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UNIT

1

MEANING AND SCOPE OF PATIENT CARE SERVICES

Meaning and Scope
of Patient Care
Services

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STRUCTURE

- 1.0 Learning Objectives
- 1.1 Introduction
- 1.2 Structure and Function of Hospital
- 1.3 Management Hierarchy
- 1.4 *Types of Hierarchy*
- 1.5 The Organogram of the Organization (Hospital)
- 1.6 Departments in Hospital Both Clinical and Non Clinical
- 1.7 Hospital Staff Medical and Paramedical
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- 1.9 Role of Administration in Patient Care
- 1.10 Classification of Hospital
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1.0 LEARNING OBJECTIVES

After completion of the unit, you will be able to:

- Under the Structure and function of Hospital
- Define Management hierarchy
- Describe the Types of hierarchy
- Discuss the organogram of the organization
- Explain Departments in hospital both clinical and non clinical
- Know hospital staff medical and paramedical
- Discuss Significance of patient care
- Discuss role of administration in patient care
- Describe classification of Hospital

1.1 INTRODUCTION

Patient Care Services consists of Nursing, Rehabilitation Services, Clinical Nutrition, Cardiopulmonary Services, Child Life and Volunteer Services.

1.2 STRUCTURE AND FUNCTION OF HOSPITAL

Organizational Structure of Hospitals

With lives in their hands, hospitals have to function very precisely, executing high-quality services every hour of every day. Organizations that have this sort of requirement usually take on a vertical organizational structure — having many layers of management, with most of the organization's staff working in very specific, narrow, low-authority roles. The numerous layers of management are designed to make sure that no one person can throw the system off too much. This structure also ensures that tasks are being done exactly and correctly.

Directors

Hospitals are corporations and are therefore overseen by boards of directors. Nonprofit hospitals have boards that often consist of influential members of health care and local communities. Many hospitals were founded by a religious group and maintain religious affiliation. These hospitals often include clergy and congregation leadership in their boards. Educationally affiliated hospitals are often overseen by universities. Therefore, university boards of trustees or regents may double as the board of directors for a hospital. Multi-hospital systems, particularly for-profit ones, usually have one board of directors overseeing numerous facilities.

Executives

Boards of directors leave it to their executives to see that their decisions are carried out and that the day-to-day operations of the hospital are performed successfully. The chief executive officer is the top boss responsible for everything that goes on in a hospital. However, hospitals usually have chief nursing officers, chief medical officers, chief information officers, chief officers and sometimes chief operating officers, who also carry a lot of weight. This group of top executives forms the central core management.

Department Administrators

The top managers of each hospital department report to the core management. These people are responsible for one type of medical or operational service. Most departments are areas of patient care such as orthopedics, labor and delivery or the emergency department. There also are non-patient-care departments such as food services and billing. Clinical departments usually have large staffs, significant

supply and purchasing needs and numerous regulations they must comply with. Therefore, administrators often have assistant administrators who help them oversee their multifaceted operations.

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Patient Care Managers

Within a department, there are the people who directly oversee patient care. Nurse managers, directors of rehabilitation services and supervising physicians have people under them who give hands-on patient care. This level of management ensures that the staff members are acting appropriately, giving the best care, addressing all of their duties, complying with hospital and legal requirements and, for nurses and allied health care workers, following physician orders. When something goes wrong with a patient or a clinician, these people handle the problem. They also usually oversee schedules and basic human resource functions for their employees.

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Service Providers

Most of a hospital is composed of service-providing staff. From nurses and physical therapists to line cooks and laundry workers, it takes a lot of hands-on staff to make everything happen. These people have very specific job descriptions and duties, which hospitals need them to perform very well to ensure the safety and health of patients.

Functions of Hospital

There are two types of function that are performed by the hospital-

- Intramural
- Extramural

Intramural

Intramural is a kind of function that performed by the hospital in its territory or premises. Intramural function includes various kinds of services like OPD, Diagnostic, IPD, Emergency services and education and training for nursing and paramedics.

A brief account about this function are as follows-

OPD

OPD stands for Out Patient Department, It defines as the ambulatory service or medical care provides to the patients who are not needy for admitted to the hospital. This department works on the basis of day care. Some writers says that OPD is the "shop window" of the hospital.

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IPD

IPD stands for In Patient Department, IPD is the heart of the hospital. The foremost objective of the hospitals is to care for the sick and injured person, this task is carried out in the wards of the hospital.

Diagnostics

Diagnosis is a medical procedure that helps in finding or diagnose the disease or cause of disease of patient.

Diagnostic techniques are of two types as follows-

1. Invasive
2. Non- Invasive

Emergency services

Emergency department is the vital department of the hospital. This deals with the emergency like accident, minor trauma, and other emergency cases associated with health.

Teaching and Education

Teaching and education refers to the training of nursing and paramedical staff.

Extramural

Extramural is a kind of function that performs by hospital in outside or surrounding areas. It includes home care services, health camps, health promotion, day care centers etc.

A brief account about this function are as follows-

Home care service

This type of health service provide by the hospital at the patients door step, Some patients wants medical help or service at there home, and hospital provides nursing care to the patient.

Health camps

Health camps are held by the hospital in rural areas, schools, colleges, etc

Health promotion-

This type of service held by the hospital at village level and in rural areas. Health promotion is done by street plays, nukkar natak, individual and public counseling etc.

Day Care centers-

This center includes minor medical procedures and minor operations which held on day basis. This includes eye care camps, dental camps etc.

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1.3 MANAGEMENT HIERARCHY

Hospital COO

Large hospitals often have both a chief executive officer and a chief operating officer, or COO. Even smaller organizations may have both positions to ensure that one person is not overwhelmed with multiple responsibilities. While the CEO is generally responsible for global issues such as strategic development, dealing with the board of directors and external issues, the COO is responsible for the day-to-day operations of the hospital. However, COOs in different organizations may have different duties and roles.

Strategy and Finance

The COO is commonly responsible for seeing that the organization's strategic initiatives are carried out through its daily activities. management is often a big part of the COO's daily job duties, as hospitals operate under economic pressures in a highly competitive environment. The COO may be involved in developing an organization-wide budget, but even if she is not, she will have to live within the institution's financial parameters and ensure that all hospital departments do the same.

Quality, Safety and Saisfaction

Quality of care, patient safety and patient satisfaction are areas that a COO must keep in mind at all times. Patient satisfaction will generate return business, while safety and high quality are two ways to improve patient satisfaction. Hospitals that receive Medicare payments must meet quality indicators and may lose if patients develop complications. Since 2008, Medicare has refused to pay extra costs associated with complications as falls, infections from urinary catheters or foreign objects left in the patient after surgery. The COO may be required to develop systems that prevent such events from occurring.

Physician Relations

Physician relations are often a large part of the COO's daily responsibilities. Physicians bring revenue to the organization by admitting patients and performing procedures or surgeries. However, physicians can also increase expenditures if

their care does not meet acceptable standards and patients must stay too long in the hospital, which usually receives a flat fee regardless of length of stay. The COO is often the primary person on the administrative team who is in regular contact with physicians, building relationships, monitoring performance and taking action when there are problems.

Daily Operations and Culture

The COO is also the primary administrative contact for employees, especially department heads. In some organizations, all or most of the department heads report directly to the COO. The COO may work with an individual department head to reduce costs, streamline services or develop new services. COOs can have a big impact on organizational culture through their day-to-day activities with both leadership and line staff. COOs also need to have an understanding of technical issues such as information management or clinical care to make effective decisions, and must spend time in all areas of the hospital to gain knowledge and insight.

Medical Administration

Medical administrators, also known as administrators, keep healthcare offices running efficiently. They perform highly specialized work requiring knowledge of medical terminology and procedures. Administrators assist physicians and medical scientists with reports, record simple medical histories, arrange for patients to be hospitalized, and order supplies. They must also be familiar with insurance rules, billing practices, and hospital or laboratory procedures.

While entry-level medical administrative positions may be filled by those possessing a high school diploma, medical office administrators require specialized medical administration training programs. Training may include courses in medical terminology, medical administration, medical office procedures, records and database management, or medical coding. Career colleges or community colleges typically grant Associate degrees or certificates in medical administration training.

Medical office administration can lead to a career in hospitals and medical offices. The work involves sitting for long periods of time and extensive keyboarding. Job risks include eyestrain, stress and repetitive motion ailments such as carpal tunnel syndrome. Office work for a medical administrator may offer flexible working arrangements, including part-time work or telecommuting – especially if the job requires extensive computer use.

Medical administrators should be proficient in keyboarding with good spelling, punctuation and grammar. In addition, a medical administrator should be organized, with good communication and customer service skills. Increasing office automation and organizational restructuring will continue to make medical administrators more productive in coming years. Computers, e-mail, scanners and voice message systems are now standard workplace tools necessary to medical administration.

According to the Bureau of Labor Statistics, 373,000 people were employed as medical administrators in 2004. While the number of administrative assistant jobs is projected to decline, the need for medical administrators is expected to continue in the next decade.

Medical office administrators earned on average between \$21,980 and \$32,690. The highest 10 percent earned over \$39,140. Salaries reflect differences in skill, experience and level of responsibility. Certification in this field usually is rewarded by a higher salary.

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Manager operations

Being an operations manager involves overseeing and having responsibility for all the activities in the organisation which contribute to the effective production of goods and services. Depending on the organisational structure, the exact nature of tasks that are classified under the operations function may differ from business to business. However, the following activities are usually applicable to all types of operations:

- **Understanding strategic objectives:** Operations managers must clearly understand the goals of the organisation and develop a clear vision of exactly how operations will help achieve them. This also involves translating these goals into implications for the operation's performance, objectives, quality, speed, dependability, flexibility and cost.
- **Developing an operations strategy:** Due to the numerous decision-making involved with operations, it is critical that operations managers have a set of guidelines that are align with the organisation's long term goals.
- **Designing the operation's products, services and processes:** Design involves determining the physical form, shape and composition of products, services and processes.
- **Planning and controlling:** This involves deciding what the operations resources should be doing and making sure that it is getting done.
- **Improving the performance of operation:** Operations managers are expected to continually monitor and improve the overall performance of their operation.

Floor coordinators

The term floor coordinator is a broad term. It relates to several job profiles relevant to different fields. Floor coordinator may work for hospitals, museum, business organizations, event management and hospitality department. Floor coordinators are responsible to look after the actual implementation of plan on the floor. In case of a museum, he keeps track of the visitors and provides them with customer services. In hospitals, he handles the reception desk and provides administrative support to the patients, doctors and management. Similarly, in event management firms, provides leadership and supervises the proceedings of an event.

Floor Coordinators Responsibilities

Floor Coordinators are the primary point of contact between the APS and the user community when it comes to technical matters. Their basic responsibility is to facilitate user activities by providing technical support. They coordinate APS and ANL services as provided by electricians, pipe-fitters, carpenters, painters, and building maintenance personnel and arrange operational support for CAT beamlines, particularly in the areas of safety and quality assurance. Floor Coordinator responsibilities also include arranging for hoisting and rigging, assisting with the transportation of hazardous materials, facilitating user access to the APS X-Ray Optics Fabrication and Characterization Facility, providing off-hours access to the APS stockroom, and assisting with purchases made using the Argonne Materials Ordering System (AMOS). Floor Coordinators also assist CAT personnel who are not yet on-site by providing technical information, overseeing CAT-related shipments to the APS, helping to facilitate LOM build-out activities, and assisting CATs in moving into their assigned areas at the APS.

Front office executives

Roles and responsibilities:

- Handling telephone calls courteously
- Answering telephone in a timely and polite manner
- Patient registration
- Accurately enter/update patient information
- Communicating with customers in a courteous, professional & co-operative manner
- Handling customer/ Patient queries with correct information regarding services
- Responsibility for patients admission and discharge formalities
- Working on other related jobs given from Management time to time
- OP/IP Billing and cash collection

Profile Description:

- Under-graduates /Graduates with a pleasing personality and excellent communication skills
- Female / Male candidates with good interpersonal and customer service skills can apply
- Should be able to communicate in English, Hindi and Kannada
- Should possess a high degree of soft skills
- 1 - 2yrs of relevant experience

1.4 TYPES OF HIERARCHY

An organization's structure dictates who is in a position of authority, how work is divided and how employees are assigned duties. Both horizontal and vertical organizational structures have advantages and disadvantages in helping an organization operate efficiently. The structure you choose for your company depends in part of your style and what you hope to accomplish. While most companies operate with a vertical structure, some prefer the less traditional, horizontal structure.

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Top Level of Hospital Management Hierarchy

This is the highest level of the management group. This is the administrative level of the hospital management hierarchy.

- **Dean of the Hospital** – The highest authority holder management official in the hospital management hierarchy is the dean of the hospital. The dean carries out the leadership duties for the hospital in an exquisite and amorous manner.
- **Hospital Administrators** – These are the group of the people who help dean ardently in carrying out the management of the hospital with a great ease and taking care of the profit loss statements along with managing and handling the smooth administration of the hospital. These are specialized professionals who are great at enforcing and mediating hospital ethics along with the knowledge and efficiency to excel at what they do.
- **Specialists Surgeons** – These professionals are also an important part of the hospital management hierarchy. These are specialized surgeons with years of practice and vital experience. Some surgeons after serving a hospital for several years with dedication also get promoted to the hospital administration level and become a part of the administrative team.

Middle Level of Hospital Management Hierarchy

This is the executive level in the hospital management hierarchy. It includes following groups -

- **Normal Specialists** – These are those doctors who specialize in a certain type of medicine, like urologists, cardiologists, and oncologist.
- **The Silent Doctors** – This group of hospital professionals includes doctors such like anesthesiologists, pathologists, and radiologists.
- **Nursing** – Nurses play a vital role in the hospital management hierarchy since all the assisting work of a doctor is handled by the nurses. Nurses are further of two types – the registered practical nurses and the licensed nurses.

Lower Level of Hospital Management Hierarchy

This is the lowest level in the hospital management hierarchy. This group responds to the operational level.

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- **Physician Assistant** – A physician assistant is practically a doctor. He is a commendable and trustable professional who is responsible for the testing, treatment and examination of the medical conditions of the patients in the hospital. They have extensive training, do the day-to-day functions of doctors and have the ability to prescribe medicine.
- **Medical Students** – Well these are the individuals seeking medical degree but not employee of the hospital yet doing practice in the hospital. This can be considered as the lowest level of the hierarchy and can be termed as a trainee or practitioner.

Vertical

The vertical organization has a structure with power emanating from the top down. There's a well-defined chain of command with a vertical organization, and the person at the top of the organizational chart has the most power. Employees report to the person directly above them in the organizational structure. Each person is responsible for a specific area or set of duties.

Horizontal

A horizontal organization has a less-defined chain of command. Employees across lines have similar input into how the organization is run. Instead of each person having clearly defined duties, employees may work in teams, with everyone on the team having input. Employees may perform many different function and may report to several supervisors, rather than a single boss. Project managers or team leaders report to a team of supervisors, with members of each team being essentially equal in terms of power.

Advantages

Vertical organizations are efficient. They can make decisions quickly, because responsibility lies with people highest in the chain of command. Employees coming into a job have clearly defined duties and each position involves specialized tasks, with little need to learn new tasks and skills. Horizontal organizations have fewer rules and put more power in the hands of employees, which can increase employee satisfaction. Employees in a horizontal organization may have a stronger sense of identification with the company, feeling they are part of a team.

Disadvantages

Vertical organizations can be rigid, with many rules. Some employees feel stifled by this kind of structure, or feel their input isn't important. Horizontal organizations are less efficient, taking more time and resources to make decisions. Workers in horizontal organizations have to learn more skills, which can increase job stress or make the job more interesting, depending on the employee.

1.5 THE ORGANOGRAM OF THE ORGANIZATION (HOSPITAL)

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Hospital As an Organisation

After knowing the hospital as a system, let us know how hospital functions as an organisation.

Organising is the process of grouping the various activities in to workable units and connecting them through authority, control and co-ordination so as to perform identified jobs for achieving organisation objectives.

Every organisation has a structure called 'Organogram' and the structure varies according to function.

Each organisation has distinct structure, objective and function, therefore differs from each other.

Organisation structure forms the basic skeleton of the organisation, which are:-

- (a) Helps to identify in consistencies and complexities in the organisation structure.
- (b) Helps to identify major line of decision making authority.
- (c) It indicates the employees there position, status and role in the organisation.

Each organisation, therefore has its own peculiarity to ensure its effectiveness. Similarly hospital is a social organisation and a rational combination of the activities of a number of persons with different level of knowledge and skills for achieving a common goal of patient care through a hierarchy of authority and responsibility.

Hospital organisation is very peculiar and differs from other organisations. Hence called a 'MATRIX' organisation.

1.6 DEPARTMENTS IN HOSPITAL BOTH CLINICAL AND NON CLINICAL

The difference between clinical and non-clinical jobs is fairly simple. Just because you work in clinic or a hospital doesn't mean your role is "clinical". The term has to do with whether or not you treat patients or provide direct patient care of any type, in which case your job is "clinical". Examples of clinical roles in healthcare are:

- Physician
- Nurse
- Allied health professionals (medical assistants, techs, therapists, etc.)

Non-clinical roles are those which do not provide any type of medical treatment, or testing. Non-clinical roles include medical billers and coders, transcriptionists, hospital executives, receptionists, and anyone who works "behind the scenes" at a hospital such as Human Resources, IT, administrative assistants, etc. Some

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non-clinical workers do interact with patients, but do not actually provide medical care. There are a lot of other non-clinical roles in the medical industry such as pharmaceutical reps, medical recruiters, medical device sales, biomedical engineers, biostatisticians, patient advocates, case workers, and more!

Clinical Positions

A clinical position involves the treatment of patients and direct patient care. An individual who works in a clinical position regularly sees and assists patients as one of their essential job duties.

Most allied health professionals fall under the clinical category because they are responsible for direct contact with patients. A few examples of healthcare fields that are considered clinical allied health professionals include:

- Medical assistants
- Radiologic technologists
- Athletic trainers
- Pharmacy technicians
- Dental hygienists
- Physical therapy assistants
- Surgical technicians
- Nursing assistants
- Veterinary technicians

All of these positions work directly with patients and are responsible for some type of patient care. That's the ultimate factor that distinguishes them from non-clinical positions.

Non-Clinical Positions

Non-clinical positions in the healthcare industry do not provide any kind of direct patient care. These positions take on more of the behind-the-scenes or administrative tasks that help with the successful functioning of the healthcare facility. Examples of non-clinical positions in the healthcare industry include:

- Medical transcriptionists
- Medical billers
- Medical receptionists
- Hospital executives
- Human Resource professionals
- IT professionals
- Pharmaceutical sales representatives
- Biomedical engineers
- Case workers
- Other administrative positions

Because people in these positions don't work directly with patients in regards to patient care, they are considered non-clinical. Even though these positions have

very different responsibilities than clinical positions, they are still a vital part of the operation of a healthcare facility.

Clinical and Non-clinical Profession

The main difference between clinical and non-clinical jobs is pretty simple. Simply because you work in a clinic or healthcare facility doesn't suggest that your function is "clinical". If you take care of patients or supply direct patient care of any type, in which particular case your job is considered as "clinical." Types of clinical functions in healthcare are:

- Physician (ER doctors, hospitalists, surgeons)
- Nurse (CRNA, LPN/LVN, RN, CNS)
- Pharmacists
- Medical Lab Technologist
- Therapist (Physical Therapist, Radiation Therapist)
- Techs (Ultrasound Tech, Radiology Tech, Surgical Tech)
- Medical Assistants
- Dietician

Non-clinical roles are the ones that do not offer any sort of medical attention, or testing. It consist of medical billing and coders, receptionists, hospital executives, transcriptionists, and anyone who works as a support staff at a hospital such as Human Resources, IT, administrative assistants, etc. Some non-clinical workers do interact with patients, but don't essentially offer medical care. There are plenty of additional non-clinical roles in the health care industry like pharmaceutical reps, medical gadget sales, medical recruiters, biomedical engineers, biostatisticians, case workers and patient advocates. Other examples of non-clinical hospital jobs:

- Case manager / Social Worker
- Human Resources & Recruiting
- Accountants
- Executives
- Administrative Assistants
- Information Technology

If you appreciate dealing with people and do patient care, working in a hospital may very well be appealing to you. A typical hospital has countless workers, along with patients coming in and out on a daily basis, it brings new challenges. Also, because healthcare is really a growing industry, hospital jobs are comparatively secure when compared with corporations which may be more unstable occasionally.

1.7 HOSPITAL STAFF MEDICAL AND PARAMEDICAL

Medical Staff

Medical staff coordinators are responsible for credentialing physicians and other healthcare professionals, managing meetings, resolving issues and complaints,

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ensuring that healthcare providers adhere to quality regulations and policies, maintaining credentials, and other related duties.

The majority of medical and health services managers, such as medical staff coordinators, work in office settings located within medical businesses such as hospitals, long-term care centers, or doctor's offices. Most coordinators work full-time, primarily during business hours. For those who work in hospitals and other 24-hour care centers, night and weekend shifts are likely.

Paramedical Staff

A paramedic is a healthcare worker, predominantly in the pre-hospital and out-of-hospital environment, and working mainly as part of emergency medical services (EMS), such as on an ambulance.[1][2] The paramedic role is closely related to other healthcare positions, especially the emergency medical technician role, with paramedics often being a higher grade role, with more responsibility.

There is an increasing realisation on the importance of paramedical personnel in the health sector, especially in accident and trauma care. Paramedics are a boon to nursing homes and a dream for students, who have not been able to become full-fledged medical professionals. Health care delivery systems are undergoing rapid changes and the demand for skilled paramedical personnel is on the rise.

Almost all the diagnostic procedures are carried out by the paramedical staff and they have emerged a vital cog in the wheel of the health care delivery system. The population explosion coupled with the mushrooming of private and corporate hospitals has provided numerous opportunities for skilled paramedics.

Now, what's important is to know more about such 'Professionals' who do a Blood Test or a massage or a therapy and aid the doctor for better treatment of the patient & hence make health care easy and effective. These Professionals are called as "Paramedics."

Medical education is very important. Without the proper education, no one would be treated properly for serious injuries or sickness. There are different types of medical education. There are people who go into the billing and coding aspect of the medical field, while others prefer to be hands on with the patients. The longest medical education is to become a doctor or surgeon. Ones who have a speciality have to take longer time getting to know their expertise and carrying out medical procedures. It is a great accomplishment, but it takes a great deal of time and work. It takes so long to become particular nurses and doctors because peoples lives are at hand. You must know what you are doing before you can administer any drug or diagnose a patient. But no other profession is as rewarding as Medical and para medical profession because of so high moral, monetary & reputative satisfaction in the society.

1.8 SIGNIFICANCE OF PATIENT CARE

Improving patient care has become a priority for all health care providers with the overall objective of achieving a high degree of patient satisfaction. Greater

awareness among the public, increasing demand for better care, keener competition, more health care regulation, the rise in medical malpractice litigation, and concern about poor outcomes are factors that contribute to this change.

The quality of patient care is essentially determined by the quality of infrastructure, quality of training, competence of personnel and efficiency of operational systems. The fundamental requirement is the adoption of a system that is 'patient orientated'. Existing problems in health care relate to both medical and non-medical factors and a comprehensive system that improves both aspects must be implemented. Health care systems in developing countries face an even greater challenge since quality and cost recovery must be balanced with equal opportunities in patient care.

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Non-medical Aspects

The fact that the patient is the most important person in a medical care system must be recognised by all those who work in the system. This single factor makes a significant difference to the patient care in any hospital. In developing countries financial constraints often lead to compromised quality of care. This can be corrected by the introduction of management systems that emphasise cost recovery. Our experience shows that a system should first be developed to attract patients who can afford to pay for high quality services and such a system should then be extended to non-paying patients. This system has the advantages of high quality care and good cost recovery. Some of the issues that need to be addressed to improve patient care are listed below.

An Afghan mother and child wait for eye care in Kabul, Afghanistan

1. **Access:** Accessibility and availability of both the hospital and the physician should be assured to all those who require health care.
2. **Waiting:** Waiting times for all services should be minimised. In most developing countries, the high demand for services often makes this a huge problem. Nevertheless, it has to be addressed effectively through continual review of patient responses and other data and using this feedback to make the necessary changes in systems.
3. **Information:** Patient information and instruction about all procedures, both medical and administrative, should be made very clear. Well trained patient counsellors form an effective link between the patient and the hospital staff and make the patient's experience better and the physicians' task much easier.
4. **Administration:** Check-in and check-out procedures should be 'patient friendly'. For example, for in-patients, we have instituted a system of discharging patients in their rooms, eliminating the need for the patient or the family to go to another office or counter in the hospital and waiting there for a long time. This has been favourably received by patients.
5. **Communication:** Communicating with the patient and the family about possible delays is a factor that can avoid a lot of frustration and anxiety. The creation of a special 'Patient Care Department' with a full time Administrator

has helped our institution significantly and has enhanced our interactions with patients and their families.

6. **Ancillary Services:** Other services such as communication, food, etc. should be accessible both to patients and to attending families.

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Medical Aspects

The medical aspects of patient care are much better understood by most health care providers. This is dependent on the quality of medical and technical expertise, and the equipment and quality assurance systems in practice. The following factors contribute to the improvement of patient care.

1. **Trained Personnel:** A well-trained 'Eye Care Team' is critical to providing high quality care with desirable outcomes. Lack of adequate personnel and lack of adequate training facilities for the available personnel are major problems. The temptation to recruit untrained or poorly trained people should be resisted. The number of training programmes must be increased, and the existing programmes must be improved. Making a uniform basic curriculum available for all training institutions/programmes should help bring about standardisation.
2. **Quality Eye Care:** There is significant concern about the outcomes of cataract surgery, and other common surgical procedures. Incorporation of quality assurance systems in every aspect of patient care is critical. For example, adherence to asepsis in the operating rooms will help reduce post-operative morbidity and proper training of ophthalmologists in diagnostic techniques will help achieve better control of sight-threatening diseases.
3. **Equipment:** All the necessary equipment must be in place and properly maintained. This is vital to the performance of the medical system and contributes significantly to better results. Eye-care equipment of acceptable standards is now available at reasonable prices, and this must be accompanied by appropriate maintenance systems.
4. **Use of Proper Instruments:** Good quality instruments are now available at lower costs. With the development of proper inventory control systems for a given operation, the costs can be lowered.
5. **Use of Appropriate Medications:** Access to low cost medicines is an absolute necessity for appropriate care.
6. **Use of Newer Technologies:** It is important to continually employ newer technologies that improve the quality of care. Of course, this must be done with reference to cost-efficiencies.

Improvement of patient care is a dynamic process and should be uppermost in the minds of medical care personnel. Development and sustenance of a patient-sensitive system is most critical to achieving this objective. It is important to pay attention to quality in every aspect of patient care, both medical and non-medical.

The Role and Significance of Nurses in Managing Transitions to Palliative Care

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Transitioning patients to palliative care from life-prolonging interventions can be a difficult aspect of clinical work with significant patient and family distress reported in studies of negotiating futility. The difficulties some health professionals experience in topicalising the need for palliative care, and resistance among patients and their families, can contribute to this care transition being poorly communicated and/or negotiated. Clinical evidence has pointed to the benefits of early and well-managed transitions to palliative care in terms of quantity and quality of life. While the role and perspectives of doctors have been previously explored, the role of nurses at the point of futility and referral to palliative care has been virtually ignored in the clinical literature. Specifically, their role in the very sensitive work of negotiating futility and in facilitating patient transitions to palliative care. Our aim in this study was to systematically examine nurses' self-reported accounts of supporting the transition to palliation in a context whereby adherence to best-practice guidelines for more effectively and timely transitions are being urgently called for.

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Nursing and the Transition to Palliative Care

The lack of attention paid to the nursing role in transitioning patients to palliative care is surprising given the presence of nurses at the patient's bedside. This is particularly the case for patients who have few remaining life-prolonging intervention options available, as caring duties typically include addressing their medical and psychosocial needs. The decision to refer a patient to palliative care is often a medical responsibility—that of the treating physician—who then leads the initial conversation about prognosis and treatment viability with the patient. In reality, however, conversations about referral and the transitions that follow involve formal and informal communication, and involve contributions from doctors, nurses and allied health professionals. The roles that different health professionals play in such contexts is not well understood, despite there being an important team-driven dynamic in terms of managing timely and effective transitions. Previous work has shown that some doctors rely heavily on nurses to directly prompt them as to the need for referral to palliative care. This largely informal delegation of responsibility provides little explanatory basis for teaching about, or streamlining, doctor–nurse professional practices around referral to palliative care. The roles and experiences of nurses thus need to be systematically examined in order to provide an understanding of current practice as well as best-practice guidance.

The Nurse–Patient Relationship and Emotional Work

In exploring the transition to palliative care, a crucial aspect of service delivery is the nurse–patient relationship. Effective transitions to palliative care entail

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high levels of psychosocial as well as medical support, and nurses are well-placed to observe and support the psychosocial well-being of patients and families. This type of caring work has considerable potential for emotional burden and fatigue among nurses. Transitions to palliative care have been shown to be challenging for all stakeholders, and managing the professional–patient–family relationship in such contexts can be difficult. For nurses, displaying appropriate emotions is central to the nurse–patient relationship. Nurses regularly care for patients within intimate and emotional circumstances, and as such require and display distinct caring skills that are highly valuable in effective transitions. During the transition to palliative care, caring tasks can include verbal and body language, which reassures the patient, displays of sympathy and empathy, or holding the hand of a family member. Indeed, nurses have been shown to be more in tune with patients' suffering and grief than medical staff in certain contexts. Less attention, however, has been focused on how nurses experience this kind of work within the context of ceasing life-prolonging treatment and transitioning to palliative care.

Methods

This qualitative study was developed to explore a range of nurses' experiences of caring in the transition to palliative care. The objective of the study was to systematically explore hospital-based nurses' accounts of the transition to palliative care, and the potential role of nurses in facilitating more effective palliative care transitions. We define the transition to palliative care as the referral and transfer to the care of a palliative care service.

This transitional process may entail initial or ongoing consultation with a palliative care specialist within the current clinical setting, but eventually involves movement to another setting under the care of a palliative care service. Nurses who were frequently involved in working with patients at the point of referral to palliative care were approached to take part in a qualitative semistructured interview to discuss their experiences and perspectives. The transition to palliative care is a particularly emotional, sensitive and difficult period for all stakeholders and face-to-face interviews have been shown historically to be a feasible and effective means of documenting experiences and perceptions of care in the last few weeks of life.

Furthermore, a qualitative design allows documentation of complex personal and interpersonal challenges, conflicts and successes. The purposive sampling strategy was facilitated by Nurse Unit Managers who provided information forms to nurses who might be interested in participation. The information form outlined the aims and objectives of the project and described the background of the researchers, then invited potential participants to voluntarily contact the researchers directly if willing to participate. The information form also outlined that potential participants would be in no way disadvantaged by electing not to participate in the study and could withdraw their participation at any time, for any reason, without penalty. Of the 30 nurses who were approached, 20 agreed to participate.

A range of areas of specialty were represented within this sample, including medical oncology, haematology, general medicine, radiation oncology and supportive/

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palliative care. The sample also included a range of levels of seniority, from junior and newly qualified nurses ($n = 4$) and clinical nurses ($n = 10$), to more senior coordinators and Nurse Unit Managers ($n = 6$). There were 18 female and 2 male participants, aged from early 20s to late 50s. Participants provided written consent for the interviews to be digitally audio-recorded and transcribed verbatim and in full. The interviews took place in private office spaces within the hospitals, lasted between 30 and 60 min, and were designed to explore the following domains: the basis of nursing practice at points of transition; interacting with patients/family about palliative care and the end of life; intraprofessional and interprofessional dynamics evident in the transition to palliative care; and the emotional and interpersonal impacts on nurses at this point in care. We continued interviewing until the point of data saturation was reached. The researchers conducted member checking during the interviews by frequently summarising and restating participants' views and experiences to enhance reliability through allowing the participant to confirm or query the researcher's understanding.

Analysis

A systematic thematic content analysis was conducted using NVivo 9 software, into which all interview transcripts were imported. The thematic analysis of the data was driven by a framework approach, which included the following steps:

1. Familiarisation—in which the researchers reviewed the manuscripts;
2. Identification of framework—key themes and issues identified around which the data was organised;
3. Indexing—application of themes to text;
4. Charting—use of headings and subheadings to build up a picture of the data as a whole and
5. Mapping and interpretation—in which associations were clarified and explanations worked towards.

Independent coding of the data was provided initially by members of the research team, which was then cross-checked to facilitate the development of themes, moving towards an overall interpretation of the data. Analytic rigour was enhanced by searching for negative, atypical and conflicting or contradicting cases in coding and theme development. Inter-rater reliability was ensured by integrating a number of research team members in the final analysis. All audio recordings, transcripts, coding reports and notes were retained and added to documentation of research aims, design and sampling, and recruitment processes and practices to form an audit trail.

Results

We report on the themes emergent from our systematic analysis of the interviews. All of the nurses interviewed spoke at length and in considerable detail of their experiences and views on caring for patients approaching the end of life, and their

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families. It was clear from the interviews that nursing work at this time had the potential to be emotionally draining, time-consuming and complex in terms of managing professional, interprofessional and nurse-patient relationships. Our analysis revealed four predominant themes:

1. In the nursing role in the transition to palliative care;
2. Emotional support and effective transitions;
3. Managing task-oriented nursing and supporting patients in transition and
4. The emotional burden of managing the transition to palliative care.

Patient-Centered Care

Organizing the delivery of health care around the needs of the patient may seem like a simple and obvious approach. In a system as complex as health care, however, little is simple. In fact, thirty years ago when the idea of -patient-centered care first emerged as a return to the holistic roots of health care, it was swiftly dismissed by all but the most philosophically progressive providers as trivial, superficial, or unrealistic. Its defining characteristics of partnering with patients and families, of welcoming—even encouraging—their involvement, and of personalizing care to preserve patients' normal routines as much as possible, were widely seen as a threat to the conventions of health care where providers are the experts, family are visitors, and patients are body parts to be fixed. Indeed, for decades, the provision of consumer-focused health care information, opportunities for loved ones' involvement in patient care, a healing physical environment, food, spirituality, and so forth have largely been considered expendable when compared to the critical and far more pressing demands of quality and patient safety—not to mention maintaining a healthy operating margin.

How times have changed. This once radical concept has undeniably been pushed into the mainstream, in part by the Picker Institute's introduction of its scientific approach to identifying and understanding patients' varied needs and by the expansion of the Planetree membership network, comprised of health care organizations across North America and abroad all implementing a patient-centered approach to care. The Institute of Medicine's 2001 seminal report *Crossing the Quality Chasm* identified patient-centeredness as an essential foundation for quality and patient safety—versus the conventional perspective of a patient-centered approach being a peripheral aim—effectively ushering in a reorientation of the health care delivery system: one in which the way care is delivered is considered equally as important as the care itself.

With the introduction of the HCAHPS (Hospital Consumer Assessment of Healthcare Providers and Systems) patient experience of care survey, there now exists a standardized tool to evaluate the way care is provided from the patient perspective. The program's development has reinforced that, from the vantage point of patients, the health care experience encompasses much more than clinical capabilities, pharmaceuticals and technology. Whereas other nationally standardized and publicly reported outcomes, like CMS's core measures, evaluate

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hospitals on aspects of clinical quality that mean little to patients themselves and/or reflect outcomes that patients take for granted as minimum standards of care, HCAHPS examines those aspects of the health care experience that mean the most to patients, including communication with nurses and physicians, cleanliness and noise levels, pain control, and quality of discharge instructions and medication information. With individual hospitals' scores publicly available for the curiosity, scrutiny and comparability of health care consumers, HCAHPS has hastened the need for hospitals to examine the way care is delivered from the perspective of their patients. And with the advent of value-based purchasing, HCAHPS will likely become a basis for reimbursement, effectively advancing patient-centered care from the —right thing to do to a business imperative.

Defining Patient Centered Care

The result is that, today, patient-centered care is in the consciousness of most every health care leader. Organizational mission statements reference it, special committees have been convened to address it, and considerable resources are expended to solicit patient feedback on it. Nevertheless, many organizations continue to struggle with what —it is.

This ambiguity ultimately leaves many with vague or muddled expectations for what constitutes patient-centered care. Is it a surprise, then, that many leaders report feeling bewildered at how to go about becoming more patient-centered? Or that others, convinced that their approach is indeed a patient-centered one, are surprised to find data reflecting patient and/or staff discontent? In the broadest terms, patient-centered care is care organized around the patient. It is a model in which providers partner with patients and families to identify and satisfy the full range of patient needs and preferences. Not to be overlooked in defining patient-centered care is its concurrent focus on staff. To succeed, a patient-centered approach must also address the staff experience, as staff's ability and inclination to effectively care for patients is unquestionably compromised if they do not feel cared for themselves.

Although patients may not always be able to accurately assess the clinical quality of their care, or whether safety processes are in place, patient safety and high clinical quality are fundamental to a patient-centered approach. Patient-centered care does not replace excellent medicine—it both complements clinical excellence and contributes to it through effective partnerships and communication. A wealth of resources exists to guide organizations in addressing clinical quality and patient safety, so for purposes of this Guide, we have narrowed our focus to discussing the patient and staff experience of care. We recognize, however, that it is essential for efforts to improve the patient experience to be grounded in and closely connected with quality and safety efforts.

Patient-Centered Care as Organizational Culture Change

We would be remiss in producing an Improvement Guide full of specific practices in

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patient-centered care without making it abundantly clear that an organizational culture of patient-centered care is characterized not by discrete programs, but by the core values and attitudes behind the implementation of such programs. Patient-centered care is about engaging the hearts and minds of those you work with and those you care for. It is about reconnecting staff with their passion for serving others. It is about examining all aspects of the patient experience and considering them from the perspective of patients versus the convenience of providers. Ultimately, it is about a collective commitment to a set of beliefs about the way patients will be cared for, how family will be treated, how leadership will support staff, and how staff will nurture each other and themselves.

In the absence of such an overarching organizational vision, programs and policies, on their own, may effectively address specific objectives, but they will fall short of cultivating an authentically patient-centered organization. In a patient-centered culture, the core value of prioritizing the perspectives of patients and families may be manifested with, for instance, the development of a Patient and Family Advisory Council, with routine patient rounding to understand their perceptions of their care, or with regular focus groups. Without the conviction of the core values behind these practices—without a genuine recognition of the need to be responsive to the voice of health care consumers—such practices will be in vain. On the other hand, in an organization where a culture of patient-centeredness has taken root, these formal approaches are naturally complemented by the countless informal ways that staff—committed on a deep level to meeting the needs of those they care for—interact with patients, families, and even each other at the bedside, in the lobby, in the cafeteria, etc.

This difference between discrete patient-centered practices and comprehensive culture change is corroborated in conversations with leaders at a number of patient-centered hospitals that have performed well on the HCAHPS survey. These leaders confirm that, in their view, their survey success cannot be attributed to any precise or tangible actions or programs. Asked to identify the specific drivers for their HCAHPS success, many of them took a more nebulous approach, describing instead an organizational culture in which, of course, call bells are answered promptly, communication with nurses and physicians is open, and important information is reinforced—again, not because of a series of in-services or program roll-outs, but because that's the expectation throughout their hospital of how care is provided.

And therein lies the rub for many organizations striving to become more patient-centered. Patient-centeredness is not a check-list, a dashboard or an action plan. It is a cultural transformation. As such, it requires buy-in and engagement from all levels of the organization, it requires a long-term commitment, and a willingness to routinely challenge the —that's the way we've always done it mentality.

What's more, patient-centeredness is not a goal to be achieved in order to move on to the next initiative. The true test of a culture of patient-centered care is its sustainability, and its ability to endure even in the face of high census days, staffing shortages, demanding patients and leadership turnover. True to any profound organizational culture change, the gradual shift to patient-centeredness comes with a natural ebb and flow of momentum. Rather than a reason to abandon

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efforts to become more patient-centered, these ebbs represent opportunities for revitalization, celebration of past accomplishments and setting new goals; the — flows are opportunities to push through barriers to further advance the culture.

So, it is with this caveat that this Patient-Centered Care Improvement Guide is presented: to be truly effective, the practices contained within must be implemented as part of a long-term and comprehensive vision of organizational culture change. That shift of mindset is a profound one with the power to unleash a swell of passion, enthusiasm and activity within your organization that will go far beyond the launching of a series of new initiatives. Indeed, with time, patience and ongoing attention, it could result in sweeping changes with far-reaching effects that will be felt for years to come by your patients, their families, and staff.

1.9 ROLE OF ADMINISTRATION IN PATIENT CARE

Patient care administrators are typically registered nurses and work in a variety of settings, including hospitals, long-term care facilities, rehabilitation clinics, and hospices. They are in charge of overseeing patient care and services, staff, regulatory compliance, quality of care, and cost containment. Patient care administrators often have duties supervising medical care, overseeing personnel and implementing procedures and regulations.

Opportunities for Healthcare Administration

An important opportunity exists for healthcare administrators to contribute more forcefully to the effectiveness of team-based care. The pressures for value creation in healthcare delivery and for improving quality through integration and coordination are strong and increasing. Administrators are in a unique position to add value to patient care by using competencies such as coordination, teambuilding, culture change, conflict management, project management, and leadership, in the service of team-based care. Healthcare administrators are important to the success of team-based care because they are in a strong position to accelerate and champion team-based care.

Meeting this opportunity to add value requires that administrators adopt both a more ambitious and collaborative posture toward clinical care than is now customary. Administrators must accept that they have shared responsibility for clinical outcomes even if they do not fully understand them or the clinical processes that produce them, and, in hospitals, even if the governing board formally delegates much that of authority to the medical staff. (Parenthetically, this means that hospital governing boards must be involved in this transformation as well.)

This role change for administrators needs to be accompanied by explicit leadership and management of the culture of the organization so that effective team-based care is encouraged and appreciated. We emphasize a few key competencies that are particularly in need of attention in healthcare administration education and practice. The first is familiarity with clinical care, a necessity for those who

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do not have clinical care backgrounds. The medical terminology requirements of health administration programs, popular when healthcare administration began to develop as a career in the mid-20th century, fell by the wayside in the 1970s and 1980s, in lieu of more business content in the curriculum.

A return to the basics of the language of clinicians is necessary. In the meantime, however, clinical care has complexified as well, and has become increasingly interprofessional and team-based. Those who are responsible for the performance of interprofessional care teams (typically, healthcare administrators) need to know what the different members of the interprofessional teams do, and more. Administrators need to understand and influence the cultures of the different clinical professions, how they relate to each other, and how they commonly disagree or resolve problems.

Another particularly vexing competency involves leadership style. Administrators need a collaborative style to effectively work with clinical professionals. Collaborative leadership sounds innocent and non-controversial, but it is a significant departure from common practice in many organizations, including healthcare organizations.

Related competencies for administrators involve shaping the structural as well as cultural conditions for team-based practice. Structural conditions include organization-wide policies and practices, particularly hiring, evaluation, and compensation policies. Helpful policies and practices include representation of multiple professions on key committees and task forces, such as quality improvement projects; educational programs for interprofessional collaboration; and shared information technology across the professions. Cultural conditions begin with the declaration in the organizational vision or values that the organization promotes team-based care. Organizational vision and values are reinforced by structural changes as well as role modeling and celebrating and rewarding effective teamwork.

To add value to team-based care requires that administrators receive stronger education and preparation in the competencies of clinical practice support and clinical systems management. There are signs that such competencies are becoming more appreciated in recent years in healthcare administration educational programs, but often in a vague and eclectic manner.

Opportunities for Clinicians

Transforming the role of healthcare administrators also has implications for clinicians. Among these is the need for clinicians to learn the general outline of how administrators, in addition to clinicians from other professions, are educated and how they can add value to the clinical enterprise. A better understanding of organizational structure, strategy, and culture can better enable clinicians to identify and promote conditions critical for interprofessional care team success.

In some professions, the curricula for educating clinicians contain course content on leadership as it pertains to those professions; even so, interprofessional and systems perspectives are not emphasized, and attention to the non-clinical aspects of the healthcare enterprise is minimal or absent. Individual clinical

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professional and interprofessional education programs can seek out the participation of administrators in appropriate parts of their education. There are advantages to having clinicians and non-clinicians in classrooms together to learn about ways to bring multiple perspectives to bear on improving both individual patient care and systems of care. Finally, clinicians can seek out the participation of administrators when their support and expertise can improve team effectiveness.

The Role of the Hospitalized Patient in Medication Administration Safety

Talking about the hospitalized patient's role in medication safety may suggest shifting responsibility away from the provider, but that is not my intent. This dialogue is intended to foster the development of approaches to care that lead to partnering with patients in care delivery and in sharing responsibility. A decade ago, a survey by the Canadian Institute for Health Information found that Canadians give high priority to enhanced information regarding health. Martin's survey (2002) of patient views on the patient-provider relationship found that more than 50% of patients believe they have primary responsibility for decisions regarding their health; an additional 35.6% expect to share decision-making with their healthcare providers. In the past 5 years, patients and their families have formed organizations such as Consumers Advancing Patient Safety and have assumed important roles with the World Health Organization's Alliance for Patient Safety. One way to foster patient involvement in patient safety is to examine and describe how providers can begin to share responsibility with patients and include them actively in safety improvement measures.

The first Canadian study of adverse events in hospitals reported that medication errors were second only to surgery-related events. Most adverse drug events happen at order entry (39%) and administration (38%). Nurses know the medication administration process intimately, but there is no discussion in the nursing literature about the patient's role in medication error. Little research exists on how patients perceive medication adverse events, and no studies have examined a role for the patient in medication administration safety.

The absence of any defined role for the patient in the medication administration process represents a gap in our knowledge and a unique opportunity to explore a potential aspect of safety. The objectives of this pilot study are stated below.

Research Objectives

1. To explore patients and nurses perceptions and experiences of medication related safety.
2. To explore patients and nurses perception of the patient's role in medication administration safety and to arrive at a substantive explanation of the patient role.
3. To determine what resources patients and nurses need to enhance medication safety while hospitalized.

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Design

Constructivist grounded theory methodology was used to conduct this study. Constructivist thinking recognizes that reality may be different across individuals, and that researchers and the participants contribute to study findings. The study method was interviews. Findings from the interviews are grounded in the data given by the participants, allowing the researcher to develop a theory about the patient role that was meaningful and understood by the participants. To insure trustworthiness in a qualitative study — what is known as “rigor” in a quantitative study — the researcher carefully explains each step of the data collection and analysis process leading to the development of the theory. After each interview, data were transcribed and analyzed. The analysis of the first interview produced a series of categories or concepts. As each subsequent interview was analyzed, findings were assigned to existing categories unless new categories were identified. The categories into which the data fit were retained. There was one category that more fully explained the existing role of the patient and was therefore called the core category. This core category and the three related categories formed the theory and are explained in the findings section.

Participants

Individual Interviews

A convenience sample of patients and nurses was used. For this study, we recruited six patients discharged from two units of a tertiary care center in Atlantic Canada and six nurses working on the units where the study participants had been patients. Because this was a pilot study, sample size was limited to 12 interviews to get a sense of the interest level of patients and nurses to participate in this research and to arrive at a tentative explanation of the role of the patient in medication administration safety.

Inclusion Criteria

Patient participants were 18 years of age or older, able to speak English, cognitively alert, and discharged from general medicine units 2 to 3 weeks prior to the interview. Nurse participants worked full-time or permanent part-time on the units from which the patient participants had been discharged. This pilot study received ethical approval by the Health Authority involved. Dalhousie University has a reciprocal agreement for ethical approval with the Health Authority.

Findings

The core category, which I call “knowing enough but not too much,” was generated from the data that met study objective number two and explained the present role of the hospitalized patient in medication administration safety. The concepts

related to this core category were knowledgeable patients, system design, and patient teaching. Knowledgeable patients and system design represent the source of the problem or the reason for the present role. Patient teaching is a strategy supporting the present role.

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Knowing Enough But Not Too Much

Being asked about a role for hospitalized patients in medication administration safety came as a bit of a surprise for study participants. Patients were surprised in two ways: (1) some believe they have no say and that medications are the domain of doctors, leaving the nurse and the patient to trust that the doctors would do the right thing, while (2) others wanted to be consulted directly about their medication orders and were pleasantly surprised at the prospect of this happening. Nurses in some cases had not thought about a patient role because they had learned that medication administration fell within the boundaries of the professional responsibility of the nurse, nevertheless they could see the potential for a patient role.

“Knowing enough” means that patients recognize their pills; that is, they know how many to take and when, what they look like — size, shape, color — and what the pills are for. This means the patient knows if the pill, for example, is for controlling blood pressure, lowering cholesterol, or thinning blood. Patients and nurses accept this level of knowledge and find it very helpful. Patients generally want to know about their medications, and nurses find it helpful and an added measure of safety when they have patients who can look at the medications they are about to receive and confirm that the medications are what they usually take. If a patient looks at his or her medications and says, “Something has changed,” that is a flag for the nurse to double check that the medications are correct.

“Knowing enough but not too much” means there is a point at which the healthcare provider feels challenged by the patient/advocate about their medications. Some patients — those who “know too much” — want to be “insiders” with respect to their medications. This means they want to be consulted about their medication orders and adjustments to those orders. In one case, the patient was a health professional and, although the medications prescribed were consistent with the protocol for the disease of the patient, when the patient explained the medications were not working, the orders were changed. In another case the patient was very knowledgeable about the disease but the protocol was adhered to, and the patient believed the hospital stay was one day longer because of it. “Knowing enough but not too much” explains how patients and nurses in this study perceived the present role of the patient. The following factors contributed to the construction of this role.

Knowledgeable Patients

Nurses report that patients/advocates regularly use the Internet and generally trust what they read. Patients/advocates question the taking of certain medications, and at times this leads to frustration for both patients and nurses. When patients/

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advocates find out about the possible side effects of medications, they do not necessarily know how to weigh the risks and benefits and calculate the potential harm they might incur by altering how medications were taken. Nurses didn't mind the questions; the point of difficulty is the patient's or advocate's insufficient knowledge about the condition and the risks involved in not taking medications as prescribed. Nurses explain that they have a set of competencies that allow them to understand the clinical condition of a patient and how each medication contributes to the management of that condition, knowledge that patients and families often do not have. Nurses believe that if patients were to be more fully involved with medication administration, they would need greater clinical understanding of their conditions.

System Design

The system for medication administration in hospitals is designed for use by healthcare providers, specifically nurses, pharmacists, and physicians, with both regulatory and structural elements. From a regulatory perspective, physicians order medications, nurses verify and transcribe these orders to a patient medication record, and the pharmacy dispenses the medication to the nursing unit. There was no evidence of a step that includes the participation of the patient, except to consume the medication. Nurses administer medications following the five rights of medication administration (right drug, dose, time, route, patient) and record this on the medication administration record (MAR) of each patient. Nurses believe that they are responsible for the administration of medications and that they can be held liable if they do not fulfill this responsibility. The MAR has no provision for a patient signature.

From a structural perspective, each hospital room is equipped with a medication cupboard. Pharmacy delivers all medications to these locked cupboards, and nurses hold the keys. Patients and nurses agree that the locked cupboard is a safety feature in the medication administration system and perceive the current system as safe in response to objective one. Patients know that sometimes they are incapable of managing their own medications while in hospital. Nurses like having a medication cupboard in each patient room because they are able to give their own medications reducing the likelihood of making a medication error. Nurses acknowledge that it is sometimes distracting if the patient wants to talk while nurses are preparing the medications. Patients know and accept that they cannot get at their medications with some exceptions, such as having medication for a headache on their person so they could take it when they wanted to rather than having to bother the nurse for it. This practice is neither allowed nor encouraged but points to the fact that patients want some control relative to their medications. Patients who are diabetic and accustomed to self-administering their insulin prefer to do so while in hospital. The structural design of the system is not meant to include the patient directly in medication administration. Nurses do not learn to have the patient participate in medication administration, yet when patients want to do so, and the nurse has a certain level of trust in the patient, then the nurse may permit the patient to self-medicate.

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Model of Care

Part of system design was the model of patient care delivery on the units involved in the study. Nurses are responsible for administering all medications and the majority of treatments, as well as providing personal care and readying patients for discharge. The units involved are also staffed with licensed practical nurses who carry out certain treatments and personal care for patients. Nurses describe the amount of time they spend on each shift administering medications or obtaining missing medications from pharmacy. Pharmacy delivers the exact number of pills for each patient each day. If a pill is dropped, another has to be obtained. This is a source of frustration for nurses because it takes time to get another pill from pharmacy. Pharmacy on the other hand knows they dispense what is required and this is a source of tension between these two groups. Nurses express concern over the amount of time spent in medication administration and not having enough time to provide patient education.

Patient Teaching

Patient teaching means providing patients with information about their diseases, the medications necessary to manage those diseases, and how these medications work in the body. Nurses believe that patients will be better able to monitor and manage their disease when they have this information. Teaching is not simply preparing a list of pills with days and times attached. Some patients only want to know the basics — what is the pill for and when do I need to take it? — others want much greater detail including how the pill works in their body, how they can expect to feel while taking the pill, what to watch for to know if the pill was working or not, and if they can adjust their pills. Nurses unanimously describe the importance of *having a comprehensive understanding of medications in order to teach patients*. They also unanimously explain that they have very little time to teach patients and families about medications in the course of their shifts. Nurses go on to say that patients and families no longer carry on without explanations and will seek the information on their own, usually from the Internet. Nurses believe that knowledgeable patients add a measure of safety.

Consequences

The present limited role for patients in medication administration has consequences for both patients and nurses. Patients expect to have some knowledge about their medications and to assume some responsibility for managing them. Patients are frustrated by the lack of information and experience with their own medications in the hospital, knowing that when they return home they are expected to know what to do.

Nurses know that many patients are readmitted to hospital because they do not completely understand their medications, which is disappointing and frustrating.

Nurses recognize that there is no purposeful patient participation in the system at present, and realize their workflow must change in order to provide the patient education necessary to optimize the patient role.

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Implications for Patients and Nurses

The third objective of this study was to determine what resources patients and nurses need to enhance medication safety while hospitalized. Patients report that, if able, they should verify the medications they are about to take. This is not one of the five rights of medication administration. Consideration might be given to revising the five rights to include a sixth right: re-verification of medications by the patient. Patients did not express the desire to self-medicate, however some patients believe they should be consulted as new medications are prescribed or when existing medications are altered. Writing patient consultation into existing standardized protocols is one strategy that could help. Increasing the level of patient/advocate involvement in the hospital will assist transitioning to self-care at home, and all patients remarked they are expected to safely manage their medications at home.

Nurses express the need for time to identify patients' learning needs about diseases and medications. Nurses want access to electronic information (both the health record and the Internet) at their fingertips in order to respond to patient and family questions and to check out the web sites that patients use for information and to provide further explanation where necessary. Nurses recommend that the pharmacy generate medication lists for patients with pictures of the medications, brief descriptions of the actions, and the administration schedule. This will help patients and families understand their medications while in the hospital and participate more fully in the medication administration process. Nurses support having patients verify pills they are about to take. It is logical to assume nurses would support the idea of a sixth right in the medication administration process. RN regulatory agencies need to address nurses' concerns about liability in transferring some responsibility to patients.

It must be noted that these findings come from a pilot study, a study from which I wanted to get a sense of the interest of patients and nurses in the patient role and what that role might look like. Clearly there is interest in this role from both perspectives, and a larger study is planned.

1.10 CLASSIFICATION OF HOSPITAL

A hospital is an institution which is scientifically & economically organized for prevention, diagnosis & treatment of diseases. The teaching hospitals have facilities for the teaching & training of medical & paramedical students & trainers, hospital may be operated by the government or private agencies.

Classifications of hospital are given bellow:-

1. **According to service:-**
 - (a) General hospital: - District hospital, Thana hospital.
 - (b) Special hospital: - Medical college hospital, mental hospital, cancer hospital.
2. **According to ownership:-**
 - (a) Government hospital: - Unforced hospital, public health hospital.
 - (b) Non -Government hospital: - Private hospital.
 - (c) Corporation hospital: - (I. Profitable, Ii. Non-profitable, Partnership hospital).
3. **According to bed capacity:-**
 - (a) Fewer than 50 beds Thana label hospital.
 - (b) 51 to 100 beds district label hospital.
 - (c) 200 bed hospital Ex: - Khanpur hospital, Nariyongong. (Bangladesh)
 - (d) 200 -300 bed hospital Ex: - faridpur medical. (Bangladesh)
 - (e) 400-500 beds hospital an over. Ex: - Dhaka medical college hospital. (Bangladesh)

On the other hand, hospital is classified are as follows:-

1. Teaching hospital: - Medical college hospital.
2. Specialist hospital: - TB hospital, cancer hospital.
3. General hospital: - District hospital.
4. Nursing home or clinic.
5. Secondary hospital.
6. Tertiary hospital.

A Classification of Hospital-Acquired Diagnoses for use With Routine Hospital Data

Patient safety advocates have recently posed the question: "Is health care getting safer?" They conclude it is impossible to know, but in order to make progress toward the answer, health systems need to change focus "away from unsystematic voluntary reporting towards systematic measurement". Their prescription is "a broad but manageable spectrum of indicators that are genuinely useful to the clinical teams that monitor quality and safety day to day", using "local data that are relevant to clinical concerns . . . how a team is doing compared with last month and last year".

Most current approaches to systematic measurement of patient outcomes in hospital do not satisfy these criteria, instead relying on voluntary reporting,

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a relatively narrow range of diagnoses, or detailed, condition-specific profiles of comorbidities for risk adjustment. To our knowledge, there has been only one attempt to use routinely recorded data on diagnosis codes to monitor the full range of hospital-acquired illness and injury — the Utah/Missouri Patient Safety Project. This was limited by the need for expert clinical review to distinguish hospital-acquired diagnoses from comorbidities, eliminating many conditions that could also be community acquired.

Here, we describe the development of a tool to allow routinely coded inpatient data to be used to monitor a full range of hospital-acquired diagnoses (“complications”) to support quality improvement efforts by hospital-based clinical teams. This tool — the Classification of Hospital Acquired Diagnoses (CHADx) — was developed under the sponsorship of the Australian Commission on Safety and Quality in Health Care and builds on the Utah/Missouri project. To identify hospital-acquired diagnoses, it uses a “condition onset” flag that is now common in a number of jurisdictions and recorded in all Australian states. We termed these diagnoses “complications” in an attempt to find neutral terminology reflecting the lack of either risk adjustment or information on causation.

The classification is designed to provide a comprehensive overview of all complications as the basis for estimating total and relative per case expenditure by complication type. It is also intended to provide hospitals with a computerised tool to group the 4000 + valid diagnosis codes typically used with a hospital-acquired diagnosis-onset flag into a smaller set of clinically meaningful classes for routine monitoring of patient safety and safety improvement efforts.

Methods

ICD-10-AM and condition-onset coding

The CHADx (pronounced “chaddix”) uses data coded according to the International Classification of Diseases, 10th revision, Australian modification (ICD-10-AM). As the ICD was not designed specifically to identify hospital-acquired conditions, the CHADx had to accommodate the idiosyncrasies of the source data and coding rules, while seeking to extract as much information as possible from the record abstracts.

Like most previous classifications, we began with the “external causes” chapters of the ICD, which contain codes for causes of injury specific to hospital care (*Complications of medical and surgical care*, Y40–Y84), and the codes for manifestations or injuries common in hospital care (T and End of Chapter [EOC] codes). The latter include *Complications of surgical and medical care not elsewhere classified* (T80–T88), *Poisoning by drugs, medicaments and biological substances* (T36–T50), and the EOC or postprocedural complication codes specific to particular chapters (eg, cardiac, respiratory).

The complications flag (C prefix²⁰) used in Victoria was the model for the recently adopted national system of “condition onset” flagging.²¹ To be flagged, a diagnosis must have occasioned treatment or active investigation in hospital, or have extended length of hospital stay. Coders review the patient’s clinical notes

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to establish whether each diagnosis was recorded as present on admission. If the diagnosis was not present on admission and is plausibly hospital acquired (ie, not a congenital or chronic condition), the C prefix is assigned. In the past, coding standards have not encouraged assigning of the C prefix to diagnoses in obstetric or perinatal patients because of ambiguities in the timing of onset of particular diagnoses. Thus, because of the small proportion of C prefixes in obstetric and neonatal records, we analysed all codes listed in the obstetric and neonatal chapters of ICD-10-AM that were plausibly hospital acquired.

Sample

We selected records with any hospital-acquired diagnosis code from the Victorian Admitted Episodes Data Set (VAED) for the financial year 2005–06. Of the 2 031 666 inpatient episodes, 126 940 (6.25%) included at least one hospital-acquired diagnosis, with a mean of three flagged diagnoses per record, giving a total of 386 048 flagged diagnoses. With the addition of 128 323 obstetric and neonatal diagnoses, 514 371 diagnoses were available for analysis.

We applied a recently developed computerised algorithm²² to remove codes judged ineligible for the hospital-acquired flag (ie, congenital or chronic conditions). On this basis, 14 898 diagnoses (2.9%) were removed. Consolidation of redundant codes removed a further 118 640 diagnoses, resulting in 380 833 instances for grouping into CHADx classes.

Analysis and Design Principles

To determine the optimal number of end classes in the CHADx, we examined how variations between hospitals in depth of coding and total number of separations per year interacted with classifications of various sizes. This suggested that for hospitals with over 6000 admissions per year, 120–130 end classes with an incidence of over 0.1% of cases would provide sufficient granularity (specificity of classes and avoidance of “catch all” classes), without creating too many “empty” classes because of infrequently occurring diagnoses. For hospitals with fewer admissions, major “roll-up” groups could be used to monitor a smaller number of broad complication types.

Australian coding standards mandate that codes be recorded in specific sequences: for example, an injury or manifestation should be coded before the cause. Some combinations of code types represent redundant coding, or only marginally refine the information available from a single code. We developed working principles for prioritising code selection and reducing double counting arising from these sequenced codes. T and EOC codes are given priority as the most specific codes for hospital-acquired conditions. To avoid double counting of manifestations related to the same cause, a “bracket rule” was used: any codes bracketed between a T or EOC code and a following Y (external cause) code were assigned to a postprocedural CHADx, with no further assignment to other CHADx classes. Exceptions were made for three “high saliency” infection-related complications: septicaemia, methicillin-resistant *Staphylococcus aureus*, and “other drug resistant” infections.

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Some manifestations are not described with T or EOC codes, and thus the bracket rule defining a code sequence cannot be applied. For example, both a rash and headache could be coded as manifestations of a particular drug. This sequence of three codes is meaningful when it is coded, but ambiguous when analysed. Only the paired external cause code and the immediately preceding diagnosis can be linked; no unequivocal links to other manifestations can be made without referring back to the medical record. Given this limitation on inferring relationships between codes, we took a conservative approach to avoid overinterpreting the data. This had the unavoidable consequence that some causes might have been omitted. In the example above, both the rash and the headache were classified in CHADx, although only one was attributed to their shared drug cause.

