# CERTIFICATE COURSE

# At

# MEDVARSITY

## CERTIFICATE COURSE ON HEALTH CARE QUALITY MANAGEMENT

**(05 April -30May 2020)**

**By**

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**Under the Guidance**

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**MBA Hospital and Health Management**

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IIHMR UNIVERSITY

**Course Description**

Quality management is a crucial need for healthcare organizations such as hospitals, nursing homes, clinics, and laboratories. Healthcare institutions must ensure that they constantly evaluate their internal processes and service delivery to ensure that the quality of healthcare delivered is of top standard. Quality in healthcare delivery is important because it has a direct impact on human lives and wellbeing.

Ensuring patient safety and healthcare quality is critical and should be a key focus of everyone in healthcare practice. This course provides healthcare practitioners and others with an introduction to the knowledge and skills needed to lead patient safety and quality improvement initiatives at the micro and macro levels.

The course gives the insight of the foundations of health care quality and the science underlying patient safety and quality improvement, theories, Accreditation in the healthcare organization, consumer protection act, design and select effective health care measures, analyse patient safety problems and processes using tools, applying systematic approaches including the Plan-Do-Check-Act (PDCA) model to address quality improvement challenges and learn strategies to lead a culture of change.

The Certificate Course in Healthcare Quality Management provides comprehensive coverage of the theoretical and practical aspects of quality at different levels of healthcare delivery. The aim of this course is to enable healthcare managers and other health professionals in the implementation of quality management and continuous quality improvement in their settings.

**Eligibility:**

This course is open to all graduates, preferably for those with work experience in healthcare sector. The focus of this course is on Quality Managers, Members of Quality Assurance Teams, Hospital administrators, Clinical Directors, Heads of Departments, Superintendents, Nursing heads, Health department officials and other professionals who are responsible for healthcare delivery.

This course is certified by **Medvarsity.**

**Course Validity:** 3 months or 30 hours of Learning content.

**Order Date:** 05 April 2020

**Course Outline:**

**Module 1: 2 videos, 42 Articles, 1quiz**

- Introduction to Healthcare Quality
- Quality Management Theories
- Quality Management Tools
- Statistics in Quality
- Quality in Healthcare Organisations
- Consumer Protection Act and Quality

**Module 2: 2videos, 20Articles, 1quiz**

- Patient Safety and Medical Errors
- Dashboards and Scorecards
- IT and Quality

**Final Assessment: 1Article, 1quiz**

**Certificate of Completion**

**Broad Objective**

To help understand the basic concepts of quality in health care and develop skills to implement sustainable quality assurance/management program in the hospital and health services.

**Specific Objectives**

- To familiarize and understand the concepts of Quality Assurance/Management and its importance in the context of health care
- To understand the scope of QA
- To understand the importance of standards, indicators, and benchmarks in QA
- To learn basic skills of assessment of the quality
- To understand the QA process and develop skills to use quality improvement tools
- To develop skills in monitoring and supervising the quality of services
- To plan and implement a QA program in health and hospitals
- To apprise of National Accreditation Program and Process

## Learning Objectives

- Define quality and describe dimensions of quality
- Assess and measure quality using a set of standards and indicators
- Define QA Problems and develop solutions
- Use selected quality improvement tools
- Develop a plan of action for quality improvement in their settings
- Preparing for Accreditation

## Topic 1: Introduction to Healthcare Quality

### Objectives

- Define quality.
- Explain the approach of quality improvement.
- Who is Interested in Quality?
- The Journey to Quality Improvement
- Differences Between Manufacturing and Service Organisations
- List the different approaches available to define quality.
- criteria and standards involved in quality management.
- Terms Defining Quality

## What is Quality?

"Doing the right thing right, right away."

The answer to this question is quite simple: "It depends.

Even though the definition of quality in health care has changed over the years, as care has become more complex and a greater number of people and processes become involved in the delivery of care, some fundamentals remain unchanged.

## Defining Quality

Quality means different things to different people there are many definitions of quality given by various quality experts.

Quality can be interpreted as meeting both the clients expressed standards and when standards (e.g. program) are fully met.

A widely accepted definition of quality, as given by the Institute of Medicine, is "the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge" (Lohr 1990).

## Different Approaches to Defining Quality

The strategic concept of order qualifiers and order winners that developed during the 1990s.

- Order qualifiers: are minimum characteristics that a product or service must have to be of acceptable quality.
- Order winners**:** are those enhancements that exceed the minimum characteristics.

## Five Approaches to Defining Quality

David Garvin identified five major approaches to defining quality:

The Transcendent Approach:

- In this view "quality is synonymous with 'innate excellence'" and is "absolute and universally recognisable."
- This approach implies that there is a construct called a quality that is universally applicable. This is the approach, which is the basis for philosophical debate - some say it is of little practical utility.
- Others argue that the transcendent approach is "the fundamentally most important approach to thinking about quality—particularly in the quality of design of breakthrough products and services."

The Product-based Approach:

- In this view quality is "a precise and measurable variable" which is a

composite of all the attributes that describe the degree of excellence of a product.

- This approach is illustrated by a draft of the ISO 8402 standard, which stated that "quality…is the degree to which a…product possesses a specified set of attributes necessary to fulfil a stated purpose."

The User-based Approach:

- In this view, quality is in the eye of the beholder— the customer. This approach has spawned tools such as quality function deployment (QFD).
- While this approach has proven to be of practical value in the design of products based on incremental innovations, it is of limited value in designing products based on radical innovations.

The Manufacturing-based Approach:

- In this view quality is "conformance to (engineering and manufacturing) requirements. W. Edwards Deming criticises this approach as "the absurdity of meeting specifications."
- "Specifications don't tell you what you need…Just to meet specifications—what you think the customer requires—no. That won't keep you in business." Taguchi argued that the manufacturing-based approach is fundamentally flawed.
- He argued that simply meeting specifications is not good enough. He developed the quadratic loss function which shows that losses increase exponentially as a parameter deviates from its target value. Others argue that conformance to specifications is a practical approach to defining quality if and only if the specifications derive from customer requirements (user-based approach).

The Value-based Approach:

- In this approach, quality is defined "in terms of costs and prices…A quality product is one that provides performance at an acceptable price or conformance at an acceptable cost." Philip Crosby also endorses this approach.
- "Quality is precisely measured by the cost of quality which, as we have said, is the expense of non-conformance (to requirements)." This blends the value-based approach with the manufacturing-based approach.

## Who is Interested in Quality?

There are two basic categories of customers interested in measuring quality.

Internal customers:

The board of directors, individual physicians, and other clinicians, as well as healthcare managers and employees. Each of these groups needs to measure or evaluate quality for different reasons.

External customers:

Individuals who are interested in measuring healthcare quality. Within this category are patients and their caregivers, private and public purchasers/payer groups, accrediting/regulatory agencies, academic institutions/researchers, and the media.

An imbalance between what the customer expects and what the process can produce leads to customer's defections, decreases in quality, increased costs, and wasted effort.

## The Journey to Quality Improvement

The journey begins by identifying an opportunity for improvement. Once an opportunity is identified, the next task is to organise a team. Your team should have representatives from all areas involved with the improvement opportunity.

Developing a flowchart of the current process is among the first tasks before the team. flowchart represents reality. The next step is to identify the customers of the process. Deciding on the primary customer is essential. Those aspects of the process, which the primary customer identifies as important are called **Quality Characteristics (QCs)**. The challenge of the team is to sort through the QCs and decide which one will be the **Key Quality Characteristic (KQC)**. The KQC will be the focal point of the team's efforts.

Once the KQC is selected, the team is ready to move on to the development of an operational definition of the KQC and the development of a data collection plan.

The steps in the development of an improvement strategy are also sequential and begin with identifying **Process Variables (PVs)**. From the list of all potential PVs, one **Key Process Variable (KPV)** should be selected and an improvement strategy should be developed around this variable.

Finally, there is a need to establish a mechanism to monitor the process on an ongoing basis.

**Differences Between Manufacturing and Service Organisations**

Defining quality in manufacturing organisations is often different from that of services.

The most common quality definition in manufacturing is conformance, which is the degree to which a product characteristic meets present standards.

since service is experienced, perceptions can be highly subjective. In addition to tangible factors, quality of services is often defined by perceptual factors.

| Manufacturing Organisations | Service Organisations |
|---|---|
| Conformance to specifications | Tangible factors |
| Performance | Consistency |
| Reliability | Responsiveness to customer needs |
| Features | Courtesy/friendliness |
| Durability | Timeliness/promptness |
| Serviceability | Atmosphere |

**Different approaches available to define quality:**

**Quality Assurance**

A quality assurance (QA) approach involves eliminating defects. In an assembly line, defects refer to damages found intangible products; in a service industry, like healthcare, defects refer to those performers who carry out a task or service poorly.