High-volume sets of codes were then grouped together into the first draft of the CHADx, using an iterative process principally involving the first two authors (T J J and J L M). Major groupings were compared with similar published grouping systems^{11,14,16,17,23} to ensure that salient event types were not overlooked in the grouping process. While grouping was based in part on the size of groups, single codes or low-volume code groups with high saliency for patient safety were created as their own groups. Other small-volume and less specific codes were grouped together. The draft classification was reviewed by the remaining three authors (C M J, J G W and R F R) and then by three independent clinical reviewers, two of whom returned full reviews of the classification. Their suggestions and amendments were analysed, and the groups were further refined.

Results

We used 4345 unique codes to characterise hospital-acquired conditions; in the final CHADx these were grouped into 144 detailed subclasses and 17 major "roll-up" groups. These major groups can be routinely monitored by low-volume hospitals, and the subclasses by larger hospitals; the subclasses also support economic analysis.

The 17 major groups are shown by volume of diagnoses in 2005–06. CHADx 12 (labour and delivery) was the largest major group by volume (75 320 diagnoses), and CHADx 1 (postprocedural complications) was the largest by number of subclasses (23). The top 20 CHADx subclasses by volume of diagnoses in 2005–06.

Five subclasses with particular relevance for efforts to improve patient safety were kept as separate CHADx categories despite their expected small numbers (< 100 cases in the sample of more than 2 million inpatient episodes). These were: 1.2 Gas embolism (3 cases); 3.4 Injury d/t assault (19); 1.6 Foreign body or substance left following procedure(46); 3.2 Falls with intracranial injury (67); and 2.17 Anaphylactic shock due to correct drug properly administered (88).

A complete list of the CHADx major groups and subclasses, along with the code sequences assigned to each category and the number of admissions from the 2005–06 VAED in each end class, is available on the website of the Australian Commission on Safety and Quality in Health Care.

Discussion

The CHADx is intended as a tool to help hospitals monitor rates of complications and the effect of patient safety interventions. In most Australian states, hospitals submit diagnosis abstracts on a monthly basis. Monthly use of the CHADx would allow hospitals to identify any changes associated with local patient safety strategies in near "real time". Longitudinal measurement would provide information not available from methods that rely on periodic and costly intensive investigations, such as chart review. We also foresee its potential to help include cost in prioritising patient safety programs.

In contrast to performance indicators, the CHADx is not intended for external monitoring or holding hospitals to account. However, at a broad systems level, it might be useful for monitoring changes in rates of particular complication types. It does not employ risk adjustment, a technique that seeks to standardise the risk of adverse events in a patient population using information on severity or comorbidity. It avoids risk adjustment for two closely related reasons:

- The classification is not primarily intended to be comparative (a hospital's casemix constitutes the context of its patient safety efforts, regardless of its risk profile); and
- Risk adjustment may cultivate a therapeutic nihilism for a proportion of complications or particular patient groups ("old patients just get more complications").

In reality, severity of illness and comorbidities do affect rates of complications. However, it is important as a tool for priority setting and for local efforts to improve patient safety to have the full picture across the patient population, regardless of the spectrum of risk and severity.

The number of end categories in the CHADx is designed according to the level of specificity required. The optimal granularity of the classification (and thus usefulness of the categories) will vary, depending on both hospital size and local depth of coding: fewer classes provide more robust cell sizes for monitoring, but may group unlike complications together. Detail has been highlighted as a critical feature of patient-event classifications.²⁴ The tiered structure of the 17 major roll-up groups and 144 detailed and comprehensive subclasses is designed to suit a range of potential uses.

The development of any classification system using routine hospital data faces a number of challenges. The quality of both medical record entries and their abstraction varies both between institutions and between jurisdictions. This limits comparisons of data, at least until robust data audits are in place.

Current coding conventions may need to be reconsidered to better support use of routine morbidity data for patient safety. However, monitoring these routine data within institutions remains potentially useful for tracking change, even in the absence of the data audits that would support comparability between institutions. With appropriate quality control and external audits, hospitals may be able to identify peers (with a similar casemix) for comparison of rates of particular CHADx classes for particular procedures or patient groups. The specificity of most CHADx

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classes might also allow more standardised reporting of complications of care in clinical research.

Assignment of the condition-onset flag has not been audited, although the annual Victorian Department of Human Services inpatient data audit covered assignment of these flags for the first time in 2008. The usefulness of the source codes could be compromised if financial incentives were applied to hospitals reporting hospital-acquired illnesses and injuries in their data. For this reason, we argue against the use of the CHADx for public reporting or the application of financial incentives.

Research groups around the world are trialling ways to collect information on patient outcomes to inform efforts to reduce rates of hospital-acquired illness and injury. Routine data is under utilised in these efforts but has the advantage of being comprehensive, timely and available at no additional cost. Validity and reliability of these data will vary within and between health care systems, and only conditions specifically identified in the record can be coded. In Australia and elsewhere, diagnosis coding is subject to increasing scrutiny and formal evaluation.

Despite increased reporting of mortality rates and other measures of quality of care, individual hospitals have had few ways of systematically investigating rates and patterns of quality problems, focusing instead on incident investigations. The CHADx is designed to provide clinicians and hospitals with a computerised tool to group hospital-acquired diagnoses into smaller sets of clinically meaningful classes for routine monitoring of patient safety. It is premised on a "just culture" approach to improving patient safety (which recognises that competent professionals make mistakes, but has zero tolerance for reckless behaviour²⁶), and also due attention to the organisational contexts in which clinicians work.

It requires well documented medical charts and investment in training and supervision of coding staff, but does not rely on special-purpose collection of data. It supports local monitoring of complication rates over time, to focus efforts to improve patient outcomes by minimising their incidence. These complications may not be preventable in every patient but are amenable to systematic efforts to reduce their rates. The CHADx can also be used as the basis for setting priorities through supporting the estimation of relative per-case and total expenditure attributable to each CHADx class.

Analysis of causal factors

This approach focuses on the causes of adverse events in patient care. These systems aim to be "multiaxial", allowing patient "safety events" to be analysed by cataloguing a range of relevant contributory factors, such as characteristics of the patient and care team, and the circumstances leading up to, or causing, any breach of patient safety. This is an important focus for workers at the "sharp end" of patient safety, but will continue to rely on voluntary reporting for the near future. Because of the historical focus on accountability of individual health care workers (largely ignoring contributory organisational factors), voluntary reporting is vulnerable to underestimation of rates of such events. These collections may be more useful to characterise events than to count them.

Case-finding for sentinel events

This type of system typically reports serious, "sentinel" or "never" events. These systems are better understood as case-finding systems that enable in-depth investigation of particular events. They also use voluntary reporting. The assumption (rarely tested) is that such relatively uncommon events function as sentinels for more systemic problems in patient care.

Performance Reporting with Risk Adjustment

This approach uses routine hospital morbidity data and focuses on performance reporting. It places a premium on preventability and risk adjustment to avoid inappropriate blame of hospitals or providers for adverse outcomes beyond their control. The foremost example of this approach is the US Pay for Performance rules, where a set of specific events coded in the record abstract leads to denial of Medicare funding. Other examples are the US Agency for Healthcare Research and Quality Patient Safety Indicators, which build on similar earlier work; the 3M proprietary system Potentially Preventable Complications; and Queensland Health's VLAD (variable life-adjusted display) indicators. By necessity, these systems focus on a narrower range of diagnoses or procedures and rely on detailed, condition-specific profiles of comorbidities that predict a higher rate of unfavourable patient outcomes. This approach is primarily embraced by regulatory and funding authorities seeking to reward better patient outcomes and to penalise poor performance.

Monitoring of the Range of Hospital-Acquired Diagnoses

The final approach also uses routine data but seeks to use the full range of routinely recorded diagnosis codes that characterise hospital-acquired illness and injury. We have identified only one example: the Utah/Missouri Patient Safety Project, funded by the US Agency for Healthcare Research and Quality, which developed a set of 64 classes. It used expert clinical review to try to distinguish at the code level between comorbidities (conditions present on admission) and complications (hospital-acquired diagnoses). Thus, it could not include conditions such as pneumonia or urinary tract infections, which may be either community- or hospital-acquired. Because US jurisdictions have yet to switch to the 10th revision of the International Classification of Diseases for coding, the project was developed using the previous version of the World Health Organization's hospital mortality and morbidity coding system.

1.11 NOC

Once the guidelines have been issued by the fire department the application for obtaining no objection certificate may be submitted to the Chief Fire Officer by the builder/owner of the premises.

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The owners/builders are further advised to ensure the compliance of all the fire safety guidelines before the approach the Chief Fire Officer for No Objection Certificate. No inspection fee is levied by the fire service for such inspection or issue of NOCs. In case of any difficulty the matter should be reported to the Dy. Chief Fire Officer or the Chief Fire Officer. The Chief Fire Officer or Dy. Chief Fire Officer may also be contacted in case there is a delay in carrying out the inspection or issue of fire safety guidelines, or issue of NOC after the inspection has been carried out etc.

The department does not levy any charges for this job for the time being.

1.12 STUDENT ACTIVITY

1. Discuss the Organizational Structure of Hospitals.
2. Describe the Functions of hospital.
3. Explain the Management hierarchy.
4. What are the functions of paramedical Staff?

1.13 SUMMARY

- Hospitals are corporations and are therefore overseen by boards of directors. Nonprofit hospitals have boards that often consist of influential members of health care and local communities. Many hospitals were founded by a religious group and maintain religious affiliation. These hospitals often include clergy and congregation leadership in their boards.
- Large hospitals often have both a chief executive officer and a chief operating officer, or COO. Even smaller organizations may have both positions to ensure that one person is not overwhelmed with multiple responsibilities. While the CEO is generally responsible for global issues such as strategic development, dealing with the board of directors and external issues, the COO is responsible for the day-to-day operations of the hospital. However, COOs in different organizations may have different duties and roles
- An organization's structure dictates who is in a position of authority, how work is divided and how employees are assigned duties. Both horizontal and vertical organizational structures have advantages and disadvantages in helping an organization operate efficiently. The structure you choose for your company depends in part of your style and what you hope to accomplish. While most companies operate with a vertical structure, some prefer the less traditional, horizontal structure.
- The vertical organization has a structure with power emanating from the top down. There's a well-defined chain of command with a vertical organization, and the person at the top of the organizational chart has the most power. Employees report to the person directly above them in the organizational structure. Each person is responsible for a specific area or set of duties.

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- A horizontal organization has a less-defined chain of command. Employees across lines have similar input into how the organization is run. Instead of each person having clearly defined duties, employees may work in teams, with everyone on the team having input. Employees may perform many different function and may report to several supervisors, rather than a single boss. Project managers or team leaders report to a team of supervisors, with members of each team being essentially equal in terms of power

1.14 GLOSSARY

- **Medical administrators:** Medical administrators known as administrators, keep healthcare offices running efficiently. They perform highly specialized work requiring knowledge of medical terminology and procedures.
- **Floor coordinators:** It relates to several job profiles relevant to different fields. Floor coordinator may work for hospitals, museum, business organizations, event management and hospitality department. Floor coordinators are responsible to look after the actual implementation of plan on the floor.
- **The Silent Doctors:** This group of hospital professionals includes doctors such like anesthesiologists, pathologists, and radiologists.
- **Clinical Position:** A clinical position involves the treatment of patients and direct patient care. An individual who works in a clinical position regularly sees and assists patients as one of their essential job duties.
- **Medical Staff Coordinators:** Medical staff coordinators are responsible for credentialing physicians and other healthcare professionals, managing meetings, resolving issues and complaints, ensuring that healthcare providers adhere to quality regulations and policies, maintaining credentials, and other related duties.

1.15 REVIEW QUESTIONS

1. What do you mean by Medical Administration?
2. What are the Floor Coordinators Responsibilities
3. What are the advantages and disadvantages of hospital management hierarchy?
4. Differentiate between Clinical and Non-clinical Profession.
5. Discuss the Significance of patient care.
6. Write short note on:
 - (a) Nurse–Patient Relationship
 - (b) Patient-Centered Care
 - (c) Role of Administration in Patient Care
 - (d) Opportunities for Clinicians
 - (e) Classification of Hospital

2

FRONT OFFICE SERVICES

STRUCTURE

- 2.0 Learning Objectives
- 2.1 Introduction
- 2.2 Outpatient Services
- 2.3 Inpatient Services
- 2.4 Accident and Emergency Services
- 2.5 Concept of Health Insurance
- 2.6 Billing Services
- 2.7 Concept of Grievance Redressal in Hospital
- 2.8 Ayush Health Care Delivery System in India
- 2.9 National health Programmes in India
- 2.10 Hospital Planning and Support Services
- 2.11 Student Activity
- 2.12 Summary
- 2.13 Glossary
- 2.14 Review Questions

2.0 LEARNING OBJECTIVES

After completion of the unit, you will be able to:

- Discuss outpatient services
- Describe inpatient services
- Explain Accident and Emergency services
- Know Concept of health insurance
- Understand Billing services
- Express Concept of grievance redressal in hospital
- Describe AYUSH health care delivery system in India
- Discuss National health programmes in India

2.1 INTRODUCTION

The work that goes on in a hospital front office can vary depending on the size of the hospital, and the number of employees that work there. In general, the office includes a reception desk to greet patients and visitors as they enter the hospital, and provide information about where to go, or the services that are provided. Registration services may also be available in the front office of the hospital; patients can provide their name and contact information, as well as any other information requested, such as emergency contact details.

Certain administrative tasks may also be completed in a hospital front office, such as the maintenance of records and paperwork throughout the hospital. Generally, however, larger hospitals will have different methods of administrative record keeping and maintenance for each department to make it easier for staff members to access and update paperwork and files. There may be one central location for patient files, provided the hospital has not completely digitized this process, but these files will generally not be kept in the hospital front office. Generally, the purpose of a front office is to provide assistance for people when they first enter the hospital.

2.2 OUTPATIENT SERVICES

Outpatient services are medical procedures or tests that can be done in a medical center without an overnight stay. Many procedures and tests can be done in a few hours. Outpatient services include:

- Wellness and prevention, such as counseling and weight-loss programs.
- Diagnosis, such as lab tests and MRI scans.
- Treatment, such as some surgeries and chemotherapy.
- Rehabilitation, such as drug or alcohol rehab and physical therapy.

Benefits of Choosing Outpatient Services

Outpatient services usually cost less, because you don't need to stay overnight. Staff members at outpatient centers are well trained in the service they provide. Most of the time, these centers specialize in one kind of treatment or procedure. Often all the care you need can be provided in one place.

Use of Outpatient Services

Most people can choose an outpatient center instead of a hospital if the needed service is available. But not all medical procedures can or should be done at an outpatient center.

Your doctor may recommend a center. You can also ask family or friends who have used outpatient services to tell you about their experiences.

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To find the right center to provide the service you need, you'll need to ask some questions, such as:

- Does the center take your health insurance? What costs will your insurance pay?
- Will you get instructions before, during, and after a procedure or test?
- Can you get all the care you need at the center?
- Does your doctor think you may need emergency services during the procedure? Can the center treat your other problems if needed?
- What kind of experience does the staff have? How long has the center been in business? Are the doctors certified to provide the care you need?
- Will the outpatient center staff talk with your doctor and give needed information quickly?
- Is the center clean, organized, comfortable, and private?

Try to find out all you can about the outpatient center before you use it. It's a good idea to visit the center before you decide.

Many health and government agencies rate or report on the quality of outpatient centers. Check with your state's board of medicine or with your insurance company to learn more.

Types of Outpatient Services

More and more medical procedures are being offered in qualified outpatient service centers.

Outpatient services are offered in many settings. For instance, medical centers often provide various types of outpatient services, such as pain clinics or rehabilitation centers. Other types of outpatient facilities include:

- Medical group practices.
- Outpatient clinics at hospitals or other medical facilities.
- Surgery centers.
- Imaging centers.
- Cardiac catheterization centers.
- Mental or behavioral health centers, which may provide substance abuse treatment services and mental health services for adults or children.
- Lab centers.
- Gastrointestinal centers, which may provide screening or other services such as colonoscopy and endoscopy.
- Durable medical equipment rental facilities.
- Physical therapy centers.
- Chemotherapy and radiation therapy centers.

Many outpatient service centers specialize in a specific area of medicine, such as orthopedics (bones) or cardiology (heart). These centers, like many hospitals, have advanced equipment and highly trained staff.

Important Considerations

There are many benefits to outpatient services, depending on the type of medical procedure you need and on what you prefer.

- Outpatient services can be cost-effective. Often, the procedure that you need may cost less at an outpatient service center than at a hospital, especially since you are not billed for separate hospital services. Outpatient service centers do not require an overnight stay. This can reduce costs.
- Outpatient service centers usually specialize in one type of treatment or procedure. And the staff usually has a lot of experience that is focused on the procedure you need. Also, the equipment and techniques used may be the most advanced.
- Outpatient services may be more convenient for you. All of the care that you need before, during, and after the procedure, surgery, or test may be conveniently provided in one place.

When choosing an outpatient facility, consider:

- The reputation and quality of the center. What do you know about the care offered by the facility? Learning about the particular center before the procedure may prevent you from receiving poor care. For more information about finding out the quality of an outpatient facility, see the Quality of Outpatient Services section of this topic.
- The center's ability to access emergency equipment. Does the center have all of the possible equipment and knowledge it needs to treat you in case of an emergency during your procedure, test, or surgery—such as problems with anesthesia during surgery or your newborn needing intensive care after delivery? If you have other health conditions, you may be at higher risk for needing emergency care.
- The center's connection to a major hospital, in case you need emergency care, and how far away the hospital is.
- The center's level of follow-up care. Find out if the center offers follow-up care or designates someone to care for you after the procedure, surgery, or test—even after the center is closed. Will you receive clear, written instructions on how to care for yourself after your visit? Follow-up care can be an important part of appropriate health care.
- The center's location. Is the facility close enough that if you need to return for additional care, you can get there without too much inconvenience? Is there a center located closer to you that offers the same service?
- The type of communication that will be available to your doctor. Will the facility send all test results and reports to your doctor? If a center does not communicate well, it will be a struggle to get helpful information to your doctor. Talk with your doctor and others who have used the center to find out whether the staff will communicate well with you and your doctor.
- Your insurance coverage. Does your health plan provide coverage for the outpatient service center? If the center is not covered, you risk having to pay more for the services.

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Quality of Outpatient Services

Most outpatient service centers are accredited and approved for the types of treatment offered. But not all centers provide care that is right for you. Be sure to find out whether the provider you're considering is reputable and qualified. The following government and health agencies can help you learn about the quality of outpatient service centers:

- Your state's board of medicine. Every state in the United States has a state board of medicine that regulates complaints against medical facilities and doctors. Although this agency will not reveal the details about any facility or individual, you can find out if there have been complaints filed against a facility or doctor. You can find your state board of medicine through the local telephone directory. Or go online and search for "Board of Medicine" for your particular state.
- COLA. This group oversees the accreditation for laboratories and testing centers. Information from this agency can be obtained through its website at www.cola.org.
- The American Osteopathic Association. This agency monitors approval of professional services by osteopathic physicians. You can find this agency through your local telephone directory. Or you can find it online at www.osteopathic.org.
- Your insurance carrier. Many insurance carriers keep quality indicator records for doctors and facilities in your local area.

Finding the Right Provider

It is important to check with your health insurance provider to determine what outpatient services are covered. Your particular health plan coverage may limit your choice of services.

Choosing a quality outpatient center before you have a medical procedure is the best way to make sure that you'll receive excellent care. Friends and family who have used outpatient services may tell you about their personal experiences. Often your doctor will know about the quality of outpatient services in your area. You may want to start your search by talking with your doctor about your options. Next, find out which outpatient services are covered by your insurance company. The following questions may help you find the outpatient service center that best fits your needs:

- Does the facility accept your health insurance? Does your insurance cover any or all of the costs?
- Is the outpatient service center conveniently located or within a reasonable distance of your home or work?
- Is more than one facility in your area qualified to provide the service you need?
- Will the facility communicate well with your doctor and provide the information you need in a timely manner? Can your doctor verify the accuracy of any tests you had?

- Is the outpatient service center accredited by a national medical board or other recognized agency? You can find out by calling your state medical board or The Joint Commission. For more information, see the Quality of Outpatient Services section of this topic.
- Is the facility clean, organized, comfortable, and private? You'll need to visit the facility to find out. You may want to ask the facility or others who have used the facility if the recovery room is well-staffed. Is there a waiting room for your family?
- Is information readily available to you? Will you receive instructions before, during, and after a procedure or test?
- Are brochures or literature available that explain the outpatient center's services and fees? Does the facility provide information on financial assistance?
- Do you have other health conditions that should be considered? Can the facility accommodate treating your other conditions if needed? Does your doctor think there is a risk that you may need specialized attention or emergency services during the procedure?
- Can you get all the care you need at the facility? Will the center provide all the medicines or other treatment needed? Will you have to go somewhere else for follow-up care?
- What kind of experience does the staff have? How long has the outpatient service center been operating? What are the specialties of the doctors providing the care? Are they board-certified in their specialty areas?

You may have more questions based on your own health issues and the type of procedure or test you need. Ask questions, listen to the recommendation of your doctor and those you trust, and visit the facility to get the information you need to make the best decision for your health care.

Child and Adolescent Outpatient Services

Mission of Service

As an integral part of Strong Health and the University of Rochester Medical Center, The Strong Behavioral Health Child and Adolescent Psychiatry Outpatient Service is committed to providing quality mental health assessment and treatment to infants, children, adolescents, and those who care for them.

Target Population

Our services are designed to meet the needs of families from diverse backgrounds who may benefit from outpatient assessment and treatment. We diagnose and treat children and adolescents with a variety of problems including depression, anxiety, attention deficits and other behavioral problems. Services are offered to infants, children, adolescents, and their families experiencing stress due to a

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medical illness, change in family situations, or other difficult life events. We also offer services within our outpatient and inpatient settings for the treatment of seriously emotionally disturbed children and adolescents.

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Types of Services Provided

- Outpatient Mental Health Services for children from birth to 18 years
- General Services
 - Diagnostic Assessment
 - Individual Therapy
 - Parent Consultation
 - Family Therapy
 - Medication Therapy
 - School Consultation
- Specialty Services
 - Group Therapy Program
- Child and Adolescent Group Therapy
- Problem Specific, Short-Term Groups
- Parent Education Groups
 - Medication Consultation Service
- Consultation
- Assessment
- Treatment
 - Psychological Testing Service

Our Approach

Families work with a primary therapist who is responsible for coordinating all aspects of the child's care. The primary therapist is a member of a multi-disciplinary team that includes mental health specialists in Psychiatry, Psychology, Social Work, and Nursing. This collaborative approach allows us to consider all aspects of care including biological, psychological and social factors such as family, school and community.

Clinical Services

Once a child or adolescent is accepted for services, a diagnostic assessment is conducted in order to understand that child's strengths and areas of concern. Recommendations are carefully reviewed with the parent or legal guardian, and the child. Recommendations may include one or more of the following services: Individual, family, group, or medical therapy, parent consultation, school consultation, and/or psychological testing. Services are selected to address specific

treatment goals. Progress toward these goals is monitored closely and discussed with the parents or legal guardians. Our mental health specialists are committed to providing the highest quality of care to each child and family. We work closely with the child, family, primary care provider, school personnel, and others to ensure that assessment and treatment are clinically appropriate and comprehensive.

Services in Intensive Outpatient Treatment Programs

A set of core services is essential to all intensive outpatient treatment (IOT) efforts and should be a standard part of the treatment package for every client. Enhanced services often are added and delivered either on site or through functional and formal linkages with community-based agencies or individual providers.

This distinction between core and enhanced services is somewhat flexible. What would be considered enhanced services for the general treatment population may be core services for a particular client group. For example, a program that serves primarily working mothers of young children may view providing child care and arranging transportation as core program elements. These same services are unlikely to be needed by most clients in an IOT program that treats mostly employed single men who do not have children living with them.

Core Services

Group Counseling and Therapy

Groups form the crux of most IOT programs. Several recent studies confirm that, for delivering relapse prevention training, a group approach is at least as effective as a one-on-one format. Group counseling allows programs to balance the cost of more expensive individual counseling services. A group approach supports IOT clients by:

- Providing opportunities for clients to develop communication skills and participate in socialization experiences; this is particularly useful for individuals whose socializing has revolved around using drugs or alcohol
- Establishing an environment in which clients help, support, and, when necessary, confront one another
- Introducing structure and discipline into the often chaotic lives of clients
- Providing norms that reinforce healthful ways of interacting and a safe and supportive therapeutic milieu that is crucial for recovery
- Advancing individual recovery; group members who are further along in recovery can help other members
- Providing a venue for group leaders to transmit new information, teach new skills, and guide clients as they practice new behaviors

Types of Groups

Most IOT programs place clients in several different types of groups during the course of treatment. Broadly speaking, these include psychoeducational, skills-

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development, support, and interpersonal process groups. These classifications are far from rigid; each type of group borrows ideas and techniques from others. Some IOT programs also add specialized groups and clubs for job-seeking or recreational activities. TIP 41, *Substance Abuse Treatment: Group Therapy*, contains specific guidance on how to organize and conduct different types of groups in the context of a treatment program.

Psychoeducational Groups

These groups provide a supportive environment in which clients learn about substance dependence and its consequences. These time-limited groups may be initiated at the beginning of treatment. They feature

- Low-key rather than emotionally intense environment.
- Rational problemsolving mechanisms to alter dysfunctional beliefs and thinking patterns.
- Various forms of relapse prevention and skills training. Didactic components often are supplemented by videos or slides to accommodate different learning styles.

Skills-Development Groups

These groups offer clients the opportunity to practice specific behaviors in the safety of the treatment setting. Common types of skills training include

- **Drug or Alcohol Refusal Training:** Clients act out scenarios in which they are invited to use substances and role play their responses.
- **Relapse Prevention Techniques:** Using relapse prevention materials, clients analyze one another's personal triggers and high-risk situations for substance use and determine ways to manage or avoid them.
- **Assertiveness Training:** Clients learn the differences among assertive, aggressive, and passive behaviors and practice being assertive in different situations.
- **Stress Management:** Clients identify situations that cause stress and learn a variety of techniques to respond to stress.

Support groups (e.g., process-oriented recovery groups)

These groups include clients in the same recovery stage—usually a middle to late phase of treatment—who are working on similar problems. Members focus on immediate issues and on

- Pragmatic ways to change negative thinking, emotions, and behavior
- Learning and trying new ways of relating to others
- Tolerating or resolving conflict without resorting to violence or substance use
- Looking at how members' actions affect others and the function of the group

Interpersonal Process Groups

- **Single-Interest Groups:** These groups—usually organized at a later stage of treatment—focus on an issue of particular significance to and sensitivity for group members. The issues include gender issues, sexual orientation, criminal offense, and histories of physical and sexual abuse.
- **Family or Couples Groups:** These groups assist clients' relatives and other significant individuals in learning about the detrimental effects of substance use on relationships and how these effects can be ameliorated or resolved.

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Key Aspects Of Groups

Organization of Groups

IOT programs often use open-ended heterogeneous groups that provide clinicians the flexibility of assigning new clients to ongoing groups. With the client census often difficult to predict from week to week, this flexibility permits immediate responsiveness to client needs. Members of open-ended heterogeneous groups have varying degrees of recognition and acceptance of their problems, and those on the road to recovery offer hope to those just beginning.

Although it may seem desirable to keep clients in the same group as they progress through the treatment process, the experience of the consensus panel has been that this is seldom possible because individuals have different responses to treatment and progress toward recovery at different rates. Hence, the composition of the group to which a client is initially assigned at admission is unlikely to remain constant throughout the treatment episode. Some clients progress rapidly to the next stage, whereas others need to cycle back to an earlier treatment intensity if they relapse or encounter other problems.

IOT programs can organize homogeneous groups based on a therapeutically relevant issue for a subset of clients or based on demographic commonalities among clients. Therapeutically relevant issues that might call for single-issue groups include single parenting, HIV/AIDS, gender issues, drug of choice, or histories of physical violence and sexual abuse. Special groups based on demographic similarities include those for women, men, elderly persons, members of minority populations, clients with common socioeconomic or legal statuses, or clients who have particular professions or are unemployed. Clients in these homogeneous groups can use their common perspective as a basis for working together.

Client-Specific Adaptations

Clients with temporary or permanent cognitive impairments, literacy deficits, or language problems need special attention or assignment to special groups. IOT programs should assess whether their treatment orientation and relapse prevention materials are appropriate for clients with cognitive impairments or learning disabilities.

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Clients not yet ready to pursue abstinence (those uninterested in change—precontemplators—or those thinking about a change in the near future—contemplators) often come to the program after being mandated to treatment by another agency. These clients could be assigned to a separate, pretreatment group in which counselors raise the clients' awareness about substance use disorders through education and motivating interviews.

Clients who Should not Participate In Certain Groups

Some clients should never be assigned to the same groups. Perpetrators and victims of domestic violence must be in separate groups. Neighbors, relatives, spouses, or significant others also should not be assigned to the same group (with the exception of family therapy).

Clients who violate the principles of group therapy by failing to honor group agreements or dropping out continually and clients who cannot control their impulses might respond better to individual therapy.

Some socially anxious or very introverted clients cannot tolerate groups. These clients should be offered individual counseling until they are comfortable participating in group sessions or lower intensity group sessions that focus on coping skills training. Some clients with severe psychiatric disorders, such as schizophrenia or antisocial personality disorder, may be unable to participate in groups and may be able to attend individual therapy only.

Duration and frequency of Group Sessions

IOT group counseling sessions often are scheduled for 90 minutes, although shorter and longer timeframes also are used. Psychoeducational group sessions often are only half that long (e.g., a 30-minute lecture followed by 15 minutes for questions) because they focus on instruction instead of interaction.

The American Society of Addiction Medicine's (ASAM's) definition of IOT requires participants to have a minimum of 9 hours of therapeutic contact per week—at least in the initial treatment stage. A typical IOT program schedules 3 hours of treatment on 3 days or evenings each week. This might entail 2 evenings of back-to-back 90-minute groups (one for members in the same recovery stage to share day-to-day concerns and the other to study a psychoeducational topic). A third evening might include 30 minutes of individual counseling, a 90-minute family session, and an hour-long skills training group. Some IOT programs meet 5 days or evenings per week.

IOT programs vary considerably in the anticipated length of stay or expected duration of active treatment. Many courses of treatment span 12 to 16 weeks before clients step down to a less intensive (maintenance) stage. Clients may remain in the maintenance phase for 6 months or more.

Group size and format

The optimal size of a group in most IOT programs is between 8 and 15 members. Process-oriented groups may function more effectively if membership is limited to 6 to 8 members, whereas psychoeducational groups with considerable didactic content can be somewhat larger.

Most counseling guidelines suggest structuring group time. Some groups use a "rule of thirds" wherein the first third of the session is used to solicit each member's current issues or experiences, the second-third is used to discuss a particular issue or skill, and the final third is used to sum up the meeting and assign an exercise. Another approach uses a standard problem solving process in which an issue of concern to the group is identified, a variety of solutions is offered, each option is explored, a decision is made about the course to follow, an action plan is developed, and affected group members agree to pursue this path and report the outcomes.

Many recovery groups have traditional opening and closing rituals that are meant to increase members' commitments to one another and to the group as a whole.

Individual Counseling

In IOT programs, individual counseling is an important, supportive adjunct to group sessions but not the primary form of treatment. Whereas concurrent psychiatric interventions and addiction counseling are appropriate for clients with co-occurring substance use and mental disorders, most individual counseling in IOT programs addresses the immediate problems stemming from clients' substance use disorders and their current efforts to achieve and maintain abstinence. Counseling typically does not address the client's underlying, longstanding conscious and subconscious conflicts that may have contributed to substance use. Many of the readily available counseling manuals for substance abuse treatment have enhanced components for individuals or orient the entire approach to individual counseling.

A 30- to 50-minute individual counseling session is typically a scheduled part of the IOT program and occurs at least weekly during the initial treatment stage. A client is assigned a primary counselor who strives to establish a close, collaborative therapeutic alliance.

An individual counseling session frequently follows a standard format. A counselor may ask the client about reactions to the recent group meeting, explore how the client spent time since the last session, ask how the client is feeling, inquire about drug and alcohol use, and ask whether there are any urgent issues. The counselor helps the client review reactions to recent group topics, reviews treatment plans and coping strategies, addresses fears and anxieties related to the change process, provides personalized feedback on urine toxicology and Breathalyzer™ results, and probes into sensitive issues that are difficult to discuss in the group. Counselors also help clients access services they need that are outside the treatment program's capabilities and plan the transition to another level of care or discharge. A counseling session usually ends with a summary of the client's plans and a schedule for the next few days.

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2.3 INPATIENT SERVICES

The primary goal of the psychiatric inpatient service is to provide top quality, short-term psychiatric inpatient care to the citizens of North Carolina in a compassionate, attentive, cost-effective and clinically prudent manner. At the present time, the primary clinical focus of our inpatient services is on the short-term stabilization of acute psychiatric disorders emphasizing discharge and disposition planning to help patients move quickly to less restrictive alternatives of care.

While we provide detoxification services to substance abusers, as well as dual-diagnosis programming where applicable, we do not at this time provide primary inpatient substance abuse treatment.

It is the policy of UNC Hospitals and the Department of Psychiatry to screen anyone requesting admission. While we reserve the right to deny admission based on clinical concerns, it is against our policy to discriminate against admission based on race, age, gender, religion, ethnicity, other personal characteristics, or any combination of the above.

Admissions Criteria

Patients admitted to the NC Neurosciences Hospital Adult Inpatient Service must meet, at the very least, the five primary admission criteria listed below:

1. The patient must be an adult* (age 18 and over);
2. The patient must have an acute psychiatric illness or acute exacerbation of a chronic illness;
3. The patient must be able to benefit from inpatient treatment here, and this should be the least restrictive approach to treatment for the patient;
4. The patient's behavior must be manageable on our units;
5. The patient must be medically/neurologically stable (in some cases patients may need to be medically cleared prior to admission).

It is our policy to try to work with most patients needing psychiatric hospitalization especially if this is a first time admission. Some patients, such as those with a demonstrated propensity towards extreme violence and/or a history of serious self-injury or property-damaging behavior while hospitalized are more safely and appropriately managed at one of the state hospitals. Other patients may need to be medically stabilized in other units of the hospital before being transferred to psychiatry. Under no circumstances will ethnicity, sex, age (other than being under 18), religion or other personal characteristics be used as criteria in discriminating against admissions to our adult units.

Payment and Insurance Information

Billing for services provided by UNC-CH Department of Psychiatry physicians is handled by UNC Physicians and Associates (UNCPA). We accept payment

through Medicare and Medicaid, and we are a Blue Cross and Blue Shield Cost-Wise service provider. We are also contracted mental health service providers for many health maintenance organizations (HMOs), and we work with most major insurance providers.

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Acute Mental Health Inpatient Services

There are a number of inpatient units across the county which provide a safe environment for assessment, treatment and therapeutic work for a full spectrum of mental health conditions. These services form part of a planned and integrated whole system approach to care which is delivered in conjunction with the community services and is designed to promote recovery. Within the acute ward all aspects of physical health, social care needs and risks are jointly managed by a multi-disciplinary team.

The inpatient services are committed to:

- Offering care and treatment that respects individual rights and allows treatment to occur in the least restrictive manner possible.
- *Providing a service which is flexible and responsive and does not discriminate between individuals.*
- Providing a high standard of treatment and care, respecting rights for privacy and dignity, in a safe and therapeutic environment for service users in the most acute and vulnerable stage of their illness.
- Ensuring all individuals needs are assessed and that an appropriate care plan is agreed, which includes the views of the service user and relevant carers and discharge planning arrangements.

Inpatient Care

Inpatient care is the care of patients whose condition requires admission to a hospital. Progress in modern medicine and the advent of comprehensive out-patient clinics ensure that patients are only admitted to a hospital when they are extremely ill or are have severe physical trauma.

Progress

Patients enter inpatient care mainly from previous ambulatory care such as referral from a family doctor, or through emergency medicine departments. The patient formally becomes an "inpatient" at the writing of an admission note.

Likewise, it is formally ended by writing a discharge note.

Planning for Patient Discharge

Healthcare professionals involved in rehabilitation are often involved in discharge planning for patients. When considering patient discharge, there are a number of

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factors to take into consideration: the patient's current state, their place of residence and the type of support available. When considering the patient's current state, although the patient may be eligible for discharge it is important to examine factors such as the likelihood of re-injury to avoid higher health care costs. Patients' homes should also be visited and examined before they are discharged from the hospital to determine any immediate challenges and corresponding goals, adaptations and assistive devices that need to be implemented. Follow-up appointments should also be coordinated with the patient prior to discharge to monitor the patient's progress as well as any potential complications that may have arisen.

History

Inpatient care goes back to 230 BC in India where Ashoka the Great founded 18 hospitals. The Romans also adopted the concept of inpatient care by building a specialized temple for sick patients in 291 AD on the island of Tiber.

It is believed the first inpatient care in North America was provided by the Spanish in the Dominican Republic in 1502; the Hospital de Jesús Nazareno in Mexico City was founded in 1524 and is still providing inpatient care.

Perhaps the most famous provider of inpatient care was Florence Nightingale who was the leading advocate for improving medical care in the mid-19th century.

Ms. Nightingale received notoriety during the Crimean War where she and 38 women volunteer nurses traveled to Crimea to treat wounded soldiers. During her first winter at the hospital 4077 soldiers died in the hospital there. She would use this experience to change the course of inpatient care by focusing on improving sanitary conditions and better living conditions within the hospital.

Florence Nightingale became known as "The Lady with the Lamp" and is still considered the founder of modern nursing. The Nightingale School of Nursing continues today and her image is the one depicted each year on nurses' day.

Hospitalist Medicine

The original model for inpatient care required a family physician to admit a patient and then make rounds and manage the patient's care during their hospital stay. That model is rapidly being replaced by hospitalist medicine a term first used by Dr. Robert Wachter in an article written for the New England Journal of Medicine in 1996.

The concept of hospitalist medicine provides around the clock inpatient care from physicians whose sole practice is the hospital itself. They work with the community of primary care physicians to provide inpatient care and transition patients back to the care of their primary care provider upon discharge. Using this approach, primary care physicians are no longer required to make rounds or be on call.

Today, hospitalist medicine is the fastest growing segment of medicine and is being adopted by hospitals worldwide for inpatient care.

Statistics

In 2011, there were approximately 39 million inpatient stays in the United States, with a national aggregate cost of \$387 billion. U.S. programs Medicare and Medicaid bore responsibility for 63 percent of these total aggregate costs.

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Inpatient Care

The Inpatient Care Department may be used as an alternative to hospitalization or an extension of a hospital stay that allows you to finish your course of therapy in an intimate and caring environment.

This fully-licensed inpatient unit offers evaluation and treatment for a variety of medical conditions. Supported by in-house diagnostic imaging, pharmacy, physical therapy services, and 24-hour clinician supervision, the Inpatient Care Department provides Yale Health members with timely and responsive care for a variety of medical issues.

Our services include:

- Admission for continued care of patients transferred from the hospital after surgery or serious illness, allowing for smoother transition from hospital to home
- Admission directly from any Yale Health clinical department or from the Acute Care Department for further evaluation, diagnosis or treatment for a range of common medical problems
- Procedures which require skilled medical services but not an overnight stay
- Physical therapy for inpatients
- Hospice and palliative care

Admission to the Inpatient Care Department

Patients are admitted to the Inpatient Care Department from either the hospital, Acute Care or any Yale Health clinical department, or home, and admission must be authorized by a Yale Health clinician. While you are in Inpatient Care your care will be managed by our staff physicians and other members of our clinical team.

Coordinated Care

A healthcare team consisting of our staff physicians and PA's, nurses, certified nursing assistants and other appropriate specialty clinicians will work with you and your family, or others you designate, to design a plan of care. In addition, if your condition requires specialized services such as dietary planning or physical therapy, Yale Health staff from those areas will also be involved. Yale Health staff will help coordinate care that may be required when you return home, and will assist with scheduling follow-up appointments, and other tasks essential to your full recovery.

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Adult Acute Inpatients

Acute inpatient services provide high quality, multi-disciplinary, multi-skilled treatment to people whose health care needs cannot be managed in their own homes due to their level of complexity, intensity and unpredictability. Inpatient services are for people whose health needs require specialist investigation, assessment and intervention.

People will be admitted to an inpatient bed, wherever possible, in their own geographic area. However when clinically necessary and to ensure that treatment is provided without delay, they may be admitted to a bed in any appropriate Trust site.

Key Service Outcomes

In providing a high quality service, our aim is to:

- Care for adults in an inpatient setting, building on patients' strengths, maintaining levels of independence and promoting well-being
- Use evidence based therapeutic interactions within a multidisciplinary approach
- Provide inpatient treatment 24/7 for people with mental health problems
- Support service users experiencing an acute psychiatric crisis of such severity that they cannot be managed at home with the involvement of the intensive team
- Provide a recovery based model of care

Service Description/Care Pathway

All requests for admission are made to the local intensive team which works with service users (and their carers) to assess their needs. If the most appropriate care is not in the community, they will arrange admission.

When a service user is admitted to hospital the intensive team and the ward team work together to provide information and an explanation as to the role hospital admission will play in supporting the service user's recovery.

Later Life Inpatient Services

Highly specialist assessment and treatment is provided to service users whose circumstances or needs mean that they cannot be treated and supported appropriately at home or in any other environment.

Separate wards look after people with functional and organic illness. People with moderate to late stage dementia will be admitted to organic wards while those with early stage dementia will be admitted to the ward which can best meet their needs often to the functional wards.

Specialist functional wards admit patients with psychiatric disorders of later life, including affective disorder and psychosis. The inpatient team will agree defined goals with the service user or carer through our community intervention teams. Goals are intensely therapeutic with short (up to 84 day) admissions.

Low Secure Services

Low secure services within Avon and Wiltshire Mental Health Partnership NHS Trust are located at the Wickham Unit at Blackberry Hill Hospital. This unit supports service users from Bath and North Somerset, Bristol, South Gloucestershire, Wiltshire and Swindon. Service users remain in contact with their care coordinators to ensure continuity of care.

Wickham Unit has three clinically distinct wards, providing a total of 29 male inpatient beds.

- Fairfax ward provides assessment of complex need's, identifies risks and supports service users to identify their rehabilitation needs
- Cromwell ward continues the individual's on going assessment. Rehabilitation is community focused, with service users developing/practising independent skills within the secure setting
- Hopton ward provides care to men with longer term rehab needs in a low secure environment. It has a new day room to make the environment a more pleasant and therapeutic space for our service users and it has been decorated throughout.
- The length of stay depends on the needs and risks of each individual, but varies between six months and three years. Individual tailor made support is available either from AWP staff or Rethink.

A wide range of rehabilitation activities and therapies are provided with many taking place away from the unit, in community settings such as educational and work related placements.

Our professional team of staff include doctors, nurses, occupational therapists, arts therapists, psychologists and social workers. They work closely with the service users to ensure their active involvement in their care pathway throughout their stay. Good communication between members of the team, including the service user will aid recovery and help to achieve individual goals/outcomes.

All referrals throughout the south west for access to high, medium or low secure care are managed by Secure Services. The referral process is Consultant to Consultant via a centralised referral system.

Service users in Wickham tends to have:

- On-going mental health issues, including treatment resistant psychosis
- Socially unacceptable disturbed patterns of behaviour, which have proved difficult to manage in open settings
- A history of drug/alcohol use or personality/cognitive impairment difficulties
- Multiple admissions to inpatient beds
- A vulnerability which results in them posing a risk to others and also to themselves
- Rehabilitation needs and would benefit from treatment within a low secure setting.

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Medium Secure Services

Forensic mental health services are specialist services for people with mental health problems who have been arrested, who are on remand or who have been to court and found guilty of a crime.

All referrals from throughout the south west for access to high, medium or low secure care are managed by the Secure services. The referral process is Consultant to Consultant via a centralised referral system.

Referrals are received for example from high secure hospitals, prison, adult mental health inpatient units, direct from the courts or from other NHS and private medium secure providers. Those cases accepted by the team are case managed by it, alongside the local clinical team.

Psychiatric Intensive Care

Some service users require a higher intensity of treatment and support than that available in an acute unit. PICU services meet these needs, 24/7, and provide therapeutic and medical care for service users who have been admitted under section under the Mental Health Act.

Service users, normally aged 18 to 65, are referred from AWP's intensive teams, adult acute inpatient units or from the prison teams and are assessed for the suitability of admission to an adult service setting.

PICUs are same sex inpatient units:

- Male: 12 bed Hazel unit in Bristol and the nine bed unit at Ashdown in Salisbury
- Female: 8 bed Elizabeth Casson House in Bristol

These PICUs have multidisciplinary teams to enable a clear treatment plan for service users to be implemented and they work closely with other services to enable a clear care pathway for the service user.

The PICU services in Hazel and Elizabeth Casson House units have gained the AIMS (Accreditation for Inpatient Mental Health Services) accreditation from the Royal College of Psychiatrists and we anticipate Ashdown receiving it in the near future.

Rehabilitation

Rehabilitation is a treatment or treatments designed to facilitate the process of recovery from injury, illness, or disease to as normal a condition as possible.

Purpose

The purpose of rehabilitation is to restore some or all of the patient's physical, sensory, and mental capabilities that were lost due to injury, illness, or disease. Rehabilitation includes assisting the patient to compensate for deficits that cannot be reversed medically. It is prescribed after many types of injury, illness, or disease,

including amputations, arthritis, cancer, cardiac disease, neurological problems, orthopedic injuries, spinal cord injuries, stroke, and traumatic brain injuries. The Institute of Medicine has estimated that as many as 14% of all Americans may be disabled at any given time.

Precautions

Rehabilitation should be carried out only by qualified therapists. Exercises and other physical interventions must take into account the patient's deficit. An example of a deficit is the loss of a limb.

Description

A proper and adequate rehabilitation program can reverse many disabling conditions or can help patients cope with deficits that cannot be reversed by medical care. Rehabilitation addresses the patient's physical, psychological, and environmental needs. It is achieved by restoring the patient's physical functions and/or modifying the patient's physical and social environment. The main types of rehabilitation are physical, occupational, and speech therapy.

Each rehabilitation program is tailored to the individual patient's needs and can include one or more types of therapy. The patient's physician usually coordinates the efforts of the rehabilitation team, which can include physical, occupational, speech, or other therapists; nurses; engineers; psychiatrists (physical medicine); psychologists; orthotists (makes devices such as braces to straighten out curved or poorly shaped bones); prosthetists (a therapist who makes artificial limbs or prostheses); and vocational counselors. Family members are often actively involved in the patient's rehabilitation program.

Physical Therapy

Physical therapy helps the patient restore the use of muscles, bones, and the nervous system through the use of heat, cold, massage, whirlpool baths, ultrasound, exercise, and other techniques. It seeks to relieve pain, improve strength and mobility, and train the patient to perform important every day tasks. Physical therapy may be prescribed to rehabilitate a patient after amputations, arthritis, burns, cancer, cardiac disease, cervical and lumbar dysfunction, neurological problems, orthopedic injuries, pulmonary disease, spinal cord injuries, stroke, traumatic brain injuries, and other injuries/illnesses. The duration of the physical therapy program varies depending on the injury/illness being treated and the patient's response to therapy.

Exercise is the most widely used and best known type of physical therapy. Depending on the patient's condition, exercises may be performed by the patient alone or with the therapist's help, or with the therapist moving the patient's limbs. Exercise equipment for physical therapy could include an exercise table or mat, a stationary bicycle, walking aids, a wheel chair, practice stairs, parallel bars, and pulleys and weights.

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Heat treatment, applied with hot-water compresses, infrared lamps, short-wave radiation, high frequency electrical current, ultrasound, paraffin wax, or warm baths, is used to stimulate the patient's circulation, relax muscles, and relieve pain. Cold treatment is applied with icepacks or cold-water soaking. Soaking in a whirlpool can ease muscle spasm pain and help strengthen movements. Massage aids circulation, helps the patient relax, relieves pain and muscle spasms, and reduces swelling. Very low strength electrical currents applied through the skin stimulate muscles and make them contract, helping paralyzed or weakened muscles respond again.

Rehabilitation Centers

Rehabilitation services are provided in a variety of settings including clinical and office practices, hospitals, skilled-care nursing homes, sports medicine clinics, and some health maintenance organizations. Some therapists make home visits. Advice on choosing the appropriate type of therapy and therapist is provided by the patient's medical team.

There are many measures initiated by Ministry of Social Justice and Empowerment and Health and Family Welfare in India.

1. District Rehabilitation Center (DRC) Project started in 1985.
2. Four Regional Rehabilitation Training Centers (RRTC) have been functioning under the DRCs scheme at Mumbai, Chennai, Cuttack, and Lucknow since 1985 for the training of village level functionaries and DRCs professionals, orientation and training of State Government officials, research in service delivery, and low cost aids. Apart from developing training material and manuals for actual field use, RRTCs also produce material for creating community awareness through the medium of folders, posters, audio-visuals, films, and traditional forms.
3. National Information Center on Disability and Rehabilitation
4. National council for Handicapped Welfare
5. National Level Institutes—NIMH, NIHH, NIVH, NIOH, IPH.

A new scheme District Disability Rehabilitation Centre for persons with disabilities launched by the Hon'ble Minister of Social Justice and Empowerment, Government of India in Jan/Feb. 2000 is a step towards providing rehabilitation services and implementation of Persons with Disability Act. 1995. The Government has decided to set up District Disability Rehabilitation Centres (DDRCs) in a phased manner. Presently, 199 DDRCs have been sanctioned and 100 new DDRCs are to be set up during the remaining two years of the 11th Plan. The DDRCs were established with the objective of providing comprehensive services to the persons with disabilities at the grass root level. The services include awareness generation, survey, identification and early intervention, counseling, assessment of need for assistive devices, provision/fitment of assistive devices, and their follow up/repair, therapeutic services like Physiotherapy, Occupational Therapy and Speech Therapy, referral and arrangement for surgical correction through Government

and Charitable Institutions, facilitation of issue of Disability Certificates and bus passes, sanction of bank loans, and promotion of barrier-free environment.

Front Office Service:

1. The National Policy for Persons with Disability 2005 is the recent development and welcome step by the Government of India.

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2.4 ACCIDENT AND EMERGENCY SERVICES

Emergency Service

Emergency services and rescue services are organizations which ensure public safety and health by addressing different emergencies. Some of these agencies exist solely for addressing certain types of emergencies whilst others deal with ad hoc emergencies as part of their normal responsibilities. Many of these agencies engage in community awareness and prevention programs to help the public avoid, detect, and report emergencies effectively.

The availability of emergency services depends very heavily on location, and may in some cases also rely on the recipient giving payment or holding suitable insurance or other surety for receiving the service.

Emergency Medical Services

Emergency medical services (abbreviated to the initialism EMS in some countries) are a type of emergency service dedicated to providing out-of-hospital acute medical care, transport to definitive care, and other medical transport to patients with illnesses and injuries which prevent the patient from transporting themselves.

Emergency medical services may also be locally known as a paramedic service, a first aid squad, emergency squad, rescue squad, ambulance squad, ambulance service, ambulance corps, or life squad.

The goal of most emergency medical services is to either provide treatment to those in need of urgent medical care, with the goal of satisfactorily treating the presenting conditions, or arranging for timely removal of the patient to the next point of definitive care. This is most likely an emergency department at a hospital. The term emergency medical service evolved to reflect a change from a simple system of ambulances providing only transportation, to a system in which actual medical care is given on scene and during transport. In some developing regions, the term is not used, or may be used inaccurately, since the service in question does not provide treatment to the patients, but only the provision of transport to the point of care.

In most places in the world, the EMS is summoned by members of the public (or other emergency services, businesses, or authorities) via an emergency telephone number which puts them in contact with a control facility, which will then dispatch a suitable resource to deal with the situation.

In some parts of the world, the emergency medical service also encompasses the role of moving patients from one medical facility to an alternative one; usually

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to facilitate the provision of a higher level or more specialized field of care but also to transfer patients from a specialized facility to a local hospital or nursing home when they no longer require the services of that specialized hospital, such as following successful cardiac catheterization due to a heart attack. In such services, the EMS is not summoned by members of the public but by clinical professionals (e.g. physicians or nurses) in the referring facility. Specialized hospitals that provide higher levels of care may include services such as neonatal intensive care (NICU), pediatric intensive care (PICU), state regional burn centres, specialized care for spinal injury and/or neurosurgery, regional stroke centers, specialized cardiac care (Cardiac catheterization), and specialized/regional trauma care.

In some jurisdictions, EMS units may handle technical rescue operations such as extrication, water rescue, and search and rescue. Training and qualification levels for members and employees of emergency medical services vary widely throughout the world. In some systems, members may be present who are qualified only to drive the ambulance, with no medical training. In contrast, most systems have personnel who retain at least basic first aid certifications, such as Basic Life Support (BLS). Additionally many EMS systems are staffed with Advanced Life Support (ALS) personnel, including paramedics, nurses, or, less commonly, physicians.

2.5 CONCEPT OF HEALTH INSURANCE

Health Insurance

A type of insurance coverage that pays for medical and surgical expenses that are incurred by the insured. Health insurance can either reimburse the insured for expenses incurred from illness or injury or pay the care provider directly. Health insurance is often included in employer benefit packages as a means of enticing quality employees.

Meaning of Health Insurance

'Future is unpredictable and rather, uncertain'. To understand the need for health care insurance it is important to know when health care needs arise and how you can benefit by having a good insurance coverage. Here are a few examples of health care needs:

- When you or your enrolled family members are in an accident and need medical assistance.
- When you or your enrolled family members need emergency care on account of a serious or unexpected illness.
- When you or your enrolled family members need non-emergency hospital services like visiting a physician, eye doctor, or a dentist.
- When you or your enrolled family members need medical treatment for an existing medical condition, or other health problems.

Health Care Needs

Front Office Services

Health insurance gives you a chance to be a part of an informed purchasing program where you can safeguard yourself against all unpredictable and predictable health care needs.

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Tips for Buying Health Insurance

You must be cautious while shopping for health care insurance. Essentially you should know

- What does your health insurance plan cover you for?
- What is not covered in your health insurance plan?

If you have a specific medical condition you must know if you are covered for it. Some of the specialty practices are:

- Muscle treatments (Orthopedic Surgery)
- Cardiology (heart diseases)
- Ear, Nose & throat (ENT)
- Dermatology (skin disease)
- Oncology (cancer treatments)
- Gastroenterology (digestive tract diseases)
- Podiatry (foot treatments)
- Obstetrics & Gynecology (women's health & pregnancy)
- Fertility Specialists
- Endocrinology (gland disease)

Details in your Insurance Kit

While the actual insurance coverage may differ for each individual, your insurance kit should include details on

- Your health care benefits
- Policies and procedures of getting health care assistance and insurance coverage
- What is covered and what is not covered
- Any limits to the insurance coverage
- Costs that you have to pay (copayment, etc) and billing
- Access to emergency care, urgent care, and admission to a hospital
- Access to non-emergency care and hospital services
- Customer service

Remember That

You should always carry your health insurance card (ID) with you. If you are in an accident or need emergency services, your insurance card will be used to get

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medical help. Your ID card will have information about your primary care doctor (if you have the HMO plan) or a toll free customer service phone number (if you have the PPO plan). Overall you should be careful while purchasing health insurance and get the right plan for your medical needs and wellness goals. Getting health insurance is no longer an option in United States. It is mandatory to have health insurance and as a law abiding citizen you must be covered for all predictable and unpredictable health care needs.

Employees' State Insurance (ESI)

Employees' State Insurance Scheme of India, is a multidimensional social security system tailored to provide socio-economic protection to worker population and their dependants covered under the scheme. Employees' State Insurance is a self-financing social security and health insurance scheme for Indian workers. For all employees earning Rs. 15000 or less per month as wages, the employer contributes 4.75 percent and employee contributes 1.75 percent, total share 6.5 percent. This fund is managed by the ESI Corporation (ESIC) according to rules and regulations stipulated there in the ESI Act 1948, which oversees the provision of medical and cash benefits to the employees and their family through its large network of branch offices, dispensaries and hospitals throughout India.

Besides full medical care for self and dependants, that is admissible from day one of insurable employment, the insured persons are also entitled to a variety of cash benefits in times of physical distress due to sickness, temporary or permanent disablement etc. resulting in loss of earning capacity, the confinement in respect of insured women, dependants of insured persons who die in industrial accidents or because of employment injury or occupational hazard are entitled to a monthly pension called the dependants benefit.

ESIC is an autonomous corporation by a statutory creation under Ministry of Labour and Employment, Government of India. As it is a legal entity, the corporation can raise loans and take measures for discharging such loans with previous sanction of the central government and it can acquire both movable and immovable property and all incomes from the property shall vest with the corporations. The corporation can set up hospitals either independently or in collaboration with state government or other private entities, but most of the dispensaries and hospitals are run by concerned state governments.

Benefits

The section 46 of the Act envisages following six social security benefits :-

- (a) **Medical Benefit:** Full medical care is provided to an Insured person and his family members from the day he enters insurable employment. There is no ceiling on expenditure on the treatment of an Insured Person or his family member. Medical care is also provided to retired and permanently disabled insured persons and their spouses on payment of a token annual premium of Rs.120/-.

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- (i) System of Treatment
 - (ii) Scale of Medical Benefit
 - (iii) Benefits to Retired IPs
 - (iv) Administration of Medical Benefit in a State
 - (v) Domiciliary treatment
 - (vi) Specialist consultation
 - (vii) In-Patient treatment
 - (viii) Imaging Services
 - (ix) Artificial Limbs & Aids
 - (x) Special Provisions
 - (xi) Reimbursement
- (b) **Sickness Benefit (SB):** Sickness Benefit in the form of cash compensation at the rate of 70 per cent of wages is payable to insured workers during the periods of certified sickness for a maximum of 91 days in a year. In order to qualify for sickness benefit the insured worker is required to contribute for 78 days in a contribution period of 6 months.
- (i) **Extended Sickness Benefit(ESB) :** SB extendable upto two years in the case of 34 malignant and long-term diseases at an enhanced rate of 80 per cent of wages.
 - (ii) **Enhanced Sickness Benefit :** Enhanced Sickness Benefit equal to full wage is payable to insured persons undergoing sterilization for 7 days/14 days for male and female workers respectively.
- (c) **Maternity Benefit (MB):** Maternity Benefit for confinement/pregnancy is payable for three months, which is extendable by further one month on medical advice at the rate of full wage subject to contribution for 70 days in the preceding year.
- (d) **Disablement Benefit:**
- (i) **Temporary disablement benefit (TDB) :** From day one of entering insurable employment & irrespective of having paid any contribution in case of employment injury. Temporary Disablement Benefit at the rate of 90% of wage is payable so long as disability continues.
 - (ii) **Permanent disablement benefit (PDB) :** The benefit is paid at the rate of 90% of wage in the form of monthly payment depending upon the extent of loss of earning capacity as certified by a Medical Board
- (e) **Dependants' Benefit(DB) :** DB paid at the rate of 90% of wage in the form of monthly payment to the dependants of a deceased Insured person in cases where death occurs due to employment injury or occupational hazards.
- (f) **Other Benefits :** Funeral Expenses : An amount of Rs.10,000/- is payable to

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the dependents or to the person who performs last rites from day one of entering insurable employment.

Confinement Expenses : An Insured Women or an I.P. in respect of his wife in case confinement occurs at a place where necessary medical facilities under ESI Scheme are not available.

In addition, the scheme also provides some other need based benefits to insured workers.

Vocational Rehabilitation: To permanently disabled Insured Person for undergoing VR Training at VRS.

Physical Rehabilitation: In case of physical disablement due to employment injury.

Old Age Medical Care: For Insured Person retiring on attaining the age of superannuation or under VRS/ERS and person having to leave service due to permanent disability insured person & spouse on payment of Rs. 120/- per annum.

Rajiv Gandhi Shramik Kalyan Yojana : This scheme of Unemployment allowance was introduced w.e.f. 01-04-2005. An Insured Person who become unemployed after being insured three or more years, due to closure of factory/establishment, retrenchment or permanent invalidity are entitled to :-

- Unemployment Allowance equal to 50% of wage for a maximum period of upto one year.
- Medical care for self and family from ESI Hospitals/Dispensaries during the period IP receives unemployment allowance.
- Vocational Training provided for upgrading skills - Expenditure on fee/travelling allowance borne by ESIC.

Incentive to employers in the Private Sector for providing regular employment to the persons with disability :

- Minimum wage limit for Physically Disabled Persons for availing ESIC Benefits is 25,000/-.
- Employers' contribution is paid by the Central Government for 3 years.

Benefits & Contributory Conditions :

An interesting feature of the ESI Scheme is that the contributions are related to the paying capacity as a fixed percentage of the workers wages, whereas, they are provided social security benefits according to individual needs without distinction. Cash Benefits are disbursed by the Corporation through its Branch Offices (BOs) / Pay Offices (POs), subject to certain contributory conditions.

ESI Scheme-a total security for workmen:		
1.	Medical Care	Primary, Secondary and Tertiary medical care with no cap on individual expenditure.
2.	Sickness Benefit	91 days
3.	Extended Sickness Benefit	730 days (upto 2 years) for specified 34 diseases.
4.	Maternity Benefit	84 days +1 month (due to complications arising out of pregnancy, confinement, premature birth of child etc.)
5.	Permanent Disablement Benefit/ Temporary Disablement Benefit	Based on loss of earning capacity/as long family members as per conditions w.r.t age/marriage.
6.	Dependants Benefit	On the death of IP to the wife till she is alive/remarried and to family members as per conditions w.r.t age/marriage
7.	Rajiv Gandhi Shramik Kalyan Yojna (Unemployment Allowance)	50% of daily average wages upto 12 months unemployment on account of closure of factories, retrenchment or permanent invalidity of not less than 40% arising out of non employment injury.
8.	Incentive Scheme to employers for employing persons with disabilities	The employers share of contribution is paid by government for 3 years for providing employment to persons with disabilities drawing monthly wages upto 25,000/-
9.	Medical Care to Retired IPs	Medical facility available with in ESIC on payment of 120/- per annum

NOTES**Mediclaim**

Mediclaim Policy is an Insurance coverage to claim reimbursement of medical treatment bills generated due to Health related hospitalisation.

There are two different ways to get your bills claimed either by cashless facility i.e your bills are directly paid to the hospital or you can pay your bills in the hospital and get an reimbursement after submission of the same to the insurance company. Mediclaim policy is a essential for the peoples because it saves financial loss in case of hospitalization for any sickness, disease or accident. But it costs much higher than other insurance and is rising in proportion with the rising cost of treatment available in private hospitals.

We all are aware about the state of medical facilities available in government operated hospitals and the increased treatment cost in private medical facilities. Medical treatment expenses are very high and they are increasing everyday. Mediclaim comes to the rescue of a policy holder as a protection to absorb the cost of treatment when the disease is identified and needs to be treated in hospitals after admitting the person.

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The latest family medicaid insurance is ideal solution to save money and cover entire family under single sum insured. This means no more multiple premiums and no more financial strain. A medicaid or a health insurance policy provides for reimbursement of hospitalization. If for some reason, an individual is on bed at and needs an attendant or a nurse, the medicaid policy will cover the expenses.

Expenses associated with treatments such as dialysis, chemotherapy, radiotherapy etc are also covered by the medicaid policy. If an individual is taken to a hospital or a nursing home and the insured person-patient is discharged on the same day, the treatment will be considered to be taken under 'Hospitalisation Benefit Scheme'. This policy is available in two variants - short term and long term and the coverage level is similar like other traditional medicaid policies. It provides covers for hospitalization expenses for illness and diseases. It includes expenses for doctors fees, nursing expenses, medicines, blood, surgical appliances and other related expenses.

It is very important for you to check what all is covered by a medicaid policy. Any disease or sickness existing before the medicaid is taken will not be covered. Each medicaid policy has a list of specific exclusions. Check the list before you make a purchase. Most Insurance Companies do not offer medicaid for obesity related illnesses, expenses arising from HIV or AIDS or the use of alcohol or drugs and expenses due to attempted suicide. Expenses associated with the treatment due to war, riots or a terrorist attack is also not insured by policies - just like exclusions in life insurance policies.

Public Health Insurance Option

The public health insurance option, also known as the public insurance option or the public option, was a proposal to create a government-run health insurance agency which would compete with other health insurance companies within the United States. The public option is not the same as publicly funded health care, but was proposed as an alternative health insurance plan offered by the government. The proposal was initially part of the debates surrounding the Patient Protection and Affordable Care Act, but was not passed in the final reconciled bill.

History

The public option was featured in three bills considered by the United States House of Representatives in 2009: the proposed Affordable Health Care for America Act (H.R. 3962), which was passed by the House in 2009, its predecessor, the proposed America's Affordable Health Choices Act (H.R. 3200), and a third bill, the Public Option Act, also referred to as the "Medicare You Can Buy Into Act", (H.R. 4789). In the first two bills, the public option took the form of a Qualified Health Benefit Plan competing with similar private insurance plans in an internet-based exchange or marketplace, enabling citizens and small businesses to purchase health insurance meeting a minimum federal standard. The Public Option Act, in contrast, would have allowed all citizens and permanent residents to buy into a public option by

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participating in the public Medicare program. Persons covered by other employer plans or by state insurance plans such as Medicare would have not been eligible to obtain coverage from the exchange. The federal government's health insurance plan would have been financed entirely by premiums without subsidy from the Federal government, although some plans called for governmentseed money to get the programs started.

President Barack Obama promoted the idea of the public option while running for election in 2008. Following his election, Obama downplayed the need for a public health insurance option, including calling it a "sliver" of health care reform, but still campaigned for the option up until the health care reform was passed.

Ultimately, the public option was removed from the final bill. While the United States House of Representatives passed a public option in their version of the bill, the public option was voted down in the Senate Finance Committee and the public option was never included in the final Senate bill, instead opting for state-directed health insurance exchanges. Critics of the removal of the public option accused President Obama of making an agreement to drop the public option from the final plan, but other journalists pointed out that the agreement was probably based more on vote counts than backroom deals, as substantiated by the final vote in the Senate.

Rationale

The purpose behind the public option was to make more affordable health insurance for uninsured citizens who are either unable to afford the rates of or are rejected by private health insurers. Supporters argued that a government insurance company could successfully lower its rates by using greater leverage than private industry when negotiating with hospitals and doctors, as well as paying the employees of the public option insurance company salaries as opposed to paying based on individual medical procedures.

Supporters of a public plan, such as Washington Post columnist E. J. Dionne, argue that many places in the United States have monopolies in which one company, or a small set of companies, control the local market for health insurance. Economist and New York Times columnist Paul Krugman also asserted that local insurance monopolies exist in many of the smaller states, accusing those who oppose the idea of a public insurance plan as defenders of local monopolies. He also argued that traditional ideas of beneficial market competition do not apply to the insurance industry given that insurers mainly compete by risk selection, claiming that "the most successful companies are those that do the best job of denying coverage to those who need it most."

Economist and former US Secretary of Labor Robert Reich argued that only a "big, national, public option" can force insurance companies to cooperate, share information, and reduce costs while accusing insurance and pharmaceutical companies of leading the campaign against the public option.

Many Democratic politicians were publicly in favor of the public option for a variety of reasons. President Obama continued campaigning for the public option during the debate. In a public rally in Cincinnati on September 7, 2009,

President Obama said: "I continue to believe that a public option within the basket of insurance choices would help improve quality and bring down costs." The President also addressed a Joint Session of Congress on September 9, 2009, reiterating his call for a public insurance option, saying that he had "no interest in putting insurance companies out of business" while asserting that the public option would "have to be self-sufficient" and succeed by reducing overhead costs and profit motives. Democratic Representative Sheila Jackson-Lee, who represents the 18th congressional district in Houston, believed that a "vigorous public option" would be included in the final bill and would "benefit the state of Texas."

Alternative Plans

The final bill, the Patient Protection and Affordable Care Act, included provisions to open health insurance exchanges in each state by October 1, 2013. As the Act requires Americans to purchase health insurance, the federal government will offer subsidies to Americans with income levels up to four times the federal poverty level.

An alternative proposal is to subsidize private, non-profit health insurance cooperatives to get them to become large and established enough to possibly provide cost savings. Democratic politicians such as Howard Dean were critical of abandoning a public option in favor of co-ops, raising questions about the ability of the cooperatives to compete with existing private insurers. Paul Krugman also questioned the ability of cooperatives to compete.

While politically difficult, some politicians and observers have argued for a single-payer system. A bill, the United States National Health Care Act, was first proposed by Representative John Conyers in 2003 and has been perennially proposed since, including during the debate on the public option and the Patient Protection and Affordable Care Act. President Obama has come out against a single-payer reform at this time, stating in the joint session of Congress that "it makes more sense to build on what works and fix what doesn't, rather than try to build an entirely new system from scratch." Obama had previously expressed that he is a proponent of a single payer universal health care program during an AFL-CIO conference in 2003.

A number of alternatives to the public option were proposed in the Senate. Instead of creating a network of statewide public plans, Senator Olympia Snowe proposed a "trigger" in which a plan would be put into place at some point in the future in states that do not have more than a certain number of private insurance competitors. Senator Tom Carper has proposed an "opt-in" system in which state governments choose for themselves whether or not to institute a public plan. Senator Chuck Schumer has proposed an "opt-out" system in which state governments would initially be part of the network but could choose to avoid offering a public plan.

In January 2013, Representative Jan Schakowsky and 44 other U.S. House of Representatives Democrats introduced H.R. 261, the "Public Option Deficit Reduction Act" which would amend the 2010 Affordable Care Act to create a public option. The bill would set up a government-run health insurance plan with premiums 5% to 7% percent lower than private insurance, with the Congressional Budget Office estimating a reduction in the United States public debt by \$104 billion over 10 years.

Opposition and Criticism

Both before and after passage in the House, significant controversy surrounded the Stupak–Pitts Amendment, added to the bill to prohibit coverage of abortions – with limited exceptions – in the public option or in any of the health insurance exchange’s private plans sold to customers receiving federal subsidies. In mid-November, it was reported that 40 House Democrats would not support a final bill containing the Amendment’s provisions. The Amendment was abandoned after a deal was struck between Representative Bart Stupak and his voting bloc would vote for the bill as written in exchange for the signing of Executive Order 13535.

Republican House Minority Whip Eric Cantor has argued that a public plan would compete unfairly with private insurers and drive many of them out of business.

Michael F. Cannon, a senior fellow of the libertarian CATO Institute, has argued that the federal government can hide inefficiencies in its administration and draw away consumers from private insurance even if the government offers an inferior product. A study by the Congressional Budget Office found that profits accounted for less than 3% of private health insurance premiums, and Cannon argued that the lack of a profit motive reduces incentives to eliminate wasteful administrative costs.

Dr. Robert E. Moffit of the Heritage Foundation has argued that a public plan in competition in private plans would likely be used as a “dumping ground” for families and individuals with higher than average health risks. This, in his view, would lead to costs that business should pay being passed onto the taxpayer.

Marcia Angell, M. D., Senior Lecturer in the Department of Social Medicine at Harvard Medical School and former Editor-in-Chief of the *New England Journal of Medicine*, believes that the result of a public option would be more “under-55’s” opting to pay the fine rather than purchase insurance under a public option scenario, instead advocating lowering the Medicare age to 55.

The chief executive of Aetna, Ron Williams, argued against the public option based on issues of fairness. On the *News Hour with Jim Lehrer*, Williams noted that a public option creates a situation where “you have in essence a player in the industry who is a participant in the market, but also is a regulator and a referee in the game”. He said, “we think that those two roles really don’t work well.”

Public Opinion

Public polling consistently showed majority support for a public option. A July survey by the Quinnipiac University Polling Institute found that 28% of Americans would like to purchase a public plan while 53% would prefer to have a private plan. It also stated that 69% would support its creation in the first place. Survey USA estimated that the majority of Americans (77%) feel that it is either “Quite Important” or “Extremely Important” to “give people a choice of both a public plan administered by the federal government and a private plan for their health insurance” in August 2009. A Rasmussen Reports poll taken on August 17–18 stated that 57% of Americans did not support the current health care bill being considered by Congress that did not include a public option, a change from their findings in July 2009.

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A NBC News/Wall Street Journal poll, conducted August 15–17, found that 47% of Americans opposed the idea of a public option and 43% expressed support. A Pew Research Center report published on October 8, 2009 stated that 55% of Americans favor a government health insurance plan to compete with private plans. The results were very similar to their polling from July, which found 52% support. An October 2009 Washington Post/ABC poll showed 57% support, a USA Today/Gallup survey described by a USA Today article on October 27 found that 50% of Americans supported a government plan proposal, and a poll from November 10 and 11 by Angus Reid Public Opinion found that 52% of Americans supported a public plan. On October 27, journalist Ray Suarez of The News Hour with Jim Lehrer noted that “public opinion researchers say the tide has been shifting over the last several weeks, and now is not spectacularly, but solidly in favor of a public option.”

Between October 28 and November 13, 2009, Democratic Senator Dick Durbin’s campaign organization polled Americans to rank their support for various forms of the “public option” currently under consideration by Congress for inclusion in the final health care reform bill. The 83,954 respondents assigned rankings of 0 to 10. A full national option had the most support, with an 8.56 average, while no public option was least favored, with a 1.10 average.

Physician Reaction

A survey designed and conducted by Drs. Salomeh Keyhani and Alex Federman of Mount Sinai School of Medicine done over the summer of 2009 found that 73% of doctors supported a public option. A survey reported by the New England Journal of Medicine in September, based on a random sample of 6,000 physicians from the American Medical Association, stated that “it seems clear that the majority of U.S. physicians support using both public and private insurance options to expand coverage.”

Conversely, an IBD/TIPP poll of 1,376 physicians showed that 45% of doctors “would consider leaving or taking early retirement” if Congress passes the health care plan wanted by the White House and Democrats. This poll also found that 65% of physicians oppose the White House and Democratic version of health reform. Statistician and polling expert Nate Silver has criticized that IBD/TIPP-poll for what he calls its unusual methodology and bias and for the fact that it was incomplete when published as responses were still coming in.

Private Insurance

Private health insurance is often offered through employers or other organizations. Some employers offer only one type of health insurance plan. Others may allow you to choose from more than one plan.

Buying health insurance on your own, instead of getting a plan through an employer, usually costs more. You pay for the plan yourself, rather than sharing the cost with an employer.

Some insurance plans work with certain health care providers and facilities, which are part of the plan's network, to provide care at lower costs. This is called managed care. There are different kinds of managed care plans:

- **Health Maintenance Organizations (HMOs):** These plans usually pay only for medical care within their network of health care providers. HMOs generally cost less than plans that offer a greater choice of providers.
- **Preferred Provider Organizations (PPOs):** These plans cover more of your medical costs if you get care within the network of care providers. But they still pay some costs for care outside of the network.
- **Point of Service:** You can choose between an HMO or a PPO each time you get medical care.
- These plans offer more flexibility in choosing doctors and hospitals.

Indemnity (fee-for-service) plans are different from managed care plans. The choice of doctors or hospitals you can use for your care is not restricted. Your health care provider is paid a fee each time you get medical care covered by the plan. The costs you have to pay on your own (out-of-pocket) could be higher than they are with some managed care plans.

Public (Government) Insurance

Medicaid

Medicaid is a state-run, government insurance program that helps some people with lower incomes pay for medical care. Medicaid pays your health care provider. You may have to pay a small amount for certain medical care.

Medicaid is available only to certain low-income people and families who are eligible. Rules about who is eligible and what services are covered vary from state to state. To learn more about Medicaid, go to www.cms.gov.

Medicare

Medicare is health insurance provided by the government for people age 65 or older. People who have certain disabilities or health problems, such as long-term (chronic) kidney failure treated with dialysis or a transplant, also may get insurance through Medicare. It covers some, but not all, medical costs for people who qualify.

2.6 BILLING SERVICES

Hospital Billing Services has demonstrated and proven experience to deliver

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world-class solutions, which are result-oriented and committed to customer satisfaction. With a 'total solutions approach', our company works as an extended arm of your organization. Hospital Billing Services ability to provide best-of-breed services derives from an expert knowledge of our business, as well as in-depth understanding of our client's business and business processes. Our experience, and high level of customer service, allows us to anticipate our client's needs and design our processes around them.

Hospital Billing Services accredited as a global leader with proven expertise at providing all facets of Hospital Billing and Collection Services to our customers yielding greater productivity with fewer resources with latest technology from our Offshore Medical Billing center.

Hospital Billing Services is committed to be a resource with efficient, innovative processes in supporting the Healthcare community with Hospital Billing and Compliance Issues from our Offshore Billing center. Hospital Billing Services have chosen a strategic global model combining the best of onshore and offshore to deliver premium quality services to our clients at affordable cost.

Hospital Billing Services possess a deep working knowledge of the technologies and processes that are crucial to successful Business Process Outsourcing (BPO) and provide a complete spectrum of Back Office Outsourcing services in the areas of Hospital Billing, Medical Billing, Medical Transcription, Claim Adjudication, Call Center and Financial services. Outsourcing to Hospital Billing Services provides a comprehensive suite of reimbursement solutions by submitting virtually error-free claims and obtaining the highest level of reimbursement.

While other Offshore Hospital Billing Outsource companies implement offshoring as a cost-cutting measure, we take a unique approach that combines Outsourcing Hospital Billing with Onshore process optimization to achieve success and make a significant difference on the profitability and operational viability by using our experience and expertise in Offshore Hospital Billing Services.

Billing and Payment:

- After the advance payment, as treatment progresses, it is better to go on making interim payment in consultation with the concerned people in the billing section. This updating of payments, periodically, helps smooth progress of entire procedure.
- Final payment has to be made at the time of discharge of patient for which the bill section will consolidate all charges for medicines/ consumables / services availed during hospitalization. The Billing department should be allowed some reasonable time as soon as the doctor signs the order for discharge.
- Bills for Insured / Corporate Clients are handled separately, but the "No Due"/ "Gate Pass" has to be collected from Billing Department before discharge.

2.7 CONCEPT OF GRIEVANCE REDRESSAL IN HOSPITAL

Grievance Redressal Policy

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In order to meet the increasing legitimate expectations of customers for better, faster and more effective service, the Company shall constantly endeavour to improve its service delivery standards and capabilities. The Company expects all its Officers and employees to maintain highest standards of integrity and transparency in their transactions with customers, intermediaries and other stakeholders.

A Grievance is a documented manifestation of dissatisfaction of a customer. Such dissatisfaction, if left unaddressed and unresolved, could endanger the lifeline of the Company and erode its image. It is therefore expected that all employees shall devote attention, time and effort at resolving the Grievances of the customers within the framework of the Company's guidelines and the terms of the policy.

Objectives:

The objectives of the Grievance Redressal Policy are:

- (a) To develop an organisational framework to resolve Grievances of Customers and other stakeholders
- (b) To provide the Customers access to immediate, hassle free recourse to have their Grievances redressed
- (c) To enlighten the Customers on their duties and responsibilities to access benefits due under the policies
- (d) To establish structured interactions with Customers to elicit information on their expectations
- (e) To identify systemic flaws in the design and administration of various general insurance products and to seek solutions thereon, and
- (f) To institute a monitoring mechanism to oversee the functioning of the Grievance Redressal Policy

Responsibility For Redressal:

The final responsibility for Grievance Redressal rests with the Chairman Cum Managing Director of the Company. The Officer In Charge of a Regional Office, Divisional Office and Branch Office are responsible for resolution of Grievances relating to their respective territory.

The Company expects that Grievance Redressal be time bound and result oriented. Every Grievance is expected to be resolved within a maximum period of fifteen working days.

The Board of Directors of the company shall monitor status and progress of Grievance Redressal and the Regional Grievance Cells shall furnish quarterly report on Grievance Redressal position for submission to the Board.

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Documenting Grievances

The Grievance Redressal Machinery starts with a proper documentation protocol. A Grievance is defined as any communication that expresses dissatisfaction about an action or lack of action or about the standard of service / deficiency of service of the Company and/or an intermediary representing the Company.

Thus any communication, as defined above - written, verbal or digital- shall be recorded in the Grievance system. Immediately on receipt of a Grievance, the concerned Office shall send a written communication to the complainant (the person who lodges the Grievance with the COMPANY), stating the following:

- (a) Acknowledging his communication
- (b) Promising necessary action within fifteen working days from the date of receipt of the Grievance
- (c) The name, address, email id and Phone number of the authority to whom the Grievance has been forwarded (in case the Grievance relates to another office)
- (d) The name, address, email id and Phone number of the authority to whom the Complainant could escalate the matter if his Grievance is not redressed within the specified timeframe or if he is not satisfied with the action taken.

Structure of Grievance Redressal Mechanism

The Grievance Redressal machinery would be three tiered with the Corporate Grievance Cell functioning at the apex level, the Regional Grievance Cell at the Regional Office, and the Divisional Grievance Cell at the Divisional Office. While the principal function of the Divisional Grievance Cell would be to redress the Grievances, it is expected the Grievance Cells at the Regional and Corporate level play a more proactive role in not only redressing Grievances, but in minimising their incidence. These two cells shall address Grievance not only in terms of their content, but also in terms of their context, to discern circumstances that give rise to repeated Grievances. The cells at the Corporate and Regional level shall carry out a root cause analysis on the Grievances to provide inputs to the corporate management on product redesign, policy redesign, emulation of best practices, etc.

Redressal Committees

To provide a meaningful review mechanism and a forum for appeal to the complainants on the decisions taken at operating levels, this policy envisages the constitution of Redressal Committees at various levels as under:

Divisional Redressal Committee

The members of the Divisional Redressal Committee (DRC) shall be the same as the members of the Divisional Claims Committee. The DRC shall take up any Grievance where the subject matter of dispute is repudiation of a claim or short payment of a claim or refund of premium. All claims and refunds falling within the financial powers of a Scale II officer and Health claims upto Rs.100000 shall be taken up for review by the Committee.

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The decision of the Committee shall be by consensus. If there is no unanimity on the decision, the Committee members shall record their assenting and dissenting views on the Grievance and escalate the Grievance to Regional Redressal Committee.

If the decision is unanimous, the complainant should be informed of the decision and also of the fact that in case the complainant is not satisfied with the decision of the DRC, he can apply for reconsideration of this Grievance to Regional Grievance Cell or to the Office of the Insurance Ombudsman concerned if his case is covered under the Redressal of Public Grievances Rules, 1998. The address of the Regional Grievance Cell and that of the Insurance Ombudsman shall also be furnished in such communication.

Regional Redressal Committee

The Regional Redressal Committee (RRC) shall comprise of:

- (i) The Region In Charge
- (ii) A retired High Court Judge/ Retired District Judge
- (iii) An Officer in the rank of Scale V, or if no such Officer is available, an Officer in the rank of Scale IV

The General Manager In Charge of Grievance at the Corporate office shall be the competent authority to constitute the RRC.

The RRC shall take into consideration the following cases:

- (a) Claims or Refunds exceeding the limits of Scale II Officers and up to the limits of Scale IV Officers, including those which fall within the powers of the Divisional Claims Committee
- (b) Health claims exceeding Rs. 100000 and not exceeding Rs. 500000
- (c) Where the complainant, not being satisfied with the DRC decision, approaches the Regional Grievance Cell for reconsideration
- (d) Where there is no consensus among the members of the DRC on any Grievance

The RRC shall be convened at least once a month, unless there are no Grievances coming under consideration.

The RRC shall consider the different views of the Divisional office, Surveyor, TPA and Complainant and shall pass an order on the case.

The decision of the Committee shall be by consensus. If there is no unanimity on the decision, the Committee members shall record their assenting and dissenting views on the Grievance and escalate the Grievance to Corporate Redressal Committee.

If the decision is unanimous, the complainant should be informed of the decision and also of the fact that in case the complainant is not satisfied with the decision of the RRC, he can apply for reconsideration of this Grievance to Corporate Grievance Cell, or to the Office of the Insurance Ombudsman concerned if his case is covered under the Redressal of Public Grievances Rules, 1998. The address of the Corporate Grievance Cell and that of the Insurance Ombudsman shall also be furnished in such communication.

Corporate Redressal Committee

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The Corporate Redressal Committee (CRC) shall comprise of:

- (a) The General Manager-In Charge of Grievance Department at the Corporate Office.
- (b) A Retired Judge of High Court.
- (c) The Deputy General Manager of the concerned Technical Department at the Corporate Office. The CRC shall be constituted by the Chairman cum Managing Director of the Company.

The CRC shall take into consideration the following cases:

- (a) Claims or Refunds exceeding the limits of Scale IV Officers and up to the limits of Scale VI Officers, including those which fall within the powers of the Regional Claims Committee.
- (b) Health claims exceeding Rs. 500000.
- (c) Where the complainant, not being satisfied with the RRC decision, approaches the Corporate Grievance Cell for reconsideration.
- (d) Where there is no consensus among the members of the RRC on any Grievance

The decision of the CRC shall be by consensus. The CRC shall consider the views of the Regional Office, the Surveyor or the TPA, and those of the complainant and take a decision on the merits of the case. The CRC shall then pass an order on the case.

The complainant shall be informed of the decision of the CRC and also of the fact that in case the complainant is not satisfied with the decision of the CRC, he can apply to the Office of the Insurance Ombudsman concerned, if his case is covered under the Redressal of Public Grievances Rules, 1998.

Powers and Limitations of the Committees:

Any Grievance could be taken up for redressal by the DRC or RRC only if the issue relates to policy or personnel falling under its jurisdiction. An Order passed by the DRC, RRC or CRC shall be complied with by the Office concerned. The Committee concerned shall not consider any Grievance which is barred by Limitation either under the terms of the policy or under law. An amount of Rs. 4000 and Rs. 5000 per sitting can be paid to the nonofficial member of the RRC and CRC respectively.

Customer Focus

Grievance Redressal Mechanism should not only seek to redress Grievances but also to avoid them. The company shall endeavour to improve service through constant interactions with the customers to elicit their views on service delivery standards, and to seek their suggestions for improvement. At least one meeting per year shall be held by every Regional Office where retail customers are invited to offer opinions and suggestions on Customer service. Their feedback should be accorded due consideration by implementing their suggestions, wherever feasible.

The company shall take all efforts to abide by and enforce its Citizens' Charter in all its operations. The company shall respect and enforce Policyholders' Rights as

enshrined in the Regulator's document. The company shall also abide by the Code of Commitment approved by the General Insurance Council. It is also expected that the company should evolve its code of commitment on specific timelines for deliverables.

All efforts shall be made to leverage Information Technology for providing an easy platform to the customers to lodge grievances, to track the status of grievances, to enlighten them on claims procedures, to provide access to information on whom to contact and to enhance service standards.

The company recognises its duties to customers who may not be inclined to approach through technology enabled channels, and to suit the needs of such customers, it is expected that the company shall establish helpline services to enable them faster access for lodging a Grievance.

Senior citizens of the country require special attention and consideration and the company shall establish a Senior Citizen Cell at the corporate office to focus on issues related to them.

To encourage the spirit of Customer focus and orientation to Grievance Redressal, reward and commendation would be given to the Region which has the best Grievance Disposal rate, in relation to the volume of business handled.

Transparency

Employees are expected to maintain transparency in their communication with the customers. Repudiation letters shall not be cursory, but shall elaborate the reasons on why a claim could not be entertained. Should the customer request to know why any settlement falls short of his claim, the company has an obligation to explain the difference, including providing a copy of the Survey Report, which incidentally, is a right under the Policyholders' Rights.

Dpg, Irda Grievances:

All coordination with DPG, IRDA, Ministry and other regulatory bodies would be done only by the Corporate Grievance Cell. All offices are expected to clear these Grievances expeditiously.

Powers of Interpretation, Modification:

The Chairman cum Managing Director of the company is vested with the powers to lay down guidelines for the implementation of this policy and to modify procedures stated in this policy, within its overall framework.

2.8 AYUSH HEALTH CARE DELIVERY SYSTEM IN INDIA

AYUSH—an acronym for Ayurveda, Yoga, Unani, Siddha, and Homeopathy—is a system of medicine that has been integrated into the Indian national healthcare delivery system to strengthen public health in rural India. In 2005, when the Indian government launched the national rural health mission (NRHM) to improve healthcare delivery especially for the rural population, integration of AYUSH was an important strategy that was adopted. This was done with the objective of offering treatment choice to people as well as a strategy to overcome

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the human resource shortage in the government health facilities. The planning and implementation of AYUSH differs across various states, depending upon the existing level of development of AYUSH services in the state and the development emphasis of the state.

Some of my reflections on the status of AYUSH medical officers who are posted in the government primary health centres. We have had opportunities to meet many AYUSH practitioners who are posted in government run primary healthcare centres during field visits for my research into access to medicines for the rural poor in Karnataka. As per the official mandates and guidelines, these practitioners are supposed to practice Indian systems of medicines at the primary healthcare centres and they are also supposed to manage different national programmes. But often what happens in practice is different.

Due to the shortage of trained MBBS doctors, they are posted to primary health centres and are expected to manage outpatient and administrative responsibilities. The AYUSH medicines supplied to the primary healthcare centres are very minimal, most of the time there is no stock of any AYUSH medicines and they are forced to prescribe allopathic medicines due to the patients's demands as well as the pressure from the district and sub district health authorities which is often "off the record." Several times these AYUSH doctors have asked the health authorities to allow them to prescribe basic allopathic medicines in more legitimate manner, but the authorities keep rejecting their plea. While narrating his plight, one of the doctors sighed and said "we are forced to do quackery in our health system," referring to the fact that he is being forced to prescribe and practice the allopathic system of medicine (which is not his area of expertise).

It is an irony when the official mandate expects these doctors to manage the patient load and implement national health programmes, but they do not have the legitimacy to prescribe the allopathic system of medicines which are often very basic and used to manage minor elements. The NRHM is almost a decade old and the problem still has not been addressed.

Allowing the AYUSH practitioners to undergo a bridge course to better orient them to allopathic system of medicine and then legitimize them to use at least some basic allopathic drugs would legitimize their position in PHCs. It is pity that in a country where a chemist can sell allopathic drugs over the counter boldly without any prescriptions, AYUSH doctors are finding themselves unsafe to prescribe allopathic medicines in existing health system.

The Ayurveda, Yoga, Naturopathy, Unani, Siddha, and Homeopathy System

In India, other than allopathic medicine, different forms of scientifically appropriate and acceptable systems of indigenous medicine, such as the Ayurveda, Yoga, Naturopathy, Unani, Siddha, and Homeopathy (AYUSH) system, are practiced in different parts of the nation. The National Rural Health Mission has decided to mainstream the AYUSH system of indigenous medicine to help meet the challenge of the shortage of health care professionals and to strengthen the health care service delivery system.

Strategies for Ensuring Mainstreaming of the Ayush System

Mainstreaming of the AYUSH system is one of the key strategies under the National Rural Health Mission, under which it is envisaged that all primary health centers, block primary health centers, and community health centers will provide AYUSH treatment facilities under the same roof. The staff required for the AYUSH system are arranged either by the relocation of AYUSH doctors from existing dispensaries or from contractual hiring; these staff are then trained in the primary health care and national health programs.

In addition, other measures have been proposed and implemented with varying range of success, such as: mobilizing existing AYUSH establishments; motivating AYUSH practitioners to spread awareness about their branch of medicine; fostering partnerships with multiple stakeholders; strengthening the existing infrastructure; promoting cross-referral between different streams of medicine; integrating AYUSH with different cadres of outreach workers such as accredited social health activists; implementing special initiatives for the development of AYUSH drugs (e.g., ensuring the ready availability of AYUSH drugs at all levels; strengthening quality control mechanisms to avoid both the manufacture and sale of counterfeit drugs; streamlining the method of drug standardization to ascertain the potency of the drug; building herbariums and crude drug museums; directing state governments to decide which system of medicine should be set up in their respective states; establishing higher centers in district hospitals and medical colleges, such as yoga centers; promoting research work by exploring the local health traditions; expanding the existing legal framework to supervise the manufacture and sale of Ayurveda, Siddha, Unani, and homoeopathic drugs; and making way for an administrative officer to facilitate the effective monitoring and supervision of different activities.

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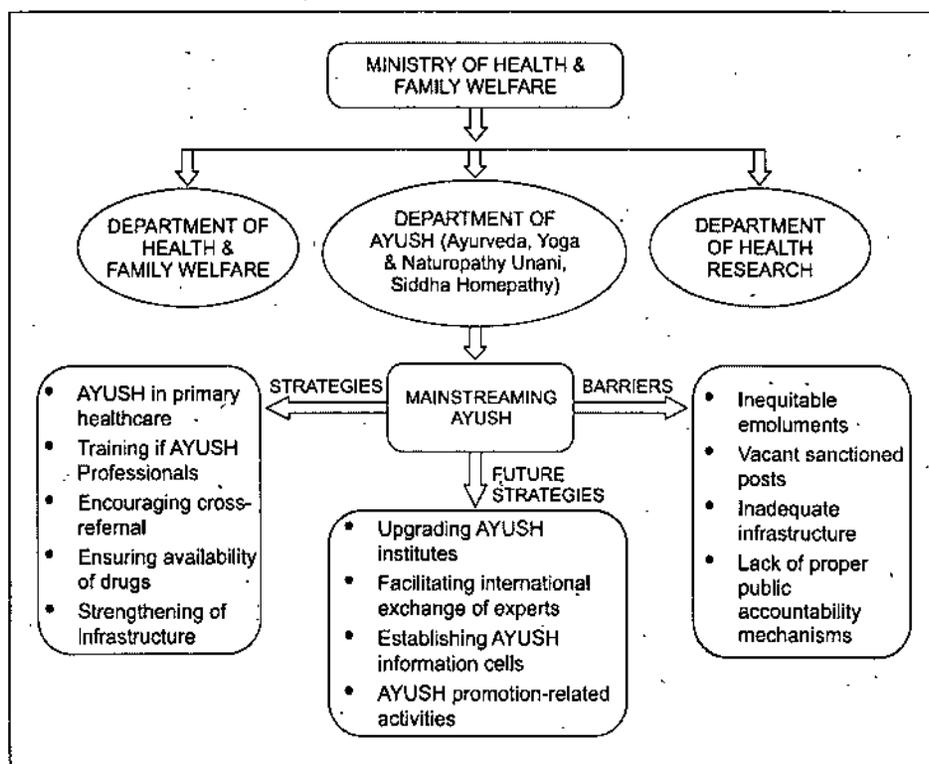


Fig. 2.1: Integration of departments of AYUSH and Health & Family Welfare.

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Experience Gained

Multiple interventions have been implemented to ensure a systematic merger; nevertheless, the anticipated results have not been achieved. This indirectly indicates the presence of multiple challenges and barriers, for example: variability in the basic philosophy of practice; disparities in the approach to specific clinical conditions or in decision-making; the lack of specific guidelines to promote cross-referral; unfilled positions; inequitable compensation; minimal support in terms of logistics and infrastructure; an unexpected rise in cross-practice; ethical issues (such as unfriendly relationships between practitioners of either system); and the absence of public accountability mechanisms at the primary care level. These challenges undermine the value of AYUSH, demotivate both practitioners and patients, and hence fail to provide the intended support to the public health system.

Future Strategies and Innovations

To bridge the gap in demand for public health professionals in India, the plan is to step up further activities to ensure the mainstreaming of AYUSH by: establishing and strengthening AYUSH institutes and colleges; organizing training programs for personnel from the AYUSH sector; formulating standardized guidelines for the treatment of different conditions; encouraging the exchange of experts and officers at an international level; extending monetary support to drug manufacturers and AYUSH institutions for international propagation of their stream; developing AYUSH information outlets in multiple nations; conducting fellowship courses under different streams of AYUSH in India for students from different countries; promoting community-based research to assess the scope of AYUSH; building links with pharmacists and their associations; and by ensuring customized implementation of strategies that have been successfully employed in other countries.

Ayush

The Umbrella term AYUSH is the acronym for Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy. At present in a global resurgence of demand for natural medicine has given a significant fillip to the development of Indian medicine. This system is moving ahead with use of latest technological & scientific developments. AYUSH system of medicine have age-old acceptance among various communities in India and played an important role in prevention and mitigation of disease. Among the 5 (Five) systems of AYUSH, Ayurveda, Homoeopathy and Yoga are equally practiced throughout Tripura both at Govt. and non Govt. levels. Remaining others might have not developed much in this State. In addition some folk medicines are practiced by local tribes in rural areas which could not be well documented.

Department of Indian Systems of Medicine and Homoeopathy (ISM&H) was created in March, 1995 and re-named as Department of Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy (AYUSH) in November, 2003 with a view to providing focused attention to development of Education & Research in Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy systems.

The Broad Objectives Are:

1. To recreate interest and faith in Indian system of Medicine & Homoeopathy.
2. Restructure the delivery mechanism of AYUSH system to make them responsive to the people needs.
3. All AYUSH institution to be strengthened with necessary infrastructure like building, equipment, manpower etc.
4. To promote the Ayush system with full emphasis on quality.
5. Integrate and mainstream AYUSH in health care delivery system including the national programmes.
6. Co-locate Ayush facilities with those of Modern Medicine hospital for providing choice of treatment to the patient.
7. Disseminate the tried and tested concepts and practices of the Indian system of medicine and Homoeopathy.
8. Provide appropriate training and orientation in respect of the RCH programme for the institutionally qualified AYUSH medial practitioner (already educated in midwifery, obstetrics and gynecology over 5-1/2 year), and utilize their services to fill in gap in manpower at appropriate level of health infrastructure, and at sub centre and primary health centres, as necessary.
9. Utilize the AYUSH institutions, dispensaries and hospitals for health and population related programmes.
10. Encourage and facilitate the setting up of speciality centres and AYUSH clinics at PHC, CHC & District Hospital level eg. Panchakarma, Kasharsutra etc.
11. Facilitate and maintain quality standard in delivery of AYUSH services.
12. Promote systematically participatory documentation of Local Health Traditions (LHT) related to one more of the following aspects in order to enhance health securities of rural communities.
 - (a) Home remedies and use of local medical plants.
 - (b) Food and Nutrition.
 - (c) Midwifery.
 - (d) Bone setting.
 - (e) Other specialized local health practices as ethno medicines/ veterinary practices.
13. Rapid assessment on selected health practices, prioritized by local communities, based on literature review.

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The Main Strategies Are

1. Under NRHM where Ayush doctors are co-located in the PHC/CHC/DHs essential drugs are supplied from financial assistance provided to state Government from the department of AYUSH, Ministry of Health & Family Welfare, and Government of India.

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2. At the CHC level shall be provided separately for AYUSH practitioner and pharmacist under the Indian Public Health Standards (IPHS) model.
3. At the same time, single doctor PHCs shall be upgraded to two Doctor PHCs by inducting AYUSH practitioner at that level.
4. AYUSH Doctors to be involved in IEC, health promotion, supervisory activities and all national health care programmes, especially in the priority areas like MCH etc.
5. Training of AYUSH Doctors in Primary Health Care and National Disease Control Programmes.
6. Drug kit provided to ASHA will contain one AYUSH preparation in the form of iron supplement. Other drugs, which are used in the treatment of common diseases, control of communicable diseases as well as drug promoting maternal and child health as well as improving quality of life could be included subsequently.
7. The already existing AYUSH infrastructure should be mobilized. AYUSH dispensaries that are not functioning well may be merged with the PHC or CHC.
8. Joint monitoring visits to health centers to be undertaken by both AYUSH and Health Care Officials at the District level's and state level.

Following Activities are Being Covered:

1. 2 (two) days Continued Medical Education training programme on AYUSH has been organized on 15th & 16th November, 2014 at Pragna Bhavan. (Participants: Medical Officer-AYUSH under National Health Mission, Health & Family Welfare Department & 50 bedded integrated AYUSH Hospital).
2. 2 (two) days Continued Medical Education training programme on AYUSH has been organized on 2nd & 3rd March, 2015 at Pragna Bhavan. (Participants: Medical Officer-AYUSH under National Health Mission, Health & Family Welfare Department, RBSK & 50 bedded integrated AYUSH Hospital).
3. 2 (two) days Continued Medical Education training programme on AYUSH has been organized on 30th & 31st March, 2015 at T.B. Association Hall. (Participants: Pharmacist-AYUSH & Masseur under National Health Mission, Health & Family Welfare Department).

Ayurveda in Tripura

At present, there are 47 (forty seven) nos. Ayurvedic Medical Officers & 12 (twelve) Nos. Pharmacists (Ayurveda) are working in different PHCs, CHCs, SDHs, DHs under State Health & Family Welfare Society, NHM, Tripura. And, 50 (fifty) nos. Medical Officers (Ayurveda) & 34 (thirty four) nos. Pharmacists (Ayurveda) are working in different Health Institutions (including stand-alone dispensaries) under Health & Family Welfare Department, Tripura. There is one State Ayurvedic Hospital having facility of OPD & IPD services, situated at paradise chowmuhan, Agartala. This hospital is now functioning with 10 beds IPD.

2.9 NATIONAL HEALTH PROGRAMMES IN INDIA

After independence several measures undertaken by the Central Government to improve the health of citizen of India. Prominent among these measures were National Health Programme. Health programme were focusing communicable disease, nutrition, environmental issues, population control, rural health and non communicable diseases introduced recently. Many of the programmes were revised as per need of time. WHO, UNICEF, World Bank, UNFPA and many other agencies have been providing technical and material assistance in the implementation of these programmes.

The First Health Programme in India was on Family Planning which was started in 1952; in fact India was the first country in the World to start programme on Family Planning. There was no Health Policy for 36 years after independence. Health was left to Committees and Commissions. Each Committee addressed to a single specific issue. Comprehension was missing in decisions. Majority of recommendations of every committee were reiterations of Bhore Committee. Individual "Health" Programs were developed in isolation based on situational exigency. Uni-purpose workers were later baptized as Multi-purpose. Some Programs worked in complete isolation till 1980 (e.g. NTCP). There was fragmented approach to Health.

For comprehensive need based development there was gradual development of various programs.

Launch of Various Programs in India

1. National Family Planning Program NFPP – 1952
2. National Malaria Eradication Program NMEP-1953
3. National Leprosy Control Program NLCP-1955
4. National Filarial Control Program NFCP-1955
5. National Tuberculosis Control Program NTCP-1962 à RNTCP-1993
6. National Cancer Control Program NCCP-75-76
7. National Family Welfare Program -1977
8. Universal Immunisation Program UIP-1985
9. National AIDS Control Program NACP-1987
10. National Goitre Control Program NGCP-1962 à NIDDCP-1992
11. Child Survival and Safe Motherhood Program CSSM-1992
12. Reproductive and Child Health Program RCH-1996
13. National Surveillance Program for Communicable Disease -1997 à IDSP-2004
14. National Population Policy NPP-2000
15. National Health Policy NHP-2002
16. NVBDCP-2004
17. NRHM-2005

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A program has the following main components:

1. **Need** - Need of masses(felt need) or government(demand generated)
2. **Goals & Objectives** - milestones to be reached
3. **Strategy** - the policy
4. **Approach** - from the multiple ways to achieve the same goal the most effective & efficient way chosen
5. **Activity** - the actions taken or work done to achieve the goal
6. **Indicators** - a measure to indicate how much work is done
7. **Monitoring & Evaluation** - to rectify the loop-holes
8. **Financing** - Budget

Here are definitions of terms commonly used in relation to Programs:

Goal

Goal is the result or achievement toward which efforts are directed. The proposed long-range benefits of the program for a specified area, defined in general terms. A goal is the ultimate objective; for example, "reducing the incidence of HIV in (a country)."

Purpose

Purpose: The overall objective (also called strategic objective) of the program, for example, "to increase the accessibility to and use of palliative care facilities in (a particular geographic area)."

It is the ultimate measure of the program's effectiveness.

Objectives: The anticipated outcomes or benefits that are the expected results of implementing a strategy. They are described in measurable terms and indicate a specific period of time during which these results will be achieved.

For objectives to be relevant they should be **SMART** → specific, measurable, appropriate, realistic, and time-bound.

Program: A Program is "a strategy with defined Objectives"

Policy: A Policy is "a written statement of objectives and expected outcomes"

Planning: Planning "a process of choosing between alternatives to accomplish the desired" Plan- a Blue print for action.

Strategy: Strategy is "Alignment of your resources, Processes and organizational structure to maximize benefits". A strategy is a plan (to choose) to achieve a particular goal or result; and reveals the logic of your choices.

Strategic Planning: Strategic planning is a process for making informed, evidence-based decisions about how to, most efficiently and effectively, achieves a measurable change toward a defined and specific goal. More specifically, it involves identifying clearly articulated goals, objectives, targets, and the strategies and broad-based activities that will be required to achieve them over time.

Approach: A statement that describes how the program will achieve its objective. That is, activities that will help the program achieve its objectives most effectively and feasibly.

Program Design: Process that identifies the interventions and determines how to manage them. A good design Interventions are ethically sound, technically up-to-date, Relevant to the program setting, and Acceptable to or endorsed by the beneficiary populations.

Program Designing: Program Designing Ensure that programs contains:

- (a) Focused data collection and analysis
- (b) Scale of action that suits the objectives and resources
- (c) The right mix of activities or interventions
- (d) An appropriate monitoring and evaluation system
- (e) A clear and feasible implementation plan
- (f) Supportive and sustainable management systems

Here is a list of some of the major as well as minor programs in operation:

Major Programs

1. National AIDS Control Program
 2. National Cancer Control Program
 3. National Diarrheal Disease Control Program
 4. National Filaria Control Program*
 5. National Family Welfare Program.
 6. National Iodine Deficiency Disorders Control Program
 7. National Leprosy Eradication Program
 8. National Malaria Eradication Program*
 9. National Program for Control of Blindness & Visual Impairment
 10. National Reproductive and Child Health Program
 11. National Program for surveillance Program for Communicable diseases
 12. National Tuberculosis Control Program (Revised)
- (* Programs are merged into National Vector Borne Disease Control Program since 2003-04).

Minor Programs

1. National Mental Health Program
 2. National Japanese Encephalitis Control Program*
 3. National Diabetes Control Program
 4. National Kala-azar Control Program*
 5. National Water Supply and Sanitation Program
- (* Programs are merged into National Vector Borne Disease Control Program since 2003-04).

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2.10 HOSPITAL PLANNING AND SUPPORT SERVICES

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Hospital Facility Planning, Design and Development

Soyring Consulting is a leader in the field of hospital planning, design, and development. We utilize our years of hospital design and operational experience to assist with development of new healthcare facilities, redesigns, and workflow optimization immersed in a logical, actionable approach.

Drawing on our experience of healthcare facility operations and processes, we can gauge the value and risks of the project and make recommendations accordingly. The data will ultimately help determine the types of services that should be offered and their priority, the size of the institution, layout and work flow, its location, as well as potential hurdles in the development process.

Our hospital design and hospital planning methodology optimizes the Patient Experience, Patient Access, Patient Satisfaction and Support Services. The phases include:

Phase I: Primary Architectural Hospital Planning Assistance

- Site identification
- Strategic Planning & Market research
- Service line organization and determination
- Review of plans
- Help select and/or work with architecture firm
- Provide guidance on layout and throughput strategies
- Aid with other needs as they arise during the construction process

Phase II: Data Process & Analysis

- Determination of best operational practices based on facility type/offerings
- Comparison against benchmarks
- Medical Staff Integration
- Financial and Budgetary Analysis (including Pro Forma)
- Process Design
- Productivity & Staffing

Phase III: Materials & Resource Analysis

- Preference
- Inventory & Storage
- Materials Flow (Supply Chain Management)

Phase IV: Operational Implementation

- Operational planning for hospital changes/opening
- Development and oversight of workgroups
- Trial plans and implementation (including mock patients/procedures)
- Regulatory compliance

Soyring Consulting is highly experienced in design and facility layouts to meet standards of care by specialty area. We are also experts in the evaluation of design to meet patient and material flow considerations.

Front Office Services

Defining Healthcare Infrastructure

To an outsider healthcare infrastructure may signify only physical construction of buildings to house healthcare facilities. However, experts involved in this segment beg to differ and claim that a larger universe exists under the umbrella of healthcare infrastructure. "Healthcare infrastructure primarily refers to the hard costs involved in establishing a healthcare facility, i.e. land, hospital building, roads, equipment etc.," explains Ayanabh Debgupta, CEO – Projects & Consultancy, MedicaSynergie & Director, Medica Hospitals, Kolkata.

Sameer Mehta, Director Projects, HOSMAC has a different take on the definition of healthcare infrastructure segment. "Segment, here, is actually a misnomer. It's a whole circle! Jokes apart, the universe of hospital infrastructure, as Hosmac sees it, starts with the home (resident nursing) and extends much beyond the conventional hospital to include quaternary care, hospices and everything in between. This would include the general physician's clinic, the diagnostic centre, the ambulatory surgery centre, the poly-clinic, the nursing home, rehabilitation centres and also the hospital as we commonly know it," he says.

"From a larger perspective, this universe includes not merely the physical infrastructure in terms of the building, the engineering and the medical equipment, but also the resources that manage, operate and service these hospitals. And by dint of this definition, it includes medical and para-medical colleges, the hospital management schools, the supply-chain logistics of pharmaceuticals and consumables and the list goes on. Hospitals have a stake in all of these and vice versa," he adds.

Agreeing with Mehta, Rang Emei Gonmei, Associate Vice President - Healthcare, Technopak Advisors, Gurgaon says, "Besides mainstream single and multi-speciality hospitals, there are many other parallel or supporting facilities – medical colleges, nursing schools and colleges, paramedic and medical technician training institutes, physiotherapy training institutes, bio-medical engineering institutes, clinical labs, pharmaceutical labs, medical research institutes, physical rehab centers, long term care centers, etc. which come under the purview of healthcare infrastructure"

"Manufacturing and distribution facilities for drugs, medical equipment, medical furniture, consumables and other healthcare products form a large portion of the healthcare infrastructure market. Other parallel healthcare facilities include holistic healing/naturopathy centers, based on Indian systems of medicine and healing such as ayurveda, yoga, unani and siddha. Even though this segment of the healthcare sector has not grown as big and as quickly as mainstream allopathic medicine, its acceptance and popularity is gaining ground. Schools for the hearing-impaired, the blind, the speech-impaired and the mentally-challenged also come under the ambit of the healthcare infrastructure market," he adds.

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Market's Might

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To get a fairly good idea of the opportunity in this segment, it is imperative to look at the market size and know how the segment will grow in the coming years. According to the Indian Healthcare edition of KPMG's Global Infrastructure – Trend Monitor report, total healthcare infrastructure expenditure for 2013 is predicted to reach \$ 14.2 billion.

“A glimpse at the present supply side scenario depicts that we need about 17 lakh beds, to reach the world average of 2.6 per 1000 population (WHO norm of 3 beds/1000), and this would at least require a whopping Rs. 344,000 crore . Even if one presumes that we will be able to realistically establish 50,000 beds in the next few years, we would still require Rs. 12,500 – 15,000 crore (at the average . cost of Rs. 25 – 30 lakh bed, secondary and tertiary included) as investment into hospital related infrastructure,” debates Debgupta.

However an optimistic Mehta pins the figure at \$ 500 million. “At about a million beds, the existing physical infrastructure alone would be worth upward of \$ 20 billion. And given the demand-supply gap, one could witness an additional investment of \$ 500 million every year for many years to come,” he says.

Whatever the figure, it is clear that the Indian healthcare infrastructure over the last decade has not kept pace with the growth in population. The available capacity has increased but not in line with the rising demand. This is likely to result in both, considerable infrastructure challenges and opportunities.

Bridging Demand-Supply Gap

Against a world average of around four hospital beds per 1000 population, India lags behind at just over 0.9 beds per 1,000 population, according to 'The World Health Statistics', far below the global average of 2.9 beds. This is a clear indication of the insufficiency of healthcare infrastructure in India. Recently, the Planning Commission's high-level expert group on health has recommended expansion of functional capacity to two beds per 1,000 population by 2022. In its latest report on universal health coverage, it has said, “Given a population of 1,353 million by 2022, the HLEG estimates that 27.05 lakh beds will be required to achieve two beds per 1,000 population. Based on the population norms, the size and spread of India's population will require a physical infrastructure of 3,14,547 sub health centres, 50,591 primary health centres, 12,648 community health centres, 4,561 sub district hospitals and 642 district hospitals.” This is only in the government sector. Experts estimate a similar demand in the private sector too.

“Currently, there are about 16,000 – 20,000 (survey figures vary widely) hospitals in India. China has twice this number. By the year 2025, India's population is estimated to be 1.4 billion people. By then we will need 2.30 million more beds, which means every year an additional 150,000 beds will need to be added to the bed pool. Considering an average of 200-250 beds per hospital, about 600–700 hospitals will need to be constructed every year for the next 14 – 15 years. Only then will India be able to bridge the demand–supply gap (or to achieve the world average of 2.6 beds per 1000 population). This, of course, is a near impossible task.” laments Emei.

“Having said that, we also need to take into account the current trend in the growth of daycare medical facilities/daycare surgery centers. Although, in India, this model is at its infancy, it is bound to grow exponentially in the coming years. Advancement in medical technology and healthcare delivery methodologies and processes have enabled most illnesses to be treated on daycare basis. This means the need for hospitalisation of patients will reduce in the coming years.

So, hospital bed-to-population ratio as a benchmark of measuring the adequacy of healthcare services will become progressively less relevant. However, the daycare model in the Indian context cannot be the same as in the USA or Europe. While, in the metros, the western model of daycare facilities will work well, in the smaller towns it may not. The majority of patients in India reside in smaller towns and rural areas. Unless daycare facilities are made conveniently accessible/reachable to them, the need to provide ‘hospital’ beds (even if just for an overnight stay, not only for patients but their family members too) will continue to exist.” he adds.

Key Growth Propellers

The growth drivers for the healthcare infrastructure broadly remain the same as for the healthcare industry itself. Growing lifestyle diseases and an expanding middle class population that demand and can pay for quality healthcare have been propelling the growth of this market. However, unconventional investors and targeted service delivery firms are taking healthcare infrastructure market to new growth heights.

“Current estimates of the hospital industry in the country is approximately \$ 36 billion. This sector is estimated to grow at the rate of 15 per cent (CAGR). Rising income, increasing insurance coverage, increasing awareness, quality consciousness, focus on preventive healthcare, etc., are the key drivers of growth. However, the growth of hospitals need to be supported by the growth of parallel infrastructure facilities: medical colleges (currently there are 300 of them; 600 more are needed), nursing colleges (1500 more are needed), technician training institutes and a host of facilities,” insists Emei.

“The primary growth driver in this sector is the involvement of professional entrepreneurs who realise the value of experts in the field of design and building of hospitals and investment bankers who are making strategic investments in healthcare sector among others, who have been instrumental in involving the hospital specialists to be able to optimise the financials of the project. Finally, the demand-supply situation of healthcare beds available in the country ensure that the need for hospitals is ever increasing.” says Debgupta.

Infra for Progress

If the problems of the healthcare delivery is analysed infrastructure is not the main culprit. “The loss of national income due to premature deaths caused by lifestyle diseases alone (diabetes, cancer and CVDs) is estimated to be Rs 11,800 billion over the next 10 years. An unhealthy working population cannot create a healthy economy,” says Emei.

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Yet, it is important to look at this segment and prioritise as this will indeed give additional impetus to resolve the larger problem of healthcare delivery.

"It is important because of the abysmally inadequate number of hospitals in the country. It is not only the inadequacy in number of facilities but also the fact that the distribution of hospitals is highly skewed. More than half the number of hospitals in the country are concentrated in the metros, while more than 70 per cent of the population reside in the small towns and villages. So, while increasing the number of hospitals, equitable distribution of hospitals and other healthcare infrastructure facilities across the country need to be on the agenda on a priority basis," he adds.

Planning and Development

So, how have hospitals been developing over the years? Before the advent of big corporate houses, small nursing homes and hospitals were built on individual plots and managed by a family of doctors. Large hospitals were a gift to the ailing society by generous donors like Sir Ganga Ram or Seth Gordhandas Sunderdas to name a few. However, all this has changed now, with professional builders and architects coming into the picture."Over the last decade or so, the way hospitals have been planned and built in our country has seen a paradigm shift.

Today, hospital promoters have come to realise that hospitals are made of four basic components: the building, the equipment, people and systems, wherein all but the first one i.e. the building can be changed at will, while the building once built has to last for at least 50 to 70 years. As a result, hospital promoters have begun to appreciate the value that "professional healthcare planners, architects, project managers" bring to their projects, not only in terms of efficient designs and scientific planning but also in terms of cost saving through prudent advisory on critical decisions like market survey, feasibility study, equity & debt syndication, selection of appropriate building materials, right medical and non-medical equipment purchase, strategic planning, human resource planning, commissioning systems and processes etc.," opines Debgupta.

With so many components forming a part of the hospital infrastructure market today, it's not surprising that promoters are outsourcing these needs and consultants are vying for a share of the pie. "From our experience, more often the large hospital projects of 250-300 beds and above are given out on turnkey basis. Also, some promoters pick and choose the services they need from the entire bouquet available to them," Mehta explains.

"One witnesses increasing outsourcing of project establishment. It helps that there are professional healthcare consulting firms, both in the realms of management and infrastructure. One yet sees the 'group' architect taking on the design but with professional medical planners brought in to fill the gap. Many stakeholders have learnt the cost of not seeking professional help the hard way. And then there are players who have taken to awarding projects on a design and build basis – this is full outsourcing in its true form to an extent. However, here too, the common practice is to outsource the physical infrastructure and not so much the medical equipment

procurement and installation as is the practice in Middle East and elsewhere. The larger groups with chains of hospitals, have hitherto, largely developed green fields and brownfields in-house, but as the requirements grow, they too have been turning to professional players in the industry to outsource these functions," says Mehta. So the truth is that most of the hospital planning and development is outsourced.

"If you are referring to planning and design services, yes, most of it is outsourced. It would not make much economic sense for most healthcare facility promoters to have in-house planning and design teams, especially those who are establishing just a single facility or two or three facilities at the most. For promoters who are setting up a chain of healthcare facilities, it does help to have an in-house project planning and design team. The government also outsources most of the major projects," informs Emie.

The Ace Players

The healthcare infrastructure in the sub-continent is dominated by about three or four companies. Out of these only one or two are pure play companies.

"India is witnessing an increasing interest from international architectural firms and some have set up shop in India too. Among international design firms, HOK, HKS, Perkins & Wills & Burt Hill have had a presence now. In the space of design and build however, Hosmac and Larsen & Toubro are the only two names that come to mind," says Mehta.

"In the recent times there have been numerous hospital consultancy firms that have mushroomed all over the country. However, there are only a handful of players who have got significant experience of planning, building and managing healthcare facilities in the country. Also there are many individual based companies who offer piecemeal solutions and very few one-stop solution providers from concept to operations under one roof like MedicaSynergie. The additional advantage of MedicaSynergie is its in-house team of clinicians at Medica Hospitals who form an integral part of the planning team," says Debgupta.

The Government Angle

Experts believe that there is a lot of investment from the government sector in the healthcare infrastructure space. Be it the Centre with its new policies or individual states like Gujarat, investment in healthcare infrastructure is on the go.

"The ratio between government and private spending in this segment is about 50:50," says Debgupta. "As a part of the health sector reforms that are currently being implemented across the country under the National Rural Health Mission and other such programs, revamping of government hospitals is a major activity under this as most of these hospitals were built many decades ago without appropriate planning to handle future disease burden and the increase in load of patients therein.

The private sector is more market-based and seeks professional assistance to ensure optimal utilisation of resources," he further adds.

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“Major corporates like Fortis, Apollo, Max, Narayana Hrudayalaya, Care, Manipal and a few more are on the verge of expansion on a large scale. Currently, about 180 – 200 hospitals are in the process of being set up. This number does not include the public sector hospitals and the numerous smaller hospitals being set up by smaller groups of promoters across the country. Addition of 1,40,000 beds is estimated within the next five years, with major contribution by Fortis, Max and the public sector. This requirement of additional beds will necessitate an investment of Rs. 6,00,000 crore.

In addition to mainstream hospitals, daycare medical facility segment is poised for significant growth in the coming years,” informs Emie.

Infra Insights

- Hospital infrastructure – a key factor in the healthcare segment
- Total healthcare infrastructure expenditure for 2013 to reach \$ 14.2 billion - KPMG’s Global Infrastructure – Trend Monitor report
- Planning Commission’s health expert group recommends two beds per 1,000 population by 2022.
- Lot of investment expected from the government sector in the healthcare infrastructure space.
- Growth in hospital infrastructure will be directly linked to the growth and successes of the healthcare sector.
- Report on Indian healthcare forecasts growth at 13 per cent per annum for the segment.
- Healthcare segment to reach Rs 5625 billion in the next five to seven years.

Future Predictions

Growth in hospital infrastructure will be directly linked to the growth and successes of the healthcare sector at large. A recent report on Indian healthcare forecasts the current Rs 2790 billion sector to grow at 13 per cent per annum. It is expected that the healthcare opportunity will double to Rs 5625 billion in the next five to seven years, as we estimate population to grow at two per cent annually and factor in a 10 per cent annual increase in the healthcare spend on the back of changing demographics, unique mix of communicable and non-communicable diseases, increase in penetration of health insurance both private and government, along with rising income levels and changing health seeking behaviour which will further propel the growth in the sector.

2.11 STUDENT ACTIVITY

1. Differentiate between outpatient services and inpatient services.
2. Discuss about Clinical Services.

3. Describe Physical therapy.
4. Explain Grievance Redressal Policy
5. Discuss Ayush health care delivery system in India

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2.12 SUMMARY

- A set of core services is essential to all intensive outpatient treatment (IOT) efforts and should be a standard part of the treatment package for every client. Enhanced services often are added and delivered either on site or through functional and formal linkages with community-based agencies or individual providers.
- Clients with temporary or permanent cognitive impairments, literacy deficits, or language problems need special attention or assignment to special groups. IOT programs should assess whether their treatment orientation and relapse prevention materials are appropriate for clients with cognitive impairments or learning disabilities.
- A healthcare team consisting of our staff physicians and PA's, nurses, certified nursing assistants and other appropriate specialty clinicians will work with you and your family, or others you designate, to design a plan of care.
- Emergency services and rescue services are organizations which ensure public safety and health by addressing different emergencies. Some of these agencies exist solely for addressing certain types of emergencies whilst others deal with ad hoc emergencies as part of their normal responsibilities.
- A type of insurance coverage that pays for medical and surgical expenses that are incurred by the insured. Health insurance can either reimburse the insured for expenses incurred from illness or injury or pay the care provider directly.

2.13 GLOSSARY

- **Inpatient Care:** Inpatient care is the care of patients whose condition requires admission to a hospital.
- **Rehabilitation:** Rehabilitation is a treatment or treatments designed to facilitate the process of recovery from injury, illness, or disease to as normal a condition as possible.
- **Emergency Medical Services:** Emergency medical services are a type of emergency service dedicated to providing out-of-hospital acute medical care, transport to definitive care, and other medical transport to patients with illnesses and injuries which prevent the patient from transporting themselves.
- **Mediclaime Policy:** Mediclaime Policy is an Insurance coverage to claim reimbursement of medical treatment bills generated due to Health related hospitalisation.

- **Private health:** Private health insurance is often offered through employers or other organizations. Some employers offer only one type of health insurance plan. Others may allow you to choose from more than one plan.

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2.14 REVIEW QUESTIONS

1. What are the quality of outpatient Services?
2. What are the admission criteria of inpatient services?
3. What is the importance of Health Insurance?
4. What do you mean by Medicare?
5. Write short note on:
 - (a) EMS
 - (b) TDB
 - (c) PDB
 - (d) ESI
 - (e) HMOs
 - (f) PPOs

3**LAB SERVICES**

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STRUCTURE

- 3.0 Learning Objectives
- 3.1 Introduction
- 3.2 Radiology Services
- 3.3 Blood Bank Services
- 3.4 Telemedicine
- 3.5 Telepharmacy
- 3.6 Student Activity
- 3.7 Summary
- 3.8 Glossary
- 3.9 Review Questions

3.0 LEARNING OBJECTIVES

After completion of the unit, you will be able to:

- Describe Radiology services
- Understand Blood bank services
- Define Telemedicine
- Explain Telepharmacy

3.1 INTRODUCTION

A medical laboratory or clinical laboratory is a laboratory where tests are done on clinical specimens in order to get information about the health of a patient as pertaining to the diagnosis, treatment, and prevention of disease.

3.2 RADIOLOGY SERVICES

The Department of Radiodiagnosis & Imaging at Indraprastha Apollo Hospitals, New Delhi is recognized as a leader in the field of diagnostic imaging. Our facility includes cutting-edge, fully digital, multimodal technological resources, including:

Hospital
Operations

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- Digital X-ray
- Fluoroscopic Investigations (Special X-Rays)
- Mammography (Breast X-Ray)
- Ultrasonography
- Multi Slice CT Scan
- MRI Scan
- DXA Scan

3D Breast Imaging

Aurora Breast MRI System

The American Cancer Society updated its guidelines for breast cancer screening, recommending an annual breast MRI exam in addition to a mammogram for women who are at high risk of developing breast cancer. Others who may be recommended for this exam include women who have dense breast tissue (tissue comprised of more muscle than fat) and those who have silicone breast implants, which can make obtaining clear images with mammography alone difficult.

The Aurora Breast MRI System is a magnetic resonance imaging (MRI) system specifically designed for 3D bilateral breast imaging. It generates very clear, highly defined images of both breasts, the chest wall and the lymph nodes, which allows breast specialists to make earlier and more accurate diagnoses for women at high risk of developing breast cancer.

For women who are newly diagnosed with breast cancer, the Aurora Breast MRI technology allows medical providers to determine the extent of the disease, to plan for surgery, if necessary, and to determine how well patients are responding to treatment.

Bone Densitometry

A Bone Density Scan is a quick and painless procedure. Bone density scanning, is also referred to as a DEXA scan (dual-energy x-ray absorptiometry). It is an enhanced form of x-ray technology used to measure bone loss. The amount of radiation used is extremely small-less than one tenth the dose of a standard chest x-ray.

How is it Performed?