Figure 1. illustrates this manager's QA approach. The bell-shaped curve on the left, which demonstrates a normal distribution, represents the combined productivity of all the employees in the department; it shows the result of many employees carrying out the same process over and over. A measure of central tendency is shown by the vertical line in the middle of the curve and may be represented as a mean, median, or mode (average number of pre-authorisations per employee). Besides, performance varies, with several data points at the

"better" tail of the curve (the speedy employees) and some data points at the "worse" tail of the curve (the dawdlers).

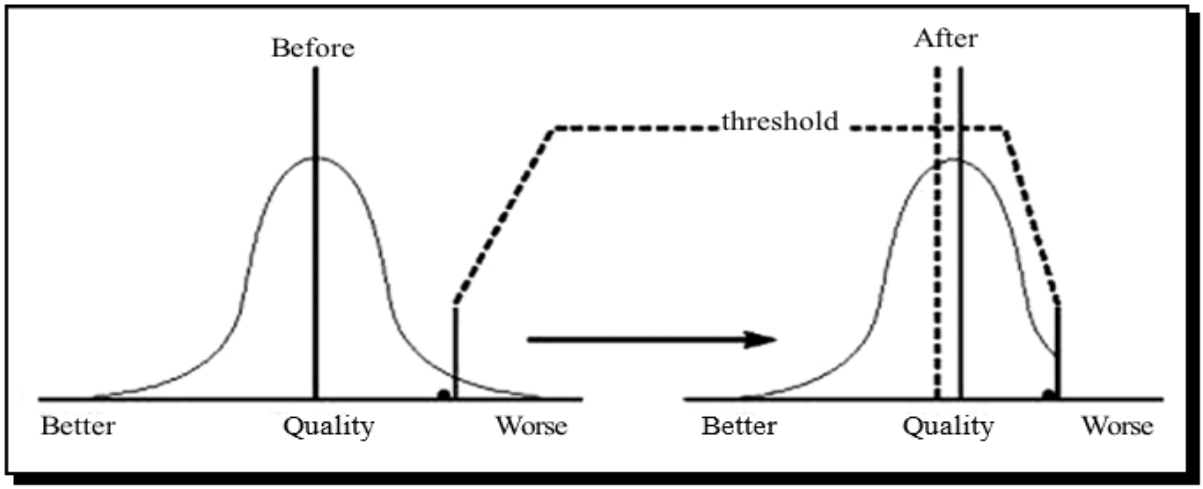



Figure 1: QualityAssurance

**Quality Improvement**

Quality Improvement (QI**)**, also referred to as Continuous Quality Improvement (CQI), approach.

Figure 2. illustrates the manager's QI approach. The baseline performance is represented by the bell-shaped curve on the left. However, how the higher average level of performance is achieved is very different than what is seen in Figure 1.

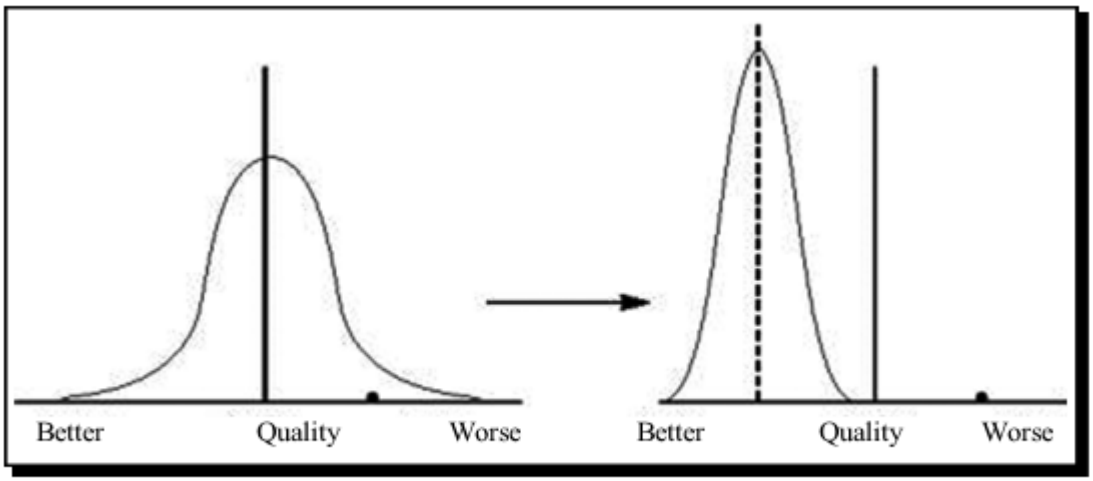


Figure 2: Quality Improvement

In QI, the goal is not only to improve the average performance but also to reduce inappropriate variations in the process (James 1989, 1993). In this way, the process delivers the desired output or result on a more consistent basis.

## Total Quality

The term total quality (TQ), also referred to as total quality management, is often used interchangeably with the terms QI and CQI.

Total quality is a philosophy or an approach to management that can be characterised by its principles, practices, and techniques.

Its three principles are customer focus, continuous improvement, and teamwork . . . each principle is implemented through a set of practices . . . the practices are, in turn, supported by a wide array of techniques.

## Quality of Structure

In practice, the whole spectrum of medical care, nursing and the infrastructure are categorised according to the measures taken to evaluate and assure them. In this connection, the following three categories have proved to be useful:

- Quality of structures
- Quality of processes (= operations)
- Quality of results (= outcome)

1. Quality of Structures

The category "structures" comprises the characteristic features of a hospital, i.e. the quality and quantity of the staff and of the other resources that are necessary for hospital performance. The quality of structures is mainly determined by:

- The number and qualifications of all staff members
- The organisational structure of a hospital
- The financial resources of a hospital and the operating resources available at a hospital

2. Quality of Processes

   The category "processes" comprises all measures that are taken - or not taken - while providing care.

3. Quality of Results

   The category "results" provides the most important basis for evaluating actual performance.

   Measuring the quality of results is, however, difficult since the targeted goal, cannot immediately be defined and measured in objective terms.

## Criteria and Standards

### Criteria

Criteria - also called indicators - provide the yardstick by which quality can be measured. Criteria must be measurable in concrete terms.

Criteria must be:

- Measurable (expressed in numbers)
- Relevant (for the area and objective under analysis) and comprehensible (for third parties)

Standards

Standards lay down the characteristic features of criteria. Standards indicate what objectives are thought to be attainable, and ought to be attained, or what objectives are targeted. Standards should be contingent on performance, i.e. it must be possible to change them.

## Terms Defining Quality

Different terms are used to describe approaches to quality. Often these terms are misunderstood and used incorrectly.

It is important in an introductory chapter of a quality book to define some of the key terms used in modern quality control.

Strategic Quality Management (SQM) is a "systematic approach for setting and meeting quality goals throughout the company…with upper management participation in managing for quality to an unprecedented degree." SQM involves the complete integration of quality into the strategic management process.

Total Quality Management (TQM) is "a management approach to long-term success through customer satisfaction. It is based on the participation of all members of an organisation in improving processes, products, services, and the culture they work in."

Quality Management is the totality of functions involved in the determination and achievement of quality (includes quality assurance and quality control).

Quality Assurance (QA**)** is a broad concept that focuses on the entire quality system including suppliers and ultimate consumers of the product or service. It includes all activities designed to produce products and services of appropriate quality. According to ASQ, quality assurance includes all those planned or systematic actions necessary to provide adequate confidence that a product or service will satisfy given needs.

Quality control (QC**)** has a narrower focus than quality assurance. Quality control focuses on the process of producing the product or service with the intent of eliminating problems that might result in a defect.

# TOPIC 2: QUALITY MANAGEMENT THEORIES

**Objectives**

1. To understand the different quality standards for hospitals.
2. To List well-known names in quality management**.**

## Introduction

Quality is not a new concept. The very survival of early humanoids depended upon the quality of the tools, which they fabricated from stone and bone, and later bronze and iron.
Quality was fully integrated into the manufacturing processes, which were passed along from one generation to the next. As civilization evolved, the specialization of labour began to develop.

## FOCUS and PDCA

### Standards for Quality Improvement - The PDCA Methodology

PDCA is a cyclic improvement/problem resolution tool. Each cycle moves closer to the objective. This approach builds on the fact that knowledge and skills are always limited but can improve as we go.

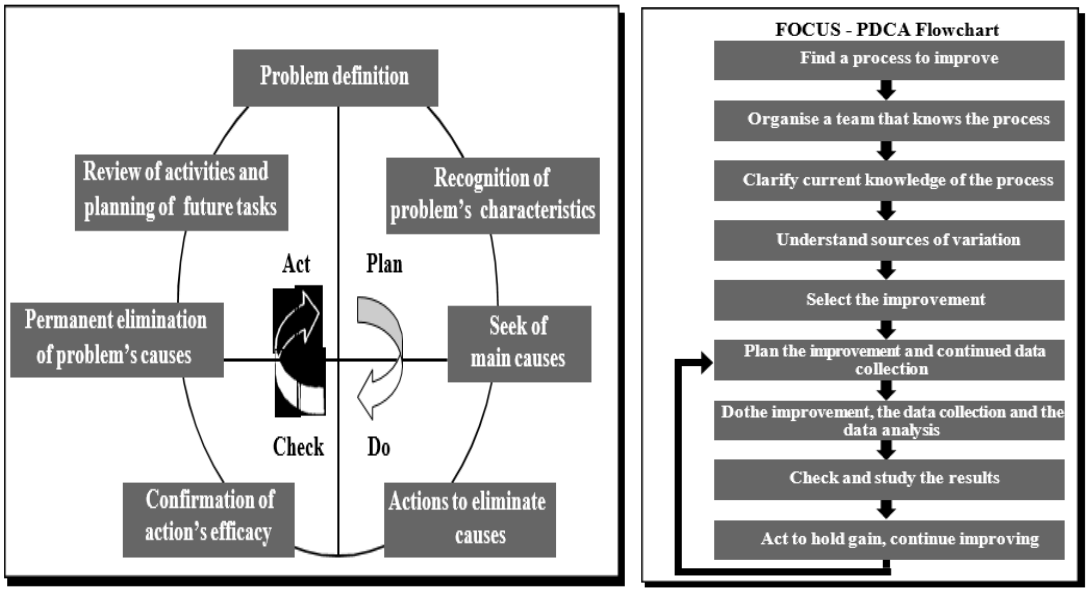
### Cycles of Improvement

Practitioners use PDCA as a guide to analysing processes. The goal is to identify errors or omissions that cause the output of the process to fall short of expectations.
The four steps of PDCA are:

1. Plan
2. Do
3. Check
4. Act

PDCA provides a framework for the improvement of a process. It can guide the entire improvement project, or to aid in developing specific projects based on identified target

improvement areas. PDCA is as a dynamic model. Completing one turn of the cycle flows into the beginning of the next.




FOCUS is an acronym for Find, Organise, Clarify, Uncover, and Start. FOCUS sets the stage for PDCA. FOCUS PDCA is then a nine-step process with five FOCUS steps and 4 PDCA steps. Using the FOCUS method with PDCA can help you achieve higher quality results in less time.

## The Deming Prize

The Deming Prize is a Japanese award given to companies to recognise their efforts in quality improvement. The award has been given by the Union of Japanese Scientists and Engineers (JUSE) since 1951. Competition for the Deming Prize was opened to foreign companies in 1984. In 1989 Florida Power & Light was the first U.S. Company to receive the award.

## The Lean Thinking

The concept called “lean management” or “lean thinking” is most associated with Japanese manufacturing, particularly the Toyota Production System (TPS). Lean thinking is not a manufacturing tactic or a cost-reduction program, but a management strategy that applies to all organisations because it has to do with improving processes. All organisations —

including health care organisations — are composed of a series of processes or sets of actions intended to create value for those who use or depend on the customers/patients). The core idea of lean involves determining the value of any given process by Distinguishing value-added steps from non-value-added steps and eliminating waste (or muda in Japanese) so that ultimately every step adds value to the process.

## Poka-Yoke

Poka-yoke was coined in Japan during the 1960s by Shigeo Shingo who was one of the industrial engineers at Toyota. Poka-yoke helps people and processes work right the first time. Poka-yoke refers to techniques that make it impossible to make mistakes. These techniques can drive defects out of products and processes and substantially improve quality and reliability. It can be thought of as an extension of FMEA. It can also be used to fine-tune improvements and process designs from six-sigma Define-Measure-Analyse-Improve-Control (DMAIC) projects. The use of simple poka-yoke ideas and methods in product and process design can eliminate both human and mechanical errors. Poka-yoke does not need to be costly.

## ISO 9000 and ISO 14000

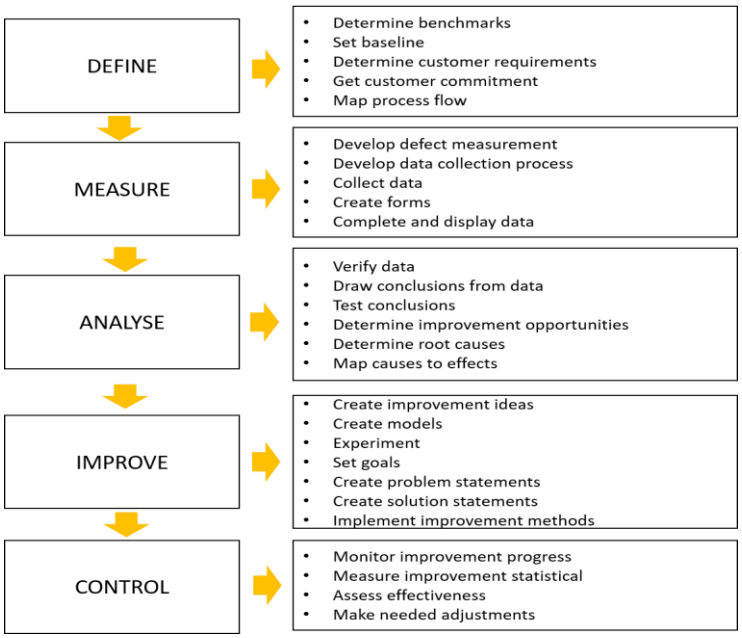
The International Organisation for Standardisation (ISO) is an international organisation whose purpose is to establish agreement on international quality standards. ISO 9000 consists of a set of standards and a certification process for companies. By receiving ISO 9000 certification, companies demonstrate that they have met the standards specified by the ISO. To receive ISO certification, a company must provide extensive documentation of its quality processes. This includes methods used to monitor quality, methods and frequency of worker training, job descriptions, inspection programs, and statistical process-control tools used. High-quality documentation of all processes is critical.

The need for standardisation of quality created an impetus for the development of other standards. In 1996 the International Standards Organisation introduced standards for evaluating a company's environmental responsibility. These standards, termed ISO 14000. With greater interest in green manufacturing and more awareness of environmental concerns, ISO 14000 may become an important set of standards for promoting environmental responsibility.

## Six-Sigma

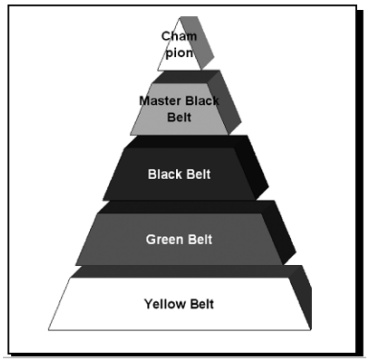
A Six Sigma defect is defined as anything outside of customer specifications. A Six Sigma opportunity is then the total quantity of chances for a defect. Process sigma can easily be calculated using a Six Sigma calculator. The fundamental objective of the Six Sigma methodology is the implementation of a measurement-based strategy that focuses on process improvement and variation reduction through the application of Six Sigma improvement projects. This is accomplished using two Six Sigma sub-methodologies: DMAIC and DMADV. The Six Sigma DMAIC process (define, measure, analyse, improve, control) is an improvement system for existing processes falling below specification and looking for incremental improvement. The Six Sigma DMADV process (define, measure, analyse, design, verify) is an improvement system used to develop new processes or products at Six Sigma quality levels. The primary goal of Six Sigma is to improve customer satisfaction, and thereby profitability, by reducing and eliminating defects. Defects may be related to any aspect of customer satisfaction: high product quality, schedule adherence, cost minimisation.

**Six Sigma Process**




### Roles in a Six-Sigma Organisation

The roles of a senior executive (CEO or president), executive committee, champion, process owner, master black belt, black belt, and green belt are critical to the Six Sigma management process.



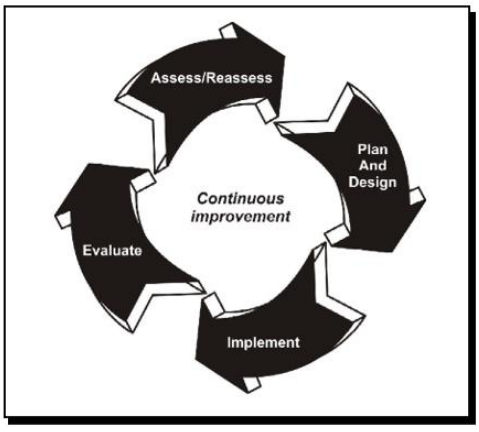

## Kaizen

Kaizen was created in Japan following World War II. The word Kaizen means "continuous improvement". Kaizen is a system that involves every employee - from upper management to the cleaning crew. Everyone is encouraged to come up with small improvement suggestions regularly. This is not a once a year, or monthly activity. It is continuous. Adoption of KAIZEN involves the creation of a culture of sustained continuous improvement focusing on eliminating waste in all systems and processes of an organisation.