DEXA is most often performed on the lower spine and hips. You will be asked to lie on a large, flat table while a mechanical arm passes over your body. The DEXA machine sends a thin, invisible beam of low-dose x-rays with two distinct energy peaks through the bones being examined. One peak is absorbed mainly by soft tissue and the other by bone. The soft tissue can be subtracted from the total and what remains is a patient's bone mineral density.

Why is it Performed?

DEXA is most often used to diagnose osteoporosis, a condition that affects women after menopause but may also be found in men. Osteoporosis involves a gradual loss of calcium, as well as structural changes, causing the bones to become thinner, more fragile and more likely to break.

A bone density test tells you if you have normal bone density, low bone density (osteopenia) or osteoporosis. It is the only test that can diagnose osteoporosis. The lower your bone density, the greater your risk of breaking a bone. A bone density test can help you and your healthcare provider:

- Learn if you have weak bones or osteoporosis before you break a bone
- Predict your chance of breaking a bone in the future
- See if your bone is improving, getting worse or staying the same
- Find out how well an osteoporosis medicine is working
- Let you know if you have osteoporosis after you break a bone

How do I Prepare?

On the day of the exam you may eat normally. You should not take calcium supplements for at least 24 hours before your exam. You should wear loose, comfortable clothes with no zippers, belts or metal buttons. You may be asked to change into a hospital gown for your comfort.

First, you will need to tell your doctor if:

- You might be pregnant
- Have recently had a radiology exam with barium
- Have recently had a computed tomography (CT) scan or radioisotope scan with contrast material. You may have to wait 10 to 14 days before undergoing a Bone Density Scan.

What Should I Expect?

When assessing the spine, your legs are supported on a padded box to flatten the pelvis and lower spine. When assessing the hips, your foot is placed in a brace that rotates the hip inward. In both cases, the detector is slowly passed over the area, generating images on a computer monitor.

You must hold very still and asked to hold your breath for a few seconds while the x-ray image is obtained to reduce the possibility of a blurred image. The technologist will walk behind a wall to activate the x-ray machine. The test is usually completed within 10 to 30 minutes.

Who Should Have a Bone Density Test?

The National Osteoporosis Foundation recommends that you have a bone density test if:

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- You are a woman age 65 or older
- You are a man age 70 or older
- You break a bone after age 50
- You are a woman of menopausal age with risk factors
- You are a postmenopausal woman under age 65 with risk factors
- You are a man age 50-69 with risk factors

A bone density test may also be necessary if you have any of the following:

- An X-ray of your spine showing a break or bone loss in your spine
- Back pain with a possible break in your spine
- Height loss of ½ inch or more within one year
- Total height loss of 1 1/2 inches from your original height

Computed Tomography (CT)

We understand that every patient is different when it comes to radiation imaging. Medical imaging helps your doctor with your care. That's why we perform only necessary medical imaging exams, and we make sure it's the right test and the right radiation dose for each patient, from adults to infants. Beverly Hospital, Lahey Outpatient Center, Danvers and Addison Gilbert Hospital utilize radiation dose techniques when scanning adults and children to minimize radiation exposure.

Beverly Hospital offers a complete range of Computed Tomography (CT) scans to diagnose heart, kidney, lung, liver, spine, and blood diseases; cancer, tumors, and cysts; as well as blood clots, hemorrhages and infections. The department also offers computed tomography angiography (CTA) to study, in precise anatomical detail, blood flow and assess disease progression in arterial and venous vessels. CTA optimally studies blood vessels without the need for arterial catheterization or invasive procedures.

In addition, CT colonography assists gastroenterologists in fully evaluating patients who are unable to complete conventional colonoscopy.

Patients benefit from advanced multi-slice imaging technology, featuring enhanced 3D image quality, which expedites exam time. Cardiac CTAs are performed at the Cardiovascular Center at Lahey Outpatient Center, Danvers. Multi-slice technology provides a sharper image of moving organs as compared to traditional CT systems and is particularly useful in examining acutely ill and trauma patients who are unable to hold their breath. If you have any questions, please ask your radiology professional before the test.

Digital Mammography

We offer the most advanced breast imaging technology available today, including digital mammography. Research has shown that digital mammography is better than film-based, analog x-rays for many patients.

- Better at detecting breast cancer in pre-menopausal women and in women with dense breasts
- Detects more cancers than standard mammograms
- Produces clearer images and allows the radiologist who is reading the image to zoom in, magnify and optimize different parts of the breast tissue
- May reduce the occurrence of unnecessary biopsies
- Digital images are stored on a computer, so they are also easy to send to other providers involved with your care

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Interventional Radiology

Interventional Radiology is a subspecialty of radiology imaging in which images are used to guide the radiologist while performing minimally invasive procedures. These procedures may be for diagnostic purposes or they may be employed to treat a patient.

- Our board-certified interventional radiologists perform a number of specialized procedures. All interventional radiology procedures below are performed in Beverly Hospital's state-of-the-art Cardiovascular Suite.

Magnetic Resonance Imaging (MRI)

Beverly Hospital MRI Services provide the most advanced MRI technology and patient-centered care available today, in three locations right here on the North Shore and in the Merrimack Valley. Our highly qualified and compassionate physicians, technologists and support staff are committed to making the MRI experience convenient and comfortable for all individuals - both children and adults - from start to finish, as well as delivering accurate results to your physician quickly.

Technological Excellence

Magnetic resonance imaging (MRI) is a highly advanced, painless, non-invasive test that creates exceptionally clear images of the internal structures and organs of your body. Beverly Hospital is the first healthcare facility in the area to own and operate the most powerful MRI scanner available for clinical use - a 3.0 Tesla scanner - which gives us optimal diagnostic capabilities. According to our physicians, the images produced by this equipment are so clear, "it's like putting on a pair of glasses for the first time."

In addition to the 3.0 Tesla unit at Lahey Outpatient Center, Danvers, Beverly Hospital also offers a 1.5 Tesla Scanner on its main campus in Beverly and an open MRI unit at the former North Shore Magnetic Imaging Center now called Beverly Hospital at Prospect Street in Peabody. The type of scanner that best suits your needs depends on several factors. We are able to accommodate the special needs of children and patients who are claustrophobic. We also offer specialized breast imaging services at our Breast Health Center using the state-of-the-art Aurora Breast MRI System.

3.3 BLOOD BANK SERVICES

The blood bank is committed to protecting the safety of both donors and potential recipients by providing quality blood and blood products from non-remunerated, healthy donors following a stringent screening process. Voluntary blood donation, being the safest form of blood donation, is encouraged. The blood bank provides for the blood requirements of patients within the hospital as well as various other hospitals and nursing homes in the city. The blood bank is licensed to prepare Whole Blood, Packed Red blood Cells, Platelet concentrate, Fresh Frozen plasma, Cryoprecipitate, Single donor platelets (platelets prepared by pheresis), Plasma pheresis and leucodepleted blood.

Blood Bank: A place where blood is collected from donors, typed, separated into components, stored, and prepared for transfusion to recipients. A blood bank may be a separate free-standing facility or part of a larger laboratory in a hospital.

Separation of Blood: Typically, each donated unit of blood (whole blood) is separated into multiple components, such as red blood cells, plasma and platelets. Each component is generally transfused to a different individual, each with different needs.

An increasingly common blood bank procedure is apheresis, or the process of removing a specific component of the blood, such as platelets, and returning the remaining components, such as red blood cells and plasma, to the donor. This process allows more of one particular part of the blood to be collected than could be separated from a unit of whole blood. Apheresis is also performed to collect plasma (the liquid part of the blood) and granulocytes (white blood cells).

Who Receives Blood: Accident victims, people undergoing surgery and patients receiving treatment for leukemia, cancer or other diseases, such as sickle cell disease and thalassemia, all utilize blood. Over 20 million units of blood components are transfused every year in the US.

Giving Blood to Yourself: Patients scheduled for surgery may be eligible to donate blood for themselves, a process known as autologous blood donation. In the weeks before non-emergency surgery, an autologous donor may be able to donate blood that will be stored until the surgical procedure.

Typing and Testing Blood: After blood is drawn, it is tested for the ABO blood group type and the Rh type (positive or negative), as well as for any unexpected red blood cell antibodies that may cause problems in the recipient. Screening tests are also performed for evidence of donor infection with hepatitis viruses B and C, human immunodeficiency viruses (HIV) 1 and 2, human T-lymphotropic viruses (HTLV) I and II and syphilis.

Storage of Blood: Each unit of whole blood is normally separated into several components. Red blood cells may be stored under refrigeration for a maximum of 42 days, or they may be frozen for up to 10 years. Red cells carry oxygen and are used to treat anemia. Platelets are important in the control of bleeding and are generally used in patients with leukemia and other forms of cancer. Platelets are stored at room temperature and may be kept for a maximum of five days. Fresh

frozen plasma, used to control bleeding due to low levels of some clotting factors, is usually kept in the frozen state for up to one year.

Cryoprecipitated AHF, which contains only a few specific clotting factors, is made from fresh frozen plasma and may be stored frozen for up to one year. Granulocytes are sometimes used to fight infections, although their efficacy is not well-established. They must be transfused within 24 hours of donation.

Other Blood Products: Other products derived from blood include albumin, immune globulin, specific immune globulins and clotting factor concentrates. These blood products are commonly made by commercial manufacturers.

American Association of Blood Banks (AABB): The AABB is a key international association of blood banks, including hospital and community blood centers, transfusion and transplantation services and individuals involved in transfusion and transplantation medicine. The AABB establishes the standards of care for patients and donors in all aspects of blood banking; transfusion medicine; hematopoietic, cellular and gene therapies; and tissue transplantation. More than 2000 community and hospital blood banks, hospital transfusion services and laboratories and over 8000 individuals from the US and 80 countries outside the US make up the AABB.

Blood Services

Central Blood Bank realizes our customers' patient transfusion needs vary. So we provide components and service solutions that give you one company you can rely on, with a commitment to provide the best and most advanced products and services in transfusion medicine services.

- Reliable, 24/7 delivery of products ensures not only your stock components arrive when you need them, but that STAT orders are a phone call away.
- ISBT 128 labeling technology which ensures highest level of accuracy, safety and efficiency through fewer misreads and identifications errors versus other labeling methods.
- Access to one of the largest inventories of hard to find HLA typed components from our Immunohematology Reference Laboratory.
- Central Blood Bank physicians and blood center experts that can help answer questions ranging from "What's the best way to maximize my inventory levels?" to "How does this component impact the patient's care?"
- Special hospital based programs like the Hospital Donor Recruitment Program- which allows your hospital to make a positive contribution to the area's blood supply and your cost for blood at the same time.

Transfusion Management Services

ITxM Clinical Services' experts know that quality and cost effective healthcare go hand in hand. We provide customers with significant and sustained cost savings, while providing practice information for optimal patient care.

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Our proven, on-site transfusion services and clinical support from leading transfusion medicine physicians delivers:

- Improved operational efficiencies
- Decreased product wastage
- Lower per admission transfusion rates
- Transfusion medicine expertise

Hemapheresis Services

The ITxM Therapeutic Hemapheresis department in Pittsburgh provides inpatient and outpatient apheresis services to area patients. With procedural experience ranging from infants to elderly, and routine to critical therapies our hemapheresis department has over twenty years of experience in providing expert care, and provides outpatient services at our Infusion Center in a friendly, comfortable environment.

Outpatient services include:

- Infusion therapies-IVIG, Reclast, injectable therapies, DDAVP, among many other non-chemotherapeutic therapies
- Blood transfusions
- Therapeutic phlebotomy
- LDL apheresis
- Plasma exchange

Inpatient services include:

- Plasma exchange
- Red cell exchange
- Plateletpheresis
- Photopheresis
- Peripheral blood progenitor cell collection

Immunoematology Reference Testing

Our transfusion medicine reference laboratory excels in antibody testing and providing compatible blood components for patients with serological problems. Our services help you choose safe and beneficial transfusion treatments for even the most complicated patients.

- Available 24/7, fast, accurate test results, most in less than 8 hours
- Access to an extensive local inventory driven by three blood centers
- Access to frozen rare units for use in unusual compatibility cases
- Consults available from ITxM physicians who are experts in transfusion medicine, who work with your physicians to select the best transfusion treatment choices for your patients
- The only AABB accredited immunoematology reference lab in the Pittsburgh area.

Conventional Blood Banking and Blood Component Storage Regulation

Blood banking is a medical logistic activity. It attempts to bring the potentially life-saving benefits of transfusion to the patients who need them by making blood components available, safe, effective and cheap. Blood banks try to maximize delivering getting blood from the right donors to the right patients in a timely manner. The easiest way to assure the timely availability of blood is to have an appropriate inventory on the shelf at all times.

Standards for blood banking have evolved in response to problems observed in the past. Donors need to be free of syphilis, hepatitis, and human immunodeficiency virus (HIV) and from a host of other diseases as well. Methods for cleaning the arms of donors should work. Blood bags should contain the appropriate solutions and be sterile. Systems for the identification of donors and patients, for the determination of antigens on their blood cells and the antibodies in their sera, and for the procedures and processes used to gather and maintain this information should be robust.

Regulatory agencies, like the United States (U.S.) Food and Drug Administration (FDA), are charged to assure that blood products are safe and effective. They attempt to assure safety by enforcing the standards noted above. They attempt to assure effectiveness by demanding demonstrations that a reasonable fraction of red cells, platelets and plasma proteins survive after storage before licensing new blood storage systems or blood modifying products like leukocyte reduction filters. Yet the reasonable fraction for red cells is 75%, for platelets is 67%, and for plasma proteins is 80%. Standards, such as insisting that every unit of blood be tested for HIV, work only if the licensed tests detect the circulating viruses, a moving target.

Better understanding of the basic biology and better tests on which to base better standards are needed. If we understood the changes that occur with the storage of red cells, platelets and plasma better, we could both design better storage systems and regulate storage more effectively. If we knew more about the viruses and bacteria and the cytokines and blood breakdown products that threaten blood safety we could institute controls to further improve blood safety. This paper will explore some specific examples.

Red Cell Collection and Storage

Red blood cells are the most commonly transfused blood component. High Human Development Index (HDI) countries use 20–70 units of red cells per thousand members of their population each year. In the U.S., 15 million units are used to care for 300 million people for a use rate of 50 U per 1000 members of the population each year. This amounts to 40,000 units for the whole population each day.

The units are collected either as whole blood into bags containing anticoagulant citrate and nutrient phosphate and dextrose (CPD) or by apheresis into acid citrate dextrose (ACD). The whole blood is centrifuged to bring down the heavier red cells, and the red cells separated from the rest of the blood. Separation is accomplished in two different ways. One way involves draining the red cells out of a port in the

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bottom of the bag, leaving behind a few red cells, the buffy coat of white cells and platelets, and the plasma on top. This is called the buffy coat method, and the bags that support it are called top and bottom bags.

The other method involves centrifuging the blood less hard to leave many of the platelets still suspended in the plasma. In this process, making concentrated red cells involves squeezing the platelet-rich plasma off the top to leave the red cells, the buffy coat of white cells and some platelet-rich plasma behind. This is called the platelet-rich plasma method of component manufacture. Typically, the concentrated red cells are then run through a leukocyte reduction filter, which removes most white cells and platelets, and an additive solution containing more nutrients is added to support longer storage and dilute the units so that they are less viscous and flow well during emergency administration. For the apheresis units, the collection method removes most of the white cells and platelets, and the additive solution is added directly to the collected red cell concentrate.

These methods of blood component separation are probably essentially equivalent, although each has advocates. The platelet-rich plasma method loses and possibly damages platelets, the buffy coat method loses some red cells, and the apheresis method is expensive. However, the expense of the apheresis method can be largely offset by collecting only males over 80 kg who can donate two units at once, saving the cost of a second set of infectious disease tests and a second leukoreduction filters.

None of these methods is particularly well optimized. The use of ACD and CPD is a legacy of the days when these were the best 3-week whole blood storage solutions available. They are acidic with a pH of 5 to 5.8 so that the dextrose does not caramelize when the solutions are autoclaved. However, mixing whole blood with these acidic anticoagulants immediately drops the pH of the resulting suspension to about 7.1 leading to rapid breakdown of red cell 2,3-diphosphoglycerate (2,3-DPG). If we simply drew whole blood into neutral citrate, we would preserve 2,3-DPG better and avoid exposing many intensive care and brain injured patients to the high dextrose loads that end up in conventional blood plasma. There is enough glucose in the blood of healthy donors to support the cells until the donated blood is processed into components. In the early days of blood banking, we stored whole blood for up to five days in citrate alone.

Over subsequent weeks of storage, red cells consume dextrose through glycolysis and the hexose monophosphate shunt to produce adenosine 5'-triphosphate (ATP) and reducing substances. The production of all of these metabolic intermediates goes down over the course of storage as the glycolytic end-products, organic acids and protons, accumulate. As pH falls, the protons specifically feed back to slow the rate of glycolysis. Conventional red cell additive storage solutions support stored red cells for about 6-weeks of storage but fail rapidly thereafter.

Between a pH of 7 where red cell storage typically starts and 6.5 where it ends, a unit of red cells can buffer about 7 mEq of protons. Raising the pH to 7.2 at the beginning of storage with either a less acid anticoagulant or a more basic additive solution can add another 3 mEq of buffer capacity as can the addition of physiologic amounts of bicarbonate. These changes can allow the continued production of ATP

for 8–9 weeks. They result in higher concentrations of ATP at all of the points in between. Higher concentrations of ATP support the actions of the enzymes that keep negatively charged phospholipids on the inside of the membrane, exclude calcium, and limit the loss of membrane in apoptotic vesicles. These actions extend potential shelf-life by extending viability.

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Red Cell Recovery

In the U.S. and Europe, the licensure of red blood cell storage systems has been based on measures of the viability and physical integrity of the stored cells. The viability of red cells is typically measured as the fraction of cells at the end of storage that are able to circulate. Physical integrity, a necessary but not sufficient condition for viability, is measured as fractional haemolysis and will be discussed in the next section.

The standard measure of viability is the 24-hour in vivo recovery. In making this measurement, about 15 mL of stored red cells are labeled with chromium 51 and reinfused into the original donor. Measurement of the total administered dose allows an estimation of the volume of dilution and timed sampling at 5, 7.5, 10, 12.5, and 15 minutes allows back extrapolation to that original concentration as well. Following the subsequent concentration allows ongoing clearance to be monitored, and recoveries greater than 75% at 24 hours are considered acceptable. Current storage systems maintaining leukocyte-reduced red cells in additive solutions provide about $84 \pm 8\%$ viability after 6 weeks storage.

A major remaining problem associated with red cell storage is that viability is very different from one donor to another. In a typical study, the individual donors red cells may have viabilities at the end of storage that range from less than 60 to more than 95%, with the larger number of donors skewed toward the upper end of the distribution. Under these circumstances, it takes more than 3 units of poorly viable red cell units to deliver the same number of persisting cells as 2 units of better-storing red cells. From cross-over and repeated donation studies, we know that post-storage viability is a stable characteristic of individual donors under a variety of storage conditions.

Being able to identify those donors whose cells store well is potentially useful for recipients such as children with thalassemia or sickle cell anaemia who can become iron overloaded from repeat transfusions. From a unit with poor recovery, such a child receives all of the iron but only a fraction of the anticipated useful red cells. Giving the cells with high recovery and long survival to these children reduces the burden and cost of iron chelation therapy, which can be tens of thousands of dollars each year. We deal with this problem now by giving such children fresh cells when we can, but as the number of individuals with sickle cell anaemia who are on exchange transfusion programmes increases, this becomes more difficult. Measures that would allow a blood banker to choose the best red cells for this situation could improve care and markedly reduce health system cost.

For general surgical patients whose transfusions are replacement for blood lost, the extra iron helps them rebuild their own blood, but the load of effete red

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cells that must be cleared in the first 24 hours after the transfusion of poorly-stored blood may cause additional problems. Increased incidences of both post-operative pneumonia and metastatic cancer after transfusion are well-recognized phenomena and may in part be related to the number of non-viable red cells presented to limited clearance mechanisms. Again, a better understanding of the red cell storage lesion might improve overall blood safety.

Obvious mechanisms of the red cell storage lesion are the metabolic consequences of the increasingly acid storage environment and the oxidative injury to be associated with keeping oxygen, heme, and iron in the same bag. Blood is collected at venous oxygen saturation, about 75%, where met-haemoglobin and superoxide generation are maximal. In healthy cells, methemoglobin reductase and superoxide desmutase are highly active, and secondary damage is limited. As stored red cells lose energy, the lifespan of these undesirable species increases with increased opportunities for secondary damage. With the exception of a few specific severe enzymatic defects that limit blood donation anyway, it is not known whose red cells are most susceptible to damage or if the addition of antioxidants such as vitamin E or n-acetyl cysteine can safely improve storage. As our sense of the complexity of the red cell increases with the identification of more than 1500 constituent proteins, there is a need for combined conventional storage experiments and quantitative proteomics on the red cells left in a bag after the 15 mL needed for recovery measures are removed.

Red Cell Haemolysis

The second standard measure in the licensure of red cell storage systems is the percent haemolysis. Haemoglobin is 98% of the non-water content of red cells, and when they rupture, haemoglobin is released into the suspending fluid. There, it can be detected as an increasingly red colour to the supernatant and measured spectrophotometrically. In the U.S., haemolysis must be less than 1% at the end of storage and, in Europe, less than 0.8%. These numbers are arbitrary, and typical modern red cell storage systems average less than half those values.

Several decades ago, Greenwalt and his colleagues, noted that more than half of the supernatant haemoglobin was in the form of membrane-bounded microvesicles that could be isolated by ultracentrifugation. These vesicles occur in at least three different forms. Some are made as immature red cells, reticulocytes and mature in the circulation and shed membrane to reduce their size and assume the mature biconcave disc form. Others are made by mature red cells as they shed oxidized lipids, and are characterized by high concentrations of these oxidized lipids and the membrane proteins stomatin and flotillin. Finally, there are apoptotic vesicles made as energy depleted senescent red cells undergo programmed cell death.

There are three major determinants of the amount of haemolysis in any given unit of red cells. Haemolysis increases with the duration of storage, it is reduced by leukoreduction, and individual variation accounts for most of the remainder. Storage duration dependent haemolysis can be reduced by suppressing apoptosis-related microvesiculation by improving glycolytic energy flux through the storage period. Removing most white cells early, reduces red cell damage from proteases

and phospholipases released when retained white cells break down. The cause of individual variation is unknown, but in cross-over studies, it is a consistent finding associated with the individual donors.

Haemolysis is not usually a clinical problem, but it can be for patients with ongoing intravascular haemolysis or massive transfusions. A typical unit of red cells contains about 69 gm of haemoglobin, one millimole of the 69 kD haemoglobin tetramer. Haemolysis is typically 0.4% at the end of storage, of which only half is free, outside of vesicles. Outside the red cell or the vesicles the tetramer dissociates into dimers, which in turn bind to haptoglobin dimers with 1:1 stoichiometry. Haptoglobin, normally circulates at 10–52 μM concentration in plasma, so it typically takes at least 15 units of red cells to overwhelm this system. However, patients with haemolytic anaemias may have already consumed their haptoglobin and small increases in free haemoglobin can lead to greater nitric oxide scavenging and more severe pulmonary and systemic vasoconstriction. It would be useful to be able to identify donors with very high levels of storage haemolysis.

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Platelet Collection and Storage

Platelets are involved in the blood coagulation process and are given to treat or prevent bleeding. About 2 million doses of platelets are given every year in the U.S., where a dose consists of 300 to 400 billion platelets, the amount in 4–7 whole blood derived collections or one apheresis collection. In Europe, the EU standard has been greater than 200 billion platelets representing the pooling of 3–5 whole blood-derived collections. Platelets are given either therapeutically to stop bleeding or prophylactically to prevent bleeding. Therapeutic uses range from polytrauma patients with massive ongoing haemorrhage to persistent gum bleeding in patients with congenital platelet dysfunction. Prophylactic platelet use ranges from maintaining low blood concentrations in leukemia and stem cell transplant patients to prevent bleeding to attempts to reach higher concentrations to limit bleeding in patients undergoing invasive bedside procedures or surgery.

Platelets are collected in three ways. They can be centrifuged from platelet-rich plasma, isolated from buffy coats, or collected directly from the bloodstream by apheresis. There is some evidence that the buffy coat and apheresis methods provide better platelets, with the suggestion that centrifuging platelets against the plastic bag surfaces in the platelet-rich plasma method leads to partial or complete activation of some of the platelets. Assays that measure the extent or effect of partial activation of platelets would be helpful. It has been hard to show that better platelets make a clinical difference, but this is probably because in the only clinical situation available for routine study, the provision of prophylactic platelets to patients undergoing leukemia treatment or marrow transplant, the dose of platelets within the clinical range does not matter.

Platelets are stored in large flat bags with as high surface to volume ratio and on agitators to facilitate oxygen diffusion. Off agitation for more than 24 hours, the bag contents become hypoxic and metabolism shifts to anerobic glycolysis so that the contents become acidotic and the platelets lose function. Platelets are stored

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at room temperature, 20–24 °C, because below 18 °C, their lipid bilayer membrane undergoes a phase change which allows the aggregation of surface glycoproteins. Such cold-damaged platelets work well in *in vitro* physiologic tests, but are removed rapidly from the circulation after reinfusion.

Platelets are generally stored in the plasma in which they are collected. This reduces handling of the platelets but increases the prevalence of complications of plasma exposure, immunologic transfusion reactions and hypotension from kinin exposure. Platelet additive solutions have been developed which reduce the complications of plasma exposure and allow the plasma to be diverted to other uses, but the platelets can be damaged by the additional handling.

It is possible to keep platelets for as long as 8–13 days, but blood banks in the U.S. are only allowed to keep them for only 5 days because of bacterial contamination. This means that 4–16% of collected platelets are lost because they do not find a recipient within their limited shelf-life. The bacteria come from the skin or blood of the donor and grow slowly at first, so it is common to hold the platelet units for 24 hours before culturing them and then hold them for another 12 hours to give the cultures time to grow before the platelet units are released from the issuing blood centre to the hospital transfusion services. Shipping the platelets from one city to another to balance inventories and use can take an additional day, so the actual product's available shelf-life is typically only 3 days.

It would be useful to store platelets longer and detect bacterial contamination sooner. Better platelet storage has been demonstrated with gentle methods of platelet separation from blood such as centrifugal elutriation, and storage in buffered Ringer's acetate where the acetate directly feeds the platelet mitochondria, and in polyvinyl chloride bags where oxygen diffusion is maximized and the plasticizers may stabilize the platelet membranes. These are empiric findings, and better scientific methods all around would be helpful.

At a regulatory level, the adoption of Scott Murphy's definition of successful platelet storage, 67% of fresh autologous platelet recovery with 58% of autologous fresh platelet survival, has allowed the development of new platelet products to go forward. Unfortunately, the adoption of these new developments has been held in check by the fear of bacterial contamination, now down to very low levels. In the last year for which data are available, there was one death from bacterial contamination of a blood component, a platelet unit, in the whole U.S.

While the regulations assure that the average platelet unit collected by any particular method or device is of reasonable quality, the recovery and survival of units from different donors is highly variable. In a review of many measures, the recovery varied from 20–90%. As with red cells, there is no sense of why this variability exists, but unlike the case of ATP in red cells, there is no biochemical marker of poor recovery.

Need for Blood Bank

As a blood transfusion service deals with different functions related to donors and patients, it is imperative to keep in mind the safety of both

donors and recipients. The blood transfusion service has to be planned and organized in such a way that it fulfils its ideal aims and objectives i.e.

1. Recruitment of blood donors - voluntary & replacement
2. Care of donor, donated unit and the recipient
3. Maintain adequate blood stock
4. Provide clinically effective blood components
5. Optimal use of available blood

In India, blood transfusion services are mostly hospital-based. In a hospital-based blood transfusion service, each hospital runs its own blood collection programme with or without central regulation. This system utilizes existing institutions and does not require creation of separate blood transfusion centres. As the organization of voluntary blood donation in hospital-based system is usually unsatisfactory, replacement donors form the main source of blood supply in the hospital. Replacement donors are usually friends and family members of the patient and are under pressure to donate blood. A voluntary donor system is far more satisfactory as there is no compulsion and the donor is motivated to donate blood.

Different aspects of a blood transfusion service that need organization are:

- Utilization of space assigned or planning of premises of a blood transfusion centre / service
- Requirement of staff
- Procurement, standardization and maintenance of equipment, reagents and other consummables
- Donor recruitment and motivation programme
- Autologous donor programme
- Donor blood collection
- Laboratory procedures
 - serological techniques
 - screening for transfusion - transmitted diseases
- Documentation and record maintenance
- Implementation of quality assurance scheme
- Inventory control, storage and transportation
- Biosafety guidelines
- Medicolegal aspects - Licensing from Drug Controller of India (DCI)
- Continuing education, training and teaching for medical, technical, nursing and other paramedical staff
- Research and development in Transfusion Medicine
- Formulation of Hospital transfusion committee and conducting medical audits.
- Guidelines for clinical use of blood and blood components

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Donor Blood Collection

Blood collection is the most important function of transfusion service and its organization must be given proper attention.

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Donor blood collection may be carried out in hospital-based blood transfusion centre or outdoor mobile blood collection camps. Efforts should be made to make the experience of blood donation as pleasant as possible for the blood donor. A pleasant atmosphere for blood donation will encourage donors to relax and help in eliminating their anxieties.

Personnel involved in donor blood collection should be polite, courteous and friendly, as well as efficient and professional.

Donor registration comprising of information about each donor that makes tracing and calling them back possible should be obtained and recorded at the time of donation.

A stringent and critical donor selection criteria should be used for proper donor screening. The criteria include a brief medical history, physical examination and preliminary laboratory testing (haemoglobin/haematocrit), based on which donors are selected or deferred. ABO grouping of the donor before blood donation is optional but it must be followed by a repeat ABO grouping by a standard grouping procedure after the blood donation.

Blood Collection should be preferably done in closed plastic collection bag system and as far as possible use of glass bottle should be avoided due to the risk of breakage and infection. As the glass bottles are an open-system for blood collection, these are more prone to bacterial contamination. The blood collection bag should be inspected for any possible defects, i.e. leaks, breaks, change of colour of anticoagulant, etc. It should be placed on a weighing balance to collect accurate volume of blood.

A correct venepuncture method should be followed for blood collection. Adequate donor care should be given during and after blood donation. Donor must be thanked for his contribution and encouraged to donate again.

Donor identification and labelling of donor unit are very important at the time of venepuncture.

Adverse donor reactions should be attended to immediately by the medical and nursing team. Instructions for handling adverse donor reactions whether mild or severe must be available to the concerned staff members. A donor with adverse reactions should be isolated from the prospective donors to avoid apprehension and anxiety.

A complete donor record, donor deferral record, donor adverse reaction record and any abnormality detected on subsequent laboratory testing must be recorded.

Continuing Education in Blood Transfusion Service (training, teaching and research)

Ongoing training and continuing education for the staff are crucial elements of

an efficient blood transfusion service. As there have been significant advances in the field of transfusion medicine i.e blood components, advances in immunology, blood group serology, coagulation, microbiology and clinical application of blood transfusion, there is a strong need for regular educational programmes for different categories of staff working in the blood transfusion centre.

The teaching programme should be based on the basic functions of the service and give necessary theoretical and practical technical skills to ensure upgraded knowledge and ability to perform all the procedures with skill and talent.

It is extremely important to have teaching sessions for the hospital staff and clinicians to help in appropriate utilization of blood and promotion of autologous blood transfusion programme. Continuing education of medical residents and senior staff is required to achieve rational, optimal and safe utilization of blood. In addition, the possibilities of active research makes the service more attractive for well-qualified doctors and scientists.

The medical and paramedical staff should be encouraged to participate in seminars, workshops and conferences to update their knowledge, widen their vision and interest in the subject.

A training programme for transfusion centre staff should also include methods for improving the organization of donor recruitment and donor appeals. The laboratory technical staff should be trained in all practical aspects of blood group serology, immunology and quality control measures.

The staff working in the blood transfusion service should be rotated in different laboratories to prevent monotony and boredom and avoid any mishaps which may occur due to lack of interest by the laboratory staff. Newly recruited staff should have an initial orientation to the workspace.

Hospital Transfusion Committee

The functions of a hospital transfusion committee are to:

- Establish broad policies for use of blood and blood components.
- Lay down procedures for auditing transfusion practice and review of blood usage (medical audit).
- Follow up adverse reactions i.e. post-transfusion infections and transfusion reactions.
- Assist the staff of blood transfusion centre in promoting good transfusion reactions.
- Assist the staff of blood transfusion centre in promoting good transfusion practice amongst the hospital staff.
- Coordinate with the blood transfusion centre in recruiting blood donors and promoting autologous donations.

The members of a hospital transfusion committee would be:

- Representative from clinical departments that use large quantities of blood i.e. surgery, anaesthesiology, gynaecology & obstetrics, cardiothoracic surgery, etc.
- Representatives of blood transfusion service, hospital administration and nursing staff.

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Essential Consumables and Equipment for a Blood Transfusion service

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Consumables Blood Collection and Administration

- Disposable lancets.
- Disinfectants and dressings.
- Material and supplies for the determination of haemoglobin concentration and haematocrit (Copper sulphate at the basic level).
- Blood collection containers preferably plastic, including disposable needles.
- Multiple blood bags for component preparation where feasible.
- Test tubes for sample collection.
- Transfusion administration sets with needles.
- Labels for blood containers, samples and records.
- Supplies for donor refreshment.

Laboratory

- Test tubes and microscope slides.
- Reagents for blood grouping and compatibility testing.
- Test reagents and supplies for screening for transfusion transmissible infections.
- Laboratory glassware (beakers, flasks, pipettes).
- Disinfectants and detergents.
- Sharps containers for disposal of contaminated articles.
- Protective clothing and disposable gloves.
- Timers.
- Aspirator bottles.

Office

- Stationery and material for adequate
- Documentation of blood donors, donations, laboratory testing, blood storage and transportation.

Equipment

Blood Collection and Administration

- Donor beds.
- Balances for controlling the blood collection procedure, blood collection monitor and shaker.
- Domestic scales for weighing donors.

- Suitable vehicles for blood collection and distribution, and Blood Transport Containers.
- Miscellaneous equipment and surgical items, eg., scissors, forceps, sphygmomanometers, tourniquets,
- Stethoscopes, thermometers.
- Necessary refreshments.

NOTES***Laboratory and Office***

- Bench centrifuges for separation of samples and
- Serological testing.
- Microscope
- 37°C incubators and/or water baths.
- Refrigerators with temperature monitoring system.
- -20°C freezer with temperature monitoring system.
- Emergency generator.
- Voltage stabilizers.
- Containers and coolant (or ice) for transportation of blood and blood components.
- Laboratory scales.
- Plasma extractors, hand sealers and tube strippers.
- Plastic or cardboard holders for blood units and frozen plasma.
- Laboratory thermometers.
- Autoclave.
- Equipment necessary for producing chemically pure and / or pyrogen-free water (e.g., delonizer, distillation apparatus).
- Laboratory and office furniture.

3.4 TELEMEDICINE

Telemedicine is an emerging field in healthcare arising out of the synergistic convergence of Information Technology with Medical Science having enormous potential in meeting the challenges of healthcare delivery to rural and remote areas besides several other applications in education, training and management in health sector. It may be as simple as two health professionals discussing medical problems of a patient and seeking advice over a simple telephone to as complex as transmission of electronic medical records of clinical information, diagnostic tests such as E.C.G., radiological images etc. and carrying out real time interactive medical video conference with the help of IT based hardware and software, video-conference using broadband telecommunication media provided by satellite and terrestrial network. Telemedicine in India is at a nascent stage and AIIMS has taken a lead to take it to higher glory.

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Rapidly evolving telecommunications technologies are creating an environment where individuals will be able to communicate interactively using a variety of media. These modes of communication will be available on demand, just as telephone service is today, and used in many situations that now require person to person contact. The application of these technologies to provide medical care is referred to as telemedicine. The medical potential for these new technologies is being researched, but it is still to be determined how effective these technologies will be in extending the reach of medical care to geographically and socioeconomically isolated populations.

Despite an abundance of physicians and a large, well financed health care system, many areas of the United States still face a chronic shortage of medical providers of all types. Additionally, the ability of most persons living in rural areas to receive the most current specialty or sub-specialty care will be limited geographically under any future system of health care envisioned. These access and provider distribution issues must be addressed in order to achieve quality health care in the medically underserved areas of the United States. The ability to provide medical care through telemedicine offers a practical solution to this maldistribution.

Medical providers have shown a willingness to adopt new technical advances in communications as they have become practical. If this historical trend continues, telemedicine will become a major mode of medical communications in many areas of practice, especially in extending the reach of specialist providers to geographically and socioeconomically isolated populations. As a result, an understanding of these new modes of medical communication and consultation is essential for the health care professional.

Potential of Telemedicine

Telemedicine systems now can utilize less expensive technology developed for teleconference applications and commonly available communication mediums, which should increase telemedicine's effectiveness by making the technology more responsive to the needs of practitioners. However, the limited implementation of telemedicine, currently occurring at an estimated rate of less than one thousand patient-provider telemedicine consults per year, prevents any systematic analysis of how telemedicine could serve as a new paradigm of health care delivery. In addition, most of the research conducted emphasized the act of providing care to groups that were previously undeserved, not on assessing the quality or effectiveness of care provided. The most recent research on telemedicine, occurring after an explosion of interest in the concept by the health care system, has focused on evaluating the potential of telemedicine and its barriers to implementation. However, several key issues must be resolved in the areas of professional practice, quality of care, and financing before telemedicine can be legally, ethically, and responsibly practiced.

The potential of telemedicine is well demonstrated through case studies conducted at the institutions that have been utilizing telemedicine systems over the past several years. In particular, significant applications have been developed

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in radiology, owing to the graphical and image based nature of the specialty. The practical utilization of telemedicine has also been demonstrated in almost every other specialty through these case studies. For these reasons, until the volume of utilization of telemedical services is increased to the level where significant research can be accomplished, the potential of telemedicine to play an effective role in health care delivery has generally been assumed, and most research, other than technical, has addressed barriers to the implementation of telemedicine, with the realization that until the barriers to the use of telemedicine on a wider scale are addressed, the potential of the technology cannot be addressed.

Barriers To the use of Telemedicine

Barriers to the use of telemedicine can be grouped into three main areas:

1. Professional practice issues,
2. Quality of care issues, and
3. Financial resources issues.

Professional Practice Issues

The professional practice issues that face telemedicine today are unclear practice standards, provider resistance, lack of coordination, and the use of non-physician providers. These issues are especially important because they are the core issues that will need to be resolved in order to address the systems management and integration issues that plagued earlier efforts in telemedicine.

Lack of practice standards is probably the most significant professional practice issue for telemedicine today. Until research can be accomplished that determines how telemedicine affects provider practice and performance, it will be difficult for professional organizations to develop adequate standards of practice for telemedicine. Additionally, legal issues regarding the practice of telemedicine must be resolved, especially licensure requirements for individuals providing medical care in two or more states.

Provider resistance manifests itself because of an unfamiliarity with the technology itself, or lack of desire to learn new modes of communication or new technologies. Provider resistance is usually inertial in nature, and is overcome as a provider is exposed to the new technologies. The best time to expose providers to the new technology will be during their training.

Lack of coordination of telemedicine efforts is common because the responsibility for the program usually becomes decentralized, while at the same time there is a greater demand for central coordination as utilization increases. Because there is no single health care system component that is responsible for coordinating care in a geographical area, the coordination problem can quickly overwhelm a telemedicine program.

The final professional practice issue is the use of non-physician providers. Although telemedicine may initially appear to be advantageous to the practice of non-physician providers, many issues in the areas of practice limitations and

reimbursement may have to be revisited unless non-physician providers are proactive in their involvement in the use of these new technologies. Non-physician providers must remember that telemedicine has the potential to expose them to portions of the health care system unfamiliar with their capabilities and limitations. Until research can demonstrate that the non-physician provider can be effectively utilized in a telemedicine setting, there will probably be significant resistance to their use.

Although these professional practice issues are complex and will demand significant research efforts to resolve, there does not seem to be any reason why they can not be overcome as long as they are addressed as new telemedicine systems are implemented. Indeed, many professional practice issues can not be addressed until a substantial telecommunications structure is in place.

Quality Of Care Issues

The quality of care issues are different than the quality of care issues that other elements of medical practice face. Instead of being a treatment itself, it is a mechanism or mode by which a treatment is delivered. As such, evaluation of the quality of care provided by telemedicine is foremost an evaluation of the entire structure of the process of care, and then an evaluation of how telemedicine impacted on the effectiveness of the specific procedure involved.

The quality assurance processes that would be able to evaluate telemedicine in this fashion are being developed. As is the case of most other new medical approaches, quality assurance processes will be developed at the same time as the effectiveness of the approach is demonstrated. There is no reason to believe that the development of quality assurance processes will be a significant impediment to the implementation of telemedicine. In fact, there seems to be great potential for telemedicine to be the vehicle for research into overall health system effectiveness and quality, because of the volume and quality of data that would be collected in a telemedicine system.

Financial Resources Issues

Finally, the ability of a telemedicine system to generate sufficient revenue to be a self supporting enterprise is the essential issue that must be addressed prior to large scale systems being implemented. The key to this ability to generate revenue is reimbursement, however, reimbursement is a difficult issue for telemedicine because of the perceived potential for overuse.

Because of the potential for abuse, it is essential that restrictions be placed on coverage for telemedicine activities. These restrictions would limit coverage to acute situations where it would not be possible to move the patient, and to settings where the patient is geographically separated from the provider by some predetermined extent. Additionally, considerable research on the reimbursement of non-physician providers must be accomplished before reimbursement issues, dealing with them are resolved. This research could help resolve the many difficult reimbursement issues that non-physician providers face today.

Services Provided by Telemedicine

Sometimes telemedicine is best understood in terms of the services provided and the mechanisms used to provide those services. Here are some examples:

- **Primary care and specialist referral services** may involve a primary care or allied health professional providing a consultation with a patient or a specialist assisting the primary care physician in rendering a diagnosis. This may involve the use of live interactive video or the use of store and forward transmission of diagnostic images, vital signs and/or video clips along with patient data for later review.
- **Remote patient monitoring**, including home telehealth, uses devices to remotely collect and send data to a home health agency or a remote diagnostic testing facility (RDTF) for interpretation. Such applications might include a specific vital sign, such as blood glucose or heart ECG or a variety of indicators for homebound patients. Such services can be used to supplement the use of visiting nurses.
- **Consumer medical and health information** includes the use of the Internet and wireless devices for consumers to obtain specialized health information and on-line discussion groups to provide peer-to-peer support.
- **Medical education** provides continuing medical education credits for health professionals and special medical education seminars for targeted groups in remote locations.

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Mechanisms Used in Telemedicine

- Networked programs link tertiary care hospitals and clinics with outlying clinics and community health centers in rural or suburban areas. The links may use dedicated high-speed lines or the Internet for telecommunication links between sites. ATA estimates the number of existing telemedicine networks in the United States at roughly 200 providing connectivity to over 3,000 sites.
- Point-to-point connections using private high speed networks are used by hospitals and clinics that deliver services directly or outsource specialty services to independent medical service providers. Such outsourced services include radiology, stroke assessment, mental health and intensive care services.
- Monitoring center links are used for cardiac, pulmonary or fetal monitoring, home care and related services that provide care to patients in the home. Often normal land-line or wireless connections are used to communicate directly between the patient and the center although some systems use the Internet.
- Web-based e-health patient service sites provide direct consumer outreach and services over the Internet. Under telemedicine, these include those sites that provide direct patient care.

Benefits of Telemedicine

Telemedicine has been growing rapidly because it offers four fundamental benefits:

- **Improved Access** – For over 40 years, telemedicine has been used to bring

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healthcare services to patients in distant locations. Not only does telemedicine improve access to patients but it also allows physicians and health facilities to expand their reach, beyond their own offices. Given the provider shortages throughout the world--in both rural and urban areas--telemedicine has a unique capacity to increase service to millions of new patients.

- **Cost Efficiencies** – Reducing or containing the cost of healthcare is one of the most important reasons for funding and adopting telehealth technologies. Telemedicine has been shown to reduce the cost of healthcare and increase efficiency through better management of chronic diseases, shared health professional staffing, reduced travel times, and fewer or shorter hospital stays.
- **Improved Quality** – Studies have consistently shown that the quality of healthcare services delivered via telemedicine are as good those given in traditional in-person consultations. In some specialties, particularly in mental health and ICU care, telemedicine delivers a superior product, with greater outcomes and patient satisfaction.
- **Patient Demand** – Consumers want telemedicine. The greatest impact of telemedicine is on the patient, their family and their community. Using telemedicine technologies reduces travel time and related stresses for the patient. Over the past 15 years study after study has documented patient satisfaction and support for telemedical services. Such services offer patients the access to providers that might not be available otherwise, as well as medical services without the need to travel long distances.

Introduction of Telemedicine to Local Physicians

When a local physician is asked to make use of a telemedicine consultation service, he or she is essentially being asked to refer patients who need the service to a physician at another facility or organization that he or she is likely to neither know nor have any idea regarding his/her level of skill and competence. Furthermore, a referring physician may be skeptical of the value of telemedicine due to the concern about the potential loss of the doctor-patient relationship that is fostered in face-to-face care. He or she needs reassurance that the specialists are not simply appropriating patients, but are available in a supportive role.

For these reasons, local physicians should have an opportunity to see the service in action at their convenience and to meet and talk with the specialty providers. Face-to-face meetings are best for establishing this relationship, but videoconferencing does work as an alternative. In addition, sharing documents describing the background, training and experience of the specialists can be helpful. While this information is typically part of the credentialing process, it should be widely shared with all physicians who might refer their patients. Finally, it is quite important that the local telemedicine champion plays a leadership role in introducing the consultation service. His or her confidence and support will lend a great deal of credibility to the service.

Related Staff of Hospital Must Aware of Telemedicine

CEO: The Chief Executive Officer and his or her immediate administrative team need to be aware that the service is being offered, how it works and what its benefits are for the patient. In addition, they need to understand what the impact of the service will be on the local provider community and on their own facility. They should learn how much the service costs, what is the nature of those costs and how much additional revenue is generated and from what source. Finally, they need to know the regulatory and legal ramifications associated with the service.

Director of Nursing: The Director of Nursing, if that person is not a member of the administrative team, needs to know the same information as that team. In addition, the Director of Nursing needs to understand the impact of telemedicine on the nursing staff of the organization. This includes estimates of nursing hours required, types of expertise needed, staff training requirements and whether or not personnel can be shifted from other services or if new hires will be necessary.

Staff Nurses: In addition to a general awareness of the available of telemedicine consultations, staff nurses need to have a sufficient understanding of the service to be able to explain what happens and the benefits it provides when a patient asks them about it. Staff nurses who take on the role of becoming telemedicine presenters also need to be fully trained in the service including set up and operation of the technology, contents and application of the protocols, interacting with the provider and the patient and documentation requirements.

Business Officers: The business office needs to understand the billing processes for telemedicine and how it differs from normal billing practices. For remote sites, the billing is generally limited to a facility fee for the use of the facility to expedite a consult (e.g., Medicare payment policies), but may be more extensive under contractual arrangements for services where the local facility assumes the billing for services role. The other important topic is the reimbursement that is available for telecommunications services in rural health facilities to bring their telecommunications costs in line with what is available in urban areas. An application process to the Universal Service Fund must be completed annually through the *Universal Services Administration Corporation*.

The First Ayurvedic Telemedicine

The first Ayurvedic telemedicine center was established in India in 2007 by PartapChauhan, an Indian Ayurvedic doctor and the Director of Jiva Ayurveda. Teledoc used Nokia phones running Javascript to link mobile ayurvedic field techs with doctors in the Jiva Institute clinic; at its peak, Teledoc reached about 1,000 villagers per month in Haryana province, primarily treating chronic diseases such as diabetes.

Monitoring a patient at home using known devices like blood pressure monitors and transferring the information to a caregiver is a fast-growing emerging service. These remote monitoring solutions have a focus on current high morbidity chronic diseases and are mainly deployed for the First World. In developing countries a

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new way of practicing telemedicine is emerging better known as Primary Remote Diagnostic Visits, whereby a doctor uses devices to remotely examine and treat a patient. This new technology and principle of practicing medicine holds significant promise of improving on major health care delivery problems, in for instance, Southern Africa, because Primary Remote Diagnostic Consultations not only monitors an already diagnosed chronic disease, but has the promise to diagnose and manage the diseases patients will typically visit a general practitioner for.

Teleneuropsychology

“Teleneuropsychology” is the application of telehealth-based communications (i.e., video teleconferencing) to neuropsychological services. This includes remote neuropsychological consultation and assessment, wherein patients with known or suspected cognitive disorders are evaluated using standard neuropsychological assessment procedures administered via video teleconference (VTC) technology. Initial studies support the feasibility and reliability of this assessment medium when using a brief battery of standard neuropsychological tests of orientation, attention, episodic memory, language, and visuospatial skills in older adults with and without cognitive impairment .

Research comparing results from VTC versus traditional face-to-face neuropsychological testing suggests good reliability on most tests studied to date, although remote administration of certain measures requiring nonverbal manipulatives may require procedural modifications which may have an impact upon test results and clinical interpretation. While promising, additional studies are needed with more neuropsychological measures in various populations to further document the validity of this assessment medium.

Telenursing

Telenursing refers to the use of telecommunications and information technology in order to provide nursing services in health care whenever a large physical distance exists between patient and nurse, or between any number of nurses. As a field it is part of telehealth, and has many points of contacts with other medical and non-medical applications, such as telediagnosis, teleconsultation, telemonitoring, etc.

Telenursing is achieving significant growth rates in many countries due to several factors: the preoccupation in reducing the costs of health care, an increase in the number of aging and chronically ill population, and the increase in coverage of health care to distant, rural, small or sparsely populated regions. Among its benefits, telenursing may help solve increasing shortages of nurses; to reduce distances and save travel time, and to keep patients out of hospital. A greater degree of job satisfaction has been registered among telenurses.

Baby Eve with Georgia for the Breastfeeding Support Project

In Australia, during January 2014, Melbourne tech startup Small World Social collaborated with the Australian Breastfeeding Association to create the first hands-free breastfeeding Google Glass application for new mothers. The

application, named Google Glass Breastfeeding app trial, allows mothers to nurse their baby while viewing instructions about common breastfeeding issues (latching on, posture etc.) or call a lactation consultant via a secure Google Hangout, who can view the issue through the mother's Google Glass camera. The trial was successfully concluded in Melbourne in April 2014, and 100% of participants were breastfeeding confidently. Small World Social Breastfeeding Support Project

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3.5 TELEPHARMACY

Pharmacy personnel deliver medical prescriptions electronically; remote delivery of pharmaceutical care is an example of telemedicine.

Telepharmacy is the delivery of pharmaceutical care via telecommunications to patients in locations where they may not have direct contact with a pharmacist. It is an instance of the wider phenomenon of telemedicine, as implemented in the field of pharmacy. Telepharmacy services include drug therapy monitoring, patient counseling, prior authorization and refill authorization for prescription drugs, and monitoring of formulary compliance with the aid of teleconferencing or videoconferencing. Remote dispensing of medications by automated packaging and labeling systems can also be thought of as an instance of telepharmacy. Telepharmacy services can be delivered at retail pharmacy sites or through hospitals, nursing homes, or other medical care facilities.

The term can also refer to the use of videoconferencing in pharmacy for other purposes, such as providing education, training, and management services to pharmacists and pharmacy staff remotely.

Teletrauma Care

Telemedicine can be utilized to improve the efficiency and effectiveness of the delivery of care in a trauma environment. Examples include:

Telemedicine for Trauma Triage: using telemedicine, trauma specialists can interact with personnel on the scene of a mass casualty or disaster situation, via the internet using mobile devices, to determine the severity of injuries. They can provide clinical assessments and determine whether those injured must be evacuated for necessary care. Remote trauma specialists can provide the same quality of clinical assessment and plan of care as a trauma specialist located physically with the patient.

Telemedicine for Intensive Care Unit (ICU) rounds: Telemedicine is also being used in some trauma ICUs to reduce the spread of infections. Rounds are usually conducted at hospitals across the country by a team of approximately ten or more people to include attending physicians, fellows, residents and other clinicians. This group usually moves from bed to bed in a unit discussing each patient. This aids in the transition of care for patients from the night shift to the morning shift, but also serves as an educational experience for new residents to the team. A new approach features the team conducting rounds from a conference

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room using a video-conferencing system. The trauma attending, residents, fellows, nurses, nurse practitioners, and pharmacists are able to watch a live video stream from the patient's bedside. They can see the vital signs on the monitor, view the settings on the respiratory ventilator, and/or view the patient's wounds. Video-conferencing allows the remote viewers two-way communication with clinicians at the bedside.

Telemedicine for Trauma Education: some trauma centers are delivering trauma education lectures to hospitals and health care providers worldwide using video conferencing technology. Each lecture provides fundamental principles, firsthand knowledge and evidenced-based methods for critical analysis of established clinical practice standards, and comparisons to newer advanced alternatives. The various sites collaborate and share their perspective based on location, available staff, and available resources.

Telemedicine in the Trauma Operating Room: trauma surgeons are able to observe and consult on cases from a remote location using video conferencing. This capability allows the attending to view the residents in real time. The remote surgeon has the capability to control the camera (pan, tilt and zoom) to get the best angle of the procedure while at the same time providing expertise in order to provide the best possible care to the patient.

Remote Surgery

Remote-surgery or telesurgery is performance of surgical procedures where the surgeon is not physically in the same location as the patient, using a robotic teleoperator system controlled by the surgeon. The remote operator may give tactile feedback to the user. Remote surgery combines elements of robotics and high-speed data connections. A critical limiting factor is the speed, latency and reliability of the communication system between the surgeon and the patient, though trans-Atlantic surgeries have been demonstrated.

Specialist Care Delivery

Telemedicine can facilitate specialty care delivered by primary care physicians according to a controlled study of the treatment of hepatitis C. Various specialties are contributing to telemedicine, in varying degrees.

Telecardiology

ECGs, or electrocardiographs, can be transmitted using telephone and wireless. Willem Einthoven, the inventor of the ECG, actually did tests with transmission of ECG via telephone lines. This was because the hospital did not allow him to move patients outside the hospital to his laboratory for testing of his new device. In 1906 Einthoven came up with a way to transmit the data from the hospital directly to his lab.

Teletransmission of ECG using methods indigenous to Asia

One of the oldest known telecardiology systems for teletransmissions of ECGs was established in Gwalior, India in 1975 at GR Medical college by AjaiShanker, S. Makhija, P.K. Mantri using an indigenous technique for the first time in India.

This system enabled wireless transmission of ECG from the moving ICU van or the patients home to the central station in ICU of the department of Medicine. Transmission using wireless was done using frequency modulation which eliminated noise. Transmission was also done through telephone lines. The ECG output was connected to the telephone input using a modulator which converted ECG into high frequency sound. At the other end a demodulator reconverted the sound into ECG with a good gain accuracy. The ECG was converted to sound waves with a frequency varying from 500 Hz to 2500 Hz with 1500 Hz at baseline.

This system was also used to monitor patients with pacemakers in remote areas. The central control unit at the ICU was able to correctly interpret arrhythmia. This technique helped medical aid reach in remote areas.

In addition, electronic stethoscopes can be used as recording devices, which is helpful for purposes of telecardiology. There are many examples of successful telecardiology services worldwide.

In Pakistan three pilot projects in telemedicine was initiated by the Ministry of IT & Telecom, Government of Pakistan (MoIT) through the Electronic Government Directorate in collaboration with Oratier Technologies (a pioneer company within Pakistan dealing with healthcare and HMIS) and PakDataCom (a bandwidth provider). Three hub stations through were linked via the Pak Sat-I communications satellite, and four districts were linked with another hub. A 312 Kb link was also established with remote sites and 1 Mbit/s bandwidth was provided at each hub. Three hubs were established: the MayoHospital (the largest hospital in Asia), JPMC Karachi and Holy Family Rawalpindi. These 12 remote sites were connected and on average of 1,500 patients being treated per month per hub. The project was still running smoothly after two years.

Teleradiology

Teleradiology is the ability to send radiographic images (x-rays, CT, MR, PET/CT, SPECT/CT, MG, US...) from one location to another. For this process to be implemented, three essential components are required, an image sending station, a transmission network, and a receiving-image review station. The most typical implementation are two computers connected via the Internet. The computer at the receiving end will need to have a high-quality display screen that has been tested and cleared for clinical purposes. Sometimes the receiving computer will have a printer so that images can be printed for convenience.

The teleradiology process begins at the image sending station. The radiographic image and a modem or other connection are required for this first step. The image is scanned and then sent via the network connection to the receiving computer.

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Today's high-speed broadband based Internet enables the use of new technologies for teleradiology: the image reviewer can now have access to distant servers in order to view an exam. Therefore, they do not need particular workstations to view the images; a standard Personal Computer (PC) and Digital Subscriber Line (DSL) connection is enough to reach keosys central server. No particular software is necessary on the PC and the images can be reached from wherever in the world.

Teleradiology is the most popular use for telemedicine and accounts for at least 50% of all telemedicine usage.

Telepathology

Telepathology is the practice of pathology at a distance. It uses telecommunications technology to facilitate the transfer of image-rich pathology data between distant locations for the purposes of diagnosis, education, and research. Performance of telepathology requires that a pathologist selects the video images for analysis and the rendering diagnoses. The use of "television microscopy", the forerunner of telepathology, did not require that a pathologist have physical or virtual "hands-on" involvement is the selection of microscopic fields-of-view for analysis and diagnosis.

A pathologist, Ronald S. Weinstein, M.D., coined the term "telepathology" in 1986. In an editorial in a medical journal, Weinstein outlined the actions that would be needed to create remote pathology diagnostic services. He, and his collaborators, published the first scientific paper on robotic telepathology. Weinstein was also granted the first U.S. patents for robotic telepathology systems and telepathology diagnostic networks. Weinstein is known to many as the "father of telepathology". In Norway, Eide and Nordrum implemented the first sustainable clinical telepathology service in 1989. This is still in operation, decades later. A number of clinical telepathology services have benefited many thousands of patients in North America, Europe, and Asia.

Telepathology has been successfully used for many applications including the rendering histopathology tissue diagnoses, at a distance, for education, and for research. Although digital pathology imaging, including virtual microscopy, is the mode of choice for telepathology services in developed countries, analog telepathology imaging is still used for patient services in some developing countries.

Teledermatology

Teledermatology is a subspecialty in the medical field of dermatology and one of the more common applications of telemedicine and e-health. In teledermatology, telecommunication technologies are used to exchange medical information (concerning skin conditions and tumours of the skin) over a distance using audio, visual and data communication. Teledermatology can reduce wait times by allowing dermatologists to treat minor conditions online while serious conditions requiring immediate care are given priority for appointments. Applications comprise health care management such as diagnoses, consultation and treatment as well as (continuing medical) education.

The dermatologists Perednia and Brown were the first to coin the term “teledermatology” in 1995. In a scientific publication, they described the value of a teledermatologic service in a rural area underserved by dermatologists.

Teledentistry

Teledentistry is the use of information technology and telecommunications for dental care, consultation, education, and public awareness in the same manner as telehealth and telemedicine.

Teleophthalmology

Teleophthalmology is a branch of telemedicine that delivers eye care through digital medical equipment and telecommunications technology. Today, applications of teleophthalmology encompass access to eye specialists for patients in remote areas, ophthalmic disease screening, diagnosis and monitoring; as well as distant learning. Teleophthalmology may help reduce disparities by providing remote, low-cost screening tests such as diabetic retinopathy screening to low-income and uninsured patients.

3.6 STUDENT ACTIVITY

1. Describe 3D Breast Imaging.
2. Describe the features of Teleneuropsychology.
3. Explain Remote surgery.
4. What do you mean by Teledentistry?

3.7 SUMMARY

- A bone density test tells you if you have normal bone density, low bone density (osteopenia) or osteoporosis. It is the only test that can diagnose osteoporosis. The lower your bone density, the greater your risk of breaking a bone.
- The blood bank is committed to protecting the safety of both donors and potential recipients by providing quality blood and blood products from non-remunerated, healthy donors following a stringent screening process.
- Blood banking is a medical logistic activity. It attempts to bring the potentially life-saving benefits of transfusion to the patients who need them by making blood components available, safe, effective and cheap. Blood banks try to maximize delivering getting blood from the right donors to the right patients in a timely manner.
- Red blood cells are the most commonly transfused blood component. High Human Development Index (HDI) countries use 20–70 units of red cells per thousand members of their population each year.

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- Platelets are involved in the blood coagulation process and are given to treat or prevent bleeding. About 2 million doses of platelets are given every year in the U.S., where a dose consists of 300 to 400 billion platelets, the amount in 4-7 whole blood derived collections or one apheresis collection.

3.8 GLOSSARY

- **Bone Density:** A Bone Density Scan is a quick and painless procedure. Bone density scanning, is also referred to as a DEXA scan (dual-energy x-ray absorptiometry).
- **Interventional Radiology:** Interventional Radiology is a subspecialty of radiology imaging in which images are used to guide the radiologist while performing minimally invasive procedures.
- **Magnetic Resonance Imaging (MRI):** Magnetic resonance imaging is a highly advanced, painless, non-invasive test that creates exceptionally clear images of the internal structures and organs of your body.
- **Telemedicine:** Telemedicine is an emerging field in healthcare arising out of the synergistic convergence of Information Technology with Medical Science having enormous potential in meeting the challenges of healthcare delivery to rural and remote areas besides several other applications in education, training and management in health sector.
- **Teleneuropsychology:** Teleneuropsychology is the application of telehealth-based communications (i.e., video conferencing) to neuropsychological services.

3.9 REVIEW QUESTIONS

1. What do you mean by Radiology services?
2. What do you mean by Telepharmacy?
3. Describe the functions of Teleradiology.
4. Explain the term Telepathology.
5. Write Short note on:
 - (a) AABB
 - (b) VTC
 - (c) ICU
 - (d) Telenursing
 - (e) RDTF

4**INTENSIVE CARE UNITS****STRUCTURE**

- 4.0 Learning Objectives
- 4.1 Introduction
- 4.2 Hospital acquired infections
- 4.3 Nosocomial Infections
- 4.4 Nursing services
- 4.5 Ward Management
- 4.6 Student Activity
- 4.7 Summary
- 4.8 Glossary
- 4.9 Review Questions

4.0 LEARNING OBJECTIVES

After completion of the unit, you will be able to:

- Understand Hospital acquired infections
- Describe Nosocomial Infections
- Discuss Nursing services
- Explain Ward Management

4.1 INTRODUCTION

Intensive care units (ICUs) are specialist hospital wards. They provide intensive care (treatment and monitoring) for people in a critically ill or unstable condition. ICUs are also sometimes known as critical care units or intensive therapy departments. A person in an ICU needs constant medical attention and support to keep their body functioning. They may be unable to breathe on their own and have multiple organ failure. Medical equipment will take the place of these functions while the person recovers.

When Intensive Care is Needed

There are several circumstances where a person may be admitted to an ICU. These include after surgery, or following an accident or severe illness.