### Kaizen and Management

Management has two major components**:**

1. Maintenance
2. Improvement



The Key Kaizen Practices

- Mindset & Culture
- Customer orientation
- Quality control (QC) circles
- Suggestion system
- Discipline in the workplace
- Small-group activities
- Cooperative labour-management relations
- Total quality control (TQC)
- Quality improvement
- Production Process
- Automation & robotics
- Automation
- Zero defects
- Total productive maintenance (TPM)
- Kanban
- Just-in-time (JIT)
- Productivity improvement
- New product development

**Benchmarking**

Benchmarking is the process of identifying, understanding, and adapting outstanding practices and processes from organisations anywhere in the world to help your organisation improve its performance.

There are many benefits of benchmarking. The following list summarises the main benefits:

- Provides realistic and achievable targets
- Prevents companies from being industry-led
- Challenges operational complacency
- Creates an atmosphere conducive to continuous improvement
- Allows employees to visualise the improvement which can be a strong motivator for change
- Creates a sense of urgency for improvement
- Confirms the belief that there is a need for change
- Helps to identify weak areas and indicates what needs to be done to improve

Types of Benchmarking

There are four basic types of benchmarking.

1. Benchmarking against internal operations, called Internal Benchmarking
2. Benchmarking against external direct product competitors, called Competitive Benchmarking.
3. Benchmarking against external functional best operations or industry leaders, called Industry or Functional Benchmarking.
4. Benchmarking a process in one or several unlike organisations, called Generic or Process Benchmarking.


**Failure Mode and Effects Analysis (FMEA)**

Is a systematic team-driven approach that identifies potential failure modes in a system, product, or manufacturing/assembly operation caused by design or manufacturing/ assembly process deficiencies. It also identifies critical or significant design or process characteristics that require special controls to prevent or detect failure modes. FMEA is a tool used to prevent problems from occurring.

FMEA in Healthcare

Why Use FMEA?

- Aimed at prevention of tragedy
- Does not require previous bad experience or close call
- Makes system more robust
- Fault-tolerant

## Topic 3: Quality Management Tools

**Objectives**

1. To understand the use of control charts in hospitals.
2. To explain the importance of the flow chart.
3. To learn the use of Pareto chart in hospital operations.

### Flowchart

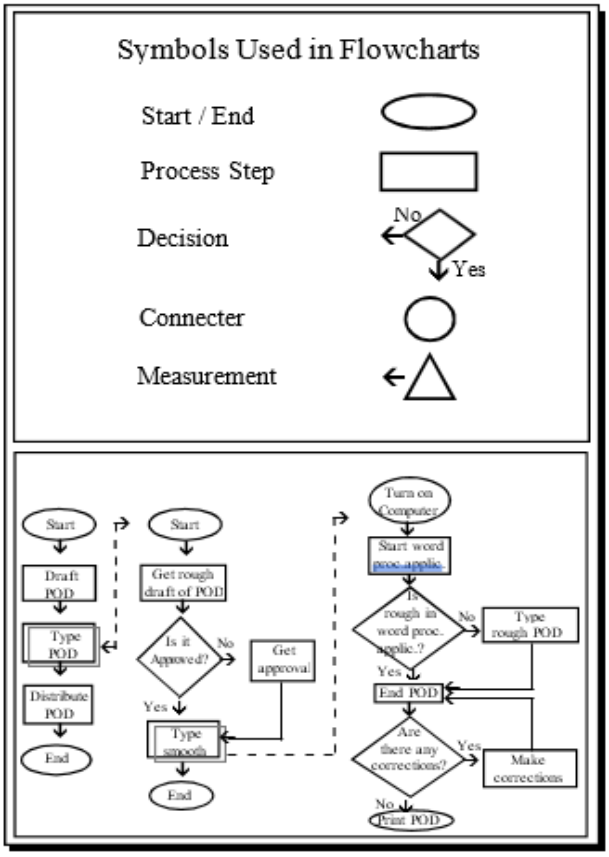
A Flowchart is a diagram that uses graphic symbols to depict the nature and flow of the steps in a process. Another name for this tool is "flow diagram."

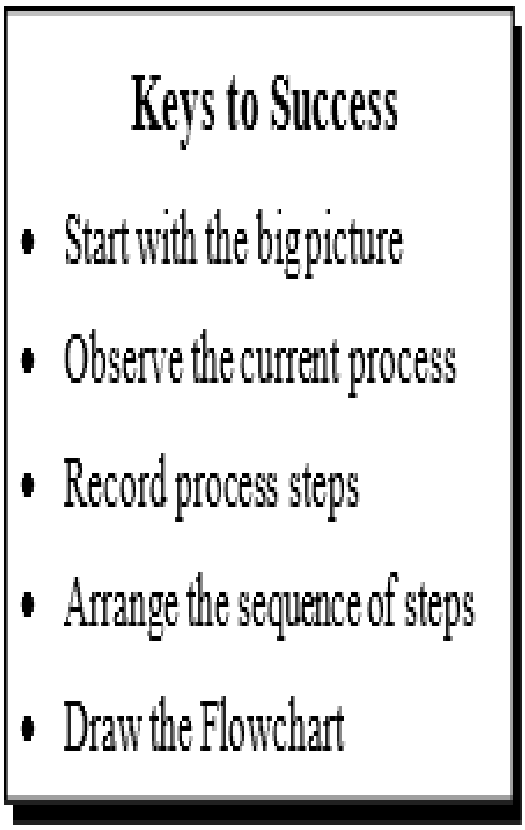
When Should Teams use Flowcharts?

- Promote understanding of a process by explaining the steps pictorially.
- Provide a tool for training employees.
- Identify problem areas and opportunities for process improvement
- Depict customer-supplier relationships

How do we get started?

- Identify the right people to develop the chart.
- Determine what you expect to get from the Flowchart.
- Identify who will use it and how.
- Define the level of detail you need.
- Establish the boundaries of the process to be improved.

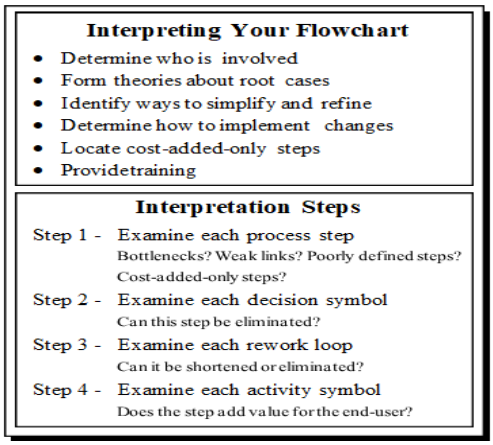



What are the Types of Flowcharts?

1. Linear Flowchart
2. Deployment Flowchart
3. Opportunity Flowchart

How do we interpret our Flowcharts?



# Run Charts

A Run Chart is the most basic tool used to display how a process performs over time. It is a line graph of data points plotted in chronological order—that is, the sequence in which process events occurred.

## Why use Run Charts?

- Understand process variation
- Analyse data for patterns
- Monitor process performance
- Communicate process performance
-

## How is a Run Chart constructed?

Step 1 - List the data.

Step 2 - Order the data and determine the range

Step 3- Calculate the median.

Step 4 - Construct the Y-Axis.

Step 5 - Draw the Centreline.

Step 6 - Construct the X-axis.

Step 7 - Plot the data points and connect them with straight lines.

Step 8 - Provide a Title and a Legend. Give the chart a title that identifies the process you are investigating and compose a legend that tells:

- The period when the data were collected
- The location where the data were collected
- The person or team who collected the data

## How do we Interpret a Run Chart?

Interpreting a Run Chart requires you to apply some of the theory of ***variation***. You are looking for ***trends, runs***, or ***cycles*** that indicate the presence of special causes. But before we examine those features of Run Charts, a word about variation. Expect to see it. Just remember that process improvement activities are expected to produce positive results, and these sometimes cause trends or runs, so the presence of special causes of variation is not always a bad sign.

## The Pareto Chart

A Pareto Chart is “a series of bars whose heights reflect the frequency or impact of problems. The bars are arranged in descending order of height from left to right. This means the categories represented by the tall bars on the left are relatively more significant than those on the right”. The chart gets its name from the Pareto Principle, which postulates that 80 per cent of the trouble comes from 20 per cent of the problems.

Why Should Teams use Pareto Charts?

"A Pareto Chart breaks a big problem into smaller pieces (and) identifies the biggest contributors. (It can) help us get the most improvement with the resources available by showing where to focus efforts to maximise achievements. The Pareto Principle states that a small number of causes accounts for most of the problems. Focusing efforts on the 'vital few' causes is usually a better use of valuable resources"

When Should we use a Pareto Chart?

A Pareto Chart is a good tool to use when the process you are investigating produces data that are broken down into categories and you can count the number of times each category occurs.


## Cause-And-Effect Analysis

A Cause-and-Effect Diagram is a tool that helps identify, sort, and display possible causes of a specific problem or quality characteristic. It graphically illustrates the relationship between a given outcome and all the factors that influence the outcome.

This type of diagram is sometimes called an "Ishikawa diagram" because it was invented by Kaoru Ishikawa, or a "fishbone diagram" because of the way it looks.