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ICU beds are a very expensive and limited resource because they provide:

- Specialised monitoring equipment
- A high degree of medical expertise
- Constant access to highly trained nurses (usually one nurse for each bed)

Some ICUs are attached to areas that treat specific conditions. Others specialise in the care of certain groups of people. For example, an ICU can specialise in:

- Nerve disorders
- Heart conditions
- Babies (neonatal intensive care, NIC) – for example, for babies born with serious conditions, such as heart defects, or if there is a complication during birth
- Children (paediatric intensive care, PIC) – for children under 16 years of age

What to expect

An ICU can be a daunting environment for both the patient and their family and friends. ICU staff understand this and are there to help the person being cared for and offer support to their family.

Patients in ICUs are often prescribed painkillers and medication that can make them drowsy (sedatives). This is because some of the equipment used can be very uncomfortable.

• A series of tubes, wires and cables connect the patient to this equipment, which may look alarming at first.

Recovery

Once a person is able to breathe unaided, they may no longer need to be in intensive care and can be transferred to a different ward to continue their recovery.

Depending on their condition, the person will either be transferred to a high dependency unit (HDU), which is one level down from intensive care, or to a general ward.

The time it takes to recover varies greatly from person to person. It also depends on things such as age, level of health and fitness, as well as how severe the condition is.

Decisions About Treatment

If you are admitted to an ICU, and are awake and able to communicate, you have the right to be fully informed and to make decisions about your treatment in partnership with the staff treating you. They should support your choice of treatment wherever possible.

However, if you are heavily sedated, you may not be able to give your consent (permission) to a particular treatment or procedure. In this case, the ICU staff treating you will decide what is best. They will always explain what they are doing to a person in an ICU, even if it appears that the person cannot hear them.

If possible, planned treatments and procedures will also be discussed with the person's family. However, this may not always be possible in an emergency situation, where immediate treatment is needed.

Designated Decision Maker

Under the Mental Capacity Act (2005), someone who knows they are going into intensive care may nominate someone to make decisions about planned treatment on their behalf.

This person is known as a designated decision maker. If the person in the ICU is unconscious, the designated decision maker has the final say about any planned treatments or procedures. However, a designated decision maker can only be nominated through:

- a lasting power of attorney – a legal document in which the person in hospital has granted someone the power to make decisions on their behalf
- being made a court appointed deputy – someone chosen to make decisions on behalf of the person in hospital by the Court of Protection, which is the legal body that oversees the implementation of the Mental Capacity Act (2005)

Therefore, a person who is admitted to an ICU in an emergency is not able to nominate a designated decision maker.

Advance Decisions

If you know you are going into intensive care, and there are certain treatments you do not want to have, it is possible to pre-arrange a legally binding advance decision (previously known as an advance directive).

This means that ICU staff will not be able to carry out certain treatments or procedures, even if you are unconscious. However, these documents must be very specific regarding what you do not want done in order for them to apply.

To make an advance decision, you should clearly state your wishes in writing and have it signed by a witness. You need to include specific details about any treatments you do not want to have and the specific circumstances in which they may apply.



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Patients in ICUs are usually connected to intensive care equipment by tubes, wires and cables

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What is the ICU (Intensive Care Unit)?

The Intensive Care Unit (ICU) is a unit in the hospital where seriously ill patients are cared for by specially trained staff. The ICU staff includes doctors, nurses, respiratory therapists, clinical nurse specialists, pharmacists, physical therapists, nurse practitioners, physician assistants, dietitians, social workers, and chaplains.

What is Different About the ICU Compared to Other Hospital Units?

Care in the ICU differs from other hospital units:

- Seriously ill patients require close observation and monitoring. Specially trained nurses care for one or two patients at a time, each shift. ICU doctors are specially trained critical care doctors.
- Patients may have special equipment in their room, depending on their unique situation and condition. The equipment in the ICU may seem overwhelming. Patients are connected to machines to monitor their heart, blood pressure, and respiratory rate. Ventilators (breathing machines) assist some patients with breathing until they are able to breathe on their own.

Visiting Guidelines for the ICU

- We request that visitors be limited to two at one time for patients in the ICU. You are advised to stay inside the patient's room during your visit. If you are asked to wait outside of the patient room, please return to the waiting area out of respect for other patient's privacy.
- Visitors will be asked by the ICU staff to leave for short periods during doctor's rounds, nurses' report, certain procedures, and emergencies.
- Doctor's Rounds: Doctor's rounds usually occur during the morning, early evening, and at midnight. Due to patient privacy issues and the close proximity of our patient rooms to each other, visitors will be asked to leave the unit occasionally when doctor's are rounding on their patients or the patients on either side of the patient they are visiting. Visiting may resume once the team is at least two doors away from the patient.
- Visitors are asked not to visit when they have potentially infectious conditions (for example: respiratory infections – "colds").

Why are Patients Admitted to the ICU?

Patients are admitted to the ICU for a variety of reasons. Some patients need close monitoring immediately after a major surgical operation or serious head injury. Others may have problems with their lungs that require ventilator support with

breathing. Patients may have heart and blood vessel problems (for example, very low or very high blood pressure, a heart attack, or an unstable heart rhythm) needing observation. Patients in the ICU may have an imbalance in the level of chemicals, salts, or minerals in their bloodstream that require close monitoring as these levels are corrected. Also, patients may have a serious infection in their bodies that require specialized ICU care.

What Can I Expect as a Patient or as a Family Member of a Patient in the ICU?

You can expect that the ICU staff will keep you well-informed of any major changes in the patient's condition or procedures that are being performed. You can expect to speak with a doctor on a regular basis. Members of the ICU team meet with the patient and/or family to ensure that everyone has a common understanding of the health condition and the plan of care. During these meetings, it is a good time for family members to ask any questions of the health care team.

It is important to understand that even though modern medicine has come a long way over the past 30 years, not all diseases can be treated or cured. Patients may be transferred to the ICU because there is a chance they may die without intensive care treatment. And sometimes, despite the use of specially trained staff and advanced technology, doctors may not be able to reverse the dying process.

Because patients in the ICU may be critically ill, they may be unable to speak on their own behalf. In this case, the doctors and nurses may ask the family what the patient would want done in the event that their heart or lungs fail. There are times when the doctors may recommend against the use of life support machines and treatments.

What Are Advance Directives?

Making decisions about the end of life can be very difficult. Often, decisions about end-of-life care are delayed until patients become very sick – too sick to make treatment decisions on their own. An Advance Directive (also called “health care proxy” or “living will”) is a written statement completed in advance of a serious illness that states patients' wishes about their medical care. An Advance Directive allows patients to state what medical treatment choices they want or do not want if they become too sick to tell the doctor themselves.

One kind of Advance Directive under California law allows patients to select and name a person or “agent” who can make health care decisions on their behalf in the event that they are unable to speak for themselves. This legal document is called a “Durable Power of Attorney for Health Care.” You may wish to speak with your family, close friends, or your doctor about your decision to complete an Advance Directive. Please ask the staff if you need further information on either an Advance Directive or a Durable Power of Attorney for Health Care.

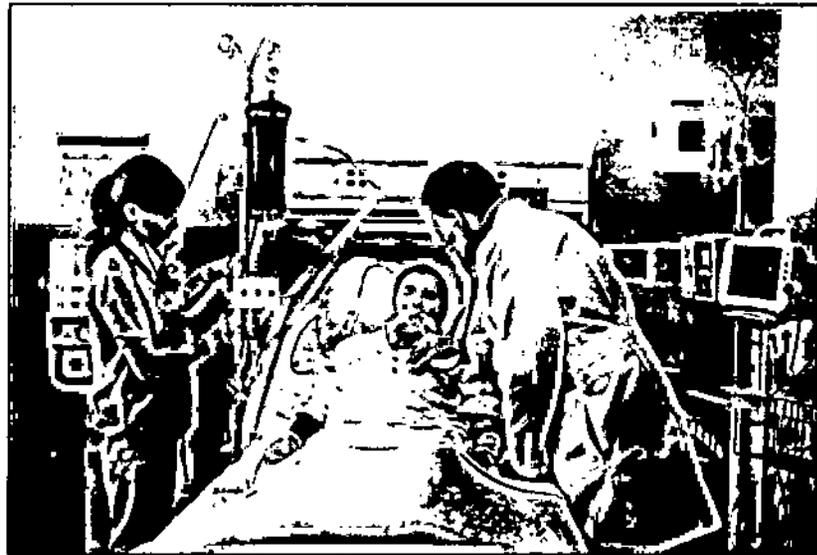
If you already have an Advance Directive, it is important to give a copy of that document to the hospital staff so that it can be kept in your medical record.

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When Are Patients Transferred Out of the ICU?

Some people may think that staying in the ICU for a longer period of time is better than moving to another hospital unit. However, the ICU is designed to care for only seriously ill patients. So, when a patient is improving and moving towards recovery, he/she will be transferred to the next level of care that meets his/her individual medical needs.

Equipment and Systems



Clinicians in an Intensive Care Unit

Common equipment in an ICU includes mechanical ventilators to assist breathing through an endotracheal tube or a tracheostomy tube; cardiac monitors including those with telemetry; external pacemakers; defibrillators; dialysis equipment for renal problems; equipment for the constant monitoring of bodily functions; a web of intravenous lines, feeding tubes, nasogastric tubes, suction pumps, drains, and catheters; and a wide array of drugs to treat the primary condition(s) of hospitalization. Medically induced comas, analgesics, and induced sedation are common ICU tools needed and used to reduce pain and prevent secondary infections. Bed Head Unit/Panel, Medical Rail System also called as Wall Utilizer.

Quality of Care

The available data suggests a relation between ICU volume and quality of care for mechanically ventilated patients. After adjustment for severity of illnesses, demographic variables, and characteristics of different ICUs (including staffing by intensivists), higher ICU staffing was significantly associated with lower ICU

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and hospital mortality rates. A ratio of 2 patients to 1 nurse is recommended for a medical ICU, which contrasts to the ratio of 4:1 or 5:1 typically seen on medical floors. This varies from country to country, though; e.g., in Australia and the United Kingdom most ICUs are staffed on a 2:1 basis (for high-dependency patients who require closer monitoring or more intensive treatment than a hospital ward can offer) or on a 1:1 basis for patients requiring very intensive support and monitoring; for example, a patient on a mechanical ventilator with associated anaesthetics or sedation such as propofol, midazolam and use of strong analgesics such as morphine, fentanyl and/or remifentanyl.

Operational Logistics

In the United States, up to 20% of hospital beds can be labelled as intensive-care beds; in the United Kingdom, intensive care usually will comprise only up to 2% of total beds. This high disparity is attributed to admission of patients in the UK only when considered the most severely ill.

Intensive care is an expensive healthcare service. In the United Kingdom, the average cost of funding an intensive care unit is:

- £838 per bed per day for a neonatal intensive care unit
- £1,702 per bed per day for a paediatric intensive care unit
- £1,328 per bed per day for an adult intensive care unit

ICU (Intensive Care Unit): Tips for Patients and Families

The Intensive Care Unit (ICU) is a very “intense” area and can create a great deal of tension and stress for patients and families. Effective and appropriate communication is an important part of the healing process, not only for the patient, but also for the family.

The following are suggestions for family members on how to communicate with a loved one in the ICU:

- Speak in a calm, clear manner. Make short positive statements. Many family members assume because their loved one is on a ventilator they cannot hear and so they speak loudly, don't worry they can hear you.
- Acknowledge and recognize any discomfort your loved one may be experiencing. For example, you may tell them, “You're are in the ICU and you have a tube to help you breath. This is just temporary and we will get the nurse to give you some medication to make you more comfortable, you are doing great and making progress.”
- Do not ask the patient questions that cannot be answered. Use a board so the patient can point to a word such as “pain,” this allows your loved one to make his need known. Most ICU's have these boards available or will make one for you. It is not unusual for patients to be angry, frustrated, or not be interested in communicating. Be patient with them, the frustration level will decrease and perhaps another method of communication will work better for them.

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- Provide a small board for the patient to write on. Many patients can write just enough so you know what they want. The hospital should provide this, however, these boards can also be purchased at a drug store or art supply store.
- Offer short phrases that offer support and reassurance. For example, "Mom, its Maureen, I'm here with you and you are doing much better. Everyone is taking good care of you."
- Simple hand gestures may work as well, such as thumbs up = "good"; and thumbs down = "pain" or "I need something."
- Remind your loved one that "this is just temporary and they are making good progress." Flood them with faith and hope.
- Hold your loved one's hand or touch them gently (be sure to check with the ICU staff first). For example, rubbing lotion on their hands or feet may not be allowed.
- Orient your loved one to the surroundings, for example, the date and time of day. You may want to make a sign each day with the date on it and place it where they can easily see it (for example, on the wall at the foot of their bed). Describe what the different noises are to help ease any fear or anxiety they may have about them.
- Read your loved one's favorite prayers, poems, books, stories, or bible verses.
- Music may be allowed in the ICU when appropriate. Again be sure to check with the ICU staff for guidance.
- Finally, just ask — the ICU staff may have the perfect suggestion for you to assist you in communicating with your loved one.

4.2 HOSPITAL ACQUIRED INFECTIONS

Hospital-acquired infections are caused by viral, bacterial, and fungal pathogens; the most common types are bloodstream infection (BSI), pneumonia (eg, ventilator-associated pneumonia [VAP]), urinary tract infection (UTI), and surgical site infection (SSI).

Essential Update: Study Reports Falling VAP and BSI Rates in Critically Ill Children

The incidence of central line-associated BSI and VAP declined significantly between 2007 and 2012 in critically ill pediatric patients, according to a national cohort study of patients admitted to 173 neonatal intensive care units (NICUs) and 64 pediatric intensive care units (PICUs). No change was observed, however, in the rate of catheter-associated UTI.

In the NICUs, the rate of central line-associated BSI decreased from 4.9 to 1.5 per 1000 central-line days during the study period; in the PICUs, the rate fell from 4.7 to 1.0 per 1000 central-line days. The rate of VAP decreased from 1.6 to 0.6 per 1000 ventilator days in the NICUs and from 1.9 to 0.7 per 1000 ventilator days in the PICUs.

Signs and Symptoms

Risk factors for catheter-associated BSI in neonates include the following:

- Catheter hub or exit-site colonization
- Catheter insertion after the first week of life
- Duration of parenteral nutrition
- Extremely low birth weight (< 1000 g) at catheter insertion
- Disruption of catheter dressings
- Pediatric ICU: Neutropenia, prolonged catheter dwell time (>7 days), percutaneously placed central venous lines, frequent manipulation of lines

Risk factors for candidemia in neonates include the following:

- Gestational age of less than 32 weeks
- 5-minute Apgar scores below 5
- Shock, disseminated intravascular coagulation
- Prior intralipid use
- Parenteral nutrition, central venous line placement
- H2 blocker administration
- Intubation
- Hospital stay longer than 7 days

Risk factors for VAP in pediatric patients include the following:

- Reintubation
- Genetic syndromes
- Immunodeficiency, immunosuppression
- Prior BSI

Risk factors for hospital-acquired UTI in pediatric patients include the following:

- Bladder catheterization
- Prior antibiotic therapy
- Cerebral palsy

The source of infection may be suggested by the instrumentation, as follows:

- Endotracheal tube: Sinusitis, tracheitis, pneumonia
- Intravascular catheter: Phlebitis, line infection
- Foley catheter: UTI

Patients with pneumonia may have the following:

- Fever, cough, purulent sputum
- Abnormal chest auscultatory findings (eg, decreased breath sounds, crackles, wheezes)

Patients with UTI may have the following:

- Fever or normal temperature
- Tenderness, suprapubic (cystitis) or costovertebral (pyelonephritis)
- Cloudy, foul-smelling urine

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Diagnosis

Because not all bacterial or fungal growth on a culture is pathogenic and because such growth may reflect simple microbial colonization, interpretation of cultures should take into account the following:

- Clinical presentation of the patient
- Reason for obtaining the test
- Process by which the specimen was obtained
- Presence or absence of other supporting evidence of infection

Methods used to diagnose and characterize BSIs include the following:

- Suspected catheter-associated BSI: Differential time to positivity of paired blood cultures (simplest); quantitative culture of blood obtained from the catheter and peripheral vein; quantitative culture of catheter segment
- Suspected fungal infection: Fungal cultures
- Possible thrombosis or vegetations: Imaging studies such as echocardiography
- Immuno compromised patients: Occasional special studies (eg, cultures for *Nocardia*, atypical mycobacteria, cytomegalovirus [CMV], and CMV antigenemia)

Tests used to identify pneumonia include the following:

- Acute-phase reactants
- Oxygen saturation and hemodynamic studies
- Chest radiography
- Sputum Gram stain and culture (if necessary, samples can also be obtained through bronchoalveolar lavage or thoracentesis)
- Rapid diagnostic tests, in specific cases

Urinalysis and urine culture, along with clinical findings, are essential for differentiating between asymptomatic bacteriuria, cystitis, and pyelonephritis. The following factors should be kept in mind in the interpretation of urine cultures:

- Number of colonies and species isolated
- Method of sample collection
- Time from collection to laboratory processing
- Sex of the patient
- Previous antibiotic use

Although imaging studies are controversial, they are recommended by most experts in evaluating children with first-time UTI.

Management

Medical care includes symptomatic treatment of shock, hypoventilation, and other complications, along with empiric broad-spectrum antimicrobial therapy.

Management of BSI may include the following:

- Line removal as appropriate
- Antibiotic therapy covering gram-positive and gram-negative organisms, started empirically and then tailored according to specific susceptibility patterns
- Antifungal therapy as appropriate
- Antiviral therapy as appropriate
- Prevention through use of catheter disinfection caps

Management of pneumonia includes the following:

- Initial empiric broad-spectrum antibiotic therapy, later streamlined on the basis of identified organisms and susceptibilities, with attention to the risk of multidrug-resistant (MDR) pathogens
- Antiviral medications against influenza for symptomatic patients and patients with immunodeficiency or chronic lung diseases to limit morbidity and mortality

Management of UTI includes the following:

- Removal of indwelling catheters if possible
- Empiric antibiotic and antifungal therapy

Management of SSI includes the following:

- Surgical debridement
- Antibiotic therapy

Background

Healthcare-associated infections (HAI) are defined as infections not present and without evidence of incubation at the time of admission to a healthcare setting. As a better reflection of the diverse healthcare settings currently available to patients, the term healthcare-associated infections replaced old ones such as nosocomial, hospital-acquired or hospital-onset infections. Within hours after admission, a patient's flora begins to acquire characteristics of the surrounding bacterial pool. Most infections that become clinically evident after 48 hours of hospitalization are considered hospital-acquired. Infections that occur after the patient is discharged from the hospital can be considered healthcare-associated if the organisms were acquired during the hospital stay.

Hospital-based programs of surveillance, prevention and control of healthcare-associated infections have been in place since the 1950s. The Study on the Efficacy of Nosocomial Infection Control Project (SENIC) from the 1970s showed nosocomial rates could be reduced by 32% if infection surveillance were coupled with appropriate infection control programs. In 2005, the National Healthcare Safety Network (NHSN) was established with the purpose of integrating and succeeding previous surveillance systems at the Centers for Disease Control and Prevention (CDC): National Nosocomial Infections Surveillance (NNIS), Dialysis Surveillance Network (DSN) and National Surveillance System for Healthcare Workers (NaSH).

Continued surveillance, along with sound infection control programs, not only lead to decreased healthcare-associated infections but also better prioritization of resources and efforts to improving medical care.

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Healthcare-associated infections are of important wide-ranging concern in the medical field. They can be localized or systemic, can involve any system of the body, be associated with medical devices or blood product transfusions. This article focuses on the 3 major sites of healthcare-associated infections (ie, bloodstream infection, pneumonia, and urinary tract infection) with focus on the pediatric population.

Pathophysiology

Infectious agents causing healthcare-associated infections may come from endogenous or exogenous sources.

Endogenous sources include body sites normally inhabited by microorganisms. Examples include the nasopharynx, GI, or genitourinary tracts. Exogenous sources include those that are not part of the patient. Examples include visitors, medical personnel, equipment and the healthcare environment.

Patient-related risk factors for invasion of colonizing pathogen include severity of illness, underlying immunocompromised state and/or the length of in-patient stay.

4.3 NOSOCOMIAL INFECTIONS

Nosocomial infections are infections are acquired in hospitals and other healthcare facilities. To be classified as a nosocomial infection, the patient must have been admitted for reasons other than the infection. He or she must also have shown no signs of active or incubating infection. These infections occur:

- Up to 48 hours after hospital admission;
- Up to 3 days after discharge;
- Up to 30 days after an operation;
- In a healthcare facility when a patient was admitted for reasons other than the infection;

It has been estimated that 9.2 out of every 100 patients acquire a nosocomial infection.

Types of Nosocomial Infections

1. Urinary tract infections
2. Surgical site infections,
3. Bloodstream infections, and
4. Pneumonia

The location of a nosocomial infection depends on the nature of a patient's hospital procedure.

Causes of Nosocomial Infections

Nosocomial infections are caused by pathogens that easily spread through the body. Many hospital patients have compromised immune systems, so they are less able to fight off infections. In some cases, patients develop infections due to poor conditions at a hospital or a healthcare facility, or due to hospital staff not following proper procedures.

Some patients acquire nosocomial infections by interacting with other patients. Others encounter bacteria, fungi, parasites, or viruses in their hospital environment.

Any hospital patient may obtain a nosocomial infection. Patients in intensive care units have a higher risk of developing an infection. According to the 1995 European Prevalence of Infection in Intensive Care Study, up to 20.6 percent of ICU patients acquire nosocomial infections during or after their stay.

On average, nosocomial patients stay in the hospital 2.5 times longer than patients without infection. Patients with highly compromised immune systems are easily infected. This is because their bodies are not able to control the infections on their own.

Symptoms of Nosocomial Infections: Symptoms of nosocomial infections vary by type. They include inflammation, discharge, fever, and abscesses. Patients may experience pain and irritation at the infection site, and many experience visible symptoms.

Diagnosis of Nosocomial Infections: Many forms of nosocomial infections can be diagnosed through sight alone. Pus, inflammation, and rashes may all be indications of infection. Blood and urine culture tests can identify the infection.

Outlook for Nosocomial Infections

Most cases of nosocomial infection are resolved with treatment, but some can be fatal. Early detection and treatment are vital. Under the right conditions, most patients are able to make a full recovery.

Preventing Nosocomial Infections

An estimated 40 percent of nosocomial infections are caused by poor hand hygiene (WHO). Hospital staff can significantly reduce the number of cases with regular hand washing. They should also wear protective garments and gloves when working with patients.

Invasive procedures increase the risk of nosocomial infections. Noninvasive procedures are recommended when possible. Hospitals are encouraged to put patients with *C. difficile*, MRSA, VRE, and resistant Gram-negative infections into isolation rooms. This can lower the risk of other patients becoming infected.

The use of antibiotics is also a vital component of prevention as well. Your doctor should recommend the use of an antibiotic if you are vulnerable to infection.

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Causes of Nosocomial Infections

Gram-positive bacteria are the commonest cause of nosocomial infections with *Staphylococcus aureus* being the predominant pathogen. There has been an increase in the rate of antibiotic resistant bacteria associated with nosocomial infections in ICU. Bacteria develop resistance when they acquire new genetic material. Poor antibiotic prescribing selects for resistant bacteria. The genetic material that encodes resistance is transferred to other strains. Methicillin-resistant *S. aureus* (MRSA) causes up to 60% of nosocomial infection in ICU. A broad-spectrum antibiotic such as vancomycin is usually prescribed for treatment. However, vancomycin-resistant enterococci and isolated cases of vancomycin-resistant *S. aureus* have been reported. This highlights the need for the use of appropriate antibiotics and some centres now discourage the use of vancomycin as first line treatment for *Clostridium difficile* diarrhoea.

Surveillance

Surveillance is the ongoing, systematic collection, analysis and interpretation of information related to health. This is essential for the planning, implementation and evaluation of public health and also the timely dissemination of information. The Nosocomial Infection National Surveillance Service was formed in 1996 and is managed by the Health Protection Agency (HPA). This surveillance service aims to collect a database for nationwide comparisons of hospital-acquired infections and to improve patient care by reducing nosocomial infection rates and assisting clinical practice. A total of 102 hospitals participated in the last 2002 survey. At present, two protocols exist:

- (iv) The surveillance of surgical site infections; and
- (v) The surveillance of hospital acquired bacteraemia.

Further protocols for the urinary tract and lower respiratory tract (second most common cause of nosocomial infections) are yet to be developed. The 2002 survey highlighted the fact that two-thirds of bacteraemias were associated with intravascular devices, with central i.v. catheters being the most common source of hospital-acquired bacteraemia. Bacteraemias were identified in 3.5 patients per 1000 hospital admissions while, in ICU, the figure rose to 9.1 patients per 1000 admissions.

The common pathogens associated with nosocomial infections and their favourite sites of colonization. These have included MRSA, methicillin-sensitive *S. aureus* (MSSA), vancomycin-resistant enterococcus (VRE) and multi-drug-resistant *Acinetobacter* spp. At a local level, compulsory monitoring of certain pathogens (MRSA and *C. difficile*) has been in place since 2000. Across Europe, a surveillance program was initiated in 1994 called HELICS (Hospitals in Europe Link for Infection Control through Surveillance). Its aim is to create a database for nosocomial infections from public health services in Europe.

Prevention

The European Prevalence of infection in Intensive Care (EPIC) study identified several factors predisposing a patient to nosocomial infections. Poor hand hygiene

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is responsible for 40% of infections transmitted in hospitals. Surveys have shown that the improvement in compliance with hand washing reduces nosocomial infection. Accessibility of the hand washing stations and the use of alcohol gels improves compliance with hand washing. Alcohol gel dries quickly, and is bactericidal, fungicidal and virucidal. Numerous studies have shown that doctors wash their hands less frequently than nurses and backs of hands, tips of fingers, web spaces and thumb are commonly missed areas. The Department of Health has produced guidelines on hand washing on their website .

Protective garments are necessary for health providers exposed to body fluids, for example sweat, oropharyngeal fluids, blood or urine. Gloves and aprons should be worn for handling body fluids. High efficiency particulate air (HEPA) filter masks are recommended for sputum smear positive patients with tuberculosis, particularly for cough-inducing procedures. Hands must be washed after glove removal as contamination of the hands can still occur.

The use of invasive procedures increases the risk of nosocomial infections. For venous access, this risk can be reduced by use of specific sites such as subclavian vein rather than internal jugular or femoral veins. Tunnelling the catheter reduces the risk of nosocomial infection. Antimicrobial impregnated catheters can reduce catheter related infections. The use of a strict, aseptic technique is paramount in the insertion of intravascular catheters. By using isolation rooms for patients with MRSA, C. difficile, VRE and resistant Gram-negative infections, the spread of infection can be reduced owing to improved awareness of the implementation of appropriate infection control precautions.

Antibiotic Use

Appropriate use of antibiotics is important. Up to 30% of ventilator associated pneumonias are treated inadequately. There is increasing evidence to suggest that the use of appropriate and early antibiotics improves morbidity and mortality. Appropriate antibiotic use requires a thorough knowledge of their mode of action, previous antibiotic history, local bacterial resistance profile and local pathogen prevalence. Antibiotics should be administered at the right dose and for the appropriate duration. The local antibiotic formulary and consultant microbiologist are valuable resources.

Daily ICU ward rounds with the microbiologist can lead to rational use of antibiotics tailored to benefit individual patients. Antibiotic-resistant bacteria prolong hospitalization, increase the risk of death, and require treatment with toxic and expensive antibiotics. Empirical use of antibiotic is often necessary as laboratory results are often not available for 48 h after the samples are sent to the laboratory for culture. Appropriate specimens include blood, urine, sputum, bronchoalveolar lavage, pus and wound swabs. Blood cultures are only positive for pathogens in a third of cases.

Once the antibiotic profile is available, a narrow-spectrum antibiotic can be commenced. Indicators of response to treatment include temperature, leucocyte count and C-reactive protein (CRP) levels. Procalcitonin is secreted by macrophages

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in response to septic shock and is an early and a more specific marker of bacterial infection than CRP. These parameters must be interpreted in the clinical context. Improvements in the ventilatory and inotrope requirements can provide additional and indirect evidence for response to treatment.

Any antibiotic policy or guideline should aim to limit the use of antibiotics and reduce the selective pressure for resistant microorganisms. Policies designed to encourage rational antibiotic use in ICU are an important element in quality of care, infection control and cost containment. De-escalation therapy, selective digestive decontamination (SDD), antibiotic rotation (cycling) therapy and restrictive guidelines can address these concerns. Optimizing any antimicrobial therapy includes both shortening the duration of antimicrobial use and appropriate use of combination therapy to reduce the emergence of resistance. Research into these antibiotic management programs is limited and results are controversial.

Rotational Antibiotic Therapy

Rotational antibiotic therapy is a strategy to reduce antibiotic resistance by withdrawing an antibiotic, or class of antibiotics, from ICU for a short period, to allow resistance rates to decrease or remain stable. The persistent use of one class of antibiotics leads to the emergence of resistant strains of bacteria; this is known as selective pressure. Rotational regimens are thought to reduce this selective pressure. There is growing support for this regimen. Kollef and colleagues demonstrated a statistical decrease in nosocomial pneumonia in a large ICU after the introduction of an antibiotic rotation policy.

Restrictive antibiotic policies are less flexible and, to a certain extent binding, with respect to prescribing. They require the prescriber to give written justification for any deviation from the policy. Automatic stop orders restrict prolonged antibiotic administration. In the general hospital setting, these measures have had some success with significant reductions in antibiotic resistance. However, the overall survival in ICU was unchanged.

The concept that commensals within the bowel may provide a protective role against more virulent organisms is called colonization resistance. Translocation of Gram-negative bacteria across the intestinal wall is thought to be a major cause of nosocomial infections. SDD aims to eliminate Gram-negative aerobic bacteria by decontamination of the oral cavity and intestinal tract. There are several variations of the SDD regimen. One such regimen is non-absorbable polymyxin E, tobramycin, and amphotericin B for gastrointestinal decontamination and cefotaxime for systemic prophylaxis. Cephalosporins are usually given as prophylaxis as they act on commensal respiratory flora such as *Streptococcus pneumoniae*, *Haemophilus influenzae* and *S. aureus*. Meta-analysis has demonstrated that SDD regimens decrease the incidence of nosocomial pneumonia but overall survival or duration of intensive care treatment is unchanged. The cost effectiveness of SDD has not been evaluated.

Prevention from Nosocomial Infection

Intensive-Care
Units

The most effective technique for controlling nosocomial infection is to strategically implement QA/QC measures to the health care sectors, and evidence-based management can be a feasible approach. For those with ventilator-associated or hospital-acquired pneumonia, controlling and monitoring hospital indoor air quality needs to be on agenda in management, whereas for nosocomial rotavirus infection, a hand hygiene protocol has to be enforced. Other areas needing management include ambulance transport.

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To reduce HAIs, the state of Maryland implemented the Maryland Hospital-Acquired Conditions Program that provides financial rewards and penalties for individual hospitals based on their ability to avoid HAIs. An adaptation of the Centers for Medicare & Medicaid Services payment policy causes poor-performing hospitals to lose up to 3% of their inpatient revenues, whereas hospitals that are able to avoid HAIs can earn up to 3% in rewards. During the program's first 2 years, complication rates fell by 15.26 percent across all hospital-acquired conditions tracked by the state (including those not covered by the program), from a risk-adjusted complication rate of 2.38 per 1,000 people in 2009 to a rate of 2.02 in 2011. The 15.26-percent decline translates into more than \$100 million in cost savings for the health care system in Maryland, with the largest savings coming from avoidance of urinary tract infections, septicemia and other severe infections, and pneumonia and other lung infections. If similar results could be achieved nationwide, the Medicare program would save an estimated \$1.3 billion over 2 years, whereas the health care system as a whole would save \$5.3 billion.

Hospitals have sanitation protocols regarding uniforms, equipment sterilization, washing, and other preventive measures. Thorough hand washing and/or use of alcohol rubs by all medical personnel before and after each patient contact is one of the most effective ways to combat nosocomial infections. More careful use of antimicrobial agents, such as antibiotics, is also considered vital.

Despite sanitation protocol, patients cannot be entirely isolated from infectious agents. Furthermore, patients are often prescribed antibiotics and other antimicrobial drugs to help treat illness; this may increase the selection pressure for the emergence of resistant strains.

Sterilization

Sterilization goes further than just sanitizing. It kills all microorganisms on equipment and surfaces through exposure to chemicals, ionizing radiation, dry heat, or steam under pressure.

Isolation

Isolation precautions are designed to prevent transmission of microorganisms by common routes in hospitals. Because agent and host factors are more difficult to control, interruption of transfer of microorganisms is directed primarily at transmission.

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Handwashing

Handwashing frequently is called the single most important measure to reduce the risks of transmitting skin microorganisms from one person to another or from one site to another on the same patient. Washing hands as promptly and thoroughly as possible between patient contacts and after contact with blood, body fluids, secretions, excretions, and equipment or articles contaminated by them is an important component of infection control and isolation precautions. The spread of nosocomial infections, among immune compromised patients is connected with health care workers' hand contamination in almost 40% of cases, and is a challenging problem in the modern hospitals.

The best way for workers to overcome this problem is conducting correct hand-hygiene procedures; this is why the WHO launched in 2005 the GLOBAL Patient Safety Challenge. Two categories of micro-organisms can be present on health care workers' hands: transient flora and resident flora. The first is represented by the micro-organisms taken by workers from the environment, and the bacteria in it are capable of surviving on the human skin and sometimes to grow.

The second group is represented by the permanent micro-organisms living on the skin surface (on the stratum corneum or immediately under it). They are capable of surviving on the human skin and to grow freely on it. They have low pathogenicity and infection rate, and they create a kind of protection from the colonization from other more pathogenic bacteria. The skin of workers is colonized by $3.9 \times 10^4 - 4.6 \times 10^6$ cfu/cm².

The microbes comprising the resident flora are: *Staphylococcus epidermidis*, *S. hominis*, and *Micrococcus*, *Propionibacterium*, *Corynebacterium*, *Dermobacterium*, and *Pitosporem* spp., while in the transitional could be found *S. aureus*, and *Klebsiella pneumoniae*, and *Acinetobacter*, *Enterobacter* and *Candida* spp. The goal of hand hygiene is to eliminate the transient flora with a careful and proper performance of hand washing, using different kinds of soap, (normal and antiseptic), and alcohol-based gels. The main problems found in the practice of hand hygiene is connected with the lack of available sinks and time-consuming performance of hand washing. An easy way to resolve this problem could be the use of alcohol-based hand rubs, because of faster application compared to correct hand washing.

All visitors must follow the same procedures as hospital staff to adequately control the spread of infections. Visitors and healthcare personnel are equally to blame in transmitting infections. Moreover, multidrug-resistant infections can leave the hospital and become part of the community flora if steps are not taken to stop this transmission.

It is unclear as of 2014 if nail polish or rings affected surgical wound infection rates as it has not been studied.

Gloves

In addition to handwashing, gloves play an important role in reducing the risks of transmission of microorganisms. Gloves are worn for three important reasons in hospitals. First, they are worn to provide a protective barrier and to prevent

gross contamination of the hands when touching blood, body fluids, secretions, excretions, mucous membranes, and nonintact skin. In the USA, the Occupational Safety and Health Administration has mandated wearing gloves to reduce the risk of bloodborne pathogen infections.

Second, gloves are worn to reduce the likelihood microorganisms present on the hands of personnel will be transmitted to patients during invasive or other patient-care procedures that involve touching a patient's mucous membranes and nonintact skin. Third, they are worn to reduce the likelihood the hands of personnel contaminated with micro-organisms from a patient or a fomite can be transmitted to another patient. In this situation, gloves must be changed between patient contacts, and hands should be washed after gloves are removed.

Wearing gloves does not replace the need for hand washing, because gloves may have small, in apparent defects or may be torn during use, and hands can become contaminated during removal of gloves. Failure to change gloves between patient contacts is an infection control hazard.

Surface Sanitation

Sanitizing surfaces is an often overlooked, yet crucial, component of breaking the cycle of infection in health care environments. Modern sanitizing methods such as NAV-CO2 have been effective against gastroenteritis, MRSA, and influenza agents. Use of hydrogen peroxide vapor has been clinically proven to reduce infection rates and risk of acquisition. Hydrogen peroxide is effective against endospore-forming bacteria, such as *Clostridium difficile*, where alcohol has been shown to be ineffective. Ultraviolet cleaning devices may also be used to disinfect the rooms of patients infected with *Clostridium difficile* after discharge.

Antimicrobial Surfaces

Micro-organisms are known to survive on inanimate 'touch' surfaces for extended periods of time. This can be especially troublesome in hospital environments where patients with immune deficiencies are at enhanced risk for contracting nosocomial infections.

Touch surfaces commonly found in hospital rooms, such as bed rails, call buttons, touch plates, chairs, door handles, light switches, grab rails, intravenous poles, dispensers (alcohol gel, paper towel, soap), dressing trolleys, and counter and table tops are known to be contaminated with *Staphylococcus*, MRSA (one of the most virulent strains of antibiotic-resistant bacteria) and vancomycin-resistant *Enterococcus* (VRE). Objects in closest proximity to patients have the highest levels of MRSA and VRE. This is why touch surfaces in hospital rooms can serve as sources, or reservoirs, for the spread of bacteria from the hands of healthcare workers and visitors to patients.

A number of compounds can decrease the risk of bacteria growing on surfaces including: copper, silver, and germicides.

Aprons

Wearing an apron during patient care reduces the risk of infection. The apron should either be disposable or be used only when caring for a specific patient.

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Treatment

Among the categories of bacteria most known to infect patients are the category MRSA (resistant strain of *S. aureus*), member of Gram-positive bacteria and *Acinetobacter* (*A. baumannii*), which is Gram-negative. While antibiotic drugs to treat diseases caused by Gram-positive MRSA are available, few effective drugs are available for *Acinetobacter*. *Acinetobacter* bacteria are evolving and becoming immune to existing antibiotics, so in many cases, polymyxin-type antibacterials need to be used. "In many respects it's far worse than MRSA," said a specialist at Case0020Western Reserve University.

Another growing disease, especially prevalent in New York City hospitals, is the drug-resistant, Gram-negative *Klebsiella pneumoniae*. An estimated more than 20% of the *Klebsiella* infections in Brooklyn hospitals "are now resistant to virtually all modern antibiotics, and those super germs are now spreading worldwide.

The bacteria, classified as Gram-negative because of their reaction to the Gram stain test, can cause severe pneumonia and infections of the urinary tract, bloodstream, and other parts of the body. Their cell structures make them more difficult to attack with antibiotics than Gram-positive organisms like MRSA. In some cases, antibiotic resistance is spreading to Gram-negative bacteria that can infect people outside the hospital. "For Gram-positives we need better drugs; for Gram-negatives we need any drugs," said Dr. Brad Spellberg, an infectious-disease specialist at Harbor-UCLA Medical Center, and the author of *Rising Plague*, a book about drug-resistant pathogens.

One-third of nosocomial infections are considered preventable. The CDC estimates 2 million people in the United States are infected annually by hospital-acquired infections, resulting in 20,000 deaths. The most common nosocomial infections are of the urinary tract, surgical site and various pneumonias.

4.4 NURSING SERVICES

The Nursing module allows the user to monitor the activities of inpatients and record progress notes. The Nursing module can perform functions such as viewing service/pharmacy orders, placing service/pharmacy orders, revoking a patient discharge, recording/amending a patient's temperature, pressure, and pulse readings, administering drugs and transferring a patient from one nursing station to another.

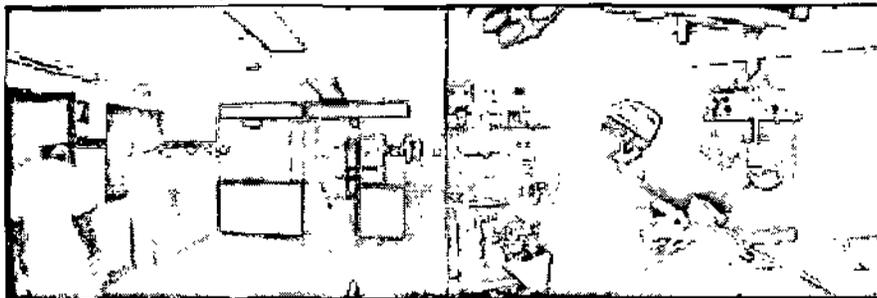
Operation Theatre

The Operation Theatre complex has four operating suites, fully equipped with state of the art technology to cater to a wide range of specialities like Orthopaedics, Neurosurgery, ENT, General surgery, Obstetrics and Gynaecology, Urology, Dental surgery and Ophthalmology. The operation theatre staff consists of skilled theatre scrub nurses, O.T technicians and housekeeping personnel dedicated to each operation theatre.

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Theatre working hours for elective cases are between 8am - 8pm from Monday to Saturday. The theatres are available for emergency surgery all through 24 hours. On an average about 300 surgeries are performed in a month consisting of major neurosurgical cases like craniotomies, clipping of aneurysms, endoscopic surgeries and spine fixation. The Urology department performs besides routine urologic procedures, laser and reconstructive surgery.

Orthopaedic surgical procedures include hip and knee replacements in addition to other routine procedures. General surgery includes major upper GI, lower GI, and laparoscopic surgery. Oncologic and endocrine surgeries also form part of the spectrum of general surgery. ENT, Dental and Ophthalmology procedures are also done. Each of these surgical departments has well trained and experienced surgeons who are dedicated full time to providing excellent service to their patients.



4.5 WARD MANAGEMENT

The ward sister is responsible to the Ng Superintendent/Matron for the management of the wards and supervisions of the nursing and domestic staff. She would be assisted in carrying out the following duties by staff nurse clinical and domestic staff as the case may be. The main aim of the ward sister should be to foster team spirit in her area of work.

1. Nursing Care of Patient

- ◇ Admission and discharge of patient.
- ◇ Efficient nursing care personal comfort and toiled of patient, administration of Drugs and Treatment, observation and recording.
- ◇ Patient's diet.
- ◇ Assistance, to medical staff in examination of patients and treatment.
- ◇ Rounds with medical staff.
- ◇ Assistance at or supervision of clinical investigations, pre-operative and post operative care.
- ◇ Maintenance of patient records.
- ◇ Care of patient's personal effects in accordance with hospital rules.
- ◇ Following of prescribed rules regarding accident or death of a patient.
- ◇ Giving and receiving reports.

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- ◇ Information to relatives and friends.
 - ◇ Intimation to Ng Supd./Matron of any special emergency in the ward.
- 2. Teaching Of Nursing Students**
- ◇ Planned and incidental teaching.
 - ◇ Supervision of student's work.
 - ◇ Consultation and co-operation with sister tutor in arranging demonstration.
 - ◇ Discussion with students to promote good attitudes, complete 'record of practical work' and in valuation to confidential reports.
- 3. Ward Staff**
- ◇ Assignment of work and arrangement of duties by taking rott-calls of nursing and domestic staff.
 - ◇ Co-ordination and facilitating work of other staff, e.g. occupational therapist, social worker, dietician, voluntary worker.
 - ◇ In-service training.
 - ◇ Orientation of new staff.
 - ◇ Maintaining good relationships among all categories of staff and with patients and their relatives.
 - ◇ Discipline of nursing and domestic staff. Reporting on absence of staff.
 - ◇ Confidential reports.
- 4. Ward Management**
- ◇ Cleanliness of ward, its annexes and environments.
 - ◇ Linen and ward equipment-up-keep and repairs.
 - ◇ Custody of dangerous drugs. Records of their administration.
 - ◇ Indents for drugs, surgical supplies, stores, diets.
 - ◇ Maintenance of stock registers, inventories.
 - ◇ Interpretations of hospital policies & regulations and their implementation.
 - ◇ Investigation of complaints.
 - ◇ Issue of stores etc.
 - ◇ Control of visitors.
- 5. General**
- ◇ Rounds with medical staff and N. Supd./Matron.
 - ◇ Taking round special visitors.
 - ◇ Participation in staff education and staff meetings.
 - ◇ Participation in professional activities.
 - ◇ Any other duty as may be specified from time to time.

4.6 STUDENT ACTIVITY

1. Describe When intensive care is needed?
2. When Are Patients Transferred Out of the ICU?
3. Explain the Causes of Nosocomial Infections.

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4.7 SUMMARY

- *Intensive care units (ICUs) are specialist hospital wards. They provide intensive care (treatment and monitoring) for people in a critically ill or unstable condition. ICUs are also sometimes known as critical care units or intensive therapy departments.*
- Under the Mental Capacity Act (2005), someone who knows they are going into intensive care may nominate someone to make decisions about planned treatment on their behalf. This person is known as a designated decision maker.
- Common equipment in an ICU includes mechanical ventilators to assist breathing through an endotracheal tube or a tracheostomy tube; cardiac monitors including those with telemetry; external pacemakers; defibrillators; dialysis equipment for renal problems; equipment for the constant monitoring of bodily functions; a web of intravenous lines, feeding tubes, nasogastric tubes, suction pumps, drains, and catheters; and a wide array of drugs to treat the primary condition(s) of hospitalization.
- Nosocomial infections are infections acquired in hospitals and other healthcare facilities. To be classified as a nosocomial infection, the patient must have been admitted for reasons other than the infection.
- Micro-organisms are known to survive on inanimate 'touch' surfaces for extended periods of time. This can be especially troublesome in hospital environments where patients with immune deficiencies are at enhanced risk for contracting nosocomial infections.

4.8 GLOSSARY

- **Hospital-Acquired Infections:** Hospital-acquired infections are caused by viral, bacterial, and fungal pathogens; the most common types are bloodstream infection (BSI), pneumonia (eg, ventilator-associated pneumonia [VAP]), urinary tract infection (UTI), and surgical site infection (SSI).
- **Doctor's Rounds:** Doctor's rounds usually occur during the morning, early evening, and at midnight.
- **Rotational Antibiotic Therapy:** Rotational antibiotic therapy is a strategy to reduce antibiotic resistance by withdrawing an antibiotic, or class of antibiotics, from ICU for a short period, to allow resistance rates to decrease or remain stable.
- **Endogenous Sources:** Endogenous sources include body sites normally inhabited by microorganisms.

4.9 REVIEW QUESTIONS

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1. What is Different About the ICU Compared to Other Hospital Units?
2. Why Are Patients Admitted to the ICU?
3. What Are Advance Directives?
4. Describe the methods of Preventing Nosocomial Infections.
5. Write short note on:
 - (a) PICUs
 - (b) NICUs
 - (c) UTI
 - (d) SSI
 - (e) BSI

5

CONCEPT OF QUALITY

NOTES

STRUCTURE

- 5.0 Learning Objectives
- 5.1 Introduction
- 5.2 Quality Control
- 5.3 Quality Assurance
- 5.4 ISO 9000 Standards
- 5.5 TQM
- 5.6 Accreditation
- 5.7 NABL
- 5.8 Quality Manual
- 5.9 Concept of Medical Tourism
- 5.10 Benefits of Medical Tourism
- 5.11 Student Activity
- 5.12 Summary
- 5.13 Glossary
- 5.14 Review Questions

5.0 LEARNING OBJECTIVES

After completion of the unit, you will be able to:

- Explain the Quality control and Quality assurance
- Describe the ISO 9000 standards
- Discuss the TQM
- Understand Accreditation
- Define NABL
- Describe Quality manual
- Explain Concept of Medical tourism

NOTES

5.1 INTRODUCTION

The word quality is often used indiscriminately for many different meanings. Quality can be defined as "fitness for use," "customer satisfaction," "doing things right the first time," or "zero defects." These definitions are acceptable because quality can refer to degrees of excellence.

5.2 QUALITY CONTROL

A process through which a business seeks to ensure that product quality is maintained or improved and manufacturing errors are reduced or eliminated. Quality control requires the business to create an environment in which both management and employees strive for perfection. This is done by training personnel, creating benchmarks for product quality, and testing products to check for statistically significant variations.

Quality control, or QC for short, is a process by which entities review the quality of all factors involved in production. ISO 9000 defines quality control as "A part of quality management focused on fulfilling quality requirements".

This approach places an emphasis on three aspects:

1. Elements such as controls, job management, defined and well managed processes, performance and integrity criteria, and identification of records
2. Competence, such as knowledge, skills, experience, and qualifications
3. Soft elements, such as personnel, integrity, confidence, organizational culture, motivation, team spirit, and quality relationships.

Controls include product inspection, where every product is examined visually, and often using a stereo microscope for fine detail before the product is sold into the external market. Inspectors will be provided with lists and descriptions of unacceptable product defects such as cracks or surface blemishes for example. The quality of the outputs is at risk if any of these three aspects is deficient in any way.

Quality control emphasizes testing of products to uncover defects and reporting to management who make the decision to allow or deny product release, whereas quality assurance attempts to improve and stabilize production (and associated processes) to avoid, or at least minimize, issues which led to the defect(s) in the first place. For contract work, particularly work awarded by government agencies, quality control issues are among the top reasons for not renewing a contract.

5.3 QUALITY ASSURANCE

A Quality Assurance (QA) activity is any project where the primary purpose is to monitor, evaluate or improve the quality of healthcare delivery by a healthcare provider (which may be an individual, service, department or organization).

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QA activity is not considered research, and therefore does not require review/ approval by a full Human Research Ethics Committee (HREC).

At St Vincent's Hospital (Melbourne) all QA activities must be submitted for review by the Quality Assurance Subcommittee. This will ensure that you have appropriate institutional acknowledgement, particularly if you are intending to publish the results (as journal editors are increasingly requiring evidence prior to publication).

Projects cannot be considered as QA if:

- The activity is undertaken without consent of the participants (this excludes retrospective audits which do not require any additional consent)
- The activity is likely to cause additional burden, harm or discomfort
- The activity is inconsistent with Privacy Principle 2.1, which provides that personal or health information should only be collected/used/disclosed when:
 - The information to be collected for the QA activity is directly related to the purpose for which it was originally collected
 - The information collected for the QA activity is not considered highly sensitive; and/or
 - The information collected for the QA activity is related to a secondary purpose, that an individual would reasonably expect the organization to use to improve services

Mission of the Quality Assurance Guidelines

The mission of the Quality Assurance Guidelines Program is to reduce friction and foster an environment of trust in the marketplace by providing clear, common language that describes characteristics of advertising inventory and transactions across the advertising value chain.

The goals of the QAG program are to:

- Support the information needs of advertising buyers
- Define a common framework of disclosures that sellers can use across the industry
- Offer clear language that enables buyers to make informed decisions
- Review compliance and facilitate the resolution of disputes and complaints.

Value for the Buyer

QAG provides transparency for buyers, enabling them to buy advertising with confidence. QAG was created through joint efforts by buyers and sellers and represents the buyers' voice to sellers in defining terms for seller disclosure.

Value for the Seller

QAG certification helps sellers demonstrate that they have achieved a new level of excellence in trust, transparency, quality and safety. Doing so makes buying

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advertising easier, which will increase overall demand for QAG-certified sellers. QAG enables all certified companies in the inventory supply chain to be classified as industry leaders, which clearly distinguishes them from any bad actors.

Failure Testing

A valuable process to perform on a whole consumer product is failure testing or stress testing. In mechanical terms this is the operation of a product until it fails, often under stresses such as increasing vibration, temperature, and humidity. This exposes many unanticipated weaknesses in a product, and the data is used to drive engineering and manufacturing process improvements. Often quite simple changes can dramatically improve product service, such as changing to mold-resistant paint or adding lock-washer placement to the training for new assembly personnel.

Statistical Control

Statistical control is based on analyses of objective and subjective data. Many organizations use statistical process control as a tool in any quality improvement effort to track quality data. Any product can be statistically charted as long as they have a common cause variance or special cause variance to track.

Walter Shewart of Bell Telephone Laboratories recognized that when a product is made, data can be taken from scrutinized areas of a sample lot of the part and statistical variances are then analyzed and charted. Control can then be implemented on the part in the form of rework or scrap, or control can be implemented on the process that made the part, ideally eliminating the defect before more parts can be made like it.

Total Quality Management

The quality of products is dependent upon that of the participating constituents, some of which are sustainable and effectively controlled while others are not. The process(es) which are managed with QA pertain to Total Quality Management.

If the specification does not reflect the true quality requirements, the product's quality cannot be guaranteed. For instance, the parameters for a pressure vessel should cover not only the material and dimensions but operating, environmental, safety, reliability and maintainability requirements.

QA in Medical Industry

QA is very important in the medical field because it helps to identify the standards of medical equipments and services. Hospitals and laboratories make use of external agencies in order to ensure standards for equipment such as X-ray machines, Diagnostic Radiology and AERB.

QA in Software Development

Software Quality Assurance consists of a means of monitoring the software engineering processes and methods used to ensure quality. The methods by which this is accomplished are many and varied, and may include ensuring conformance to one or more standards, such as ISO 9000 or a model such as CMMI.

Models and Standards

ISO 17025 is an international standard that specifies the general requirements for the competence to carry out tests and or calibrations. There are 15 management requirements and 10 technical requirements. These requirements outline what a laboratory must do to become accredited. Management system refers to the organization's structure for managing its processes or activities that transform inputs of resources into a product or service which meets the organization's objectives, such as satisfying the customer's quality requirements, complying with regulations, or meeting environmental objectives.

The CMMI (Capability Maturity Model Integration) model is widely used to implement Process and Product Quality Assurance (PPQA) in an organization. The CMMI maturity levels can be divided into 5 steps, which a company can achieve by performing specific activities within the organization.

Company Quality

During the 1980s, the concept of "company quality" with the focus on management and people came to the fore. It was realized that, if all departments approached quality with an open mind, success was possible if the management led the quality improvement process.

The company-wide quality approach places an emphasis on four aspects:-

1. Elements such as controls, job management, adequate processes, performance and integrity criteria and identification of records
2. Competence such as knowledge, skills, experiences, qualifications
3. Soft elements, such as personnel integrity, confidence, organizational culture, motivation, team spirit and quality relationships.
4. Infrastructure (as it enhances or limits functionality)

The quality of the outputs is at risk if any of these aspects is deficient.

QA is not limited to the manufacturing, and can be applied to any business or non-business activity:

- Design
- Consulting
- Banking
- Insurance
- Computer software development

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- Retailing
- Investment
- Transportation
- Education
- Translation

It comprises a quality improvement process, which is generic in the sense that it can be applied to any of these activities and it establishes a behavior pattern, which supports the achievement of quality.

This in turn is supported by quality management practices which can include a number of business systems and which are usually specific to the activities of the business unit concerned.

In manufacturing and construction activities, these business practices can be equated to the models for quality assurance defined by the International Standards contained in the ISO 9000 series and the specified Specifications for quality systems.

In the system of Company Quality, the work being carried out was shop floor inspection which did not reveal the major quality problems. This led to quality assurance or total quality control, which has come into being recently.

Using Contractors and/or Consultants

Consultants and contractors are sometimes employed when introducing new quality practices and methods, particularly where the relevant skills and expertise are not available within the organization or when allocating the available internal resources are not available. Consultants and contractors will often employ Quality Management Systems (QMS), auditing and procedural documentation writing CMMI, Six Sigma, Measurement Systems Analysis (MSA), Quality Function Deployment (QFD), Failure Mode and Effects Analysis (FMEA), and Advance Product Quality Planning (APQP).

5.4 ISO 9000 STANDARDS

ISO 9000 is a series of standards, developed and published by the International Organization for Standardization (ISO), that define, establish, and maintain an effective quality assurance system for manufacturing and service industries. The ISO 9000 standard is the most widely known and has perhaps had the most impact of the 13,000 standards published by the ISO. It serves many different industries and organizations as a guide to quality products, service, and management.

An organization can be ISO 9000-certified if it successfully follows the ISO 9000 standards for its industry. In order to be certified, the organization must submit to an examination by an outside assessor. The assessor interviews staff members to ensure that they understand their part in complying with the ISO 9000 standard, and the assessor examines the organization's paperwork to ensure ISO 9000 compliance. The assessor then prepares a detailed report that describes

the parts of the standard the organization missed. The organization then agrees to correct any problems within a specific time frame. When all problems are corrected, the organization can then be certified. Today, there are approximately 350,000 ISO 9000-certified organizations in over 150 countries.

What is ISO 9000?

Quality is something every company strives for and is often times very difficult to achieve. Complications concerning efficiency and quality present themselves everyday in business, whether an important document cannot be found or a consumer finds a product not up to their expectations. How can a company increase the quality of its products and services? The answer is ISO 9000.

As standards go, ISO 9000 is one of the most widely recognized in the world. ISO 9000 is a quality management standard that presents guidelines intended to increase business efficiency and customer satisfaction. The goal of ISO 9000 is to embed a quality management system within an organization, increasing productivity, reducing unnecessary costs, and ensuring quality of processes and products.

ISO 9001:2008 is applicable to businesses and organizations from every sector. The process oriented approach makes the standard applicable to service organizations as well. Its general guidelines allow for the flexibility needed for today's diverse business world.

How does ISO 9000 work?

ISO 9000 is set up as a collection of guidelines that help a company establish, maintain, and improve a quality management system. It is important to stress that ISO 9000 is not a rigid set of requirements, and that organizations have flexibility in how they implement their quality management system. This freedom allows the ISO 9000 standard to be used in a wide range of organizations, and in businesses large and small.

One important aspect of ISO 9000 is its process-oriented approach. Instead of looking at a company's departments and individual processes, ISO 9000 requires that a company look at "the big picture." How do processes interact? Can they be integrated with one another? What are the important aspects of products and services?

Once this process-oriented approach is implemented, various audits can be done as a check of the effectiveness of your quality management system. There are three main types of audits – 1st, 2nd, and 3rd party audits. An internal audit is a 1st party audit. ISO 9000 encourages (and requires) this type of audit so that an organization can get feedback quickly from those who know the company best.

However, this audit process cannot be viewed as impartial. Therefore, 2nd party audits allow for a consumer to evaluate the performance on an organization. As an alternative to a 2nd party audit, many companies choose to become certified with ISO 9000 through a 3rd party audit. In this case, an independent certification body comes into an organization and evaluates it in terms of the ISO 9000 guidelines:

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If an organization meets the requirements of the standard, it becomes certified in ISO 9000 and carries a seal of quality recognized throughout the world.

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Why is ISO 9000 important?

The importance of ISO 9000 is the importance of quality. Many companies offer products and services, but it is those companies who put out the best products and services efficiently that succeed. With ISO 9000, an organization can identify the root of the problem, and therefore find a solution. By improving efficiency, profit can be maximized.

As a broad range of companies implement the ISO 9000 standards, a supply chain with integrity is created. Each company that participates in the process of developing, manufacturing, and marketing a product knows that it is part of an internationally known, reliable system.

Not only do businesses recognize the importance of the ISO 9000, but also the customer realizes the importance of quality. And because the consumer is most important to a company, ISO 9000 makes the customer its focus.

What are the ISO 9000 Principles?

1. **A Customer Focus:** As stated before, the customer is the primary focus of a business. By understanding and responding to the needs of customers, an organization can correctly target key demographics and therefore increase revenue by delivering the products and services that the customer is looking for. With knowledge of customer needs, resources can be allocated appropriately and efficiently. Most importantly, a business's dedication will be recognized by the customer, creating customer loyalty. And customer loyalty is return business.
2. **Good Leadership:** A team of good leaders will establish unity and direction quickly in a business environment. Their goal is to motivate everyone working on the project, and successful leaders will minimize miscommunication within and between departments. Their role is intimately intertwined with the next ISO 9000 principle.
3. **Involvement of people:** The inclusion of everyone on a business team is critical to its success. Involvement of substance will lead to a personal investment in a project and in turn create motivated, committed workers. These people will tend towards innovation and creativity, and utilize their full abilities to complete a project. If people have a vested interest in performance, they will be eager to participate in the continual improvement that ISO 900 facilitates.
4. **Process approach to quality management:** The best results are achieved when activities and resources are managed together. This process approach to quality management can lower costs through the effective use of resources, personnel, and time. If a process is controlled as a whole, management can focus on goals that are important to the big picture, and prioritize objectives to maximize effectiveness.

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5. **Management system approach:** Combining management groups may seem like a dangerous clash of titans, but if done correctly can result in an efficient and effective management system. If leaders are dedicated to the goals of an organization, they will aid each other to achieve improved productivity. Some results include integration and alignment of key processes. Additionally, interested parties will recognize the consistency, effectiveness, and efficiency that come with a management system. Both suppliers and customers will gain confidence in a business's abilities.
6. **Continual Improvement:** The importance of this principle is paramount, and should be a permanent objective of every organization. Through increased performance, a company can increase profits and gain an advantage over competitors. If a whole business is dedicated to continual improvement, improvement activities will be aligned, leading to faster and more efficient development. Ready for improvement and change, businesses will have the flexibility to react quickly to new opportunities.
7. **Factual approach to decision making:** Effective decisions are based on the analysis and interpretation of information and data. By making informed decisions, an organization will be more likely to make the right decision. As companies make this a habit, they will be able to demonstrate the effectiveness of past decisions. This will put confidence in current and future decisions.
8. **Supplier relationships:** It is important to establish a mutually beneficial supplier relationship; such a relationship creates value for both parties. A supplier that recognizes a mutually beneficial relationship will be quick to react when a business needs to respond to customer needs or market changes. Through close contact and interaction with a supplier, both organizations will be able to optimize resources and costs.

Why is root cause analysis and systemic corrective action so important in management system standards, such as ISO 9001?

When problem solving, it is important to find the cause of problem in order to develop a solution. Sometimes, the most obvious cause is not the right one. This is why ISO 9000 stresses the importance of finding the root cause(s) of a problem. There may be multiple, subtle reasons why a process isn't working correctly, and finding the actual causes will lead a company one step closer to a solution and implementation of corrective actions.

The goal of finding root causes is to improve the way problems are managed. Becoming adept in recognizing the root causes of a problem will lead to a reduced impact, a containment of error, and the prevention of recurrence. Identifying and correcting root causes will also lead to the reduction of unnecessary efforts which in turn will lower the cost of maintaining quality. As more and more corrective actions are taken, processes will become more stable, and continual improvement will face less interruptions.

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How does ISO 9000 interact with other standards?

ISO 9000 is the standard for a quality management system that closely resembles many other management systems. These other systems, based on health, safety, the environment, and business continuity, can be integrated into an overarching business management system. Benefits of this system include aligned interests, reduced costs, and improved efficiency. With one of these systems in place, it is easier to implement any of the others; many documents required for a different standard are already prepared, and personnel are already accustomed to the audit process. Using multiple standards will not only increase the efficiency of an organization, but increase the integrity of its operations.

What does ISO 9000 mean to me and my company?

ISO 9000 is a standard created to make the attainment of quality, consistent products easier by providing specific steps for development of an organization's quality management system. This quality management system is meant to monitor the progress of a product or service as it goes through each stage of production, from development to testing to assembly to customer feedback.

One cornerstone of ISO 9000 is continual improvement. No company should ever be satisfied with the conditions of a process at the given moment; they should always be looking for ways to make these processes more efficient and effective. ISO 9000 was written with the business world's insatiable desire for excellence in mind. This is why continual improvement is a requirement of the standard – to inspire progress and the pursuit of perfection.