## When Should a Team use a Cause-And-Effect Diagram?

Constructing a Cause-and-Effect Diagram can help your team when you need to

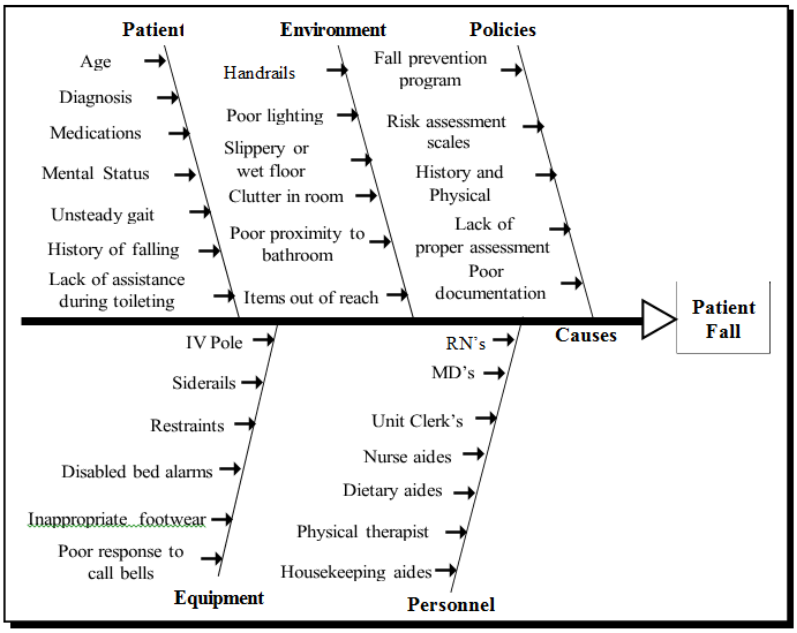
- Identify the possible root causes, the basic reasons, for a specific effect, problem, or condition.
- Sort out and relate some of the interactions among the factors affecting a process or effect.
- Analyse existing problems so that corrective action can be taken.

## Why Should we use a Cause-and-Effect Diagram?

A Cause-and-Effect Diagram is a tool that is useful for identifying and organizing the known or possible causes of quality, or the lack of it. The structure provided by the diagram helps team members think in a very systematic way. Some of the benefits of constructing a Cause-and-Effect Diagram are that it

- Helps determine the root causes of a problem or quality characteristic using a structured approach.
- Encourages group participation and utilises group knowledge of the process.
- Uses an orderly, easy-to-read format to diagram cause-and-effect relationships.
- Indicates possible causes of variation in a process.
- Increases knowledge of the process by helping everyone to learn more about the factors at work and how they relate.
- Identifies areas where data should be collected for further study.

**Causes by Categories (Fishbone Diagram)**




The fishbone diagram helps teams to brainstorm about possible causes of a problem, accumulate existing knowledge about the causal system surrounding that problem, and group causes into general categories.

## Control Chart

A control chart (also called process chart or quality control chart) is a graph that shows whether a sample of data falls within the common or normal range of variation. A control chart has upper and lower control limits that separate common from assignable causes of variation.

### Why Use Control Charts?

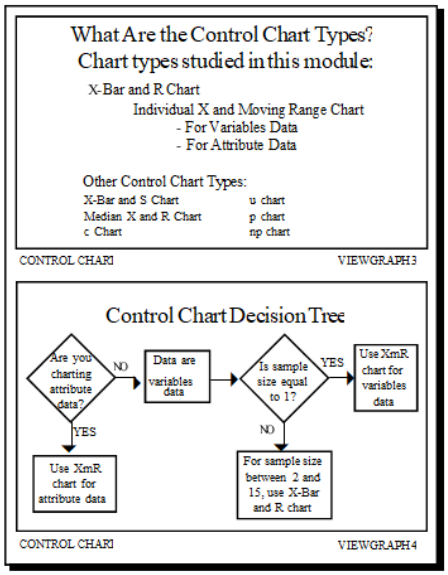
- Monitor process variation over time.
- Differentiate between special cause and common cause variation.
- Assess the effectiveness of changes.
- Communicate process performance.

What are the types of Control Charts?

There are two main categories of Control Charts, those that display

- attribute data
- variables data.

What are the elements of a Control Chart?




**Scatter Diagram**

The scatter diagram is another visual display of data. It shows the association between two variables acting continuously on the same item. The scatter diagram illustrates the strength of the correlation between the variables through the slope of a line. This correlation can point to but does not prove, a causal relationship. Therefore, it is important not to rush to conclusions about the relationship between variables as there may be another variable that modifies the relationship.

Use the scatter diagram when

- You suspect there is a relationship between two variables
- The data is continuous, such as temperature, time, or numbers.
- You need a fast way to test relationships between variables.

How to use it

Scatter diagrams are easy to construct.

Step 1. Collect at least 40 paired data points: "paired" data are measures of both the cause being tested and its supposed effect at one point in time.

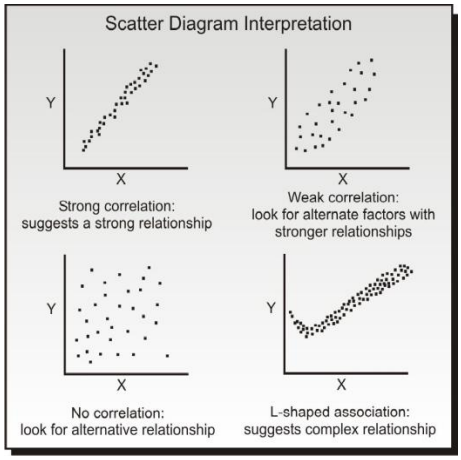
Step 2. Draw a grid, with the "cause" on the horizontal axis and the "effect" on the vertical axis.

Step 3. Determine the lowest and highest value of each variable and mark the axes accordingly.

Step 4. Plot the paired points on the diagram. If there are multiple pairs with the same value, draw as many circles around the point as there are additional pairs with those same values.

Step 5. Identify and classify the pattern of association using the graphs below of possible shapes and interpretations.

Scatter Diagram Interpretation

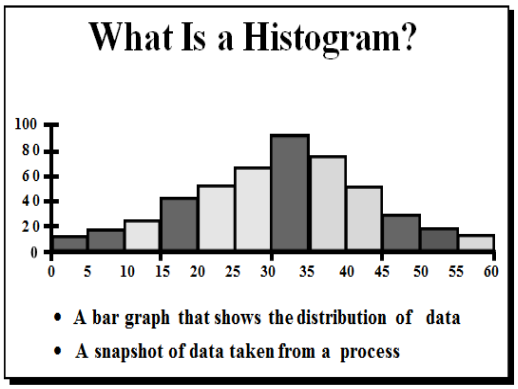


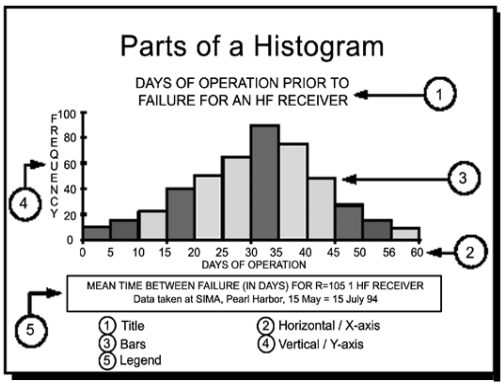

**Histogram**

A histogram is a diagram that graphically depicts the variability in a process or procedure within your agency. When you want to see how a procedure is working in your organisation, you can gather data about that procedure (such as the amount of time the procedure takes) and create a histogram. Then you can see the variation in the amount of time it takes to do that process within your organisation.

When Are Histograms Used?

- Summarise large data sets graphically
- Compare measurements to specifications
- Communicate information to the team
- Assist in decision making




How to use it

The steps to create a histogram include:

- Gather the data about the variable you are interested in.
- Look at the data and determine the categories or intervals you will use to organise the data.
- Construct a frequency table for your data. The frequency corresponds to the number of times each value is observed.

## Topic 4: Statistics in Quality

**Objectives**

- To understand and explain the basic principles of statistical process control.
- To enlist the different statistical/data presentation tool.
- To able to explain the importance of Standard deviation, Median and Mode and Mean.

## Introduction

Statistics are an essential element of quality improvement and every quality professional must understand the basic statistical tools.

Statistica1 quality control (SQC) is the term used to describe the set of statistical tools used by quality professionals. Statistical quality control can be divided into three broad categories:

1. Descriptive statistics
2. Statistical process control (SPC)
3. Acceptance sampling

## Describing Information

Once you have collected data about your service or process, you want a way to describe it so that you can understand and communicate a sense of what your findings illustrate.

There are three basic ways to characterise distribution, depending on the information you are looking for: the mean, the median, and the mode. Each measure contributes a specialised piece of information about your data.