ISO 9000 is an internationally recognized standard, and that may seem daunting for some smaller businesses. How are they going to implement the same standard adopted by multi-national corporations? Quite easily, actually. ISO 9000 is a flexible standard that lays down requirements for an organization to follow, but allows the organization to fulfill these requirements any way they choose. This increases ISO 9000's scope of effectiveness, allowing a wide range of companies to create quality management systems that match their needs.

ISO 9000 is seen in every sector of the business world, and its success is a testament to its worth. With a focus on customer satisfaction, products and services improve and flourish under ISO 9000's quality management system. With a combination of continual improvement and corrective actions – tenets of ISO 9000 – a business will create processes that run smoothly and efficiently.

How Will ISO 9000 Benefit My Small Business?

A good foundation builds a good business, and ISO 9000 is a good foundation for small businesses that want to expand their market. By introducing a quality management system like ISO 9000 to a small business, the quality of processes will increase and costs due to inefficiency will decrease. In addition, a small business will be able to advertise their use of the internationally recognized ISO 9000. This

may create business opportunities that were not available before an objectively verified quality management system was in place.

Having management systems in place, such as ISO 9000, will also help when selling a business. The integrity and value of a small business will be apparent with well-documented processes and proof of quality. ISO 9000 will ensure the reputation of your business in any situation.

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5.5 TQM

A core definition of total quality management (TQM) describes a management approach to long-term success through customer satisfaction. In a TQM effort, all *members of an organization participate in improving processes, products, services, and the culture in which they work.*

The Primary Elements of TQM

Total quality management can be summarized as a management system for a customer-focused organization that involves all employees in continual improvement. It uses strategy, data, and effective communications to integrate the quality discipline into the culture and activities of the organization.

- **Customer-Focused:** The customer ultimately determines the level of quality. No matter what an organization does to foster quality improvement—training employees, integrating quality into the design process, upgrading computers or software, or buying new measuring tools—the customer determines whether the efforts were worthwhile.
- **Total Employee Involvement:** All employees participate in working toward common goals. Total employee commitment can only be obtained after fear has been driven from the workplace, when empowerment has occurred, and management has provided the proper environment. High-performance work systems integrate continuous improvement efforts with normal business operations. Self-managed work teams are one form of empowerment.
- **Process-Centered:** A fundamental part of TQM is a focus on process thinking. A process is a series of steps that take inputs from suppliers (internal or external) and transforms them into outputs that are delivered to customers (again, either internal or external). The steps required to carry out the process are defined, and performance measures are continuously monitored in order to detect unexpected variation.
- **Integrated System:** Although an organization may consist of many different functional specialties often organized into vertically structured departments, it is the horizontal processes interconnecting these functions that are the focus of TQM.
 - ◊ Micro-processes add up to larger processes, and all processes aggregate into the business processes required for defining and implementing strategy.

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Everyone must understand the vision, mission, and guiding principles as well as the quality policies, objectives, and critical processes of the organization. Business performance must be monitored and communicated continuously.

- ◇ An integrated business system may be modeled after the Baldrige National Quality Program criteria and/or incorporate the ISO 9000 standards. Every organization has a unique work culture, and it is virtually impossible to achieve excellence in its products and services unless a good quality culture has been fostered. Thus, an integrated system connects business improvement elements in an attempt to continually improve and exceed the expectations of customers, employees, and other stakeholders.
- **Strategic And Systematic Approach:** A critical part of the management of quality is the strategic and systematic approach to achieving an organization's vision, mission, and goals. This process, called strategic planning or strategic management, includes the formulation of a strategic plan that integrates quality as a core component.
- **Continual Improvement:** A major thrust of TQM is continual process improvement. Continual improvement drives an organization to be both analytical and creative in finding ways to become more competitive and more effective at meeting stakeholder expectations.
- **Fact-Based Decision Making:** In order to know how well an organization is performing, data on performance measures are necessary. TQM requires that an organization continually collect and analyze data in order to improve decision making accuracy, achieve consensus, and allow prediction based on past history.
- **Communications:** During times of organizational change, as well as part of day-to-day operation, effective communications plays a large part in maintaining morale and in motivating employees at all levels. Communications involve strategies, method, and timeliness.

These elements are considered so essential to TQM that many organizations define them, in some format, as a set of core values and principles on which the organization is to operate.

The Eight Elements of TQM

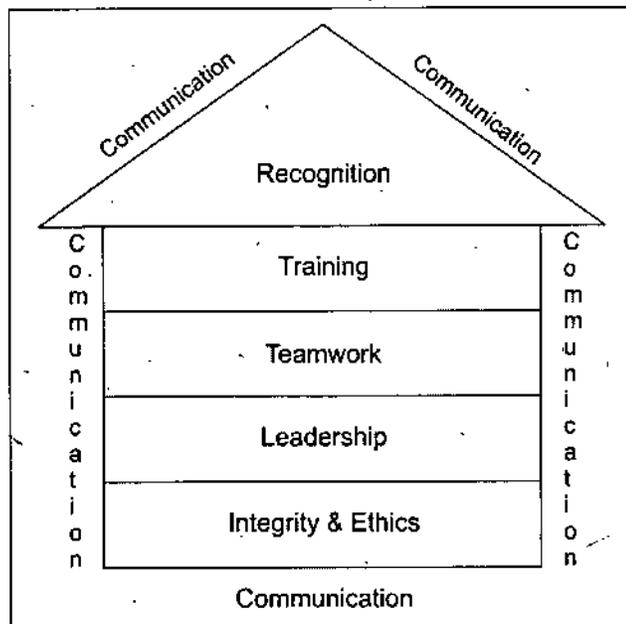
Total Quality Management (TQM) is a management approach that originated in the 1950s and has steadily become more popular since the early 1980s. Total quality is a description of the culture, attitude and organization of a company that strives to provide customers with products and services that satisfy their needs. The culture requires quality in all aspects of the company's operations, with processes being done right the first time and defects and waste eradicated from operations.

To be successful implementing TQM, an organization must concentrate on the eight key elements:

1. Ethics
2. Integrity
3. Trust
4. Training
5. Teamwork
6. Leadership
7. Recognition
8. Communication

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This paper is meant to describe the eight elements comprising TQM.



Key Elements

TQM has been coined to describe a philosophy that makes quality the driving force behind leadership, design, planning, and improvement initiatives. For this, TQM requires the help of those eight key elements. These elements can be divided into four groups according to their function. The groups are:

- (i) Foundation – It includes: Ethics, Integrity and Trust.
- (ii) Building Bricks – It includes: Training, Teamwork and Leadership.
- (iii) Binding Mortar – It includes: Communication.
- (iv) Roof – It includes: Recognition.

Foundation

TQM is built on a foundation of ethics, integrity and trust. It fosters openness, fairness and sincerity and allows involvement by everyone. This is the key to

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unlocking the ultimate potential of TQM. These three elements move together, however, each element offers something different to the TQM concept.

1. **Ethics** – Ethics is the discipline concerned with good and bad in any situation. It is a two-faceted subject represented by organizational and individual ethics. Organizational ethics establish a business code of ethics that outlines guidelines that all employees are to adhere to in the performance of their work. Individual ethics include personal rights or wrongs.
2. **Integrity** – Integrity implies honesty, morals, values, fairness, and adherence to the facts and sincerity. The characteristic is what customers (internal or external) expect and deserve to receive. People see the opposite of integrity as duplicity. TQM will not work in an atmosphere of duplicity.
3. **Trust** – Trust is a by-product of integrity and ethical conduct. Without trust, the framework of TQM cannot be built. Trust fosters full participation of all members. It allows empowerment that encourages pride ownership and it encourages commitment. It allows decision making at appropriate levels in the organization, fosters individual risk-taking for continuous improvement and helps to ensure that measurements focus on improvement of process and are not used to contend people. Trust is essential to ensure customer satisfaction. So, trust builds the cooperative environment essential for TQM.

Bricks

Basing on the strong foundation of trust, ethics and integrity, bricks are placed to reach the roof of recognition. It includes:

4. **Training** – Training is very important for employees to be highly productive. Supervisors are solely responsible for implementing TQM within their departments, and teaching their employees the philosophies of TQM. Training that employees require are interpersonal skills, the ability to function within teams, problem solving, decision making, job management performance analysis and improvement, business economics and technical skills. During the creation and formation of TQM, employees are trained so that they can become effective employees for the company.
5. **Teamwork** – To become successful in business, teamwork is also a key element of TQM. With the use of teams, the business will receive quicker and better solutions to problems. Teams also provide more permanent improvements in processes and operations. In teams, people feel more comfortable bringing up problems that may occur, and can get help from other workers to find a solution and put into place. There are mainly three types of teams that TQM organizations adopt:
 - (a) **Quality improvement teams or excellence teams (QITs)** – These are temporary teams with the purpose of dealing with specific problems that often recur. These teams are set up for period of three to twelve months.

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- (b) **Problem solving teams (PSTs)** – These are temporary teams to solve certain problems and also to identify and overcome causes of problems. They generally last from one week to three months.
 - (c) **Natural work teams (NWTs)** – These teams consist of small groups of skilled workers who share tasks and responsibilities. These teams use concepts such as employee involvement teams, self-managing teams and quality circles. These teams generally work for one to two hours a week.
6. **Leadership** – It is possibly the most important element in TQM. It appears everywhere in organization. Leadership in TQM requires the manager to provide an inspiring vision, make strategic directions that are understood by all and to instill values that guide subordinates. For TQM to be successful in the business, the supervisor must be committed in leading his employees. A supervisor must understand TQM, believe in it and then demonstrate their belief and commitment through their daily practices of TQM.

The supervisor makes sure that strategies, philosophies, values and goals are transmitted down through out the organization to provide focus, clarity and direction. A key point is that TQM has to be introduced and led by top management. Commitment and personal involvement is required from top management in creating and deploying clear quality values and goals consistent with the objectives of the company and in creating and deploying well defined systems, methods and performance measures for achieving those goals.

Binding Mortar

7. **Communication** – It binds everything together. Starting from foundation to roof of the TQM house, everything is bound by strong mortar of communication. It acts as a vital link between all elements of TQM. Communication means a common understanding of ideas between the sender and the receiver. The success of TQM demands communication with and among all the organization members, suppliers and customers. Supervisors must keep open airways where employees can send and receive information about the TQM process. Communication coupled with the sharing of correct information is vital. For communication to be credible the message must be clear and receiver must interpret in the way the sender intended.

There are different ways of communication such as:

- (a) **Downward communication** – This is the dominant form of communication in an organization. Presentations and discussions basically do it. By this the supervisors are able to make the employees clear about TQM.
- (b) **Upward communication** – By this the lower level of employees are able to provide suggestions to upper management of the affects of TQM. As employees provide *insight and constructive criticism*, supervisors must listen effectively to correct the situation that comes about through the use of TQM. This forms a level of trust between supervisors and employees. This is also similar to empowering communication, where supervisors keep open ears and listen to others.

- (c) Sideways communication – This type of communication is important because it breaks down barriers between departments. It also allows dealing with customers and suppliers in a more professional manner.

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Roof

8. Recognition – Recognition is the last and final element in the entire system. It should be provided for both suggestions and achievements for teams as well as individuals. Employees strive to receive recognition for themselves and their teams. Detecting and recognizing contributors is the most important job of a supervisor. As people are recognized, there can be huge changes in self-esteem, productivity, quality and the amount of effort exhorted to the task at hand. Recognition comes in its best form when it is immediately following an action that an employee has performed. Recognition comes in different ways, places and time such as,
- ◇ Ways – It can be by way of personal letter from top management. Also by award banquets, plaques, trophies etc.
 - ◇ Places – Good performers can be recognized in front of departments, on performance boards and also in front of top management.
 - ◇ Time – Recognition can given at any time like in staff meeting, annual award banquets, etc.

Legacy

Interest in TQM as an academic subject peaked around 1993. The Federal Quality Institute was shuttered in September 1995 as part of the Clinton administration's efforts to streamline government. The European Centre for Total Quality Management closed in August 2009, a casualty of the Great Recession.

TQM as a vaguely defined quality management approach was largely supplanted by the ISO 9000 collection of standards and their formal certification processes in the 1990s. Business interest in quality improvement under the TQM name also faded as Jack Welch's success attracted attention to Six Sigma and Toyota's success attracted attention to Lean manufacturing, though the three share many of the same tools, techniques, and significant portions of the same philosophy. TQM lives on in various national quality awards around the globe.

TQM Defined

TQM is a management philosophy that seeks to integrate all organizational functions (marketing, finance, design, engineering, and production, customer service, etc.) to focus on meeting customer needs and organizational objectives.

TQM views an organization as a collection of processes. It maintains that organizations must strive to continuously improve these processes by incorporating the knowledge and experiences of workers. The simple objective of TQM is "Do

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the right things, right the first time, every time." TQM is infinitely variable and adaptable. Although originally applied to manufacturing operations, and for a number of years only used in that area, TQM is now becoming recognized as a generic management tool, just as applicable in service and public sector organizations. There are a number of evolutionary strands, with different sectors creating their own versions from the common ancestor. TQM is the foundation for activities, which include:

- *Commitment by senior management and all employees*
- Meeting customer requirements
- Reducing development cycle times
- Just in time/demand flow manufacturing
- Improvement teams
- Reducing product and service costs
- Systems to facilitate improvement
- Line management ownership
- Employee involvement and empowerment
- Recognition and celebration
- Challenging quantified goals and benchmarking
- Focus on processes / improvement plans
- Specific incorporation in strategic planning

This shows that TQM must be practiced in all activities, by all personnel, in manufacturing, marketing, engineering, R&D, sales, purchasing, HR, etc.

Principles of TQM

The key principles of TQM are as following:

Management Commitment

- Plan (drive, direct)
- Do (deploy, support, participate)
- Check (review)
- Act (recognize, communicate, revise)

Employee Empowerment

- Training
- Suggestion scheme
- Measurement and recognition
- Excellence teams

Fact Based Decision Making

- SPC (statistical process control)
- DOE, FMEA
- The 7 statistical tools

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- TOPS (Ford 8D – team-oriented problem solving)

Continuous Improvement

- Systematic measurement and focus on CONQ
- Excellence teams
- Cross-functional process management
- Attain, maintain, improve standards

Customer Focus

- Supplier partnership
- Service relationship with internal customers
- Never compromise quality
- Customer driven standards

The Concept of Continuous Improvement by TQM

TQM is mainly concerned with continuous improvement in all work, from high level strategic planning and decision-making, to detailed execution of work elements on the shop floor. It stems from the belief that mistakes can be avoided and defects can be prevented. It leads to continuously improving results, in all aspects of work, as a result of continuously improving capabilities, people, processes, technology and machine capabilities.

Continuous improvement must deal not only with improving results, but more importantly with improving capabilities to produce better results in the future. The five major areas of focus for capability improvement are demand generation, supply generation, technology, operations and people capability.

A central principle of TQM is that mistakes may be made by people, but most of them are caused, or at least permitted, by faulty systems and processes. This means that the root cause of such mistakes can be identified and eliminated, and repetition can be prevented by changing the process.

There are three major mechanisms of prevention:

1. Preventing mistakes (defects) from occurring (mistake-proofing or poka-yoke).
2. Where mistakes can't be absolutely prevented, detecting them early to prevent them being passed down the value-added chain (inspection at source or by the next operation).
3. Where mistakes recur, stopping production until the process can be corrected, to prevent the production of more defects. (stop in time).

Implementation Principles and Processes

A preliminary step in TQM implementation is to assess the organization's current reality. Relevant preconditions have to do with the organization's history, its current needs, precipitating events leading to TQM, and the existing employee quality of working life. If the current reality does not include important preconditions, TQM

implementation should be delayed until the organization is in a state in which TQM is likely to succeed.

If an organization has a track record of effective responsiveness to the environment, and if it has been able to successfully change the way it operates when needed, TQM will be easier to implement. If an organization has been historically reactive and has no skill at improving its operating systems, there will be both employee skepticism and a lack of skilled change agents. If this condition prevails, a comprehensive program of management and leadership development may be instituted. A management audit is a good assessment tool to identify current levels of organizational functioning and areas in need of change. An organization should be basically healthy before beginning TQM. If it has significant problems such as a very unstable funding base, weak administrative systems, lack of managerial skill, or poor employee morale, TQM would not be appropriate.

However, a certain level of stress is probably desirable to initiate TQM. People need to feel a need for a change. Kanter (1983) addresses this phenomenon by describing building blocks which are present in effective organizational change. These forces include departures from tradition, a crisis or galvanizing event, strategic decisions, individual "prime movers," and action vehicles. Departures from tradition are activities, usually at lower levels of the organization, which occur when entrepreneurs move outside the normal ways of operating to solve a problem. A crisis, if it is not too disabling, can also help create a sense of urgency which can mobilize people to act. In the case of TQM, this may be a funding cut or threat, or demands from consumers or other stakeholders for improved quality of service. After a crisis, a leader may intervene strategically by articulating a new vision of the future to help the organization deal with it. A plan to implement TQM may be such a strategic decision. Such a leader may then become a prime mover, who takes charge in championing the new idea and showing others how it will help them get where they want to go. Finally, action vehicles are needed and mechanisms or structures to enable the change to occur and become institutionalized.

Steps in Managing the Transition

Beckhard and Pritchard (1992) have outlined the basic steps in managing a transition to a new system such as TQM: identifying tasks to be done, creating necessary management structures, developing strategies for building commitment, *designing mechanisms to communicate the change*, and assigning resources.

Task identification would include a study of present conditions (assessing current reality, as described above); assessing readiness, such as through a force field analysis; creating a model of the desired state, in this case, implementation of TQM; announcing the change goals to the organization; and assigning responsibilities and resources. This final step would include securing outside consultation and training and assigning someone within the organization to oversee the effort. This should be a responsibility of top management. In fact, the next step, designing transition management structures, is also a responsibility of top management. In fact, Cohen and Brand (1993) and Hyde (1992) assert that management must be heavily involved

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as leaders rather than relying on a separate staff person or function to shepherd the effort. An organization wide steering committee to oversee the effort may be appropriate. Developing commitment strategies was discussed above in the sections on resistance and on visionary leadership.

To communicate the change, mechanisms beyond existing processes will need to be developed. Special all-staff meetings attended by executives, sometimes designed as input or dialog sessions, may be used to kick off the process, and TQM newsletters may be an effective ongoing communication tool to keep employees aware of activities and accomplishments.

Management of resources for the change effort is important with TQM because outside consultants will almost always be required. Choose consultants based on their prior relevant experience and their commitment to adapting the process to fit unique organizational needs. While consultants will be invaluable with initial training of staff and TQM system design, employees (management and others) should be actively involved in TQM implementation, perhaps after receiving training in change management which they can then pass on to other employees. A collaborative relationship with consultants and clear role definitions and specification of activities must be established.

In summary, first assess preconditions and the current state of the organization to make sure the need for change is clear and that TQM is an appropriate strategy. Leadership styles and organizational culture must be congruent with TQM. If they are not, this should be worked on or TQM implementation should be avoided or delayed until favorable conditions exist.

Remember that this will be a difficult, comprehensive, and long-term process. Leaders will need to maintain their commitment, keep the process visible, provide necessary support, and hold people accountable for results. Use input from stakeholder (clients, referring agencies, funding sources, etc.) as possible; and, of course, maximize employee involvement in design of the system.

Always keep in mind that TQM should be purpose driven. Be clear on the organization's vision for the future and stay focused on it. TQM can be a powerful technique for unleashing employee creativity and potential, reducing bureaucracy and costs, and improving service to clients and the community.

Tqm Principles

Different consultants and schools of thought emphasize different aspects of TQM as it has developed over time. These aspects may be technical, operational, or social/managerial.

The basic elements of TQM, as expounded by the American Society for Quality Control, are:

1. Policy, planning, and administration;
2. Product design and design change control;
3. Control of purchased material;
4. Production quality control;

5. User contact and field performance;
6. Corrective action; and
7. Employee selection, training, and motivation.

The real root of the quality movement, the "invention" on which it really rests, is statistical quality control. SQC is retained in TQM in the fourth element, above, "production quality control." It may also be reflected in the third element, "control of purchased material," because SQC may be imposed on vendors by contract.

In a nutshell, this core method requires that quality standards are first set by establishing measurements for a particular item and thus defining what constitutes quality. The measurements may be dimensions, chemical composition, reflectivity, etc.—in effect any measurable feature of the object. Test runs are made to establish divergences from a base measurement (up or down) which are still acceptable. This "band" of acceptable outcomes is then recorded on one or several Shewhart charts. Quality control then begins during the production process itself. Samples are continuously taken and immediately measured, the measurements recorded on the chart(s). If measurements begin to fall outside the band or show an undesirable trend (up or down), the process is stopped and production discontinued until the causes of divergence are found and corrected. Thus SQC, as distinct from TQM, is based on continuous sampling and measurement against a standard and immediate corrective action if measurements deviate from an acceptable range.

TQM is SQC—plus all the other elements. Deming saw all of the elements as vital in achieving TQM. In his 1982 book, *Out of the Crisis*, he contended that companies needed to create an overarching business environment that emphasized improvement of products and services over short-term financial goals—a common strategy of Japanese business. He argued that if management adhered to such a philosophy, various aspects of business—ranging from training to system improvement to manager-worker relationships—would become far healthier and, ultimately, more profitable. But while Deming was contemptuous of companies that based their business decisions on numbers that emphasized quantity over quality, he firmly believed that a well-conceived system of statistical process control could be an invaluable TQM tool. Only through the use of statistics, Deming argued, can managers know exactly what their problems are, learn how to fix them, and gauge the company's progress in achieving quality and other organizational objectives.

Making Tqm Work

In the modern context TQM is thought to require participative management; continuous process improvement; and the utilization of teams. Participative management refers to the intimate involvement of all members of a company in the management process, thus de-emphasizing traditional top-down management methods. In other words, managers set policies and make key decisions only with the input and guidance of the subordinates who will have to implement and adhere to the directives. This technique improves upper management's grasp of operations and, more importantly, is an important motivator for workers who begin to feel like they have control and ownership of the process in which they participate.

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Continuous process improvement, the second characteristic, entails the recognition of small, incremental gains toward the goal of total quality. Large gains are accomplished by small, sustainable improvements over a long term. This concept necessitates a long-term approach by managers and the willingness to invest in the present for benefits that manifest themselves in the future. A corollary of continuous improvement is that workers and managers develop an appreciation for, and confidence in, TQM over a period of time.

Teamwork, the third necessary ingredient for TQM, involves the organization of cross-functional teams within the company. This multidisciplinary team approach helps workers to share knowledge, identify problems and opportunities, derive a comprehensive understanding of their role in the overall process, and align their work goals with those of the organization. The modern "team" was once the "quality circle," a type of unit promoted by Deming. Quality circles are discussed elsewhere in this volume.

For best results TQM requires a long-term, cooperative, planned, holistic approach to business, what some have dubbed a "market share" rather than a "profitability" approach. Thus a company strives to control its market by gaining and holding market share through continuous cost and quality improvements—and will shave profits to achieve control. The profitability approach, on the other hand, emphasizes short-term stockholder returns—and the higher the better. TQM thus suits Japanese corporate culture better than American corporate culture. In the corporate environment of the U.S., the short-term is very important; quarterly results are closely watched and impact the value of stocks; for this reason financial incentives are used to achieve short term results and to reward managers at all levels. Managers are therefore much more empowered than employees—despite attempts to change the corporate culture. For these reasons, possibly, TQM has undergone various changes in emphasis so that different implementations of it are sometimes unrecognizable as the same thing. In fact, the quality movement in the U.S. has moved on to other things: the lean corporation (based on just-in-time sourcing), Six Sigma (a quality measure and related programs of achieving it), and other techniques.

Practicing Tqm

As evident from all of the foregoing, TQM, while emphasizing "quality" in its name, is really a philosophy of management. Quality and price are central in this philosophy because they are seen as effective methods of gaining the customer's attention and holding consumer loyalty. A somewhat discriminating public is thus part of the equation. In an environment where only price matters and consumers meekly put up with the successive removal of services or features in order to get products as cheaply as possible, the strategy will be less successful. Not surprisingly, in the auto sector, where the investment is large and failure can be very costly, the Japanese have made great gains in market share; but trends in other sectors—in retailing, for instance, where labor is imposed on customers through self-service stratagems—a quality orientation seems less obviously rewarding.

For these reasons, the small business looking at an approach to business ideal for its own environment may well adapt TQM if it can see that its clientele will reward this approach. The technique can be applied in service and retail settings as readily as in manufacturing, although measurement of quality will be achieved differently. TQM may, indeed, be a good way for a small business, surrounded by "Big Box" outlets, to reach precisely that small segment of the consuming public that, like the business itself, appreciates a high level of service and high quality products delivered at the most reasonable prices possible.

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5.6 ACCREDITATION

Accreditation is the process in which certification of competency, authority, or credibility is presented.

Organizations that issue credentials or certify third parties against official standards are themselves formally accredited by accreditation bodies (such as UKAS); hence they are sometimes known as "accredited certification bodies". The accreditation process ensures that their certification practices are acceptable, typically meaning that they are competent to test and certify third parties, behave ethically and employ suitable quality assurance.

Benefits of Accreditation

Accreditation

"A public recognition of the achievement of accreditation standards by a healthcare organisation, demonstrated through an independent external peer assessment of that organisation's level of performance in relation to the standards".

Accreditation benefits all stake holders. Patients are the biggest beneficiary. Accreditation results in high quality of care and patient safety. The patients get services by credential medical staff. Rights of patients are respected and protected. Patient satisfaction is regularly evaluated.

The staff in a accredited health care organisation are satisfied lot as it provides for continuous learning, good working environment, leadership and above all ownership of clinical processes.

Accreditation to a health care organisation stimulates continuous improvement. It enables the organisation in demonstrating commitment to quality care. It raises community confidence in the services provided by the health care organisation. It also provides opportunity to healthcare unit to benchmark with the best.

Finally, accreditation provides an objective system of empanelment by insurance and other third parties. Accreditation provides access to reliable and certified information on facilities, infrastructure and level of care.

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The Impact of Hospital Accreditation on Quality of Care

Accreditation is a process whereby an organization is assessed on a set of pre-determined standards. It intends to promote quality improvement through diverse approaches; they are either mandated by the government, voluntary or initiated by independent agencies. Although many health-care organizations in developing countries are undergoing or considering accreditation, there is little research on its impact and consequently no conclusive evidence that it improves quality of care.

Quality of care is now prominent on health policy agendas of governments of several countries in the East Mediterranean Region. A study conducted in 2000 by the World Health Organization revealed that there were no accreditation programs in the Eastern Mediterranean. Since then, several countries in this region have been developing and implementing accreditation programs. Among those countries, Lebanon was the first to develop and implement a national accreditation program. Since its implementation in 2002, little is known on its impact on quality of care in Lebanese hospitals. Although there are many different definitions for quality, in this study, quality refers to two simple domains, the technical and interpersonal. This focus does not include continuity of care.

Context

The Ministry of Public Health implemented accreditation through two national surveys. The First National Survey (Survey I) was implemented between September 2001 and July 2002 and 128 hospitals were surveyed. Small-sized hospitals (<100 beds) accounting for the majority of hospital beds in Lebanon were, on average, operating below standards. Medium-sized hospitals (101–200 beds) got a somewhat better average score than large-sized hospitals (>200 beds).

The Second Survey (Survey II) was launched in 2004. In this survey, accreditation standards and scoring mechanisms changed slightly. Among the 142 surveyed hospitals, only 85 met the requirements. Large-sized hospitals had higher ratings than medium-sized hospitals while small-sized hospitals had the lowest rating. The remaining 57 hospitals failed to meet accreditation requirements.

Study Objectives

The objective is to assess the perceived impact of accreditation on quality of care through the lens of health-care professionals, specifically nurses. This study also investigates the perceived contributing factors that can explain changes in quality of care.

Studies by Shortell *et al.* and Pomey *et al.* provided conceptual guidance to our study. In their article, Shortell *et al.* argued that quality improvement implementation leads to greater perceived patient outcomes. Furthermore Shortell *et al.* found that large-sized hospitals face some difficult challenges in terms of quality improvement implementation, underlining the importance of assessing hospital

size. Pomey *et al.* assessed organizational changes after accreditation in France and argued that accreditation can promote quality improvement implementation in hospitals thus leading to better outcomes.

Methods

We surveyed nurses in an effort to assess their perception of improvement in quality of care as a result of hospital accreditation, including contributing factors. This assessment took into consideration the size of hospitals since it may impact quality improvement implementation.

Study Design

This research study followed a cross-sectional survey design where all sixty-eight hospitals that successfully passed both surveys (I and II) were included. A total of fifty-nine hospitals consented to participate. To compare hospitals with similar service and care characteristics, hospitals were stratified by size into three categories defined by the Lebanese Ministry of Health as follows: small- (≤ 100 beds), medium- (101–200 beds) and large-sized (> 200 beds). This stratification also allowed observing variations in quality results by hospital size.

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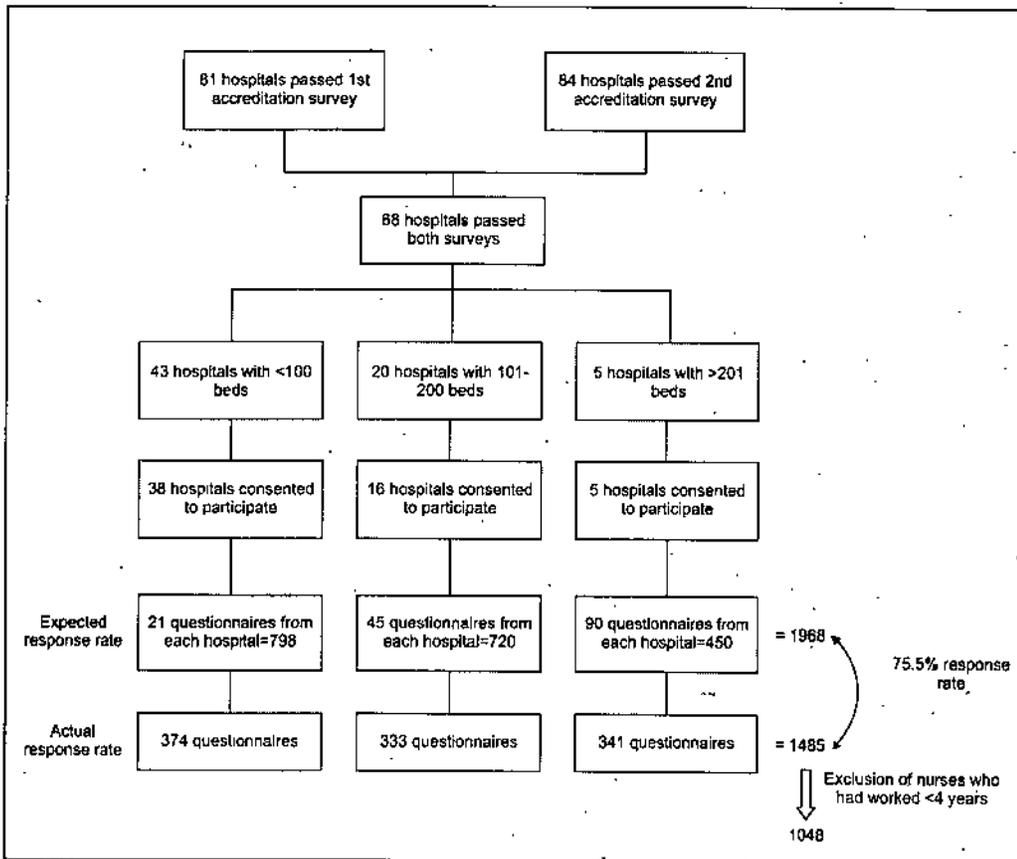


Fig. 5.2: Sampling procedure and response rate.

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Selection of Respondents

The health professionals targeted for this study were nurses. Evidence shows that nurses are key factors in quality of care and are interested in providing good patient outcomes. In fact, nurses spend up to 90% of their time caring for patients and are therefore most likely to feel the impact of accreditation on quality. The sample was limited to Registered Nurses, that is, nurses holding at least a Bachelors' of Science in Nursing, Baccalaureate Technique, Technique Superior, or License Technique. Moreover, only nurses who have been working in the hospital for at least 4 years (i.e. had passed through both accreditation surveys I and II) were surveyed.

On the basis of discussion with hospital and nurse managers and given that there is no official estimate on the number of nurses practicing in Lebanese hospitals, we sampled at least 50% of practicing nurses at each hospital. After computing an average of the estimated number of nurses within each size category, the 38 small-sized hospitals were each asked to return 21 questionnaires, while the 16 medium-sized hospitals were requested to return 45 questionnaires each and the five large-sized hospitals were asked to return 90 questionnaires each. A total of 1968 questionnaires were sent, however, only 1485 questionnaires were collected (755% response rate). In some hospitals, nurses who had <4 years experience mistakenly filled the questionnaire; they were excluded and 1048 nurses were included in our final sample.

Survey Instrument

Very few instruments are available in the literature to evaluate quality implementation and outcomes in health-care organizations, particularly in the context of accreditation. There is no such instrument that can be used worldwide for health-care organizations. For our study, we used scales that were developed in previous studies. As shown in Table, all the scales used in this study are adapted from Shortell *et al.* with the exception of one scale that was adapted from Pomey *et al.*

The wording of few questions was modified to fit the local culture with no change in content. Each of the 54 items used are described in Appendix I. Scales were translated to Arabic. The Arabic version was back-translated to English and compared with the original version. Both language versions of the questionnaire were pilot tested on 15 nurses; each nurse completed both versions with a 1-week time interval. Cronbach Alpha exceeded 0.60 for all scales in both language versions.

Table 5.0: Breakdown of sources of each scale, number of items in each scale and subscale in addition to Cronbach Alpha from Pilot Sample and Total Sample

Scale name	Number of items	Source	Pilot sample		Total sample	
			English	Arabic	English	Arabic
Quality results	5	[13]	0.79	0.90	0.89	0.89
Leadership, commitment and support	9	[13]	0.64	0.91	0.91	0.92
Strategic quality planning	7	[13]	0.71	0.86	0.85	0.84
Human resources utilization	6	[13]	0.80	0.93	0.85	0.88
Education and training	3	[13]	0.69	0.96	0.87	0.87
Rewards and recognition	3	[13]	0.82	0.81	0.84	0.81
Quality management	6	[13]	0.86	0.90	0.88	0.88
Use of data	7	[13]	0.75	0.85	0.90	0.91
Accreditation	14	[14]	0.89	0.89	0.96	0.94
Staff Involvement	5	[14]	0.84	0.86	0.87	0.91
Benefits of Accreditation	9	[14]	0.92	0.92	0.93	0.96
N			15		1048	

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The final survey tool consisted of nine scales and subscales that were rated on a five-point Likert scale (ranging from one for strongly disagree to five for strongly agree). A section on demographics (gender, age, educational qualifications, occupational category and years of experience) was also included. The dependant variable was Quality Results, whereas the independent variables were Leadership, Commitment and Support; Strategic Quality Planning; Quality Management; Human Resource Utilization; Use of Data; and Accreditation.

Before proceeding with the survey, ethical approval was obtained from the Institutional Review Board of the American University of Beirut.

Data Analysis

Data were analyzed using SPSS 15.0 and analyses were carried out at the 0.05 significance level. Data analysis steps are detailed below.

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Descriptive Analysis

To describe the characteristics of the respondents, univariate statistics were performed. Mean scores were computed for every scale and subscale based on the number of available items.

Comparing Hospitals of Different Size (ANOVA)

ANOVA was performed to compare mean scores for each scale and subscale across small-, medium- and large-sized hospitals. The Bonferroni correction was used as a multi-comparison technique.

Creation of Factor Scores

Principal component factor analysis was conducted with orthogonal rotation (varimax) to create factor scores. Eigen values exceeding 1.0 were considered. One factor score was calculated for each of the scales with the exception of those on human resources utilization and accreditation, each of which yielded two factor scores. As mentioned before, the factor score representing Quality Results was considered the dependant variable. The remaining factor scores in addition to the variable representing hospital size were considered the explanatory/independent variables.

Association Between the Dependant and Independent Variables

The dependant variable (factor score on quality results) was correlated against the independent variables represented by their factors scores using Pearson correlation coefficient. The correlation analysis was also stratified by hospital size to assess any effect of size on the correlation coefficients.

The dependant variable was then regressed against all independent variables represented by their factors scores. Interactions between independent variables and hospital size were also investigated. When found significant, the main effect and interaction terms were used to create simple effect terms. All analyses were corrected for nurses' demographic characteristics and only statistically significant variables were kept in the model.

Results

Descriptive analysis

As observed in Table 2, the majority of sampled nurses were females (84.9%), and most of them being between 30 and 45 years of age (59.2%). The vast majority of sampled nurses held a Bachelors' of Science in Nursing, Technique Superior or Baccalaureate Degree with minimal representation from nurses holding License

Technique, Masters in Science or Midwifery degrees. Most of the sampled nurses held staff nurse positions in their hospitals (57.9%). The respondents were equally distributed across small-, medium- and large-sized hospitals.

NOTES**Table 5.1: Descriptive Statistics on the study sample**

	N	%
Gender		
Female	877	84.9
Male	156	15.1
Age groups		
< 30 years	340	32.8
30–45 years	614	59.2
46–55 years	70	6.7
> 56 years	14	1.4
Degrees		
Bachelors of Science	344	33.2
Technique Superior	264	25.5
Baccalaureate Technique	229	22.1
License Technique	104	10.0
Masters Degree	85	8.2
Midwife	10	1.0
Occupational categories		
Nurse	600	57.9
Head nurse	365	35.2
Other	42	4.1
Supervisor	22	2.1
Midwife	8	0.8
Number of nurses across hospital size		
Small (<100 beds)	374	35.7
Medium (100–200 beds)	333	31.8
Large (>201 beds)	341	32.5

Comparing Hospitals of Different Size

As observed in Table, the score on the scale that measures Quality Results was 4.09

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(±0.72). This indicates that nurses perceived an improvement of Quality Results in hospitals as an outcome of accreditation. In terms of the Benefits of Accreditation subscale, the mean score of 4.11 (±0.66) indicates that nurses perceived improved team work and productivity in hospitals as an outcome of accreditation. Rewards and Recognition had the lowest agreement score (mean = 3.41) while the Use of Data subscale (mean = 4.15) had the highest agreement score. The mean scores for all scales and subscales were significantly different across hospital sizes, with the exception of the scale on Leadership, Commitment and Support. Significant differences were observed specifically between small- and large-sized hospitals in addition to medium- and large-sized hospitals, with no significant differences between small- and medium-sized hospitals. The scales and subscales followed a general trend of having the lowest score in large-sized hospitals, slightly higher for small-sized hospitals and highest for medium-sized hospitals. The exceptions were the scale on Quality Results and the subscale on Benefits of Accreditation where the highest scores were observed for small-sized hospitals.

Table 5.2: Distribution of the score of the study variables

	Over- all Mean (SD)	Confidence Interval (95%)	Mean (SD) for small hospitals	Mean (SD) for medium hospitals	Mean (SD) for large hospitals	P-value
Quality results ^{a,b}	4.09 (0.72)	4.05–4.17	4.24 (0.60)	4.20 (0.71)	3.82 (0.79)	<0.001
Leadership, commitment and support	4.02 (0.67)	4.01–4.13	4.05 (0.72)	4.07 (0.58)	3.96 (0.68)	0.10
Strategic quality planning ^{a,b}	4.08 (0.63)	4.05–4.16	4.14 (0.62)	4.18 (0.58)	3.92 (0.67)	<0.001
Education and training ^{a,b}	4.12 (0.79)	4.07–4.21	4.15 (0.78)	4.26 (0.75)	3.95 (0.82)	<0.001
Rewards and recognition ^{a,b}	3.41 (1.04)	3.46–3.64	3.50 (1.02)	3.53 (1.00)	3.20 (1.07)	<0.001
Quality management ^{a,b}	4.12 (0.66)	4.09–4.21	4.16 (0.64)	4.22 (0.62)	3.99 (0.70)	<0.001
Use of data ^{a,b}	4.15 (0.67)	4.08–4.20	4.26 (0.64)	4.27 (0.60)	3.93 (0.71)	<0.001
Staff involvement in accreditation ^{a,b}	4.11 (0.70)	4.05–4.19	4.20 (0.69)	4.13 (0.60)	3.97 (0.77)	<0.001
Benefits of accreditation	4.11 (0.66)	4.03–4.15	4.16 (0.63)	4.15 (0.61)	4.03 (0.72)	0.04

^a Significant difference between medium and large hospitals.

^b Significant difference between small and large hospitals. SD, standard deviation.

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Association Between the Dependant and Independent Variables

The dependant variable (quality results) was found to be positively correlated with all scales with the Pearson R ranging from 0.53 (benefits of accreditation) to 0.73 (use of data). No major differences were observed when stratifying by hospital size.

The regression model where quality results was the dependant variable regressed against factor scores and hospital size. The model had an R^2 of 0.68 depicting a good fit. The model indicated that the predictors of better quality results were leadership, commitment and support; use of data; quality management; staff involvement and hospital size. Quality results increased by 0.18 and 0.39 for every unit increase in leadership, commitment and support and use of data, respectively. This may indicate that the way senior hospital management managed the accreditation process and the capability of the hospital to use data to improve quality may have had a direct effect on improving quality results. The situation was slightly more complex for the other two scales due to the presence of interaction terms. The scale on quality management was observed to have the greatest impact in medium-sized hospitals where for every unit increase in quality management, perceived improvement in Quality Results increased by 0.40 ($P < 0.001$).

This may indicate that medium-sized hospitals were more responsive to quality needs such as creating policies and procedures, designating new services or checking and maintenance of equipment which may have contributed to improving Quality Results. For large- and small-sized hospitals, the impact of the scale measuring quality management failed to show statistical significance. Staff Involvement in accreditation had the greatest impact in small-sized hospitals where the increase in quality results per unit of the independent variable was 0.26 ($P < 0.001$). For large- and medium-sized hospitals, staff involvement failed to show significance with quality results. This observation may indicate that hospital staff was more involved in accreditation in small-sized hospitals, and such involvement helped hospitals improve its quality results.

Table 5.3: Regression model testing for the predictors of quality results

	Beta ^a (standard error)	P-value
Factor score: leadership, commitment and support	0.18 (0.04)	<0.001
Factor score: use of data	0.39 (0.04)	<0.001
Factor score: quality management		
In small hospitals	-0.09 (0.07)	0.17
In medium hospitals	0.40 (0.14)	0.004
In large hospitals	0.05 (0.14)	0.71
Factor score: staff involvement in accreditation		
In small hospitals	0.26 (0.06)	<0.001

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	Beta ^a (standard error)	P-value
In medium hospitals	0.06 (0.14)	0.68
In large hospitals	0.22 (0.13)	0.08
Hospital size (medium vs. small)	-0.15 (0.06)	0.02
Hospital size (large vs. small)	-0.27 (0.06)	<0.001
Adjusted R ²	0.68	
N	503	

* Beta stands for the average change in Quality Results score per unit increase in independent variable scores.

Discussion

In this study, nurses perceived improvement in quality as a result of accreditation. Accreditation seems to have improved perceived quality of care in sampled hospitals, with significant differences across hospital size. With the exception of the subscale on Leadership, Commitment and Support, better results were observed in small- and medium-sized hospitals for all scales and subscales. This finding is particularly important since evidence shows that larger organizations are more likely to value and benefit from accreditation whereas smaller organizations may be burdened by costs of surveys and compliance in comparison with their overall budgets. Evidence shows that smaller organizations often have a more homogeneous culture and its staff probably shares the same values. Large-sized hospitals tend to be more hierarchically and bureaucratically organized which makes implementation of quality work more challenging. In fact, increasing organizational size is also inversely related to an employees' attachment to an organization and hence his/her performance.

Although the relationship between hospital size and quality results as an outcome of accreditation has not been explored much, we believe that our findings merit further research. In the Lebanese context, larger hospitals have been implementing quality improvement initiatives (such as International Standards Organization, etc.) even before implementing the national accreditation program. In fact, they have been delivering services of a certain standard of quality for a long-time. Thus, they may have had narrower room for improvement. Another explanation related to our finding on hospital size has to do with the accreditation standards themselves.

It might be that accreditation standards were made more tailored to fit small- and medium-sized hospitals since the priority for the Ministry of Public Health is to improve service delivery in poor performing hospitals (mostly small- and medium-sized hospitals). This might explain why results in large-sized hospitals were not better than small- and medium-sized hospitals. In other words, the differential improvement in quality as a result of accreditation was small in large-sized hospitals. As for the majority of small- and medium-sized hospitals, the concept of quality

improvement and accreditation was new. That is probably why improvements that have been brought to those hospitals as a result of accreditation were more significant.

It is important to note the Ministry of Public Health had linked accreditation to contracting with private hospitals. In other words, hospitals that fail accreditation cannot contract with the ministry and provide services to its patients. Although a significant amount of revenues for most of the small- and medium-sized hospitals in Lebanon come from delivering services to ministry patients, it might be possible that those hospitals considered accreditation as a serious threat for losing their contracts. As a result, it might be possible that they had incentives to effectively implement accreditation standards.

In Lebanon, the main sources of revenue for large private hospitals are out-of-pocket patients and private third party payers. They depend less on public funds to survive. In addition, the Ministry of Public Health cannot afford not to contract with large hospitals. This is due to patients' preference in addition to other political reasons. That is why accreditation might have been less threatening to large hospitals.

Study results revealed that the variable on leadership, commitment and support was significantly associated with quality results. The high scores observed in ANOVA indicate that senior management was highly committed to the accreditation in their hospitals. However, the level of senior management commitment was lowest for large hospitals and almost equal between small and medium hospitals. To explain this finding, research evidence shows that having continuous and direct lines of communication between top-level managers and their employees can facilitate organizational change, but this relationship diffuses slowly as hospital size increases. Furthermore, evidence shows that the willingness of employees to undertake quality improvement activities is significantly associated with hospitals' culture in addition to the degree of teamwork and support.

The measure for staff Involvement was also significantly associated with better quality results. Significant differences were observed particularly between small- and medium-sized hospitals. Evidence shows that involvement of staff is crucial when implementing changes or new initiatives in an organization particularly when it comes to reducing resistance to change. Since an organization's decision to reach accreditation requires high short-term investment which can yield long-term benefits that are not always guaranteed, staff involvement at all stages including recognition can be beneficial to achieving the ultimate goals of the organization. To achieve this, the management and support given by the administration can play an important role. In this context, it is worth mentioning that while rewards and recognition was not found to be a predictor of quality results in hospitals, this subscale had the lowest overall score. Evidence shows that rewards and recognition influence staff satisfaction, performance and retention.

The variable on use of data was found to be significantly associated with improved quality at accredited hospitals. This demonstrates the importance of using data in driving quality improvement activities. While no literature was found to document the association between the use of data and accreditation, it is important

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to note that the use of data in the accreditation process can help hospitals track improvement activities, measure performance and provide evidence for compliance to accreditation standards.

Three limitations for this study should be recognized. The first lies in the fact that our results are based on the perception of nurses, with no further analysis of patient outcome data. Although patient outcomes could be a good indicator of quality improvement, hospitals in Lebanon do not have standardized outcome indicators.

The second limitation was the differential response rate across hospitals of different sizes (46.9% in small hospitals, 46.3% in medium hospitals and 75.8% in large hospitals). The overall response rate in small- and medium-sized hospitals is lower as some hospitals provided us with fewer questionnaires than requested since they had a low number of nurses. Nurses working in small-sized hospitals may have different scope of practice than nurses working in larger hospitals indicating that we may have sampled a specific group of nurses. This may have impacted their perception of quality. To investigate this, we should have ideally compared the sampled nurses to non-respondents, but access to this information posed ethical concerns. We therefore compared these nurses to respondents from large-sized hospitals because we had higher response there. Since they were not different in terms of age, degree or gender, we deduced that a response bias was unlikely to have occurred. In this context, it is important to note that the overall response rate (75.5%) was acceptable.

Another limitation was selecting only hospitals that passed through both accreditation surveys. One might argue that results generated from hospitals that underwent two accreditation surveys may not be generalized to hospitals that undergo accreditation for the first time. These hospitals might react to the survey in a different manner.

Accreditation Process and Benefits of Accreditation

As online degree programs become more and more predominant in the world of higher education, students in the United States and all around the globe should know the facts about the accreditation process and the benefits of accreditation.

World Wide Learn strives to provide you with the information you need to know about how the accreditation process works and about the many benefits of receiving an education from a college or university with accreditation.

The Accreditation Process

In the United States, accreditation is a voluntary, non-governmental process of review. Elsewhere around the world the accreditation process is performed by government agencies and is often mandated by law.

By accepting accreditation status from a recognized accreditation organization, a college, university, or other institution agrees to uphold the quality standards set by the accreditation organization. The accredited college, university, or other institution also agrees to periodically submit to accreditation renewal review.

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According to CHEA, "Accreditation is a process of external quality review used by higher education to scrutinize colleges, universities and higher education programs for quality assurance and quality improvement. Accreditation in the United States is more than 100 years old, emerging from concerns to protect public health and safety and to serve the public interest."

But what exactly is the process used by accreditation organizations "to scrutinize colleges, universities and higher education programs for quality assurance and quality improvement"? And how does this process work?

A college, university, or other institution seeking accreditation status must complete several primary steps in the accreditation process. Each of these primary steps is designated by the particular accreditation organization from which the institution is seeking accreditation status.

The college, university, or other institution must first prepare materials that demonstrate the institution's accomplishments and exhibit the level of quality of the areas of operation that are under scrutiny. Next, the college or university undergoes a peer review of the prepared materials. Finally, action is taken by the accreditation organization to determine whether accreditation will be granted to the institution.

Steps of the Accreditation Process

The following list discusses each step of the accreditation process:

1. **Preparation and self-examination:** The college, university, or other institution seeking accreditation status prepares materials that effectively display the institution's accomplishments. The institution must also create a written report of its accomplishments according to the standards set by the accreditation organization.
2. **Peer review:** Administrative and faculty peers conduct an intensive review of the prepared materials, written report, and the general workings of the college, university, or other institution seeking accreditation status. Teams of peer reviewers visit the institution. Most accreditation boards are populated by faculty and administrative peers in the field.
3. **Visit and examination:** In addition to the visits made by the peer reviewers, most accreditation organizations also gather a visiting team that visits the college, university, or other institution seeking accreditation status. This team is often made up of peers and members of the public who volunteer their time because of a strong interest in the quality standards of higher education institutions.
4. **Judgment action made by accreditation organization:** After the previous steps are completed, the accreditation organization calls upon their commission to review the steps and affirm or deny accreditation status for the college, university, or other institution under scrutiny.
5. **Continuous review:** By accepting accreditation status, a college, university, or other institution agrees to undergo a review on a rotating basis every few years or sometimes every ten years. An institution is usually required to go

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through all the steps of the accreditation process each time it is reviewed. The purpose of the continuous review is to ensure that the accredited institution continues to maintain the required accreditation standards.

Accreditation organizations are held accountable for the colleges, universities, and other institutions to which they grant accreditation status. They know that students, families, faculty, administrators, state government, and the federal government rely on them to thoroughly review an institution's workings before granting accreditation. Accreditation organizations also perform periodic quality reviews of themselves to ensure that they are effectively able to handle the requirements of their job.

The Benefits of Accreditation

Now that you know the steps of the accreditation process and how the overall process works, you should also know about the benefits of the accreditation process and how those benefits apply to you.

Quality Education

As you now know, accreditation is the tool used in the United States and around the world, to monitor, assess, and evaluate the standards and quality of the education a student receives at a college, university, or other institution of higher learning. Because of the process of accreditation, new students, returning students, and families of students can trust that the education they are paying for is valuable and worth their time, money, and effort.

Accreditation status indicates that a college, university, institution, or program meets the standards of quality set by the accreditation organization, in terms of faculty, curriculum, administration, libraries, financial well-being, and student services.

While a student who attends an accredited college, university, or other institution of higher learning can be assured that he or she will receive a quality education, students should remember that a college or university's accreditation does not automatically guarantee a student's academic success. It is, of course, up to the individual student to make the most of the education he or she receives! But if a larger than average number of students attending a college or university are not successful and do not demonstrate a high level of educational performance, an accreditation organization may need to step in to examine the effectiveness of the institution and evaluate what aspects of the institution need to be improved.

Aside from the promise of overall quality educational opportunities, an institution's accreditation status provides students with many other benefits as well.

Financial aid Opportunities

The federal government relies on accreditation organizations to establish quality assurance of institutions by awarding appropriate types of accreditation status after a successful review of the institution's characteristics. Students are only able to obtain federal financial assistance if the institution they are attending has achieved appropriate accreditation status from an accreditation organization recognized by the USDE.

Students who want or need to get federal (and sometimes state) loans or grants should be sure to enroll at a college or university that has accreditation recognized by the USDE.

In the United States, the USDE and CHEA review accreditation organizations to make sure that they are using effective accrediting practices. The USDE must keep watch to make sure that all federal student financial aid funds are being used for effective and worthwhile academic institutions and programs that are giving students the quality education they deserve.

The USDE is concerned with factors such as a college or university's standards of student admission and practices of student recruitment, financial well-being, and student learning achievement outcomes.

Federal (and often state) financial aid is available only to students who enroll at a college, university, or other institution of higher learning that has been accredited by an accreditation organization that has been reviewed and approved by the USDE.

Credit Transfer

At some point in their education, many students wish to transfer to a new college or university. Most often, these students wish to transfer the course credits they have already accumulated to the new college or university so that they will not have to repeat similar courses, spending unnecessary time and money. Accreditation is an important factor when a college or university is deciding whether to accept transfer credit from a student's previous school. Most colleges and universities will not accept transferred course credits from an institution that has not earned appropriate accreditation status from an accreditation organization.

Success in the Workplace

Most employers prefer to hire job applicants who have gained their education from a college or university with the appropriate accreditation status. Many employers also look to see that employees have been educated at an appropriately accredited institution when making decisions about business promotions, company advancements, and whether to provide tuition coverage or assistance for employees who wish or need to further their education. It is also common for states to require that a college, university, or program be accredited when allowing students to acquire state professional licensure.

5.7 NABL

The National Accreditation Board for Testing and Calibration Laboratories (NABL) undertakes the assessment and accreditation of Testing and Calibration Laboratories, in accordance with the international standard ISO / IEC 17025 and ISO 15189.

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What does NABL stand for? What's its use?

NABL stands for National Accreditation Board For Testing And Calibration Laboratories. NABL has agreements with ILAC (International Laboratory Accreditation Conference) and APLAC (Asia Pacific Laboratory Accreditation Cooperation). These are especially valuable for International recognition and mutual acceptance of test results. In short accreditation has worldwide acceptance.

NABL is an autonomous body under the aegis of Department of Science & Technology, Government of India, and is registered under the Societies Act. It is only one of its kinds that assess laboratories in India for quality and consistency in the results. The concept of Laboratory Accreditation was developed to provide a means for third-party certification of the competence of laboratories to perform specific type(s) of testing.

Does NABL Follow any ISO Guidelines?

NABL follows ISO 15189:2007, which is specific ISO followed world wide for medical laboratories. This standard is used by APLAC (Asia Pacific Laboratory Accreditation Cooperation) and ILAC (International Laboratory Accreditation Co-operation) etc. This means that an NABL accredited laboratory in India follows the same guidelines as any other accredited laboratory in the world.

What is the difference between ISO certification and NABL accreditation?

NABL accreditation is based on evaluation of technical competence whereas ISO certification is based upon verification of proper documentation. Though documentation forms an essential and important part of NABL, it lays down great emphasis on quality and the lab can be denied accreditation if one does not comply with the quality standards.

Is the activity of NABL monitored by some independent authority?

NABL has established its Accreditation System in accordance with ISO/IEC 17011:2004, which is followed internationally. In addition NABL has to also comply with the requirements of APLAC (Asia Pacific Laboratory Accreditation Cooperation) MR001 which it satisfies.

Is NABL Accreditation Mandatory in the Country?

No. It is purely voluntary.

How Many Labs are Currently NABL Accredited in the Country?

We are the first lab in Vadodara city and also first lab in central & south Gujarat to get accreditation. At present only 139 Labs are accredited in the entire country.

Is Accreditation a one-time Phenomenon?

NABL accreditation is not a one-time phenomenon. Laboratory accreditation is valid for a period of 2 years only. During these 2 years NABL conducts periodical

surprise surveillances of the laboratory on an annual basis. Accreditation can be revoked if the laboratory fails to maintain the standards of NABL even during these two years.

Is NABL like any other inspection with all its nuances?

NABL is a very professional and ethical body and the assessors give guidance rather than do policing

Who comprise the NABL assessing team?

For each inspection, there is one lead assessor and other technical assessors for assessing different departments of the laboratory. These are qualified people from *government, semi government and private organizations* who have got special training from NABL.

What does this all mean for the common man, patient and the doctor?

It means that your lab is continuously striving for quality and this will further progress our cause of providing quality services. Laboratory Accreditation provides formal recognition of competent laboratories like ours, thus providing a ready means for customers to find reliable testing services in order to meet the demands.

Nabl Certificate

We have been accredited with NABL certificate for our quality testing services. All in-house facilities that is required for testing have got approved by third-party that comes directly under the National Accreditation Board for Testing and Calibration Laboratories (NABL). We have got NABL certification for our environmental and food testing services. One can easily import or export products with our NABL certified test reports. Further, all these accreditation are in accordance with International Organization for Standardization (ISO 14000 ISO 18000) Standards.

Advantages of our NABL Certification:

- Can import or export products without any problem
- No need for re-testing once you have got our NABL accredited testing report
- One can easily search our name in the Directory of Accredited Laboratories
- Our clients have greater access for their products, in both domestic and global markets place when tested by our NABL accredited laboratory

About NABL

NABL accredit recognition of the technical competence of a testing, calibration or medical laboratory for a specific task following ISO/IEC 17025:2005, ISO 15189:2007 Standards. It is associated with Asia Pacific Laboratory Accreditation

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Objectives

NABL has been established with the objective to provide Government, Industry Associations and Industry in general with a scheme for third-party assessment of the quality and technical competence of testing and calibration laboratories. Government of India has authorised NABL as the sole accreditation body for Testing and Calibration laboratories.

Laboratory Accreditation

The concept of Laboratory Accreditation was developed to provide a means for third-party certification of the competence of laboratories to perform specific type(s) of testing and calibration.

Laboratory Accreditation provides formal recognition of competent laboratories, thus providing a ready means for customers to find reliable testing and calibration services in order to meet their demands.

Laboratory Accreditation enhances customer confidence in accepting testing / calibration reports issued by accredited laboratories. The globalization of Indian economy and the liberalization policies initiated by the Government in reducing trade barriers and providing greater thrust to exports makes it imperative for Accredited Laboratories to be at international level of competence.

For Accreditation, the laboratories should be legally identifiable & appropriately registered. They can be a part of a big organization or an independent entity. NABL can provide accreditation to:

- Laboratories undertaking any sort of testing or calibration in the specified fields.
- Private or government laboratories.
- Small operations to large multi-field laboratories.
- Site facilities, temporary field operations and mobile laboratories.

Process for Accreditation at NABL

The procedure for getting accreditation is detailed in general information brochure published as NABL 100.

Stage I

1. Prepare your laboratory's application for NABL accreditation, giving all desired information and enlisting the test(s) / calibration(s) along with range and measurement uncertainty for which the laboratory has the competence to perform. Laboratory can apply either for all or part of their testing / calibration

facilities. Formats NABL 151, NABL 152 & NABL 153 are to be used by Testing, Calibration and Medical Laboratories respectively for applying to NABL for accreditation.

2. Laboratory has to take special care in filling the scope of accreditation for which the laboratory wishes to apply. In case, the laboratory finds any clause (in part or full) not applicable to the laboratory, it shall furnish the reasons.
3. Laboratories are required to submit three sets of duly filled in application forms for each field of testing / calibration along with two sets of Quality Manual and Application Fees.
4. NABL Secretariat on receipt of application will issue acknowledgement to the laboratory. After scrutiny of application for it being complete in all respects, a unique Customer Registration Number will be allocated to laboratory for further processing of application.
5. NABL Secretariat shall then nominate a Lead Assessor for giving Adequacy Report on the Quality Manual / Application submitted by the laboratory. A copy of Adequacy Report by Lead Assessor will be provided to Laboratory for taking necessary corrective action, if any. The laboratory shall submit Corrective Action Report.

After satisfactory corrective action by the laboratory, a Pre-Assessment audit of the laboratory will be organised by NABL. Laboratories must ensure their preparedness by carrying out its internal audit before Pre-Assessment.

Stage II

1. NABL Secretariat shall organise the Pre-Assessment audit, which shall normally be carried by Lead Assessor at the laboratory sites.
2. The pre-assessment helps the laboratory to be better prepared for the Final Assessment. It also helps the Lead Assessor to assess the preparedness of the laboratory to undergo Final Assessment apart from Technical Assessor(s) and Total Assessment Man-days required vis-à-vis the scope of accreditation as per application submitted by the laboratory.
3. A copy of Pre-Assessment Report will be provided to Laboratory for taking necessary corrective action on the concerns raised during audit, if any.
4. The laboratory shall submit Corrective Action Report to NABL Secretariat.

After laboratory confirms the completion of corrective actions, Final Assessment of the laboratory shall be organised by NABL.

Stage III

1. NABL Secretariat shall organise the Final Assessment at the laboratory site(s) for its compliance to NABL Criteria and for that purpose appoint an assessment team.
2. The Assessment Team shall consist of a Lead Assessor and other Technical Assessor(s) in the relevant fields depending upon the scope to be assessed.

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3. Assessors shall raise the Non-Conformance(s), if any, and provide it to the laboratory in prescribed format so that it gets the opportunity to close as many Non-Conformance(s) as they can before closing meeting of the Assessment.
4. The Lead Assessor will provide a copy of consolidated report of the assessment to the laboratory and send the original copy to NABL Secretariat.

Laboratory shall take necessary corrective action on the remaining Non-Conformance(s) / other concerns and shall submit a report to NABL within a maximum period of 2 months.

Stage IV

1. After satisfactory corrective action by the laboratory, the Accreditation Committee examines the findings of the Assessment Team and recommend additional corrective action, if any, by the laboratory.
2. Accreditation Committee determines whether the recommendations in the assessment report is consistent with NABL requirements as well as commensurate with the claims made by the laboratory in its application.
3. Laboratory shall have to take corrective action on any concerns raised by the Accreditation Committee.
4. Accreditation Committee shall make the appropriate recommendations regarding accreditation of a laboratory to NABL Secretariat.
5. Laboratories are free to appeal against the findings of assessment or decision on accreditation by writing to the Director, NABL.
6. Whenever possible NABL will depute its own technical personnel to be present at the time of assessment as Coordinator and NABL Observer. Sometimes, NABL may at its own cost depute a newly trained Technical Assessor as "Observer" subject to convenience of the laboratory to be accessed.

Stage V

1. Accreditation to a laboratory shall be valid for a period of 2 years and NABL shall conduct periodical Surveillance of the laboratory at intervals of one year.
2. Laboratory shall apply for Renewal of accreditation to it at least 6 months before the expiry of the validity of accreditation.

Benefits of Accreditation

NABL is a signatory to ILAC Arrangements as well as APLAC Mutual Recognition Arrangements (MRA), based on mutual evaluation and acceptance of other MRA Partner laboratory accreditation systems. Such international arrangements facilitate acceptance of test / calibration results between countries to which MRA partners represent.

This developing system of international mutual recognition agreements between accreditation bodies has enabled accredited laboratories to achieve a form

of international recognition, and allowed test data accompanying exported goods to be readily accepted on overseas markets amongst the countries which have already qualified as significant to ILAC Arrangements. This effectively reduces costs for both the exporters and the importers, as it reduces or eliminates the need for products to be re-tested in another country.

Following are the benefits one can accrue with accreditation:-

1. Potential increase in business.
2. Increase Confidence and satisfaction.
3. Time and money saving due to reduction or elimination of the need for re-testing of products.
4. Better control of laboratory operations and feedback to laboratories as to whether they have sound Quality Assurance System and are technically competent.
5. Increase of confidence in Testing / Calibration data and personnel performing work.
6. Customers can search and identify the laboratories accredited by NABL for their specific requirements from the Directory of Accredited Laboratories.
7. Users of accredited laboratories will enjoy greater access for their products, in both domestic and international markets, when tested by accredited laboratories.

Proficiency Testing

It is about assessing and determining the reliability of data that they are producing against their testing. The tool of Inter-Laboratory comparison is used to determine the proficiency of testing. All Accredited Laboratories have to successfully participate in at least one inter-laboratory comparison.

All the accredited laboratory have to follow ISO/IEC 17025 to maintain quality management system in testing and calibration.

Measurement audits are also undertaken. NABL also undertake proficiency testing programme for its accredited as well as applicant laboratories.

Training Courses

NABL undertakes following courses:-

1. ISO/IEC 17021 Assessor's Training Course
2. ISO 15189 Assessor's Training Course

Scope of Accreditation

Its scope for accreditation extends to:-

Testing Laboratories: Biological, Chemical, Electrical, Electronics, Fluid-Flow, Mechanical, Non-Destructive, Photometry, Radiological, Thermal

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Calibration Laboratories: Electro-Technical, Mechanical, Fluid Flow, Thermal & Optical, Radiological,

Medical Laboratories: Clinical Biochemistry, Clinical Pathology, Haematology and Immuno-haematology, Microbiology and Serology, Histopathology, Cytopathology, Genetics, Nuclear Medicine (in-vitro tests only). ALL MAY NOT BE CORRECT.

5.8 QUALITY MANUAL

An official document produced by a business that details how its quality management system operates. A typical quality manual will include the company's quality policy and goals, as well as a detailed description of its quality control system that might include staff roles and relationships, procedures, systems and any other resources that relate to producing high quality goods or services.

Overview

The quality manual template is a supplement to the laboratory quality management system-training toolkit, Module 16 - Documents and records.

This quality manual template is based on internationally-accepted standards, and provides guidance for public health and clinical laboratories on writing policies and procedures that support a quality management system. It comprises a main document providing information and examples to assist with writing a laboratory quality manual, and 24 appendices (examples of standard operating procedures, forms, and processes). All documents are in Word format because they are meant to serve as templates and are thus modifiable. The individual laboratories are required to customize the text of the template to the local situation.

What Must a Quality Manual Contain?

There's just no single simple answer to this question, despite many badly informed beliefs to the contrary. It all depends on what *you* need in *your* business. Just as a smart car, a delivery truck and a freight train are all vehicles, but will be right in different contexts, what is the 'right' quality manual in one company may be too much or too little in another. A small business may only need a single manual; a large company often will need more.

Widespread but ignorant and uninformed (mis)belief insists there is One Single Right and Proper format. Utter tosh. It's completely wrong to dictate that an ISO 9001 Quality Manual *must always look like X*, or that *quality manuals must always have these specific headings* or *must be set out like this*. If you've been told that, you've been misinformed.

What is Required in a Quality Manual?

To start, let's list out what is required from a Quality Manual, and a bit of the reasoning behind each item:

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1. **The Scope of the Quality Management System:** This is in place to identify the limit of the system, and is based on the scope agreed with the registrar to be placed on the ISO9001 certificate. This is the explanation of what your company does, be it "Design and Manufacture of Aircraft Electronics," "Machining Services for Customers in the Automotive Industry," or "Providing Fast Food for People in the Greater Pensacola Area."

The second part of the scope requirement is to identify any exclusions from the standard. In many cases the Quality Manual will identify none, but the most common exclusion is the requirement of the ISO 9001 standard for "Design & Development" for companies such as a machining shop, which works exclusively from customer drawings and does not design any products itself.

2. **The Documented Procedures Established for the Quality Management System (or References):** As is commonly pointed out, there are only six documented procedures required by the ISO9001 standard (Control of Documents, Control of Records, Internal Audit, Control of Non-Conforming Products, Corrective Actions & Preventive Actions). In addition, there is a requirement to create documented procedures when non-conformances would occur if the procedure was not written down. Simply put, if you need to have a written procedure to make sure that mistakes are not made, you need to have a written procedure. If these procedures are simply in flowchart form they could be incorporated into a short Quality Manual, but more than likely they will include some additional information, and most companies will have some additional procedures as well, so references in the Quality Manual are the simplest thing to do. This also gives you a quick place to look when trying to find a procedure.
3. **A Description of the Interaction of Processes:** This is most simply done with a flowchart that identifies all the processes in the organization with arrows showing how they connect. While an in-depth flowchart may help you to better understand the interactions between processes in your organization, a simple top-level flowchart is all that is needed for most people to understand the basics. This is what is needed in the Quality Manual.

Why a Short Quality Manual?

The best part of a short, graphic Quality Manual is that it makes for a good brochure to explain your company to would-be clients. By removing most of the wordiness in a Quality Manual that comes when you simply re-state the ISO9001 standard, you can include some added extras that help to sell you to people who want to buy your product. You can include Mission and Vision statements along with your Quality Policy and Quality Objectives. If these are worded correctly, you can stress to your clients how you want your company to be of service to them in a clear and concise manner. You can even include a top-level Management Structure so that people can better understand how your company is controlled.

5.9 CONCEPT OF MEDICAL TOURISM

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“Medical tourism” is the term commonly used to describe people traveling outside their home country for medical treatment. Traditionally, international medical travel involved patients from less-developed countries traveling to a medical center in a developed country for treatment that was not available in their home country. In the United States, the term “medical tourism” generally refers to people traveling to less-developed countries for medical care. Medical tourism is a worldwide, multibillion-dollar phenomenon that is expected to grow substantially in the next 5–10 years. However, little reliable epidemiologic data on medical tourism exist. Studies using different definitions and methods have estimated there are 60,000–750,000 medical tourists annually from around the world.

The most common categories of procedures that people pursue during medical tourism trips are cosmetic surgery, dentistry, cardiology (cardiac surgery), and orthopedic surgery. Common destinations include Thailand, Mexico, Singapore, India, Malaysia, Cuba, Brazil, Argentina, and Costa Rica. The type of procedure and the destination need to be considered when reviewing the risk of travel for medical care.

Most medical tourists rely on private companies or “medical concierge” services to identify foreign health care facilities, and they pay for their care out of pocket. Some insurers and large employers have alliances with overseas hospitals to control health care costs, and several major medical schools in the United States have developed joint initiatives with overseas providers, such as the Harvard Medical School Dubai Center, the Johns Hopkins Singapore International Medical Center, and the Duke-National University of Singapore. Whether these joint ventures will increase the number of US citizens who go overseas for health care is unknown.

What is Medical Tourism?

Medical tourism can be defined as the process of traveling outside the country of residence for the purpose of receiving medical care. Growth in the popularity of medical tourism has captured the attention of policy-makers, researchers and the media. Originally, the term referred to the travel of patients from less-developed countries to developed nations in pursuit of the treatments not available in their homeland.

Today we are experiencing both qualitative and quantitative shifts in patient mobility, as people travel from richer to less-developed countries in order to access health services. Such shift is mostly driven by the relative low-cost of treatments in less developed nations, the availability of inexpensive flights and increased marketing and online consumer information about the availability of medical services.

What really puts the word “tourism” in medical tourism concept is that people often stay in the foreign country after the medical procedure. Travelers can thus take advantage of their visit by sightseeing, taking day trips or participating in any other traditional tourism activities.

5.10 BENEFITS OF MEDICAL TOURISM:

1. As the technology, doctor training and standards of healthcare in developing countries has vastly improved in recent years, more and more people are looking at medical tourism as an attractive solution to their health problems.
2. Medical tourists come from all over the world, but most are citizens of Western nations such as the United States, Britain, Europe, the Middle East and Japan. The most obvious benefit for medical tourists is the dramatic savings in cost.
3. Another major benefit is the speed at which some surgical procedures can be completed. The waiting period for a hip replacement in Britain, for example, can be up to a year or more. A patient can fly to India, Thailand, Malaysia or the Philippines and have the procedure done almost immediately. Since most of the doctors and surgeons in medical tourism destinations have been well-trained internationally, patients can expect quality healthcare at the reputable institutions.
4. Insurance is another factor in the decision to choose a foreign country for a medical procedure. Some orthopaedic operations, especially knee and hip replacements, are often not covered by health insurance.
5. A final benefit is the pleasure of adding some travel and adventure to your medical needs. For many medical tourists, a trip to Thailand or India will be a first. A big component of the medical tourism industry is the relaxing vacation period following the medical procedure

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Cost

Medical tourism represents a worldwide, multibillion-dollar phenomenon that is expected to grow considerably in the next decade. For the individual interested in health services, cost is the key factor involved in the decision to receive medical care abroad.

As healthcare costs in the US and other parts of the world are excessively soaring, many employers and insurance companies started to view medical tourism as a way to lower them. More and more countries around the globe start to see the financial benefits from this emerging market, so they offer premium medical services at notably lower prices.

The primary reason that clinics and hospitals in the developing countries are able to lower their prices is directly related to the nation's economic status. The direct correlation with per capita gross domestic product of the country is observed, which is a proxy for income levels. As a consequence, surgery prices are from 30% to 70% lower in the countries that are promoting medical tourism when compared to the US.

Quality

There are two major components of the service quality in the health care sector - technical or mechanical quality and serviceable or functional quality. Technical

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equipment is at the core of the patients' diagnostic algorithm, while the functional quality is measured by the service offered in the healthcare centers (such as the services of staffs, nurses and, most importantly, the doctors towards the patient and their assistants). The service quality in medical tourism industry is a vital part in attracting customers.

One of the fundamental barriers in accepting medical tourism is the perception of inadequate quality. A key to overcome it is using adequate marketing strategies and quality assessment via accreditation from an internationally recognized institution. Such accreditation is pivotal for strengthening confidence in the quality of healthcare.

This confidence can be even stronger if accreditation is followed by an affiliation with reputable hospitals or health care systems in industrialized countries. Once healthcare providers are accredited and become a part of international referral networks, they can be appropriately rated for risks.

Treatment Types

Categories of different treatments and their availability also represent an important factor in decision to engage in medical tourism. The most common types of procedures that patients pursue during medical tourism trips are elective cosmetic surgery, dentistry, organ transplantation, cardiac surgery and orthopedic surgery.

However, a wide variety of services can be obtained through medical tourism, ranging from various essential treatments to different kinds of traditional and alternative treatments. Reproductive tourism and reproductive outsourcing are growing in popularity, which is the practice of traveling abroad to engage in surrogate pregnancy, in vitro fertilization and other assisted reproductive technology methods.

In addition to cost, other major factor responsible for the increase of medical tourism is access. The lack of it, either due to the unavailability of the technology or the prohibition in the home country, can subsequently lead to medical tourism. The common examples are cytoplasmic transfer or stem cell therapy.

Medical Tourism: Same Game, Different Name

Medical tourism boasts an almost identical definition to medical exchange. It is defined as the movement of patients across borders to receive a form of medical treatment. This option creates a dual opportunity for patients who have a willingness to travel for treatment and for countries that are looking to establish treatment centers with specialties and accommodations that will attract patients from throughout the world. Medical tourism also can include spa treatments such as massage, hydrotherapy and facial treatments.

The document "Medical Tourism: Treatments, Markets and Health System Implications" cites the reversal of patient flow from wealthier, more developed

areas to less-developed nations, making it an emerging international market for healthcare. The shift is also accompanied by a change in how healthcare is viewed from a consumer standpoint. As a side benefit, tourism dollars in that country also increase when patients travel for a medical procedure.

Today the purchase of a healthcare procedure is increasingly viewed as just another consumer good that is available from providers throughout the world, and its purchase can result from an internet search or from a referral source such as a doctor or third-party administrator. Access to this information on healthcare procedures around the world is now available from a variety of internet sources and is accessible from any computer or Smartphone. Naturally as availability of services increases so does competition, which could effectively decrease the cost and prices available in domestic healthcare systems.

Demand drivers for medical services overseas:

1. Familiarity
2. Availability
3. Cost
4. Quality
5. Bioethical legislation
6. Technological platform ("Medical Tourism: Treatments, Markets and Health System Implications")

Traveling for Medical Need, not for Pleasure

According to the McKinsey Quarterly (May 2008) medical travel is defined as traveling explicitly for medical treatment in a foreign country. These patients typically seek higher-quality medical services of an inpatient and outpatient nature in a hospital setting. Because this group seeks prompt service for their medical condition, searching for a lower-cost procedure is not a priority. McKinsey defined this group of medical travelers as individuals who demand the most-advanced technology, especially when those services are not available in the patient's home country.

According to a report from Johnson & Garman, 2010, for every \$1 spent by an American on healthcare services abroad, \$5.64 is spent by international patients seeking healthcare in the U.S. Those international patients with the most severe illnesses also stay 28% longer (Satjapot, Johnson & Garman, 2011). The medical traveler looks for direct access to information on physicians, pricing for procedures and logistics. While this patient may primarily look for the highest-quality service for necessary procedures, they may adopt a more lenient approach to lower-cost options for more discretionary procedures.

Potential problems to address:

- Willingness of patients to travel abroad
- Incentivizing patients to travel
- Increasing awareness of medical travel

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- Navigating geopolitical events and acts of nature
- Navigating evolutions in national healthcare policy

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A Crystal Ball Forecast

A surprising effect of the current U.S. healthcare reform may be the number of Americans who will travel abroad for their healthcare needs according to the publication "U.S. Healthcare Reform's Effect on the U.S. Medical Tourism Marketplace." This article stated that there would be no impact on the growth of foreign patients coming to the U.S. for medical treatment or on Americans who travel within the U.S. for treatment.

The viewpoint stated above was also backed up by a June 2012 blog posting on Florida Medical Retreat.com. The posting spoke of the creation of a National Travel and Tourism office within the U.S. Commerce Department. This office is believed to have an ability to influence policy in the Federal government with strategies to easy entry for foreign visitors, coordination of Federal programs that affect tourism and the creation of additional support for travel-related research. The goal of the organization is to make the U.S. the top travel destination by the end of 2021, attracting 100 million visitors annually.

In the near future, traveling for healthcare needs may become more of the norm rather than the exception with more consumers choosing options outside their immediate locale. Some will be directed by employee insurance programs and others will conduct a personal search for the provider and service that best fits their need(s). Today quality and dependable healthcare is available throughout the world whether traveling for medical treatment (medical exchange), partaking of medical and health benefits in a beautiful locale (medical tourism) or choosing medical treatment in a dedicated hospital setting (medical travel).

Medical Tourism Statistics & Facts

With medical tourism still in its early stages, gaining reliable data is challenging. Our research and editorial team works hard to compile the most accurate, current information on international medical travel, global healthcare, and the international patient experience.

Below, we have compiled brief answers to some of the queries we receive most often. Contact us with specific queries—we're happy to work with you to provide the best source information, third-party references, patient case studies, industry contacts, and the latest research data.

What are the Top Destinations?

Costa Rica, India, Israel, Malaysia, Mexico, Singapore, South Korea, Taiwan, Thailand, Turkey, United States

Why These Destinations?

The making of a world-class healthcare destination is complex. We consider a variety of factors, including:

- Government and private sector investment in healthcare infrastructure
- Demonstrable commitment to international accreditation, quality assurance, and transparency of outcomes
- International patient flow
- Potential for cost savings on medical procedures
- Political transparency and social stability
- Excellent tourism infrastructure
- Sustained reputation for clinical excellence
- History of healthcare innovation and achievement
- Successful adoption of best practices and state-of-the-art medical technology
- Availability of internationally-trained, experienced medical staff

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What are the top Specialties for Medical Travelers?

- *Cosmetic surgery*
- Dentistry (general, restorative, cosmetic)
- Cardiovascular (angioplasty, CABG, transplants)
- Orthopedics (joint and spine; sports medicine)
- Cancer (often high-acuity or last resort)
- Reproductive (fertility, IVF, women's health)
- Weight loss (LAP-BAND, gastric bypass)
- Scans, tests, health screenings and second opinions.

How big is the Market?

Finding the answer to this question can be challenging, as estimates and forecasts vary widely among world's the top research firms. These disparities arise from inconsistencies in defining medical travel and a lack of verifiable data at the country level.

Patients Beyond Borders' editors define a medical traveler as anyone who travels across international borders for the purpose of receiving medical care. We do not count in-country expatriates, tourists in need of emergency medical care, companions accompanying medical travelers, or multiple patient episodes that occur over the course of one medical visit.

With these variables in mind, we believe the market size is USD 38.5-55 billion, based on approximately eleven million cross-border patients worldwide spending an average of USD 3,500-5,000 per visit, including all medically-related costs, cross-border and local transport, inpatient stay and accommodations. We estimate some 1,200,000 Americans will travel outside the US for medical care this year (2014).

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Is the Market Growing?

Yes. The world population is aging and becoming more affluent at rates that surpass the availability of quality healthcare resources. In addition, out-of-pocket medical costs of critical and elective procedures continue to rise, while nations offering universal care are faced with ever-increasing resource burdens. These drivers are forcing patients to pursue cross-border healthcare options either to save money or to avoid long waits for treatment. We estimate the worldwide medical tourism market is growing at a rate of 15-25%, with rates highest in North, Southeast and South Asia.

How Much can you Save?

Using US costs across a variety of specialties and procedures as a benchmark, average range of savings for the most-traveled destinations:

- Brazil: 20-30%
- Costa Rica: 45-65%
- India: 65-90%
- Malaysia: 65-80%
- Mexico: 40-65%
- Singapore: 25-40%
- South Korea: 30-45%
- Taiwan: 40-55%
- Thailand: 50-75%
- Turkey: 50-65%

We are happy to provide detailed comparative cost data, by country and procedure, upon request.

What is International Accreditation?

Trusted international accreditation has become one of the biggest drivers in the growth of the medical tourism market. Responding to a global demand for accreditation standards, the US-based Joint Commission launched its international affiliate agency in 1999, the Joint Commission International (JCI). In order to be accredited by the JCI, an international hospital must meet the same set of rigorous standards set forth in the US by the Joint Commission. More than 600 hospitals and clinical departments around the world have now been awarded JCI accreditation and that number is growing by about 20% per year.

More recently, established agencies that accredit outpatient clinics, such as The Accreditation Association of Ambulatory Health Care (AAAHC) and The American Association for Accreditation of Ambulatory Surgery Facilities (AAASF) have launched international initiatives that address ambulatory care.

International Healthcare Accreditation

International healthcare accreditation is the process of certifying a level of quality for healthcare providers and programs across multiple countries. International healthcare accreditation organizations certify a wide range of healthcare programs such as hospitals, primary care centers, medical transport, and ambulatory care services.

The oldest international accrediting body is Accreditation Canada, formerly known as the Canadian Council on Health Services Accreditation, which accredited the Bermuda Hospital Board as soon as 1968. Since then, it has accredited hospitals and health service organizations in ten other countries.

In the United States, the accreditation group Joint Commission International (JCI) was formed in 1994 to provide international clients education and consulting services. Many international hospitals today see obtaining international accreditation as a way to attract American patients.

Joint Commission International is a relative of the Joint Commission in the United States. Both are US-style independent private sector not-for-profit organizations that develop nationally and internationally recognized procedures and standards to help improve patient care and safety. They work with hospitals to help them meet Joint Commission standards for patient care and then accredit those hospitals meeting the standards.

The different international healthcare accreditation schemes vary in quality, size, cost, intent and the skill and intensity of their marketing. They also vary in terms of cost to hospitals and healthcare institutions making use of them.

Increasingly, some hospitals are looking towards dual international accreditation, perhaps having both JCI to cover potential US clientele, and Accreditation Canada. As a result of competition between clinics for American medical tourists, there have been initiatives to rank hospitals based on patient-reported metrics.

Other organizations providing contributions to quality practices include:

- The United Kingdom Accreditation Forum (UKAF) is an established network of accreditation organisations with the intention of sharing experience good practice and new ideas around the methodology for accreditation programmes, covering issues such as developing healthcare quality standards, implementation of standards within healthcare organisations, assessment by peer review and exploration of the peer review techniques to include the recruitment, training, monitoring and evaluation of peer reviewers and the mechanisms for awards of accredited status to organisations.

Risks

Medical tourism carries some risks that locally-provided medical care does not. Some countries, such as India, South Africa, or Thailand have very different infectious disease-related epidemiology to Europe and North America. Exposure to diseases without having built up natural immunity can be a hazard for weakened

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individuals, specifically with respect to gastrointestinal diseases (e.g., Hepatitis A, amoebic dysentery, paratyphoid) which could weaken progress and expose the patient to mosquito-transmitted diseases, influenza, and tuberculosis. However, because in poor tropical nations diseases run the gamut, doctors seem to be more open to the possibility of considering any infectious disease, including HIV, TB, and typhoid, while there are cases in the West where patients were consistently misdiagnosed for years because such diseases are perceived to be "rare" in the West.

The quality of post-operative care can also vary dramatically, depending on the hospital and country, and may be different from US or European standards. Also, traveling long distances soon after surgery can increase the risk of complications. Long flights and decreased mobility associated with window seats can predispose one towards developing deep vein thrombosis and potentially a pulmonary embolism. Other vacation activities can be problematic as well — for example, scars may become darker and more noticeable if they sunburn while healing.

Also, health facilities treating medical tourists may lack an adequate complaints policy to deal appropriately and fairly with complaints made by dissatisfied patients.

Differences in healthcare provider standards around the world have been recognised by the World Health Organization, and in 2004 it launched the World Alliance for Patient Safety. This body assists hospitals and government around the world in setting patient safety policy and practices that can become particularly relevant when providing medical tourism services.

If there are complications, the patient may need to stay in the foreign country for longer than planned or if they have returned home, will not have easy access for follow up care.

Legal Issues

Receiving medical care abroad may subject medical tourists to unfamiliar legal issues. The limited nature of litigation in various countries is one reason for the lower cost of care overseas. While some countries currently presenting themselves as attractive medical tourism destinations provide some form of legal remedies for medical malpractice, these legal avenues may be unappealing to the medical tourist. Should problems arise, patients might not be covered by adequate personal insurance or might be unable to seek compensation via malpractice lawsuits. Hospitals and/or doctors in some countries may be unable to pay the financial damages awarded by a court to a patient who has sued them, owing to the hospital and/or the doctor not possessing appropriate insurance cover and/or medical indemnity.

Ethical Issues

There can be major ethical issues around medical tourism. For example, the illegal purchase of organs and tissues for transplantation had been methodically

documented and studied in countries such as India, China, Colombia and the Philippines. The Declaration of Istanbul distinguishes between ethically problematic “transplant tourism” and “travel for transplantation”.

Medical tourism may raise broader ethical issues for the countries in which it is promoted. For example in India, some argue that a “policy of ‘medical tourism for the classes and health missions for the masses’ will lead to a deepening of the inequities” already embedded in the health care system. In Thailand, in 2008 it was stated that, “Doctors in Thailand have become so busy with foreigners that Thai patients are having trouble getting care”. Medical tourism centered on new technologies, such as stem cell treatments, is often criticized on grounds of fraud, blatant lack of scientific rationale and patient safety. However, when pioneering advanced technologies, such as providing ‘unproven’ therapies to patients outside of regular clinical trials, it is often challenging to differentiate between acceptable medical innovation and unacceptable patient exploitation.

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Medical Tourism in India

Medical tourism is a growing sector in India. India’s medical tourism sector is expected to experience an annual growth rate of 30%, making it a \$2 billion industry by 2015. As medical treatment costs in the developed world balloon - with the United States leading the way - more and more Westerners are finding the prospect of international travel for medical care increasingly appealing. An estimated 150,000 of these travel to India for low-priced healthcare procedures every year.

Attractions

Advantages for medical treatment in India include reduced costs, the availability of latest medical technologies, and a growing compliance on international quality standards, as well as the fact that foreigners are less likely to face a language barrier in India. The Indian government is taking steps to address infrastructure issues that hinder the country’s growth in medical tourism. The government has removed visa restrictions on tourist visas that required a two-month gap between consecutive visits for people from Gulf countries which is likely to boost medical tourism. A visa-on-arrival scheme for tourists from select countries has been instituted which allows foreign nationals to stay in India for 30 days for medical reasons. In Noida, which is fast emerging as a hotspot for medical tourism, a number of hospitals have hired language translators to make patients from Balkan and African countries feel more comfortable while at the same time helping in the facilitation of their treatment.

Confederation of Indian Industry reported that 150,000 medical tourists came to India in 2005, based on feedback from the organization’s member hospitals. The number grew to 200,000 by 2008. A separate study by ASSOCHAM reported that the year 2011 saw 850,000 medical tourists in India and projected that by 2015 this number would rise to 3,200,000.

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Most estimates claim treatment costs in India start at around a tenth of the price of comparable treatment in America or Britain. The most popular treatments sought in India by medical tourists are alternative medicine, bone-marrow transplant, cardiac bypass, eye surgery and hip replacement. India is known in particular for heart surgery, hip resurfacing and other areas of advanced medicine.

Lower treatment cost does not necessarily mean lower healthcare standards. There are 21 JCI accredited hospitals in India and growing. However, for a patient traveling to India, it is important to find the optimal Doctor-Hospital combination. After the patient has been treated, the patient has the option of either recuperating in the hospital or at a paid accommodation nearby. Many hospitals also give the option of continuing the treatment through telemedicine.

The city of Chennai has been termed **India's health capital**. Multi- and super-specialty hospitals across the city bring in an estimated 150 international patients every day. Chennai attracts about 45 percent of health tourists from abroad arriving in the country and 30 to 40 percent of domestic health tourists. Factors behind the tourists inflow in the city include low costs, little to no waiting period, and facilities offered at the specialty hospitals in the city. The city has an estimated 12,500 hospital beds, of which only half is used by the city's population with the rest being shared by patients from other states of the country and foreigners. Dental clinics have attracted dental care tourism to Chennai.

India is a global leader in medical tourism, and one of the world's least expensive choices among medical tourism destinations. Focusing on heart surgery, India also attracts patients with high quality dental care, Ayurvedic spa treatments and other medical and alternative treatments.

Pros

1. The medical cost savings of having operations and treatments in India are among the best in the world.
2. Many doctors are trained abroad and hospitals attracting international patients with all staff being proficient in English.
3. India has many appealing options for recovery with costs for accommodation typically low.
4. The Indian health and medical industry is large and boasts some well developed infrastructure, particularly in big cities such as Chennai, which support the wealthy classes.

Cons

1. Although India has a rich legacy of cultural sites that attract tourists, it is not practical to enjoy some of these sites while recovering. If you do venture out of a sterile hospital environment expect to be exposed to bacteria that may cause a stomach upset or worse.
2. India gets extremely hot in the summer months, with temperatures reaching 40°C at times.

3. During the monsoons, water-borne diseases become a problem too, so choosing a good time to visit is essential.

India Cosmetic Surgery

India offers a wide range of cosmetic surgery procedures at a nominal cost, attracting foreign patients with affordable treatments. Mumbai has the largest panel of cosmetic surgeons in India and is a popular place for full body makeovers including facelifts.

India Dental Tourism

India is well known as a popular destination for dental procedures. Dental work in India typically costs just a third of dental treatment in the US.

India Alternative Medicine

India is also known for its ashrams and retreat centers that offer plenty of new age pursuits and ancient practices such as meditation, yoga, Ayurvedic treatments and more. Many of these practices originated in India, and experts that can otherwise be hard to find in other countries are widely available here.

India Medical

Medical infrastructure in India is state-of-the-art, the greatest concentration of clinics is found in Chennai, with large hospitals also available in cities like Mumbai and New Delhi. This is an overview of the major hospitals in India catering to medical tourists and what you can expect for medical care and medical facilities.

India Medical Travel

India is an enticing holiday destination, characterized by myriad cultural traditions and historical attractions spanning thousands of years. Traveling here to receive world-class medical care followed by a sightseeing holiday still costs significantly less than it would to undergo the same medical procedures in Europe or North America.

Table 5.4: Comparing Medical Treatment Pricing

Procedure	USA	Singapore	Thailand	India
Hip Replacement	\$24,000	\$15,000	\$10,000	\$6,300
Breast Augmentation	\$10,000	\$8,000	\$3,150	\$2,200
Spinal Fusion	\$62,000	\$9,000	\$7,000	\$5,500
Coronary Angioplasty	\$41,000	\$11,250	\$4,150	\$3,500

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5.11 STUDENT ACTIVITY

1. Explain the meaning of ISO 9000 standards.
2. Why is ISO 9000 important?
3. Discuss the Primary Elements of TQM.
4. Describe the Benefits of Accreditation
5. What does NABL stand for? What's its use?

5.12 SUMMARY

- A valuable process to perform on a whole consumer product is failure testing or stress testing. In mechanical terms this is the operation of a product until it fails, often under stresses such as increasing vibration, temperature, and humidity.
- QA is very important in the medical field because it helps to identify the standards of medical equipments and services. Hospitals and laboratories make use of external agencies in order to ensure standards for equipment such as X-ray machines, Diagnostic Radiology and AERB.
- ISO 9000 is a series of standards, developed and published by the International Organization for Standardization (ISO), that define, establish, and maintain an effective quality assurance system for manufacturing and service industries.
- A critical part of the management of quality is the strategic and systematic approach to achieving an organization's vision, mission, and goals. This process, called strategic planning or strategic management, includes the formulation of a strategic plan that integrates quality as a core component.
- Recognition is the last and final element in the entire system. It should be provided for both suggestions and achievements for teams as well as individuals. Employees strive to receive recognition for themselves and their teams.

5.13 GLOSSARY

- **Quality Control:** The term quality control describes a variety of activities. It encompasses all techniques and activities of an organization that continuously monitor and improve the conformance of products, processes or services to specifications.
- **Quality Assurance:** The term quality assurance describes all the planned and systematic actions necessary to assure that a product or service will satisfy the specified requirements.
- **Statistical control:** Statistical control is based on analyses of objective and subjective data. Many organizations use statistical process control as a tool in any quality improvement effort to track quality data.

- **Downward communication:** This is the dominant form of communication in an organization. Presentations and discussions basically do it. By this the supervisors are able to make the employees clear about TQM.
- **Upward communication:** By this the lower level of employees are able to provide suggestions to upper management of the affects of TQM.

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5.14 REVIEW QUESTIONS

1. What is ISO 9000?
2. How does ISO 9000 work?
3. What are the Principles of TQM?
4. Explain the Accreditation Process and Benefits of Accreditation
5. Write short note on:
 - (a) QITs
 - (b) PSTs
 - (c) NWTs
 - (d) TQM
 - (e) Medical tourism

6

HEALTHCARE MARKETING MANAGEMENT

STRUCTURE

- 6.0 Learning Objectives
- 6.1 Introduction
- 6.2 Healthcare Marketing
- 6.3 Principles of Management
- 6.4 Organisational Behaviour
- 6.5 Organisational Structure
- 6.6 Business Communication
- 6.7 Epidemiology
- 6.8 Total Quality Management (TQM) in Healthcare
- 6.9 Medical Audit
- 6.10 Student Activity
- 6.11 Summary
- 6.12 Glossary
- 6.13 Review Questions

6.0 LEARNING OBJECTIVES

After completion of the unit, you will be able to:

- Understand Healthcare Marketing
- Describe Principles of management
- Discuss Organisational Behavior and Structure
- Explain Business communication
- Define Epidemiology
- Describe Total Quality Management (TQM) in Healthcare
- Discuss Medical audit

6.1 INTRODUCTION

Health marketing is a new approach to public health that applies traditional marketing principles and theories alongside science-based strategies to prevention, health promotion and health protection. Health marketing is one of the ways through which advancements in medicine and in health-protecting services like insurance are made widely known. A good example is the current drive in Kenya to promote circumcision among communities that do not customarily circumcise. Medical researchers have recently documented that circumcision is 65% effective in preventing HIV infection among men.

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6.2 HEALTHCARE MARKETING

Healthcare is one of the most highly regulated industries in the world. With so many sensitive issues, new laws and potential risks, it's important that you partner with an experienced healthcare marketing agency. You need a partner capable of delivering powerful marketing messages that connect with your target audience on an emotional and rational level without sacrificing accuracy or compliance.

Health marketing is a new approach to public health that applies traditional marketing principles and theories alongside science-based strategies to prevention, health promotion and health protection. Health marketing is one of the ways through which advancements in medicine and in health-protecting services like insurance are made widely known. A good example is the current drive in Kenya to promote circumcision among communities that do not customarily circumcise. Medical researchers have recently documented that circumcision is 65% effective in preventing HIV infection among men.

The marketing strategy would follow the traditional 4 "P's" of marketing namely:

- The "product" in question in this case the surgical procedure.
- The "place" which refers to the access to this procedure.
- "Promotion" refers to creating awareness and hence demand.

"Price" refers to the cost of the procedure e.g. money, time, reputation etc.

"Health marketing" is a term rarely used in public health and related disciplines. "Social marketing" or "integrated marketing communication" are more commonly used in public health and other disciplines to refer to marketing-based planning frameworks for public health communication.

6.3 PRINCIPLES OF MANAGEMENT

Management is the process of forecasting and planning, organising, leading, coordinating and controlling the resources of an organisation in the efficient and effective pursuit of a specified organisational goal.

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Healthcare management theory evolves out of more general theories of management that govern the effective use of human and material resources, and applies them in a healthcare setting. Your key goal in community health management is improving the health of your community. Reaching this goal requires an understanding of the concepts of management and leadership.

Concepts of management

Three of the most important concepts in healthcare management are effectiveness, efficiency and equity. In this section you will learn more about these concepts to help you work successfully with people and resources.

Effectiveness

The concept of effectiveness is a measure of how well an organisation, or a person in an organisation, is meeting their goals. For example, if the goal is to provide high quality healthcare and the organisation or person succeeds in doing so, then they are working effectively. If the healthcare provision is poor and people are not satisfied, then the organisation or person is not effective.

The health sector becomes effective when health managers choose the correct goals and then make sure that their health teams can achieve them. Health manager effectiveness involves doing the right things to move the health sector closer to its objectives and at the same time continually learning from that experience. Monitoring and control helps you to measure performance against set objectives and standards and thus assess effectiveness and how well an objective has been achieved. You will learn more about monitoring and control in Study Session 5.

- A Health Extension Practitioner is set an objective to distribute 500 malaria bed nets during one year and succeeds in distributing 100. What do you think went wrong?
- There may be many reasons why the objective has not been reached, but this is a failure of management. The Health Extension Practitioner has not been managed effectively, or she would have achieved her objectives.

Efficiency

Healthcare management involves getting things done using human, financial and material resources so that the goal of improving the health of the community can be achieved. Efficiency is a measure of how well the health sector is using its resources to achieve that goal. If money and materials are being used well and there is little wastage, then you are working efficiently. If costs are too high or materials are being wasted, then your activity is inefficient. Efficiency involves doing things right, using resources wisely and with a minimum of waste.

- Health Post A has received an anti-malarial drug with only one month's shelf life remaining. It expires after one month having served only a few people. Is this an efficient use of resources?
- No. In this case there is a waste of resources.

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Equity

Access to healthcare is the basic right of all people. However, this does not always happen in real life for many reasons. Health inequalities are a result of the unfair distribution of resources and may be associated with low income levels, housing, education, gender, geographically inaccessible areas and sometimes with ethnicity. As a Health Extension Practitioner you have an important role to play in allocating resources equally to all the diversified groups in your community, with a special focus on those who are deprived and denied access to healthcare.

Principles Of Management

For Health Extension Practitioners the following principles are the most important for you to apply in the field of community health:

- Team spirit
- Division of labour
- Focus on results not activities

Team Spirit

Team spirit is essential for any organisational work. This principle advocates the benefits of working as a team and building good morale amongst everyone you work with, including volunteers and members of model households. As a manager you will need to ensure that you develop and maintain morale, both individually and communally, and through building team spirit. This helps promote an atmosphere of mutual trust and understanding.

Division Of Labour

The principle of division of labour is that work must be shared or divided fairly amongst the team. Normally, in a team, there needs to be division of labour, where each category of staff exercises their particular skill towards achieving specific objectives. The role of management is to assign a balanced proportion of each type of worker to the work to be done.

- There has been an outbreak of diarrhoeal disease in your community. A prevention and control committee has formed in response to the epidemic and identified a number of activities which will be needed to sort out the problem. The work (a-d) must be divided amongst the staff and groups available (1-4), who all have different skills. Who will do which activity? Match (a-d) with (1-4).

(a) Mobilising the community	(1) Water committee
(b) Check medicine supplies	(2) Kebele administration
(c) Ensure water is treated and safe	(3) Health Extension Worker/Practitioner
(d) Give health education and advocacy	(4) Health personnel

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- (a) You should have:
- (b) The kebele administration and the Health Extension Worker/Practitioners must mobilise the community.
- (c) Health personnel must assure the supply of medicine.
- (d) The water committee should ensure that the water is treated and safe.
- (e) The Health Extension Worker/Practitioner should give health education and advocacy.

Focus On Results Not Activities

One of the principles of management is to make sure that everybody within the organisation has a clear understanding of the goals and objectives, and makes each person aware of their own roles and responsibilities in achieving those objectives. This is commonly called management by objective, which is a systematic and organised approach that allows management to focus on achievable goals. Deciding and saying what is to be accomplished is setting an objective (a goal, a purpose or a target). There are many kinds of objectives. For example, you may have an objective that 80% of the pregnant women in your *kebele* will attend antenatal care and be delivered by Health Extension Practitioners next year.

Management Functions

Health Extension Practitioners play various roles in the Primary Health Care system. You will be expected to be a manager, leader, coordinator, planner, supervisor and also monitor of the health services in your community. Management consists of the following functions.

Planning

Planning is forecasting and thinking about things that you want to happen in the future and then working out ways to get there. It will be your job to help develop the plans that determine the goals you pursue to improve the health of all the people in your community. As a first step you need to prepare plans for the future and this is best done together with community groups that share a common purpose.

Organising

After a plan is developed it needs to be translated into action. As part of the implementation process, organising the various administrative structures and community group members is crucial. Furthermore, you need to construct a set of formal relationships with different groups in the community. This process will help you in deciding how the plan will be carried out and who will do it.

Leading

Leading is directing, influencing and motivating a team. At the community level, the health delivery system includes various community groups, such as model households, volunteers and development workers. As a Health Extension Practitioner you are a leader and you will play a leading role in working with these groups, to carry out the different activities involved in maintaining community health. You need also to create an environment that encourages your teams to do their best work so their performance inspires other members of the community.

Coordination

To coordinate activities is to ensure that everything that needs to be done is done and that no two people are trying to do the same job. Coordination will help you to see whether the things that you and your team are doing are consistent with your overall plan. You may arrange meetings with your team as a coordination mechanism to discuss how jobs and responsibilities are progressing.

Monitoring And Control

Monitoring and control will be an important part of your role as a Health Extension Practitioner; otherwise you won't know how well you are doing as you try to achieve your goals and objectives. **Monitoring** is the regular observation and recording of activities. **Controlling** is ensuring that work has been accomplished according to plan. If your monitoring and control activities indicate that you aren't being very effective then you may have to change the way that you are working or ask for extra help from your supervisors.

- Look again at the list of management functions. Imagine that you are trying to increase the number of people in your community who use latrines regularly. Which of the management functions do you think is the most important?
- All these functions are important when you try to achieve your health objectives. Good management involves the use of all these functions.

Management Roles And Levels

A **health manager** is someone who spends a substantial proportion of their time managing areas of healthcare provision such as:

- coverage of services (planning, implementation and evaluation)
- resources (staff, budgets, drugs, equipment, buildings, information)
- external relations with partners, including service users.

A manager's effectiveness is significantly influenced by their insight into their own work. Health sector managers often become managers after working in a technical role within healthcare. Indeed, many healthworkers combine management with clinical or other technical work.

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Management Levels

In healthcare management there are three levels of managers: top, middle, and frontline. Together they are responsible for the work and performance of the health sector. These managers have formal authority to use health sector resources and to make decisions appropriate to their level.

Top-Level Managers

Top-level managers are often called senior management or executives. In Ethiopia, the Federal Ministry of Health and Regional Health Bureau include top-level managers and they hold titles such as Minister, Head of Regional Health Bureau, and Director. Often, a group of these managers will constitute the top management team. Top-level managers make decisions affecting the entirety of the health sector. Top managers do not direct the day-to-day activities of the sector; rather, they set goals for the health sector and direct others to achieve them.

Middle-Level Managers

Middle-level managers are those in the levels below top managers. Middle-level managers are responsible for carrying out the goals set by top management. They also set goals at their level and perhaps for other units they are responsible for. Middle-level managers can motivate and assist frontline managers to achieve the sector objectives. They may also communicate upwards, by offering suggestions and feedback to top managers.

Frontline Managers

First-level or frontline managers are responsible for the daily management of health activities in the community. Health Extension Practitioners, for example, are frontline managers of the primary healthcare services. Although lower-level managers typically do not set goals for the nation, they have a very strong influence on the sector and do have to set goals for their own work. These are the managers that interact most with the larger community on a daily basis.

- What level of management is each of these: Health Extension Worker, Health Centre Director, Health Extension Practitioner, Minister of Health, Health Volunteer, Head of Regional Health Bureau?
- Health Extension Practitioners and Workers are frontline managers. The Head of the Regional Health Bureau and the Minister of Health are top-level managers. The Health Centre Director is middle-level. Although Health Volunteers don't have a formal management role they still do important work within the health service and may have to help organise what actually happens in your community.

What Do Managers Do?

So, what do health managers actually do? Managers play various roles in their day-to-day activities which are generally categorised as *interpersonal*.

roles, informational roles and decisional roles. As a Health Extension Practitioner, who is also a frontline manager, you will have a role to play at community level. The different roles are briefly described as follows.

Interpersonal Roles

Working together with other people in your team is sometimes the most rewarding part of the job, but it does require skill. *Interpersonal roles* require you to direct, support and supervise your team, and work together with people from other agencies. This role is particularly critical for Health Extension Practitioners, who must often compete with other managers (in agriculture) for important resources, yet also maintain successful working relationships with them. Interpersonal roles are categorised as the *leader role*, *figurehead role* and *liaison role*.

The *leader role* involves all the leadership and motivational activities that are essential for the effective management of people. The people that will expect you to fulfill a role as leader include model householders and the health volunteers. A leader acts as an example for other team members to follow. You may have to give directions to those who you are working with, make decisions, and mobilise community support.

The *figurehead role* deals largely with ceremonial and symbolic activities such as attending opening ceremonies or taking a special part in community celebrations. The figurehead may be a top or middle manager at Federal level. At village level, however, frontline managers such as Health Extension Practitioners also play a figurehead role within the community.

The third type of interpersonal role is a *liaison role* which includes those activities which you as a Health Extension Practitioner need to undertake in order to develop and maintain a network of contacts inside and outside the community. For example, maintaining contact and good relationships with District Health Offices and Health Centres is always important. In your liaison role, you will need to coordinate the work of others in different sub-*kebeles*; establishing alliances between other sectors, such as agriculture, education, and working together to share resources.

- You are asked to give out the certificates to the health volunteers who have completed their training. What role is this?
- Attending ceremonies in your own community and having a formal role is a figurehead role. People in your community will look up to you and expect you to support and encourage them when they work to improve the health of the community.

Informational Roles

Informational roles are those in which you gather and then pass on information. These roles have changed dramatically as technology has improved. These roles mainly involve the movement of information. As a Health Extension Practitioner, you are placed in a strategic position to obtain and disseminate critical information

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about health promotion and disease prevention. Under the informational role you play a monitor, disseminator and spokesperson role.

Your role as a *monitor* deals with the search for and collection of information that is of value to the health of your community.

The *disseminator role* entails passing on relevant information to those in the community that have a need to know. The dissemination process may be written or oral, formal or informal.

The third type of informational role that you may play is in the *spokesperson role*, which involves the dissemination of information to others outside the community.

- Imagine that there is an outbreak of diarrhoeal disease in your community. What informational roles do you think it would be important for a Health Extension Practitioner to perform?
- They should monitor information about the outbreak and find out as much as possible about how to deal with the outbreak. They also need to disseminate information so that everyone knows how to deal with it. They may also have to be a spokesperson and seek additional resources so that the outbreak is contained and further outbreaks possibly prevented in the future.

Decisional Roles

Decisional roles include the roles of: *resources allocator*, *negotiator*, *entrepreneur* and *disturbance handler*. It is important to recognise that these roles are highly interrelated.

The resource allocator role entails the prioritisation and allocation of scarce resources in response to the many demands on those resources. The negotiator role is to negotiate resolutions to important disputes, both inside and outside the community. The entrepreneur role is to seek and identify opportunities to promote improvement and needed change. The entrepreneur role requires you to assign community resources to develop innovative services.

The disturbance handler role involves taking corrective action when needed to resolve unexpected disturbances. In this role, the health manager must handle problems and conflict among team members.

- Imagine that there is an outbreak of an infectious disease in your community. Which role or roles do you think that the Health Extension Practitioner would have to take on?
- In many instances the Health Extension Practitioner might be engaged in several different roles at the same time. If there is an outbreak of an infectious disease they would have to take on almost all these roles.

6.4 ORGANISATIONAL BEHAVIOUR

Healthcare represents a dynamic industry, with the sometimes conflicting interests of different medical professionals coming together in a high-pressure environment.

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With a team of researchers from Hunter New England Health, the Institute of Leadership, Royal College of Surgeons and Hong Kong Polytechnic University we are undertaking internationally comparative research to investigate collaboration in this environment. Our current research focuses on collaboration between professions, or interprofessional collaboration. This research recognises that there are professional barriers and demarcation lines that can create barriers to collaboration involving different medical, nursing and allied health professionals. One of the unexpected findings of our OCRG research is that a little bit of tension or disagreement within a group can actually bring about more innovative and higher quality outcomes – as long as the group leader has been able to successfully convey the importance of the team's goal.

Organizational behavior management (OBM) focuses on what people do, analyzes why they do it, and then applies an evidence-based intervention strategy to improve what people do. The relevance of OBM to improving health care is obvious. While poorly designed systems contribute to most medical errors, OBM provides a practical approach for addressing a critical component of every imperfect health care system—behavior. Behavior is influenced by the system in which it occurs, yet it can be treated as a unique contributor to many medical errors, and certain changes in behavior can prevent medical error. This paper reviews the principles and procedures of OBM as they relate to reducing medical error and improving health care.

Medical errors continue to be a major public health issue. This paper attempts to bridge a possible disconnect between behavioral science and the management of medical care. Epidemiologic data on patient safety and a sampling of current efforts aimed at patient safety improvement are provided to inform relevant applications of organizational behavior management (OBM). The basic principles of OBM are presented, along with recent innovations in the field that are relevant to improving patient safety. Safety-related applications of behavior-based interventions from both the behavioral and medical literature are critically reviewed. Potential OBM targets in health care settings are integrated within a framework of those OBM techniques with the greatest possibility of improving patient safety on a large scale.

Organizational behavior management (OBM) focuses on what people do, analyzes why they do it, and then applies an evidence-based intervention strategy to improve what people do. The relevance of OBM to improving health care is obvious. While poorly designed systems contribute to most medical errors, OBM provides a practical approach for addressing a critical component of every imperfect health care system—behavior. Behavior is influenced by the system in which it occurs, yet it can be treated as a unique contributor to many medical errors, and certain changes in behavior can prevent medical error. This paper reviews the principles and procedures of OBM as they relate to reducing medical error and improving health care.

First, we need to define medical error. This task is neither simple nor straightforward because the definition of a medical error varies markedly across different hospitals and health care systems. For example, the National Patient Safety Foundation defines a "health care error" as: "[A]n unintended health care outcome caused by a defect in the delivery of care to a patient." According to the Institute of Medicine (IOM), a health care error is "a problem in the *process* of

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care itself or failure of a planned action to be completed as intended or the use of a wrong plan to achieve an aim." Thus, while some refer to medical error as any *act*, or failure to act, which results in harm to a patient, others refer to medical error as any action within the process of care that may have the potential to cause harm. This latter prevention-focused definition best fits the application of OBM.

This distinction is relevant to interpreting the patient safety literature, since research results typically focus on frequencies of adverse events (outcomes) rather than process-level errors (or behaviors) occurring during health care. However, a single error does not guarantee that a patient will experience a medical injury. An examination of case studies of errors presented in the *Annals of Internal Medicine* suggests as many as 17 separate individual errors may occur before a patient is actually harmed. Thus, process measures need to be addressed in designing patient safety programs.

6.5 ORGANISATIONAL STRUCTURE

With lives in their hands, hospitals have to function very precisely, executing high-quality services every hour of every day. Organizations that have this sort of requirement usually take on a vertical organizational structure — having many layers of management, with most of the organization's staff working in very specific, narrow, low-authority roles. The numerous layers of management are designed to make sure that no one person can throw the system off too much. This structure also ensures that tasks are being done exactly and correctly.

Directors

Hospitals are corporations and are therefore overseen by boards of directors. Nonprofit hospitals have boards that often consist of influential members of health care and local communities. Many hospitals were founded by a religious group and maintain religious affiliation. These hospitals often include clergy and congregation leadership in their boards. Educationally affiliated hospitals are often overseen by universities. Therefore, university boards of trustees or regents may double as the board of directors for a hospital. Multi-hospital systems, particularly for-profit ones, usually have one board of directors overseeing numerous facilities.

Executives

Boards of directors leave it to their executives to see that their decisions are carried out and that the day-to-day operations of the hospital are performed successfully. The chief executive officer is the top boss responsible for everything that goes on in a hospital. However, hospitals usually have chief nursing officers, chief medical officers, chief information officers, chief financial officers and sometimes chief operating officers, who also carry a lot of weight. This group of top executives forms the central core management.

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Department Administrators

The top managers of each hospital department report to the core management. These people are responsible for one type of medical or operational service. Most departments are areas of patient care such as orthopedics, labor and delivery or the emergency department. There also are non-patient-care departments such as food services and billing. Clinical departments usually have large staffs, significant supply and purchasing needs and numerous regulations they must comply with. Therefore, administrators often have assistant administrators who help them oversee their multifaceted operations.

Patient Care Managers

Within a department, there are the people who directly oversee patient care. Nurse managers, directors of rehabilitation services and supervising physicians have people under them who give hands-on patient care. This level of management ensures that the staff members are acting appropriately, giving the best care, addressing all of their duties, complying with hospital and legal requirements and, for nurses and allied health care workers, following physician orders. When something goes wrong with a patient or a clinician, these people handle the problem. They also usually oversee schedules and basic human resource functions for their employees.

Service Providers

Most of a hospital is composed of service-providing staff. From nurses and physical therapists to line cooks and laundry workers, it takes a lot of hands-on staff to make everything happen. These people have very specific job descriptions and duties, which hospitals need them to perform very well to ensure the safety and health of patients.

Organizational Design

Organizational design is a formal, guided process for integrating the people, information, and technology of an organization, and serves as a key structural element that allows corporations to maximize value by matching their corporate design to overall strategy. From a strategy perspective, organizational design is an untapped variable that needs to be addressed in the context of organizational strategy and change. As attention to clinical quality becomes more of a priority, it will be essential for health-care institutions to evolve organizational and management structures that support the design and implementation of quality-improvement initiatives and create mechanisms for accountability for quality of care. Moreover, organizations in most industries are in constant evolution, so organizational design should be considered a variable and evolving tool for improving organizational performance.

As hospital-based care became the dominant system of health-care delivery in the 20th century, most hospitals adopted a functional model based on discipline-based specialization. Each functional area (i.e. various clinical departments, nursing,

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laboratory services) has a manager that reports to higher management levels and eventually to the hospital's chief executive officer. Although this centralized design has allowed for efficiency based on scales of economy, it limits integration across functions and the ability to develop innovative, creative quality-improvement processes and solutions at the level of the service line. For example, most total quality management projects originate and are implemented at the level of hospital management teams through high-end administrative and support services. However, clinical care is administered at a service-line level by clinicians and teams of complementary health-care professionals (i.e. nurses, therapists, pharmacists, etc). The conflict between central control and local autonomy and accountability is a key issue to resolve for most organizations.

The development of a less centralized, service-line orientation at hospitals should help support the development of total quality management processes at the clinical level. Organizational design by product and service line is becoming more common in health-care institutions and is likely to grow. Innovative, high-quality health-care systems like Intermountain Health care have attempted to implement new quality efforts and allow more autonomy at the service line. However, because the current organizational structure is more functional in nature, management has experienced difficulty in crediting cost savings and improved quality to specific service lines. Modification of current management systems from a centralized to more decentralized structure, in order to make service line units more accountable and autonomous for quality-improvement initiatives, may help optimize the results of future efforts.

Hospital systems in the USA have historically evolved such that physicians serve primarily as consultants and customers of the hospital and are paid on a fee-for-service basis, whereas hospital resources (such as beds, operating rooms, and technologies) are managed by administrators and shared by departments. A more recent trend has moved physicians into active roles as integral personnel within hospital management, but there has been little change in hospital structure to accommodate their evolving role in quality management. For example, total quality management projects have traditionally existed within hospital management administrative teams, while clinical care was a guarded realm of health-care professionals. Future changes in organizational structure that incorporate physicians into quality management roles at the service level, as well as direct reporting to the hospital chief executive officer, should help facilitate the involvement of clinicians in total quality management.

Successful businesses have developed organizational and management structures that engender corporate-level objectives while maximizing the ability of individual business units to address their local competitive environments. For example, large corporations are successfully using corporate strategy maps and balanced scorecards so that employees both belong to individual business units and are in tune with corporate priorities. Individual unit managers make decisions that tie their activities to corporate values. This strategy has allowed the company to realign local management goals and decision making without having to endure the upheaval of major organizational restructuring. Additionally, large companies such as Johnson & Johnson and General Electric have successfully used a multidivisional

organizational structure to maximize financial performance and quality oversight within local business units. Management and organizational structures in health-care organizations should be developed to allow each member of product and service lines to improve the quality of care they deliver to patients.

Incentive Structures

In an effort to narrow the well-documented gaps between health-care guidelines and clinical practice, a variety of mechanisms have been developed to provide incentives to health-care institutions to improve their quality of care. These efforts have been developed at multiple levels, including federal, commercial, and public watch efforts. Traditional quality-improvement methods have focussed on education, but large quality gaps persist. Public reporting of process measures and outcomes has gained momentum, but evidence regarding their effectiveness is mixed. Likewise, the use of financial incentives to reward measured performance has gained recent enthusiastic support. The results of several recent studies examining the effectiveness of pay for performance in comparison to other quality-improvement activities (such as public reporting and quality-improvement registries) are also mixed, and further studies are needed to determine their role in quality-improvement initiatives.

Although external quality-improvement efforts such as public reporting and pay for performance target hospital performance, it will be imperative to develop incentive structures within individual health-care institutions to influence organizational strategy and individual decision making. For example, in 2003 the US Centers for Medicare and Medicaid Services launched the Hospital Quality Incentive Demonstration (HQID), the largest pay-for-performance project to date in the USA. The HQID is a competitive bonus program in which reward is relative to performance measured on an ordinal basis across centers but does not provide direct incentives to individual clinicians or other service line personnel who operate at the point of patient care. In addition, the total bonus compensation from 2003 to 2004 for the 260 hospitals participating in the HQID totaled \$17.55 million, and many have questioned whether the bonus size is large enough to stimulate meaningful quality improvement. New incentive structures need to be developed at the hospital and physician levels to guide managerial and clinical quality efforts.

One of the tools most commonly used in businesses to align corporate structure and strategy is the 'balanced scorecard'. The balanced scorecard is a performance measurement framework that articulates corporate-level strategy and goals across all elements of an organization and recognizes the creation of value beyond the capabilities of individual business units. It empowers managers to adopt behaviors and implement actions to meet corporate-level objectives while continuing to address the unit's local environment and strategy. The scorecard allows managers to manage their business units and create value from four important perspectives: financial, customer, process, and learning and growth. Balanced scorecards should be adapted to health-care institutions to engender a corporate commitment to quality and provide a framework so that service-level teams of health-care professionals can optimize quality of care.

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There have been notable successes in health care, such as the use of the balanced scorecard method at Duke University Children's Hospital in Durham, North Carolina, which resulted in significant improvements in operating margin and quality of care. This 'dual citizenship' approach, a term coined by Ingersoll-Rand chief executive Herb Henkel, would make health-care professionals not just members of clinical service lines, but members in corporate quality priorities. In accordance with this corporate-wide value proposition, it may be reasonable to introduce hospital bonus-based incentive systems that can be shared by all health-care staff when corporate quality goals are met. These monetary incentives could then be complemented by offerings to top management and clinical service line managers (i.e. department chairs) for meeting quality targets.

Roles of Organizational Structure

Organizational structure pertains to the way in which companies arrange their departments. Smaller companies tend to have flatter organizational structures with few management levels. Larger companies use tall organizational structures with many echelons of management and employees. Companies use several types of organizational structure for specific roles. For example, companies using a geographic organizational structure decentralize various functions like marketing because of varying regional needs.

Efficiency

One role of organizational structure is efficiency. Most companies need to make the most of various resources. Duplicating raw materials or job duties is wasteful and inefficient. Consequently, a company will structure its organizational according to products and services it offers. A small software manufacturer may use a customer-oriented organizational structure because of its wide variety of customers. For example, the software company may sell to consumers, corporations, financial institutions, hospitals and health clubs. In this case, organizing departments by customers is efficient because of diversity. Product management duties may differ widely by customer type. Marketing to consumers is much different than targeting corporations.

Harnessing Experience

Another role of organizational structure is harnessing experience. Companies may arrange their companies by specific functions, such as marketing, accounting, finance and engineering. The purpose of grouping departments by function is to use the experience of groups to accomplish tasks and projects. A certain synergism exists when skilled employees of similar talents work together as a whole. For example, marketing and advertising managers can better evaluate the potential success of a new product introduction as a group.

Decision Making

Organizational structure in a company also enhances decision making, according to Referenceforbusiness.com. Companies will often structure their organizations

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to make the best decisions possible. For example, a company may decentralize its marketing to make quicker decisions locally. Consequently, the company may put marketing managers in one of four different regions. It is much easier for regional marketing managers to make local decisions about consumer needs than a marketing manager in a distant corporate office.

Communication

Companies also use various organizational structures for communication purposes. Larger companies have many levels of management. Therefore, the most effective way to communicate is usually from the top of the organization down. Executives create certain operational procedures which they communicate to directors and managers. Managers, in turn, explain these operational procedures to subordinates or hourly employees.

Span of Control

Organizational structure is used for span of control. For example, a vice president of marketing may be in charge of four directors: One for marketing research, brand management, advertising and public relations. The directors may have three separate groups of managers reporting to them. Span of control pertains to the number of employees an executive or manager oversees. This reporting structure is how companies establish accountability.

Purpose Of Organizational Structure

Organizational structure is about definition and clarity. Think of structure as the skeleton supporting the organization and giving it shape. Just as each bone in a skeleton has a function, so does each branch and level of the organizational chart. The various departments and job roles that make up an organizational structure are part of the plan to ensure the organization performs its vital tasks and goals.

Purpose

Organizational structures help everyone know who does what. To have an efficient and properly functioning business, you need to know that there are people to handle each kind of task. At the same time, you want to make sure that people aren't running up against each other. Creating a structure with clearly defined roles, functions, scopes of authority and systems help make sure your people are working together to accomplish everything the business must do.

Function

To create a good structure, your business has to take inventory of its functions. You have to identify the tasks to be accomplished. From these, you can map out functions. Usually, you translate these functions into departments. For example, you have to receive and collect money from clients, pay bills and vendors, and account for your revenues and expenditures. These tasks are all

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financial and are usually organized into a finance or accounting department. Selling your products, advertising, and participating in industry trade shows are tasks that you can group under the umbrella of a marketing department. With differing ways to organize the tasks, you can always choose something less traditional. But in all cases, organizational structure brings order to the list of tasks.

Considerations

Employees do best when they know who to report to and who is responsible. Organizational structure creates and makes known hierarchies. This can include the chain of command within an organization. A good organizational chart will illustrate how many vice presidents report to a president or CEO and in turn, how many directors report to a vice president and how many employees report to a director. In this way, everyone knows who has say over what and where they are in the scope of decision-making and responsibility. Hierarchy can also include macro-level management. For example, one department may comprise several teams. Perhaps several departments form one division of a company, and that division has a vice president who oversees all the departments and teams within it.

Features

Organizational structure encompasses all the roles and types of jobs within an organization. A complete organizational chart will show each type of position and how many of these there are at present. When smaller organizations look at their organizational structures, they usually focus more on job roles than hierarchy. Small businesses, particularly growing ones, often change quickly -- adding positions and shifting people's responsibilities as they remain flexible enough to adapt as to go along. For these businesses, having known definitions of people's roles can be useful, especially as things change.

Types

Organizations that are very hierarchical are usually referred to as having vertical organizational structures. Typically, these organizations want their employees having more limited scopes and performing their jobs in particular ways with little variation. Therefore, they have many layers of management to oversee that things are done correctly and uniformly. The banking industry is a good example. Money must be handled carefully and responsibility, there is significant risk involved, and rules and regulations dictate specific procedures. Small businesses, innovation-based companies and professional organizations tend to use horizontal structures. These involve fewer layers of management and more focus on peers and equality. The idea is that each person takes on more responsibility and has more freedom to perform her work as she sees fit. Group medical practices are a good example. Physicians don't oversee physicians. There may be a managing partner who oversees the general operation, but otherwise, professionals are peers each practicing in their style -- all contributing to the organization's success.

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Organizational Structure During the Twentieth Century

Understanding the historical context from which some of today's organizational structures have developed helps to explain why some structures are the way they are. For instance, why are the old, but still operational steel mills such as U.S. Steel and Bethlehem Steel structured using vertical hierarchies? Why are newer steel mini-mills such as Chaparral Steel structured more horizontally, capitalizing on the innovativeness of their employees? Part of the reason, as this section discusses, is that organizational structure has a certain inertia—the idea borrowed from physics and chemistry that something in motion tends to continue on that same path. Changing an organization's structure is a daunting managerial task, and the immensity of such a project is at least partly responsible for why organizational structures change infrequently.