1. Mean – The mean identifies the typical value in a range of values. It is calculated by adding all the values in a group and then dividing the resulting sum by the number of values in the group.
2. Median - When you want to know what is typical about your data, and not have the result skewed by the outliers, you can calculate your average another way, by identifying the median the midpoint in your data set. The midpoint means that 50 per cent of your data points lie on one side of that value and 50 per cent on the other side. Thus, the median is not affected by the extremes or outliers that skew the mean.
3. Mode - Sometimes it is informative to know the value that occurs most frequently in a set of data. That is the mode, which is useful especially in describing a high-volume population. The mode differs from the mean and the median because, unlike the mean and median, the mode can represent data that are categorical rather than quantitative.

## Understanding Variability

### Range

If you want to know the range of your data, which means how widely spread the data points are from each other, subtract the lowest number from the highest. The result is the range

Standard Deviation

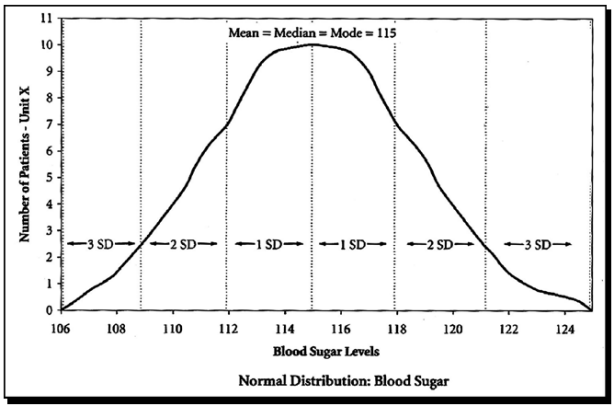
The range gives you some sense of the big picture, but it is very general. Often you might like a little more information regarding the range, a kind of fine-tuning that would tell you how far away from the mean, on average, a set of data points is. You can calculate this by calculating the standard deviation (SD). That is what SD is, the average distance from the mean. The larger the SD, the farther the average data point is from the mean. Understanding the formula, even in theory, is not a bad idea. since people in health care services tend to talk about standard deviation.

Where: S is the standard deviation

å (sigma) tells you to find the sum of what follows the symbol X represents each data point

X (called X-bar) is the mean of the data set n is the number of data points being analysed

Bell Curve.




A bell curve, or *normal distribution*, is perfectly symmetrical-high in the middle and trailing off evenly to both sides. Many phenomena are normally distributed: blood sugar levels, body temperatures, the height of the population. Extremes are rare (which is why they are called extreme) and fall at the ends of either side of the bell curve.

The middle of the curve, where most of the results are, represents the average (the mean, median, and mode). Interestingly, almost all normal distributions fall into the value of plus or minus 3 SDs from the mean. Therefore, if you know the mean and the SD, you can compute 3 SDs in each direction from the mean on a graph. Normal data will fall within this range.

## Using Data to Improve Care

Describing your data by identifying the average and the range and variability of the data points is a good place to start. But because you will want to use the data to interpret the processes involved in your delivery of care and improve performance if necessary, you might want to use your data to ask-and answer-theoretical or research questions based on the objective facts revealed by the data.

1. Hypotheses and Variables
2. Null Hypotheses
3. Hypothesis Testing
4. Sampling
5. Interpreting Results
6. Interpreting Meaning
7. Displaying Data
8. Monitoring Process

## Topic 5: Accreditation in Healthcare Organisations

**Objectives**

1. To understand and explain the importance of accreditation in ensuring accountability.
2. To be able to define licensure and certification.
3. To know about the role of Joint Commission International (JCI) in ensuring quality healthcare.
4. To understand the role of the Quality Council of India (QCI) in ensuring quality in healthcare.
5. To get familiarize with the process of National Accreditation Board for Hospitals & Healthcare Providers (NABH) certification.

## Introduction

Worldwide, the Standardization of Healthcare Delivery System has become the focus. In India, the health care delivery system has remained largely fragmented and uncontrolled. The focus of accreditation is on continuous improvement in the organizational and clinical

performance of health services, not just the achievement of a certificate or award or merely assuring compliance with minimum acceptable standards.

Following are the strategies to improve quality and safety in healthcare and hospital setup:

1. Leadership with clear policy and governing structure
2. Change of culture
3. Common standards and objective measurements
4. Education and training
5. It support
6. Public endorsement

## Accountability in Healthcare

Accreditation is the process of evaluating and recognising the excellence of healthcare delivery for whole hospitals, integrated service delivery networks and other such systems as well as professional activities. It is a voluntary process of development and education through consultation, participation and professionalization and independent peer review. Accreditation derives its strength from its credibility. It is a participative process of continuous improvement and recognition of excellence is the outcome.

Accreditation system

Accreditation is an instrument of quality improvement in healthcare. The objectives of accreditation are to:

1. Assess the quality and safety of care given by the organisation.
2. Assess the organisation's capability to make sure continuous improvement of the overall quality of patient care by ascertaining the conformity of standards laid down by the accreditation body.
3. Explain the organisation about its deficiencies that must be overcome to comply with the set standards.
4. Give external recognition or the stamp of approval to the quality of services being offered by the organisation.
5. Inform the consumers about the certified high standards of quality of services provided by the hospital.
6. The benefits of hospital accreditation system are:
7. Patients focus which will lead to better quality services and satisfaction of the patients.

8. Wasteful expenses and activities are reduced, and the efficiency is improved.
9. Profitable activities are optimised, and the outcome is improved.
10. The reputation of professional excellence gives the hospital an edge over the competitors and will improve the business.
11. Improve the confidence of patience, public, insurance agencies as well as the regulatory authorities in the quality of healthcare services.
12. Reduce the chances of negligence by making the hospital safer for patients and the public and increases hospital reputation.

## MODELS OF ACCREDITATION

1. The first model of assessment gives priority to standards related to available facility norms, equipment requirements, human resources, and space specifications. Here, the criterion of accreditation is based on the availability of basic health facilities.
2. The second gives importance to quality assurance and sets standards for those institutions striving to arrive or improve quality of care, hence accreditation is based on satisfying some basic indicators of quality and involves ranking based on levels of quality.
3. The third model is based on the ground that health systems should be accessible and acceptable to health-seekers. It gives importance to the health-seeker with an emphasis on evaluating health systems from indicators such as user-friendliness, providing information to users about the services available, setting up procedures for redressing grievances, etc.

## ACCREDITATION BODIES

Accreditation is not new to the health system. Broadly there exist two types of hospital accreditation

1) International healthcare accreditation
2) Hospital and healthcare accreditation which takes place within national borders

Joint Commission on Accreditation of Healthcare Organisations/ Joint Commission

The pioneer's initiative in the field of accreditation started with constitution of Joint Commission on Accreditation of Healthcare Organisations (JCAHO) 60 years back to start the hospital accreditation program in the USA. The quality standards for healthcare compliance were developed by JCAHO and the accreditation system was based on the assessment of standards through self-assessment along with onsite surveys by an external team of surveyors appointed by JCAHO.

JOINT COMMISSION INTERNATIONAL(JCI)

The accreditation program involves accreditation of hospitals based on uniform quality standards called the JCI standards, which are designed for international application. Since JCI is an international accreditation system some of the hospitals opt for JCI because it helps to attract patients through medical tourism. The focus areas of JCI include Assessment of patients, utmost care of the patients, patient and family rights, strict infection control for the safety of the patients, education, and documentation.

At present, JCI has accreditation programs for the following standards:

- Ambulatory care standards.
- Care continuum standards.
- Clinical laboratory standards.
- Disease or the condition of particular care standards.
- Hospital standards.

Hospital Accreditation in India

National Accreditation Board for Hospitals and Healthcare Providers (NABH) was established in 2006. The organisations like Confederation of Indian Industries (CII), Federation of Indian Chamber of Commerce and Industry (FICCI) and Associated Chamber of Commerce and Industry (ASSOCHAM) involved themselves in the improvement of healthcare delivery in the country. Apart from accreditation system, rating the hospital services were started by Credit Rating Information Services of India Ltd (CRISIL) based on the speciality and locality. This gives the view on the relative quality of healthcare delivered by the institution. Another agency called the Ananth's Directory of Health Services began rating the services of hospitals according to locations or speciality.

However, the most serious and established system on accreditation became the NABH under the auspices of the Quality Council of India.

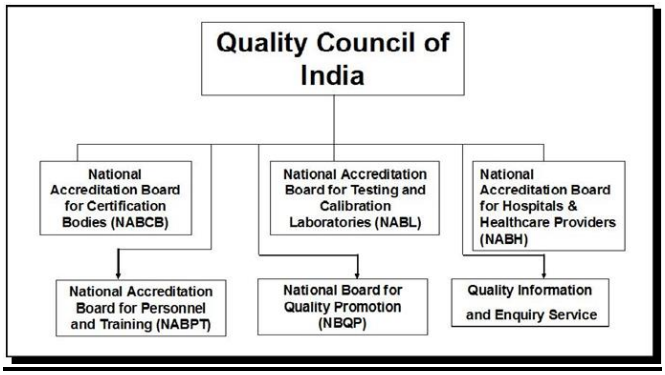
## Quality Council of India (QCI)

QCI is an autonomous body set up by Govt. of India along with the partners like CII, FICCI and ASSOCHAM to establish and operate accreditation structure in the country.

*Objectives of QCI*

1. Establish and operate an accreditation structure in the country for conformity assessment bodies
2. Provide right and unbiased information on quality and related standards
3. Promote quality in national perspective
4. Represent India's interest in international forums
5. Help establish brand equity of Indian products and service

*Structure of QCI*

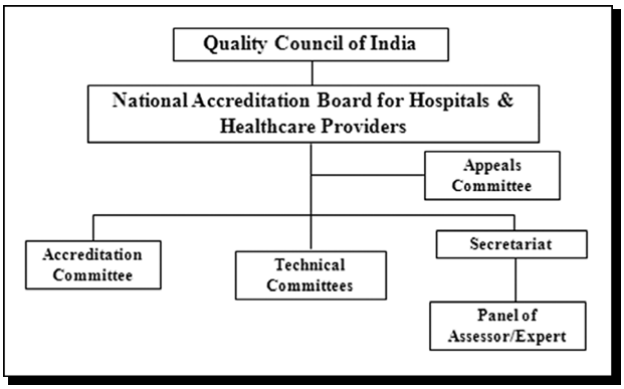



National Accreditation Board for Hospitals and Healthcare Providers (NABH)

National Accreditation Board for Hospitals & Healthcare Providers (NABH), constituted as a constituent board of Quality Council of India, in the year 2006 to establish and operate accreditation programme for healthcare organisations. The board is structured to cater to much desired needs of the consumers and to set benchmarks for progress of the health industry. The board is functionally autonomous in its operation. Currently, it accredits Hospitals & Nursing homes, Blood Banks, Diagnostic Centres (Imaging), and has published new accreditation standards for Dental Centres, Wellness centres and AYUSH Hospitals/

Clinics. NABH has now published its 3rd edition of standards with 10 chapters, 102 standards and 636objective elements.

The structure of NABH is as follows:




The standards and objective elements for valuation by NABH have been set in the following 10 areas particularly the clear intent of standards:

Patient-Centred Standard

- Access, Assessment and Continuity of Care (ACC)
- Care of Patient (COP)
- Management of Medication (MOM)
- Patient Rights and Education (PRE)
- Hospital Infection Control (HIC)

Organisation Centred Standards

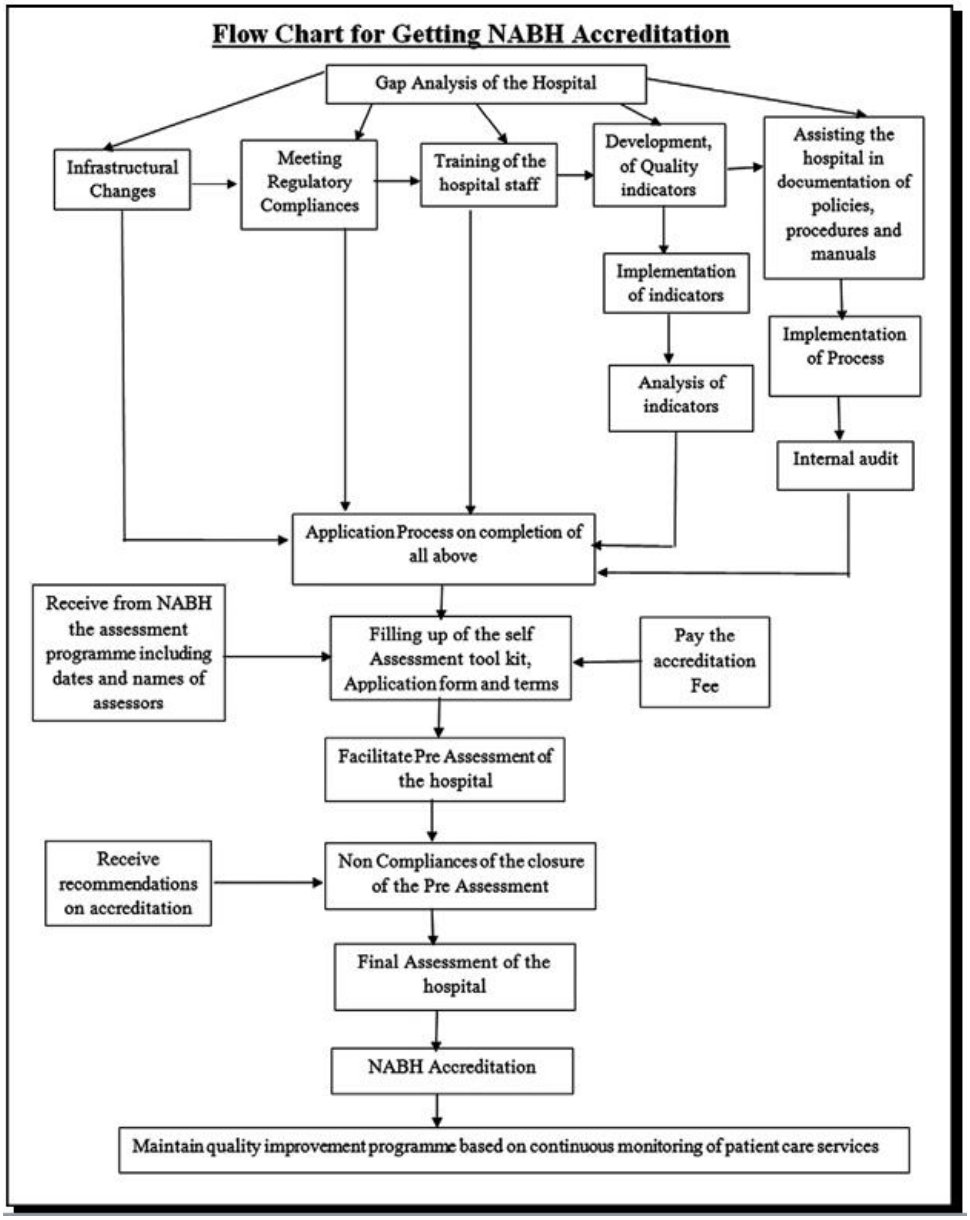
- Continuous Quality of Improvement (CQI)
- Responsibilities of Management (ROM)
- Facility Management and Safety (FMS)
- Human Resource Management (HRM)
- Information Management System (IMS)

The Accreditation process involves a comprehensive review of the hospital's compliance with NABH's standards. Cardinal principles of assessment are:

i. Hospital operations are based on sound principles of system-based organisation
ii. NABH standards are implemented and institutionalise into hospital functioning.

iii. Patient safety and quality of care, as core values, are established and owned by management and staff in all functions and at all levels.

iv. There is a structured quality improvement programme based on continuous monitoring of patient care services.




**Overview of Certification**

Certification is done when an accredited third party visits an organisation, assesses their management system, and issues the certificate to show that the organisation will abide by the principles set out in the standard by following industries best practices.

ISO certification for healthcare organisations

International Organisation for Standardisation (ISO) is a network of National Standards Institute of 157 countries worldwide. ISO 9000 family of standards usually deals with quality management and ISO 9001:2008 applies to all healthcare organisations. The structure of ISO 9001:2008 has 8 clauses.

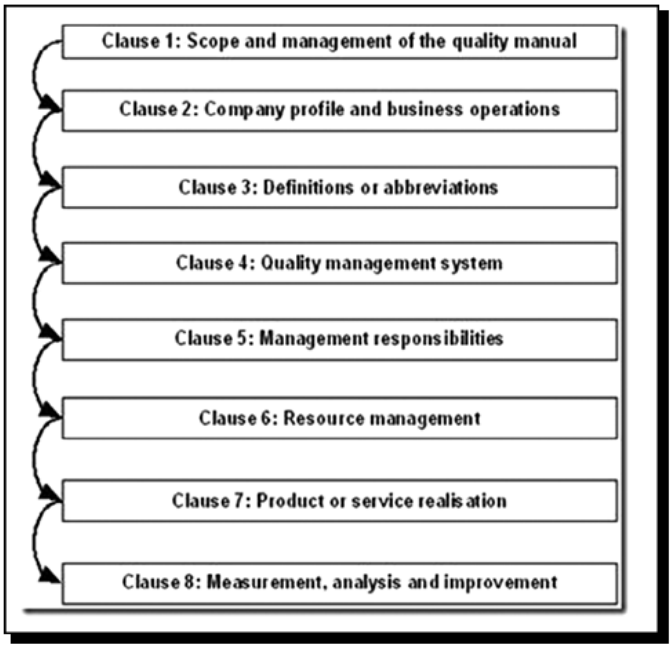



***Figure:*** Eight Clauses of ISO 9001:2008

The difference between accreditation and certification are listed in the table below:

| | Accreditation | Certification |
|---|---|---|
| Definition | It is a procedure, which an authoritative body will give formal recognition to a healthcare organisation. | It is the action performed by a third-party agency to verify if the product, process, or service will fulfil all the particular needs of the pertinent standards, technical regulations or other |

| | | |
|---|---|---|
| | | normative acts that are in force. |
| Function | It is a formal recognition of competence, which is based on proven technical knowledge and so requires certification of the technical expert for the scope to be accredited. | It involves making sure that the organisations conform to a given set of rules. |
| Example | NABH | ISO9001 |

Benefits of Accreditation and Certification

A. The benefits of accreditation are as follows:

1. Accreditation will benefit all the Stakeholders. The biggest beneficiaries are Patients. Accreditation will result in high quality of care and safety of the patient. The patients will get services by the credential medical staff. Rights of the patients are respected and protected, and patient satisfaction is regularly evaluated.
2. Accreditation to a hospital will stimulate continuous enhancement. It raises the community's confidence in services provided by the hospital. It also allows a healthcare unit to benchmark with the best.
3. The staffs in an accredited hospital are satisfied as it allows continuous learning, good working environment, leadership, and ownership of clinical processes. It enhances the overall professional development of clinicians and paramedical staff and gives leadership for quality improvement in medicine and nursing.
4. Accreditation gives access to reliable and certified information on facilities, infrastructure, and level of care.