At the beginning of the twentieth century the United States business sector was thriving. Industry was shifting from job-shop manufacturing to mass production, and thinkers like Frederick Taylor in the United States and Henri Fayol in France studied the new systems and developed principles to determine how to structure organizations for the greatest efficiency and productivity, which in their view was very much like a machine. Even before this, German sociologist and engineer Max Weber had concluded that when societies embrace capitalism, bureaucracy is the inevitable result. Yet, because his writings were not translated into English until 1949, Weber's work had little influence on American management practice until the middle of the twentieth century.

Management thought during this period was influenced by Weber's ideas of bureaucracy, where power is ascribed to positions rather than to the individuals holding those positions. It also was influenced by Taylor's scientific management, or the "one best way" to accomplish a task using scientifically-determined studies of time and motion. Also influential were Fayol's ideas of invoking unity within the chain-of-command, authority, discipline, task specialization, and other aspects of organizational power and job separation. This created the context for vertically-structured organizations characterized by distinct job classifications and top-down authority structures, or what became known as the traditional or classical organizational structure.

Job specialization, a hierarchical reporting structure through a tightly-knit chain-of-command, and the subordination of individual interests to the superordinate goals of the organization combined to result in organizations arranged by functional departments with order and discipline maintained by rules, regulations, and standard operating procedures. This classical view, or bureaucratic structure, of organizations was the dominant pattern as small organizations grew increasingly larger during the economic boom that occurred from the 1900s until the Great Depression of the 1930s. Henry Ford's plants were typical of this growth, as the emerging Ford Motor Company grew into the largest U.S. automaker by the 1920s.

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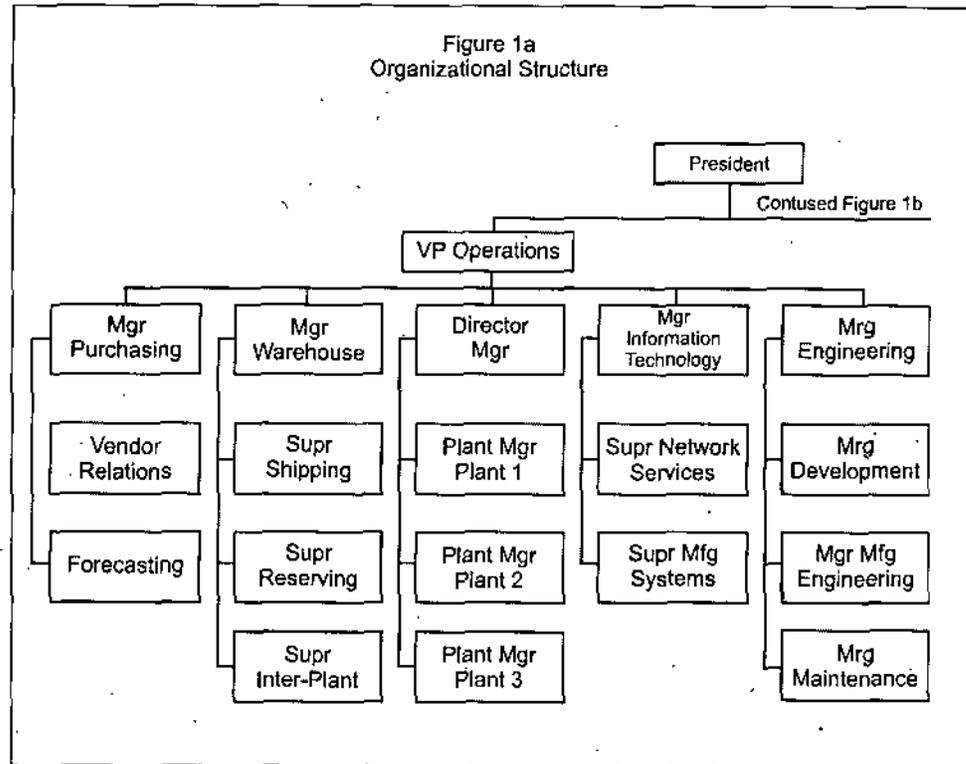


Fig. 6.3: *Organizational Structure*

The Great Depression temporarily stifled U.S. economic growth, but organizations that survived emerged with their vertically-oriented, bureaucratic structures intact as public attention shifted to World War II. Postwar rebuilding reignited economic growth, powering organizations that survived the Great Depression toward increasing size in terms of sales revenue, employees, and geographic dispersion. Along with increasing growth, however, came increasing complexity. Problems in U.S. business structures became apparent and new ideas began to appear. Studies of employee motivation raised questions about the traditional model. The “one best way” to do a job gradually disappeared as the dominant logic. It was replaced by concerns that traditional organizational structures might prevent, rather than help, promote creativity and innovation—both of which were necessary as the century wore on and pressures to compete globally mounted.

Traditional Organizational Structure

While the previous section explained the emergence of the traditional organizational structure, this section provides additional detail regarding how this affected the practice of management. The structure of every organization is unique in some respects, but all organizational structures develop or are consciously designed to enable the organization to accomplish its work. Typically, the structure of an organization evolves as the organization grows and changes over time.

Researchers generally identify four basic decisions that managers have to make as they develop an organizational structure, although they may not be explicitly aware of these decisions. First, the organization’s work must be divided into specific jobs. This

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is referred to as the division of labor. Second, unless the organization is very small, the jobs must be grouped in some way, which is called departmentalization. Third, the number of people and jobs that are to be grouped together must be decided. This is related to the number of people that are to be managed by one person, or the span of control—the number of employees reporting to a single manager. Fourth, the way decision-making authority is to be distributed must be determined.

In making each of these design decisions, a range of choices are possible. At one end of the spectrum, jobs are highly specialized with employees performing a narrow range of activities, while at the other end of the spectrum employees perform a variety of tasks.

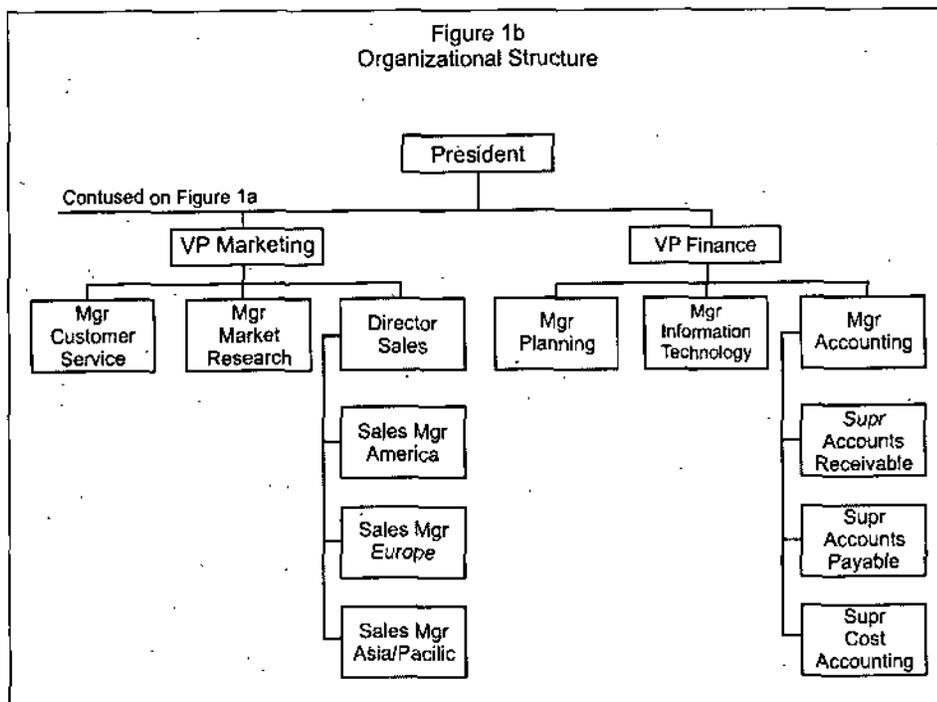


Fig. 6.4: Organizational Structure

In traditional bureaucratic structures, there is a tendency to increase task specialization as the organization grows larger. In grouping jobs into departments, the manager must decide the basis on which to group them. The most common basis, at least until the last few decades, was by function. For example, all accounting jobs in the organization can be grouped into an accounting department, all engineers can be grouped into an engineering department, and so on. The size of the groupings also can range from small to large depending on the number of people the managers supervise.

The degree to which authority is distributed throughout the organization can vary as well, but traditionally structured organizations typically vest final decision-making authority by those highest in the vertically structured hierarchy. Even as pressures to include employees in decision-making increased during the 1950s and 1960s, final decisions usually were made by top management. The traditional model

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of organizational structure is thus characterized by high job specialization, functional departments, narrow spans of control, and centralized authority. Such a structure has been referred to as traditional, classical, bureaucratic, formal, mechanistic, or command and control. A structure formed by choices at the opposite end of the spectrum for each design decision is called unstructured, informal, or organic.

The traditional model of organizational structure is easily represented in a graphical form by an organizational chart. It is a hierarchical or pyramidal structure with a president or other executive at the top, a small number of vice presidents or senior managers under the president, and several layers of management below this, with the majority of employees at the bottom of the pyramid. The number of management layers depends largely on the size of the organization. The jobs in the traditional organizational structure usually are grouped by function into departments such as accounting, sales, human resources, and so. Figures 1a and 1b illustrate such an organization grouped by functional areas of operations, marketing and finance.

Basis For Departmentalization

As noted in the previous section, many organizations group jobs in various ways in different parts of the organization, but the basis that is used at the highest level plays a fundamental role in shaping the organization. There are four commonly used bases.

Functional Departmentalization

Every organization of a given type must perform certain jobs in order to do its work. For example, key functions of a manufacturing company include production, purchasing, marketing, accounting, and personnel. The functions of a hospital include surgery, psychiatry, nursing, housekeeping, and billing. Using such functions as the basis for structuring the organization may, in some instances, have the advantage of efficiency. Grouping jobs that require the same knowledge, skills, and resources allows them to be done efficiently and promotes the development of greater expertise.

A disadvantage of functional groupings is that people with the same skills and knowledge may develop a narrow departmental focus and have difficulty appreciating any other view of what is important to the organization; in this case, organizational goals may be sacrificed in favor of departmental goals. In addition, coordination of work across functional boundaries can become a difficult management challenge, especially as the organization grows in size and spreads to multiple geographical locations.

Geographic Departmentalization

Organizations that are spread over a wide area may find advantages in organizing along geographic lines so that all the activities performed in a region are managed together. In a large organization, simple physical separation makes centralized coordination more difficult. Also, important characteristics of a region may make

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it advantageous to promote a local focus. For example, marketing a product in Western Europe may have different requirements than marketing the same product in Southeast Asia. Companies that market products globally sometimes adopt a geographic structure. In addition, experience gained in a regional division is often excellent training for management at higher levels.

Product Departmentalization

Large, diversified companies are often organized according to product. All the activities necessary to produce and market a product or group of similar products are grouped together. In such an arrangement, the top manager of the product group typically has considerable autonomy over the operation. The advantage of this type of structure is that the personnel in the group can focus on the particular needs of their product line and become experts in its development, production, and distribution. A disadvantage, at least in terms of larger organizations, is the duplication of resources. Each product group requires most of the functional areas such as finance, marketing, production, and other functions. The top leadership of the organization must decide how much redundancy it can afford.

Customer/Market Departmentalization

An organization may find it advantageous to organize according to the types of customers it serves. For example, a distribution company that sells to consumers, government clients, large businesses, and small businesses may decide to base its primary divisions on these different markets. Its personnel can then become proficient in meeting the needs of these different customers. In the same way, an organization that provides services such as accounting or consulting may group its personnel according to these types of customers.

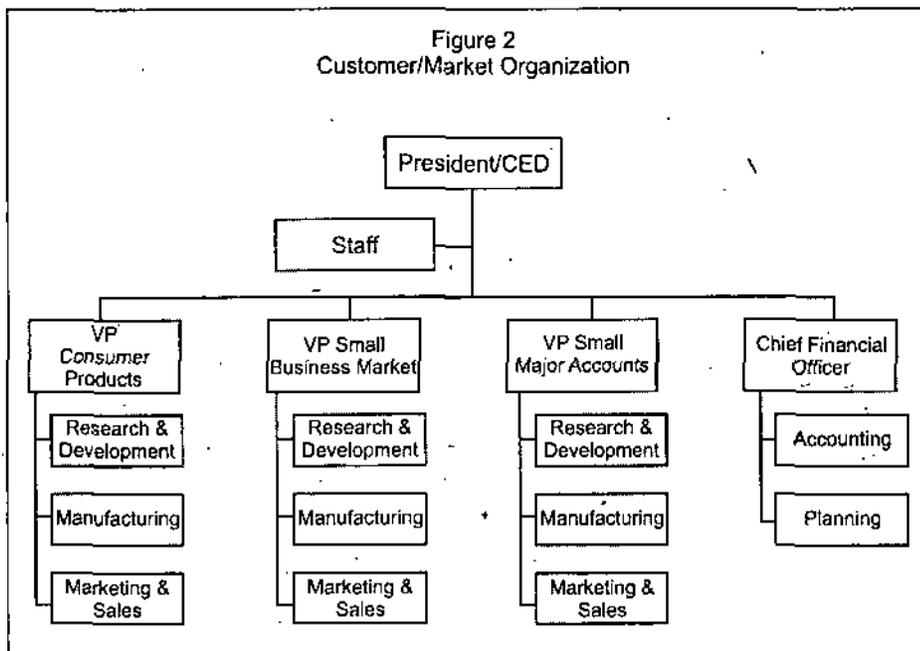


Fig. 6.5: *Customer/Market Organization*

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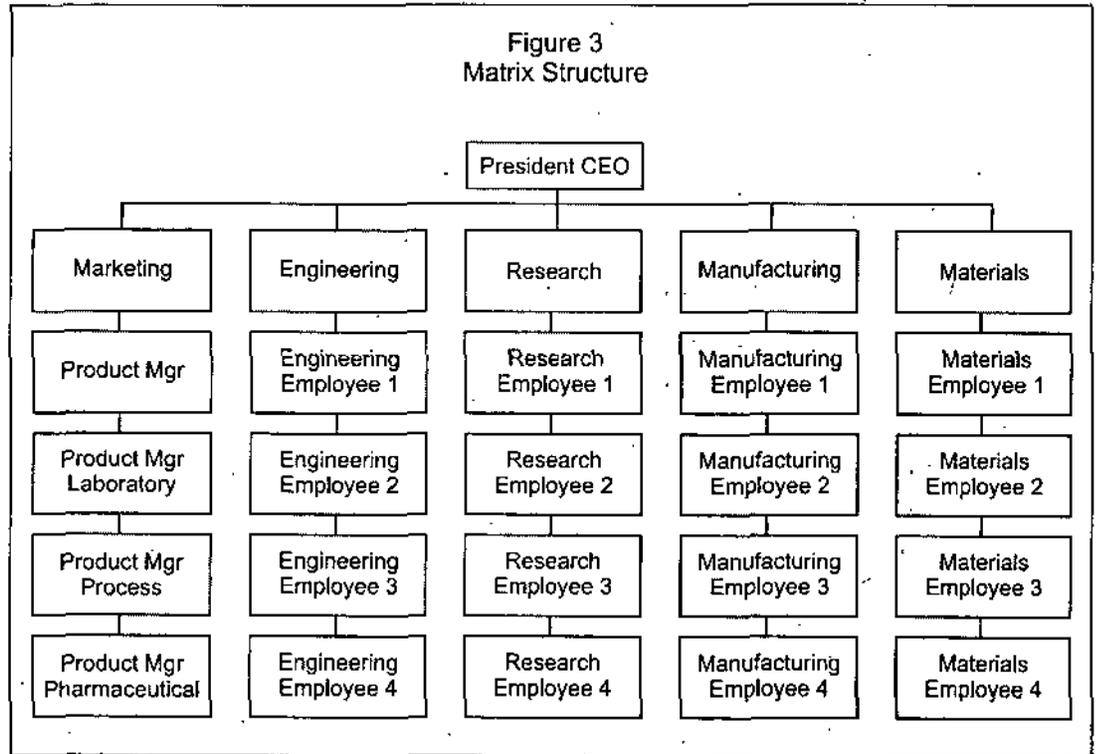


Fig. 6.6: Matrix Structure

Matrix Organizational Structure

Some organizations find that none of the afore-mentioned structures meet their needs. One approach that attempts to overcome the inadequacies is the matrix structure, which is the combination of two or more different structures. Functional departmentalization commonly is combined with product groups on a project basis. For example, a product group wants to develop a new addition to its line; for this project, it obtains personnel from functional departments such as research, engineering, production, and marketing. These personnel then work under the manager of the product group for the duration of the project, which can vary greatly. These personnel are responsible to two managers.

One advantage of a matrix structure is that it facilitates the use of highly specialized staff and equipment. Rather than duplicating functions as would be done in a simple product department structure, resources are shared as needed. In some cases, highly specialized staff may divide their time among more than one project. In addition, maintaining functional departments promotes functional expertise, while at the same time working in project groups with experts from other functions fosters cross-fertilization of ideas.

The disadvantages of a matrix organization arise from the dual reporting structure. The organization's top management must take particular care to establish proper procedures for the development of projects and to keep communication channels clear so that potential conflicts do not arise and hinder organizational

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functioning. In theory at least, top management is responsible for arbitrating such conflicts, but in practice power struggles between the functional and product manager can prevent successful implementation of matrix structural arrangements. Besides the product/function matrix, other bases can be related in a matrix. Large multinational corporations that use a matrix structure most commonly combine product groups with geographic units. Product managers have global responsibility for the development, manufacturing, and distribution of their own product or service line, while managers of geographic regions have responsibility for the success of the business in their regions.

Strategic Business Units

As corporations become very large they often restructure as a means of revitalizing the organization. Growth of a business often is accompanied by a growth in bureaucracy, as positions are created to facilitate developing needs or opportunities. Continued changes in the organization or in the external business environment may make this bureaucracy a hindrance rather than a help, not simply because of the size or complexity of the organization but also because of a sluggish bureaucratic way of thinking. One approach to encourage new ways of thinking and acting is to reorganize parts of the company into largely autonomous groups, called strategic business units (SBUs).

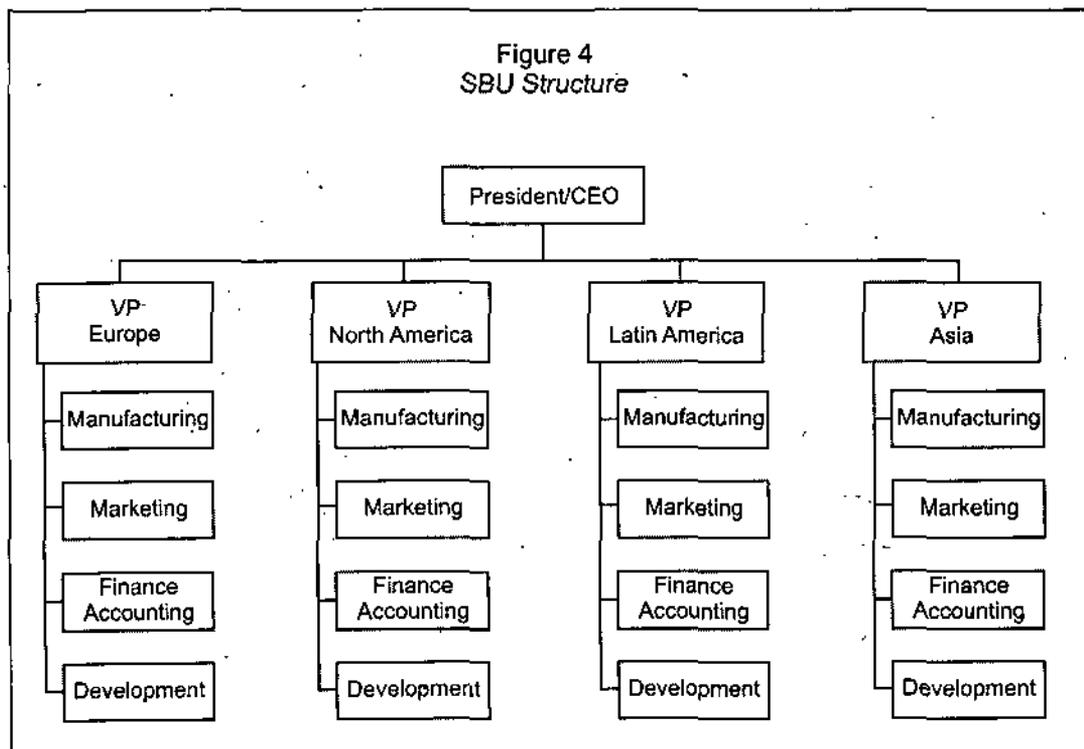


Fig. 6.7: SBU Structure

Such units generally are set up like separate companies, with full profit and loss responsibility invested in the top management of the unit—often the president of

6.6 BUSINESS COMMUNICATION

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Communication in Healthcare

Healthcare is a communication intensive business. Good communication has a profound effect on the quality of delivery in healthcare organisations. Communication also has a huge bearing on patient satisfaction. Yet historically, the options for how we communicate with each other in the healthcare industry have been somewhat limited. We are hampered by an industry that has far too long relied on old fashioned telephone, paging, fax, and mail (both postal and interoffice); not exactly the most contemporary communication infrastructure.

Healthcare's Communication Challenges

Healthcare organisations are increasingly facing challenges—the ongoing pressures to improve operating margins while meeting the increasing demands for high-quality patient care. Implementing a Unified Communications (UC) framework can address these concerns by providing solutions that improve collaboration between medical and administrative staff, enabling faster and better decision making.

Patient care and safety can be improved by more effective and accurate communications. Improved communications saves time and resources, which reflects as improved facility utilisation. The effectiveness of communication at all levels—written, oral, and electronic, have the greatest impact on patient safety. The new UC technologies are secure and auditable and therefore support regulatory compliance requirements. Also, communications regarding patient-specific information can be restricted to those with authorised access, unlike the earlier voice telephony mode. These new UC options often reduce the amount of time spent in communication. The value is usually seen in the reduction of wasted staff time, as well as cost-saving reconfigurations of communications systems. This technology will also have a profound effect on the way healthcare professionals conduct meetings and do trainings in the future apart from facilitating easy communication regarding rounds presentations, staff training, patient education, and more.

By using unified communications services one will be no longer restricted to the telephone for communicating with colleagues or patients. One can decide to use either a synchronous or asynchronous mode of communication. It almost eliminates the hassles of waiting on hold or playing phone tag on the telephone. Office telephone, Smartphone, Pocket-PC, laptop, Tablet-PC or desktop PC can be utilised whether it's an instant message, e-mail, voice, or video communication on a single platform. UC has great potential to help healthcare institutions save money and improve productivity; however, UC alone is not enough. The challenge is implementing UC services so that they result in role-enablement.

Roles in a hospital are highly specific and well defined. For example, a surgical nurse has a very different role than a neonatal nurse, and a radiology tech's role is distinct from a pharmacy techs. Not only are their roles different; their information

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and communication requirements can vary as well. This variance is the case for every role in a hospital—from doctor to billing clerk. When a life is on the line and a nurse needs to reach a doctor, the hospital's communication infrastructure should enable her to contact that doctor as rapidly, effortlessly and efficiently as possible. Technology should serve people; people should not be asked to serve technology.

Role-enabled communications takes into account the various roles individuals play in a healthcare organisation. Role-enabled communications seamlessly provide for the information and communication needs that meet the work-process requirements of that role. The fact that more healthcare institutions than ever are moving to EMR (An electronic medical record), PACS (A picture archiving and communication system) and RIS (A radiology information systems) is important because these technologies optimise clinical workflow; however, enabling interdisciplinary teams with a truly collaborative communications environment is equally as important.

Today, the healthcare industry is clear in its move toward becoming a paperless and wireless system. Due to heightened focus on HIT advancement healthcare institutes are now increasingly deploying more integrated solutions that combine clinical technology with unified communications solutions at increased levels. UC provides integrated mobile communications to reduce the device proliferation so prevalent in healthcare institutions today. It also provides a single number that can be used to contact each user, thereby eliminating the guesswork and wait times associated with using pagers and dialing multiple numbers.

Clinical mobility is crucial to overall healthcare delivery. Nurses, doctors, technicians and therapists need access to current *electronic medical records (EMRs)* wherever they interact with patients. It is one thing to put a computer on wheels, but quite another to expand the range of activities clinicians can use it for. When coupled with bedside voice services, integration of soft communications into COWS can dramatically increase their effectiveness and give nurses' access to patients' EMRs and additional vital patient data. Today, hospitals are gradually realising the importance of device consolidation and expense reduction

Being able to communicate effectively is a valuable trait that can help your business career flourish. Employers consider top-notch communication skills to be advantageous to their companies, so both you—and your employer—can benefit from your ability to communicate well. It's well worth the effort to refine your communication skills, because communication is a necessity in nearly all areas of the business world.

Building Rapport

Building rapport is about establishing a level of familiarity and trust with clients, co-workers, stakeholders and even your competitors. It's a process that relies on effective communication skills to help create a bond that fosters a healthy, trusting and profitable business relationship. Communication allows for a mutual connectivity, which, in turn, creates the rapport. According to a February 2005 article in "The Business Review," rapport building uses two types of communication:

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verbal and nonverbal. Nonverbal communication is about making good eye contact with the person you are conversing with, mirroring her body language and actively listening.

Consider a salesman. He may know all the ins and outs of a product, but if he doesn't possess excellent communication skills, he may not be able to establish rapport with his customers and will lose sales.

Resolving Conflict

As a manager, you may be required to resolve conflict among your department team members. Communication skills will help you handle disagreements tactfully and smoothly, without adding any ripples to an already turbulent situation. According to Help Guide, an online resource that offers advice on resolving challenges, conflict resolution relies on good communication skills, because miscommunication is often the reason for the conflict in the first place. When you employ effective communication strategies with your staff, you can smooth the waters so the team members get along and continue to be productive.

Meetings

There is rarely a shortage of meetings in the business world. You will be required to attend and participate in various meetings, conferences and other events that involve face-to-face interactions. So communication skills will inevitably come into play. Meetings rely on good communication for the sharing and exchange of ideas and strategic decisions, and for business negotiations among a group of people. Even if you are not the presenter in a meeting, you must still utilize your listening skills, which are an essential part of communication, to take note of what decisions are being made.

Face-to-Face Communication in Business

New communication methods such as texting, email and video conferencing are rapidly replacing face-to-face business communication. Only 29 percent of college students prefer face-to-face communication, according to a 2010 "University of Media" study conducted by Mindshare Business Planning group, Alloy Media and Brainjuicer. Instead, students send more than 50 text messages per day. As these young adults move into the workplace, they'll be more comfortable with new technology than previous generations. Yet, face-to-face communication plays a dominant role in business.

Benefits

The vast majority of executives still feel face-to-face communication is essential for business, according to a 2009 Forbes Insights survey of more than 750 business professionals. In fact, eight out of 10 respondents said they preferred face-to-face meetings over technology-enabled meetings such as videoconferencing. Face-to-face meetings "build stronger, more meaningful business relationships," they said, while allowing better social opportunities to bond with clients and coworkers.

It is also easier to read body language and facial expressions and interpret nonverbal communication signals. Respondents overwhelmingly agreed face-to-face communication is best for persuasion, leadership, engagement, inspiration, decision-making, accountability, candor, focus and reaching a consensus.

Limitations

While face-to-face communication is generally preferable, benefits exist to remote communication, writes Chuck Martin in Chief Information Officer magazine. Email and instant messenger communication can accelerate the discussion for large groups in instances where members can't interrupt their work schedules to meet. Email is also a better way to schedule and confirm meetings because everyone will have reliable, written correspondence to refer back to if need be. A phone call is a more sensible way to carry on a quick two-way conversation without blocking out time. Memos are best for longer background pieces that require a heightened level of comprehension and understanding. Some business owners use DVDs to effectively spread corporate messages to employees, which is a brief, engaging way to capture attention.

Features

"A little preparation can go a long way," writes Kiplinger's Marty Nemko. The most effective communicators may not know everything, but they've fine-tuned their speeches to reflect on an important niche where they are the experts. Coming into an interaction prepared is especially important at a face-to-face meeting when you can't Google your way out. Bring jotted notes but do not read a strict script. To improve trustworthiness, be honest, share a personal story and draw out your listeners' empathy. Dig for fresh and relevant material. Actively engage your listeners in an interactive way by asking questions or adding activities to your meeting. Lastly, Nemko reminds, "When you speak, think like a concert pianist: In virtually every sentence, vary your tone, pace, and intensity. Include dramatic pauses."

Misconceptions

Nectarios Lazaris, CIO of global architectural firm Woods Bagot, told Forbes Magazine, "The only thing that gets lost (in video conferencing) is people aren't sitting in the same room. Other than that, it's the same." However, it's a myth that remote usability results are just as good as face-to-face results, write Corrie Kwan, Jin Li and May Wong in a July 2010 edition of UXMatters magazine. "Without a way to observe study participants during remote usability studies, facilitators cannot detect nonverbal signals," the authors conclude, pointing to the enduring importance of face-to-face communication in business. They maintain that many business interactions rely on empathy, connection and understanding initiated by nonverbal cues, which is difficult to build without meeting participants gathered in the same room.

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Considerations

Time is the biggest impediment to face-to-face communication in business. Overworked executives often feel they simply do not have the time to meet with all employees and interact in a meaningful fashion. To maximize your time, meet for example with a handful of senior executives for a one-hour meeting on Monday to tackle the week's most significant issues and request reports from various departments. The next day, meet with each individual member to review reports and important messages they've compiled for you. On Wednesday, meet with operational managers, and Thursday, meet with front-line supervisors. By Friday, your front-line employees will have a new sense of direction. Even though you will meet with everyone face to face, you should post your meeting notes electronically online for other employees to review, thereby keeping multiple channels of communication open.

Effective Business Communication Methods

Communicating in business is important in every job, every industry and every geography. Even small businesses face communication challenges. There are literally no roles in which communication with someone--whether colleagues, customers or community members--doesn't come with the territory. Effective communication is something that most small business owners struggle with. Fortunately, there are some methods that can help businesspeople improve their communications.

Understand Your Audience

It is impossible to communicate effectively with anyone without first understanding their needs, interests, concerns and expectations. This is as true in the business world as it is in our personal lives. The first step is to consider what is important to the individual you will be communicating with and what questions or objections he might have. Then, in deciding how to approach the individual and what key messages to convey, ensure that you are focused on meeting and addressing his needs and concerns.

Be Prepared

Anyone who has embarked on a business communication mission without thorough preparation and failed miserably can understand the importance of preparation. Preparation will vary depending on the situation and the importance of the communication, but certain situations require more preparation than others. Conducting an annual performance review, responding to a customer complaint, making a request for a pay increase and delivering a business presentation all are examples of communications that require preparation. That preparation will include thinking about the messages you wish to convey, possibly writing a script to help you gather your thoughts, and even practicing your communication with a friend, colleague or on your own.

Listen First

Effective business communication first requires taking time to listen to the other person's perspective. Start the conversation by asking questions--and listening thoroughly and attentively--to the responses. As Stephen Covey, author of "The 7 Habits of Highly Effective People," has famously said: "Seek first to understand."

Structure & Planning

Sponsors of public-sector health plans (plan sponsors) face challenges in providing stable, sustainable health-care benefits. Health-care cost inflation has put plan sponsors in the position of continually reacting to increased costs, rather than following a long-term plan. Plan sponsors need to find ways to manage the costs of their health-care plans within the organization's financial framework and structure in order to be more efficient while continuing to offer a slate of health-care benefits that allows the organization to be competitive in the marketplace.

Recommendation

GFOA recommends that plan sponsors consider developing and formally adopting a long-term, strategic plan that includes guiding principles and key objectives for managing health-care costs and improving participant wellness. The strategic plan design should consider both incremental changes and major initiatives to establish an efficient and effective structure that will enable the plan sponsor to provide the desired level of health-care coverage while maintaining those costs at sustainable levels. While smaller jurisdictions may not have the resources to undertake every recommendation set forth below, effecting any of these suggestions will yield benefits. Accordingly, plan sponsors should take the following steps:

1. Determine the purpose of the health-care plan.
 - (a) Define the plan sponsor's overall objective for providing benefits (e.g., keeping employees healthy, recruiting new employees, employee retention, etc.).
 - (i) Develop a strategy for determining who is eligible to participate in the health-care plan.
 - (ii) Articulate separate strategies for both active and retired employees.
 - (iii) Develop a contribution rate strategy for both employers and employees.
 - (b) Clarify the role of the health-care plan as part of the overall compensation package (e.g., consider whether these benefits are offered in lieu of other elements of employee compensation).
 - (c) Define the economic and labor market in which the health-care plan and compensation package exists, and where the plan should fall within those markets. (In the middle of its peers? Below? Above?)

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2. Establish and define cost objectives using performance measures. This should include selecting a 3- to 5-year planning horizon for measuring changes to annual trends in the cost of services provided and services used by plan participants. Set performance goals against national or other relevant trends (e.g., keeping plan costs X percent of the national or regional trend).
3. Health-care sponsors should use analytical tools to measure the cost drivers and health risk factors of plan participants. Understanding what diseases, conditions, facilities, and treatments are driving cost increases can help identify opportunities for cost savings and allow plan sponsors to make informed decisions. Methods for accomplishing this include:
 - Predictive modeling, which uses data analytics (analyzing plan-specific, detailed claims, utilization trends, and demographic data) to identify individual high-risk and high-cost users.
 - (a) Data warehousing, which involves gaining access to participant data from all vendors, in a compatible electronic format. Health Insurance Portability and Accountability Act of 1996 (HIPAA) compliant data warehousing eliminates reliance on vendor-produced reports and allows plan data to be sorted in any way deemed valuable by plan management. Accurate data can allow for better vendor and plan management. Plan sponsors should move away from the idea that vendors own the data and push for ownership of that information; owning the data allows a plan to use it to manage costs.
 - (b) Measuring the plan's efficiency ratio, or the ratio of covered claims to paid claims. For example, if 100 percent of a doctor's visit is covered, that is a 100 percent efficiency ratio. If there is 20 percent co-pay, the efficiency ratio is 80 percent. (Efficiency ratios tend to be about 75 percent at the state level, and a plan with a 95 percent efficiency ratio, for instance, would be providing very generous benefits. When efficiency ratios are close to 100 percent, people tend to use the plan without consumer consciousness.)
4. Determine appropriate cost-containment measures as needed, and review the purpose of the health-care plan in light of the cost objectives and related performance goals that have been set. Consider the following actions to contain costs:
 - Auditing plan performance.
 - Eligibility management strategies include auditing dependents, Medicare eligibles, and retirees.
 - (a) Vendor management strategies include auditing claims to ensure that carriers or thirdparty administrators pay benefits according to plan rules, coordinating benefits, adopting procedures for addressing complaints about vendor activity, periodically reviewing contracts, and implementing achievable performance goals (e.g., increasing the percentage of diabetics getting regular check-ups). Consider including high-quality medical outcomes a part of physician and hospital contracting.

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- (b) Health-care management programs such as wellness, disease management, large-case management, utilization review, and pharmacy benefit management programs.
- Assess existing vendor contracts to find out if such programs are already included.
 - (a) Investigate pre-packaged vendor offerings carefully; be aware that some programs do not provide sufficient benefits to justify the program.
 - (b) Establish the amount the plan sponsor is willing to pay for specific outcomes before committing to such a program, and consider developing measures to assess all health-care management programs.
 - (c) Influencing participant behavior can improve participant health and drive down costs. This might include educational programs about improving health habits and behaviors, individual health risk appraisals, and online information about certain illnesses, as well as financial incentives for modifying behaviors.
 - (d) Cost-sharing measures such as higher deductibles, co-payments, co-insurance provisions, and employee contributions.
 - (e) Aggregation (by using fewer vendors to deliver benefits or by combining the purchasing power of several organizations) to get better pricing. Where allowed by law, organizations can enter into health-care insurance pools, intergovernmental agreements for procurement of prescription drugs, or partnerships with private-sector organizations. Local governments in some states can participate in state master agreements.
 - (f) Evaluate the viability of self-funding. Factors to analyze include number and type of participants, ability to accept risk, and availability of stop-loss coverage, as well as ongoing comparisons between self-funded and fully insured plans. Long-term projections and analysis of the program's financial viability are essential, particularly in the context of rapidly rising health-care costs. Third-party administrators can handle many tasks such as negotiating pricing arrangements, managing contracts, and processing claims, but it remains essential that internal staff have the scope of knowledge and experience to manage these functions.
- 5. Work with other departments, including human resources, to make sure the long-term strategic plan design for health care is understood and can be taken into consideration during labor negotiations. Healthcare plan sponsors should consider integrating the health-care plan design with the organization's longterm financial plan.

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6. Establish ongoing education initiatives.
 - Educate participants about benefit provisions, including benefit limitations, employer and employee costs, and the benefit's value to employees and retirees.
 - (a) Develop an education guide to communicate the value of the benefits to elected and appointed officials, employees, labor groups, other agencies, and the public.
7. Plan sponsors should consider how the provision of retiree health-care benefits (commonly referred to as other post-employment benefits, or OPEB) affects the costs and sustainability of the overall health-care benefit package provided. In addition to cost containment measures, plan sponsors should consider other means of enhancing the sustainability of the health-care benefits provided.

6.7 EPIDEMIOLOGY

Public Health is a blend of sciences, skills and convictions that is focused on the preservation and improvement of the health of all people through preventive (rather than curative) measures.

Epidemiology is considered a basic science of public health. Epidemiology is:

- (a) A quantitative discipline built on a working knowledge of probability, statistics, and sound research methods;
- (b) A method of causal reasoning based on developing and testing hypotheses pertaining to occurrence and prevention of morbidity and mortality; and
- (c) A tool for public health action to promote and protect the public's health based on science, causal reasoning, and a dose of practical common sense.

The word epidemiology comes from the Greek words epi, meaning "on or upon," demos, meaning "people," and logos, meaning "the study of." Many definitions have been proposed; here are two that capture the underlying principles and the public health spirit of epidemiology:

"Epidemiology is the study of the distribution and determinants of health-related states or events in specified populations, and the application of this study to the control of health problems."

"Epidemiology is the study of the distribution and determinants of disease frequency in man.

These definitions of epidemiology include several terms which reflect some of the important principles of the discipline:

Study - Epidemiology is a scientific discipline and has at its foundation, sound methods of scientific inquiry.

Distribution - Epidemiology is concerned with the frequency and pattern of health events in a population. Frequency includes not only the number of such events in a population, but also the rate or risk of disease in the population.

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Pattern refers to the occurrence of health-related events by time, place, and personal characteristics.

- Time characteristics include annual occurrence, seasonal occurrence, and daily or even hourly occurrence.
- Place characteristics include geographic variation, urban-rural differences, and location of work sites or schools, for example.
- Personal characteristics include demographic factors such as age, race, sex, marital status, and socioeconomic status, as well as behaviors (such as occupation or risk-taking activity) resulting in environmental exposures.

This characterization of the distribution of health-related states or events is one broad aspect of epidemiology called descriptive epidemiology. Descriptive epidemiology provides the What, Who, When and Where of health-related events.

Determinants - Epidemiology is often used to search for causes and other factors that influence the occurrence of health-related events such as diseases, syndromes, and injuries. Analytic epidemiology attempts to provide the Why and How of such events by comparing groups with different rates of disease occurrence and with differences in demographic characteristics, genetic or immunologic make-up, behaviors, environmental exposures, and other so-called potential risk factors. Under ideal circumstances, epidemiologic findings provide sufficient evidence to direct swift and effective public health control and prevention measures.

Health-related states or events - Originally, epidemiology was concerned with epidemics of communicable diseases. The discipline was extended to endemic communicable diseases and noncommunicable infectious diseases. Modern epidemiology has been applied to chronic diseases, injuries, birth defects, maternal-child health, occupational health, and environmental health. Now, even behaviors related to health and well-being (amount of exercise, seat-belt use, etc.) are recognized as valid subjects for applying epidemiologic methods. The term "disease" refers to the range of health-related states or events.

Specified populations - Although epidemiologists and physicians in clinical practice are both concerned with disease and the control of disease, they differ greatly in how they view "the patient." Clinicians are concerned with the health of an individual; epidemiologists are concerned with the collective health of the people in a community or other area. When faced with a patient with diarrheal disease, for example, the clinician and the epidemiologist have different responsibilities. Although both are interested in establishing the correct diagnosis, the clinician usually focuses on treating and caring for the individual. The epidemiologist focuses on the exposure (action or source that caused the illness), the number of other persons who may have been similarly exposed, the potential for further spread in the community, and interventions to prevent additional cases or recurrences.

Application - Epidemiology is more than "the study of." As a discipline within public health, epidemiology provides data for directing public health action. To treat a patient, a clinician must call upon experience and creativity as well as scientific knowledge. Similarly, an epidemiologist uses the scientific methods of descriptive and analytic epidemiology in "diagnosing" the health of a community,

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but also must call upon experience and creativity when planning how to control and prevent disease in the community. As a public health discipline, epidemiology is instilled with the spirit that epidemiologic information should be used to promote and protect the public's health. Hence, epidemiology involves both science and public health practice. The term applied epidemiology is sometimes used to describe the application or practice of epidemiology to address public health issues.

Examples of applied epidemiology include the following:

- The monitoring of reports of communicable diseases in the community
- The study of whether a particular dietary component influences your risk of developing cancer
- Evaluation of the effectiveness and impact of a cholesterol awareness program through quasi-experimental study design
- Analysis of historical trends and current data to project future public health resource needs
- Clinical trial randomizing communities into different strategies for risk reduction

Epidemiology and the information generated by epidemiologic methods have many uses which include:

Population or community health assessment - To set policy and plan programs, public health officials must assess the health of the population or community they serve and must determine whether health services are available, accessible, effective, and efficient. To do this, they must find answers to many questions: What are the actual and potential health problems in the community? Where are they? Who is at risk? Which problems are declining over time? Which ones are increasing or have the potential to increase? How do these patterns relate to the level and distribution of services available? The methods of descriptive and analytic epidemiology provide ways to answer these and other questions. With answers provided through the application of epidemiology, communities and officials can make informed decisions that will lead to improved health for the population.

Individual decisions - People may not realize that they use epidemiologic information in their daily decisions. When they decide to stop smoking, take the stairs instead of the elevator, order a salad instead of a cheeseburger, or choose one method of contraception instead of another, they may be influenced, consciously or unconsciously, by epidemiologists' assessments of risk. Since World War II, epidemiologists have provided information related to all these decisions. In the 1950s, epidemiologists documented the increased risk of lung cancer among smokers; in the 1960s and 1970s, epidemiologists noted a variety of benefits and risks associated with different methods of birth control; in the mid-1980's, epidemiologists identified the increased risk of human immunodeficiency virus (HIV) infection associated with certain sexual and drug-related behaviors; and epidemiologists continue to document the role of exercise and proper diet in reducing the risk of heart disease. Hundreds of epidemiologic findings are directly relevant to the choices that people make every day, choices that affect their health over a lifetime.

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Completing the clinical picture - When studying a disease outbreak, epidemiologists depend on clinical physicians and laboratory scientists for the proper diagnosis of individual patients. But epidemiologists also contribute to physicians' understanding of the clinical picture and natural history of disease. For example, in late 1989 three patients in New Mexico were diagnosed as having myalgia (severe muscle pains in chest or abdomen) and unexplained eosinophilia (an increase in the number of one type of white blood cell). Their physician could not identify the cause of their symptoms, or put a name to the disorder. With considerable success, epidemiologists found other cases of eosinophilia-myalgia syndrome, more fully describing the illness, its complications, and its rate of mortality. Similarly, epidemiologists have documented the course of HIV infection, from the initial exposure to the development of a wide variety of clinical syndromes that include the originally described acquired immunodeficiency syndrome (AIDS). They have also documented the numerous conditions that are associated with cigarette smoking - from pulmonary and heart disease to lung and cervical cancer.

Search for causes - Much of epidemiologic research is devoted to a search for causes, factors that influence one's risk of disease. Often the goal is to identify a cause so that appropriate public health action might be taken. While epidemiology can not necessarily prove a causal relationship between an exposure and a disease, it often provides enough information to support effective action. Examples include John Snow's removal of the pump handle in nineteenth century London to combat cholera and the withdrawal of a specific brand of tampon that was linked by epidemiologists to toxic shock syndrome in the 1970s-1980s. Just as often, epidemiology and laboratory science converge to provide the evidence needed to establish causation. For example, a team of epidemiologists were able to identify a variety of risk factors during an outbreak of a pneumonia among persons attending the American Legion Convention in Philadelphia in 1976. However, the outbreak was not "solved" until the Legionnaires' bacillus was identified in the laboratory almost 6 months later.

The faculty in the Department of Epidemiology will work with you to build your knowledge base and technical skills in the field of epidemiology. While the topic areas that we work in are diverse (e.g., cancer, occupational, infectious, heart, genetic, environmental, dental, injury, children and women's health), we share a common methodology in the field of epidemiology.

The practice

Epidemiologists employ a range of study designs from the observational to experimental and generally categorized as descriptive, analytic (aiming to further examine known associations or hypothesized relationships), and experimental (a term often equated with clinical or community trials of treatments and other interventions). In observational studies, nature is allowed to "take its course", as epidemiologists observe from the sidelines. Conversely, in experimental studies, the epidemiologist is the one in control of all of the factors entering a certain case study. Epidemiological studies are aimed, where possible, at revealing unbiased relationships between exposures such as alcohol or smoking, biological agents, stress, or chemicals to mortality or morbidity. The identification of causal

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relationships between these exposures and outcomes is an important aspect of epidemiology. Modern epidemiologists use informatics as a tool.

Observational studies have two components: descriptive, or analytical. Descriptive observations pertain to the "who, what, where and when of health-related state occurrence". However, analytical observations deal more with the 'how' of a health-related event.

Experimental epidemiology contains three case types: randomized control trial (often used for new medicine or drug testing), field trial (conducted on those at a high risk of conducting a disease), and community trial (research on social originating diseases).

Unfortunately, many epidemiology studies conducted cause false or misinterpreted information to circulate the public. According to an epidemiology class taught by professor Madhukar Pai at McGill, "...optimism bias is pervasive, most studies biased or inconclusive or false, most discovered true associations are inflated, fear and panic inducing rather than helpful; media-induced panic, cannot detect small effects; big effects are not to be found anymore".

The term 'epidemiologic triad' is used to describe the intersection of *Host*, *Agent*, and *Environment* in analyzing an outbreak.

As Causal Inference

Although epidemiology is sometimes viewed as a collection of statistical tools used to elucidate the associations of exposures to health outcomes, a deeper understanding of this science is that of discovering *causal* relationships.

"Correlation does not imply causation" is a common theme for much of the epidemiological literature. For epidemiologists, the key is in the term inference. Epidemiologists use gathered data and a broad range of biomedical and psychosocial theories in an iterative way to generate or expand theory, to test hypotheses, and to make educated, informed assertions about which relationships are causal, and about exactly how they are causal.

Epidemiologists Rothman and Greenland emphasize that the "one cause - one effect" understanding is a simplistic mis-belief. Most outcomes, whether disease or death, are caused by a chain or web consisting of many component causes. Causes can be distinguished as necessary, sufficient or probabilistic conditions. If a necessary condition can be identified and controlled (e.g., antibodies to a disease agent), the harmful outcome can be avoided.

Bradford Hill Criteria

In 1965 Austin Bradford Hill proposed a series of considerations to help assess evidence of causation, which have come to be commonly known as the "Bradford Hill criteria". In contrast to the explicit intentions of their author, Hill's considerations are now sometimes taught as a checklist to be implemented for assessing causality. Hill himself said "None of my nine viewpoints can bring indisputable evidence for or against the cause-and-effect hypothesis and none can be required *sine qua non*."

1. **Strength:** A small association does not mean that there is not a causal effect, though the larger the association, the more likely that it is causal.

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2. **Consistency:** Consistent findings observed by different persons in different places with different samples strengthens the likelihood of an effect.
3. **Specificity:** Causation is likely if a very specific population at a specific site and disease with no other likely explanation. The more specific an association between a factor and an effect is, the bigger the probability of a causal relationship.
4. **Temporality:** The effect has to occur after the cause (and if there is an expected delay between the cause and expected effect, then the effect must occur after that delay).
5. **Biological Gradient:** Greater exposure should generally lead to greater incidence of the effect. However, in some cases, the mere presence of the factor can trigger the effect. In other cases, an inverse proportion is observed: greater exposure leads to lower incidence.
6. **Plausibility:** A plausible mechanism between cause and effect is helpful (but Hill noted that knowledge of the mechanism is limited by current knowledge).
7. **Coherence:** Coherence between epidemiological and laboratory findings increases the likelihood of an effect. However, Hill noted that "... lack of such [laboratory] evidence cannot nullify the epidemiological effect on associations".
8. **Experiment:** "Occasionally it is possible to appeal to experimental evidence".
9. **Analogy:** The effect of similar factors may be considered.

Legal interpretation

Epidemiological studies can only go to prove that an agent could have caused, but not that it did cause, an effect in any particular case:

"Epidemiology is concerned with the incidence of disease in populations and does not address the question of the cause of an individual's disease. This question, sometimes referred to as specific causation, is beyond the domain of the science of epidemiology. Epidemiology has its limits at the point where an inference is made that the relationship between an agent and a disease is causal (general causation) and where the magnitude of excess risk attributed to the agent has been determined; that is, epidemiology addresses whether an agent can cause a disease, not whether an agent did cause a specific plaintiff's disease."

In United States law, epidemiology alone cannot prove that a causal association does not exist in general. Conversely, it can be (and is in some circumstances) taken by US courts, in an individual case, to justify an inference that a causal association does exist, based upon a balance of probability.

The subdiscipline of forensic epidemiology is directed at the investigation of specific causation of disease or injury in individuals or groups of individuals in instances in which causation is disputed or is unclear, for presentation in legal settings.

6.8 TOTAL QUALITY MANAGEMENT (TQM) IN HEALTHCARE

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Total Quality Management (TQM)

Total Quality Management (TQM) may have been the first quality oriented philosophy to transition into healthcare. TQM is based on three principles: continuous quality improvement (CQI), customer focus, and teamwork. To date, limited research attention has been given to challenges involved in adopting such practices to healthcare. Despite the enthusiasm raised by the potential benefits, many initiatives have not fully delivered the promised results. Some of the reasons for failure can be traced to the insufficient support of health professionals, the lack of leadership commitment and the tendency to look at TQM in isolation rather than putting it at core of the institution's strategy. Moreover, there exist various powerful subcultures (e.g. manager's subculture, physician's subculture, etc), each one of whom has their own perspective of what quality should be and how the work should be done.

Continuous Quality Improvement (CQI)

Continuous quality improvement is a concept based on a Japanese philosophy of "kaizen," the principle of which is based on continually seeking improvement on a process or system. The underlying belief on continuous improvement is that any aspect of a process or system can be improved. The focus is not to wait for a big problem to occur before acting.

CQI involves simplifying a process or a task and a lot of it was due to the computer application, automation, and processes that have exploded in the late 1980s. Medical has been slow in adapting to it. Healthcare is notorious for its enormous knowledge base, the vast array of data that are devoted to patient care, and the complexity of those data. Yet many clinicians and hospitals still rely on paper and pen to record data, on charts and files to store data, and on their reliance to cognitive memory or searching abilities to find—in stacks of charts, files, books, journals, and literature summaries—data and information to support decisions.

An example of this is a clinical laboratory in Southern California that still believes in manually inputting their timecard and the breakdown of their daily workload. Anecdotal accounts indicates that many workers at this particular department complained at the end of the day that after looking at hundreds if not thousands of cells in a microscope, manually inputting numbers is just an enormous task. The matter was brought up to the managers attention and some workers in the department even made an effort to simplify the process through use of Excel spreadsheet, but the managers of the place called it "cheating." The Excel program was discarded. This is a classic example of an archaic manager subculture at workplace of which each has their perspective of how the work should be done.

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Customer Service

Kelly (2006), emphasized the responsibility of managers in instilling a customer focused environment and direction for employees, including adherence to the dual nature of medical quality. Continuous quality improvement (CQI) in health care espouses customer service and stakeholders define it based on their expectations and needs. For instance, in an effort to provide better customer focused environment, a big clinical lab in San Diego has rebranded their initiative as Vision for the Future and Beyond. The goal: to find ways to work better, what the organization could do differently to improve the way they serviced customers, improve what they offered customers, improve the way they operate, and improve their overall service to patients, customers and our employees. The renaming was embraced by everyone and hundreds of initiatives and projects sprang up, and were prioritized.

Teamwork

Teamwork means employee involvement in quality. As such, the people involved have a common goal and purpose. The members of the team work together, rather than delegating to subordinates, their performance is judged not only by individual contributions but also by group contributions, and the members have an overarching purpose that transcends individual priorities. Patient care teams in a hospital provide for all kinds of services, from prevention, to acute care, and to the end-of-life (Kelly, 2006).

For total quality to be implemented, one strategy is to have the leaders of the organization steer the workforce in the right direction. In this author's introductory paragraph, it was emphasized that some of the reasons for failure of continuous quality improvement can be traced to the insufficient support of health professionals, the lack of leadership commitment and the tendency to look at TQM in isolation rather than putting it at core of the institution's strategy. Moreover, there exist various powerful subcultures (e.g. manager's subculture, physician's subculture, etc), each one of whom has their own perspective of what quality should be and how the work should be done. Leaders of an organization have a major role in the development of an organizational culture that is supportive of organizational improvement. The leader of the organization must foster total employee involvement in the quest for excellent service quality.

6.9 MEDICAL AUDIT

Quality health care is based on accurate and complete clinical documentation in the medical record. The best way to improve your clinical documentation and the livelihood of your health care organization is through medical record audits. They are necessary to determine areas that require improvements and corrections.

The goals of an audit are to provide efficient and better delivery of care and to improve the financial health of your medical provider. Medical record audits specifically target and evaluate procedural and diagnosis code selection

as determined by physician documentation. Once areas of weakness are revealed through an audit, you can present the audit findings and identify opportunities for training in your health care organization.

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What Is Medical Auditing and Why Perform One?

Medical auditing entails conducting internal or external reviews of coding accuracy, policies, and procedures to ensure you are running an efficient and hopefully liability-free operation.

There are many reasons to perform medical audits:

- To determine outliers before large payers find them in their claims software and request an internal audit be done.
- To protect against fraudulent claims and billing activity
- To reveal whether there is variation from national averages due to inappropriate coding, insufficient documentation, or lost revenue.
- To help identify and correct problem areas before insurance or government payers challenge inappropriate coding
- To help prevent governmental investigational auditors like recovery audit contractors (RACs) or zone program integrity contractors (ZPICs) from knocking at your door
- To remedy undercoding, bad unbundling habits, and code overuse and to bill appropriately for documented procedures
- To identify reimbursement deficiencies and opportunities for appropriate reimbursement.
- To stop the use of outdated or incorrect codes for procedures
- To verify ICD-10-CM and electronic health record (EHR) meaningful use readiness

What is clinical audit?

Clinical audit is a quality improvement process that was introduced to the NHS by the 1989 White Paper Working for Patients. Previously known as medical audit until a name change in the early 1990's, clinical audit involves reviewing the delivery of healthcare to ensure that best practice is being carried out.

Clinical audit is now an established part of the NHS landscape and a key component of the clinical governance framework. In recent times there has been a move away from "optional" clinical audit activity to a more "obligatory" approach. A good example of this is the Community Pharmacists, whose contract in 2005 made clinical audit work a contractual obligation. All healthcare professionals are now expected to participate in clinical audit work and in time it will be a key quality improvement activity for doctor revalidation.

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It is fair to say that clinical audit has a 'mixed' reputation and national documents endorsed by the Chief Medical Officer – 'Good Doctors, Safer Patients' (2006) and the 'Assurance and Safety' White Paper (2007) concluded that clinical audit was falling short of its potential and thus needed to be re-invigorated.

Since 2008 the Department of Health have made considerable amounts of funding available for the development of clinical audit. There are now many established National Clinical Audits that Trusts are expected to take part in and the National Advisory Group for Clinical Audit and Enquiries provides guidance to NHS England. Recent years have seen the drivers for clinical audit grow at an exponential rate and now clinical audit activity must be published via Quality Accounts, clinical audit reports are made available to the Care Quality Commission, clinical audit is an integral part of NHSLA arrangements and NICE Quality Standards should be audited. New commissioner/provider relationships have extended the remit of clinical audit and audit work is being linked to relatively new initiatives, such as QIPP, CQUINs, PROMs, etc. Revalidation arrangements (published in 2012) identify that all doctors must take part in quality improvement initiatives and many are likely to opt to conduct clinical audit projects to meet these requirements.

Definitions

Since audit was introduced in 1989 there have been many different definitions of clinical audit. The current accepted definition appears in Principles for Best Practice in Clinical Audit (2002) and was endorsed by the National Institute of Clinical Excellence:

"Clinical audit is a quality improvement process that seeks to improve patient care and outcomes through systematic review of care against explicit criteria and the implementation of change. Aspects of the structure, process and outcome of care are selected and systematically evaluated against explicit criteria. Where indicated changes are implemented at an individual, team, or service level and further monitoring is used to confirm improvement in healthcare delivery".

Although this is an excellent technical definition of clinical audit it is also 68 words long and unlikely to inspire healthcare professionals to take part in clinical audit work. Ironically, the 1989 White Paper Working for Patients provided a far shorter and simpler definition of audit:

"audit involves improving the quality of patient care by looking at current practice and modifying it where necessary".

Clinical audit is essentially all about checking whether best practice is being followed and making improvements if there are shortfalls in the delivery of care. A good clinical audit will identify (or confirm) problems and should lead to effective changes being implemented that result in improved patient care.

The integration into contemporary healthcare

Despite the successes of Nightingale in the Crimea and Codman in Massachusetts, clinical audit was slow to catch on. This situation was to remain for the next 130 or so years, with only a minority of healthcare staff embracing the process as a means of evaluating the quality of care delivered to patients.

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As concepts of clinical audit have developed, so too have the definitions which sought to encapsulate and explain the idea. These changes generally reflect the movement away from the medico-centric views of the mid-Twentieth Century to the more multidisciplinary approach used in modern healthcare. It also reflects the change in focus from a professionally-centred view of health provision to the view of the patient-centred approach. These changes can be seen from comparison of the following definitions.

In 1989, the White Paper, *Working for patients*, saw the first move in the UK to standardise clinical audit as part of professional healthcare. The paper defined medical audit (as it was called then) as

“the systematic critical analysis of the quality of medical care including the procedures used for diagnosis and treatment, the use of resources and the resulting outcome and quality of life for the patient.”

Medical audit later evolved into clinical audit and a revised definition was announced by the NHS Executive:

“Clinical audit is the systematic analysis of the quality of healthcare, including the procedures used for diagnosis, treatment and care, the use of resources and the resulting outcome and quality of life for the patient.”

The National Institute for Health and Clinical Excellence (NICE) published the paper *Principles for Best Practice in Clinical Audit*, which defines clinical audit as

“a quality improvement process that seeks to improve patient care and outcomes through systematic review of care against explicit criteria and the implementation of change. Aspects of the structure, processes, and outcomes of care are selected and systematically evaluated against explicit criteria. Where indicated, changes are implemented at an individual, team, or service level and further monitoring is used to confirm improvement in healthcare delivery.”

Types of Audit

- Standards-based audit - A cycle which involves defining standards, collecting data to measure current practice against those standards, and implementing any changes deemed necessary.
- Adverse occurrence screening and critical incident monitoring - This is often used to peer review cases which have caused concern or from which there was an unexpected outcome. The multidisciplinary team discusses individual anonymous cases to reflect upon the way the team functioned and to learn for the future. In the primary care setting, this is described as a ‘significant event audit’.
- Peer review - An assessment of the quality of care provided by a clinical team with a view to improving clinical care. Individual cases are discussed by peers to determine, with the benefit of hindsight, whether the best care was given. This is similar to the method described above, but might include ‘interesting’ or ‘unusual’ cases rather than problematic ones. Unfortunately, recommendations made from these reviews are often not pursued as there is no systematic method to follow.
- Patient surveys and focus groups - These are methods used to obtain users’ views about the quality of care they have received.

6.10 STUDENT ACTIVITY

1. Describe Principals of Management.
2. Discuss the Organisational structure
3. Explain Business Communication.
4. What is clinical audit?
5. What are the Healthcare's Communication Challenges?

6.11 SUMMARY

- *Health marketing is a new approach to public health that applies traditional marketing principles and theories alongside science-based strategies to prevention, health promotion and health protection. Health marketing is one of the ways through which advancements in medicine and in health-protecting services like insurance are made widely known.*
- *Management is the process of forecasting and planning, organising, leading, coordinating and controlling the resources of an organisation in the efficient and effective pursuit of a specified organisational goal.*
- *Middle-level managers are those in the levels below top managers. Middle-level managers are responsible for carrying out the goals set by top management. They also set goals at their level and perhaps for other units they are responsible for. Middle-level managers can motivate and assist frontline managers to achieve the sector objectives. They may also communicate upwards, by offering suggestions and feedback to top managers.*
- *Healthcare is a communication intensive business. Good communication has a profound effect on the quality of delivery in healthcare organisations. Communication also has a huge bearing on patient satisfaction.*
- *Continuous quality improvement is a concept based on a Japanese philosophy of "kaizen," the principle of which is based on continually seeking improvement on a process or system. The underlying belief on continuous improvement is that any aspect of a process or system can be improved. The focus is not to wait for a big problem to occur before acting.*

6.12 GLOSSARY

- *Decisional roles: Decisional roles include the roles of: resources allocator, negotiator, entrepreneur and disturbance handler. It is important to recognise that these roles are highly interrelated.*

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- **Organizational behavior management:** Organizational behavior management (OBM) focuses on what people do, analyzes why they do it, and then applies an evidence-based intervention strategy to improve what people do.
- **Clinical audit:** Clinical audit is a quality improvement process that seeks to improve patient care and outcomes through systematic review of care against explicit criteria and the implementation of change. Aspects of the structure, process and outcome of care are selected and systematically evaluated against explicit criteria.
- **Epidemiology:** Epidemiology is often used to search for causes and other factors that influence the occurrence of health-related events such as diseases, syndromes, and injuries. Analytic epidemiology attempts to provide the Why and How of such events by comparing groups with different rates of disease occurrence and with differences in demographic characteristics, genetic or immunologic make-up, behaviors, environmental exposures, and other so-called potential risk factors.
- **Medical audit:** Quality health care is based on accurate and complete clinical documentation in the medical record. The best way to improve your clinical documentation and the livelihood of your health care organization is through medical record audits.

6.13 REVIEW QUESTIONS

1. What do you mean by Organisational behavior?
2. What do you mean by MATRIX ORGANIZATIONAL STRUCTURE?
3. What Is Medical Auditing and Why Perform One?
4. Explain Effective Business Communication Methods.
5. Write short note on:
 - (a) OBM
 - (b) HQID
 - (c) TQM
 - (d) CQI
 - (e) HIV