B. Certification bodies are usually used to verify their credentials. The following are the benefits of certification:

1. Assists consumers in making informed decisions about trained providers.
2. Protects the public from incompetent and unfit practitioners.
3. Establishes a professional standard for individuals in a field.
4. Facilitates higher wages for the employees in the form of bonuses, assistance to education or higher salary.
5. Provides more productive and highly trained workforce for the employers.
6. Gives a competitive advantage over the non-certified individuals in the same field.
7. Improves employment opportunities.
8. Assists employers in making hiring decisions.

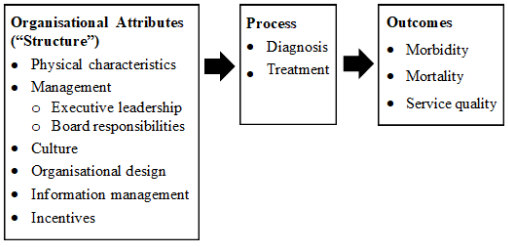
## TOPIC 6: QUALITY IN HEALTHCARE ORGANISATIONS

**Objectives**

- To understand the role of the organisation in delivering quality.
- To exhibit the responsibilities of the board and the leadership in organisational quality.
- To get familiarize with information technology in quality management.

## INTRODUCTION

To begin such a discussion, one must have an appropriate framework for undertaking this effort. Donabedian defined the health-care triad of structure, process, and outcome.




The following key elements of organisational attributes from a management perspective are highlighted and discussed:

1. Executive management, including senior leadership and board responsibilities
2. Culture
3. Organisational design

4. Incentives structures
5. Information management and technology

## Future Directions

The proposed framework examines key organisational attributes concerning quality and provides an updated view of Donabedian's conception of structure. New strategies can be developed to utilise this proposed framework to improve health-care quality from both management and research perspectives.

There are clear action items that can be implemented by hospital management today. These include an inventory of organisational attributes, assessment of hospital boards' understanding and investment in quality systems and personnel, creation of an organisational strategy and accountability for quality, and dissemination of quality objectives throughout the organisation.

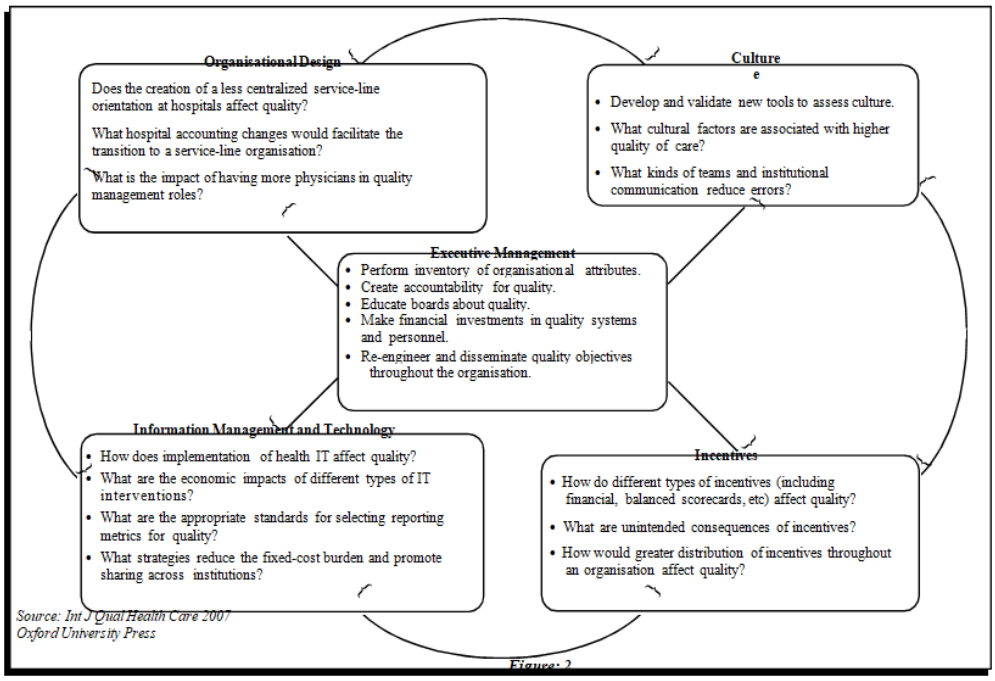



Figure: 2

## TOPIC 7: Consumer Protection Act and Quality

### Objectives

- To understand the important aspects of the Consumer Protection Act (CPA).
- To know about the State Consumer Forum.
- To know about the National Consumer Forum.

## Introduction

Private medical provision is an important constituent of health care delivery services in India. The quality of care provided by this sector is a critical issue. The decision to bring private medical practice under the Consumer Protection Act (CPA) 1986 is considered an important step towards regulating the private medical sector and minimising malpractice and negligent behaviour, but it does have adverse consequences such as an increase in fees charged by doctors, an increase in the prescription of medicines and diagnostics, an adverse impact on emergency care, etc.

## Consumer Protection Act

(Act No. 68 of the Year 1986 dated 24th. December 1986)

An Act to provide for better protection of the interests of consumers and for that purpose to make provision for the establishment of consumer councils and other authorities for the settlement of consumers disputes and matters connected therewith. It extends to the whole of India except the State of Jammu and Kashmir.

As a result of this judgment, the medical profession has been brought under the Section 2(1) (o) of CPA, 1986 and, it has included the following categories of doctors/ hospitals under this Section:

1. All medical/dental practitioners doing independent medical/dental practice unless rendering only free service.
2. Private hospitals charging all patients.
3. All hospitals having free as well as paying patients and all the paying and free category patients receiving treatment in such hospitals.
4. Medical/dental practitioners and hospitals paid by an insurance firm for the treatment of a client or employment for that of an employee.
5.

Special features of CPA

CPA has an overriding effect

1. CPA is a Special and Unique Piece of Social Welfare Legislation
2. No Court fee or stamp fee
3. No need for a lawyer complainant himself can present his case
4. Arbitration clause – no bar to CPA route

The State Consumer Forum usually hears cases of three types:

1. Appeals from District Consumer Forums
2. Cases against companies that operate an office or a branch in the state.
3. Cases where the actual reason why you are filing the complaint (such as the signing of an agreement or payment of a bill) partially or fully occurred within the state.

The National Consumer Court handles five types of complaints:

1. Complaints that have been sought or need to be transferred from one State Consumer Commission to another in the interest of justice.
2. Appeals from State Consumer Disputes Redressal Commissions
3. Consumer complaints that occurred in India, except in the State of Jammu and Kashmir
4. Cases from State Consumer Commissions where there has been accusations or proof of material irregularity or illegal activities
5. Cases where ex-parted (where verdicts have been passed in the absence of either party) orders must be set aside.

## Topic 8: Patient Safety and Medical Errors

**Objectives**

1. To identify the various types of errors.
2. To be able to describe how to reduce errors in healthcare and patient safety.
3. To understand and define adverse events and its causes, costs and impact.
4. To be able to describe the safety strategies for the prevention of medical errors.

### Introduction

Medication-related errors occur frequently in hospitals and although not all result in actual harm, those that do, are costly.

Errors are also costly in terms of opportunity costs. A comprehensive approach to improving patient safety is needed. This approach cannot focus on a single solution since there is no "magic bullet" that will solve this problem, and indeed, no single recommendation in this

report should be considered as the answer. Rather, large, complex problems require thoughtful, multifaceted responses.

The combined goal of the recommendations is for the external environment to create sufficient pressure to make errors costly to health care organisations and providers, so they are compelled to take action to improve safety. At the same time, there is a need to enhance knowledge and tools to improve safety and break down legal and cultural barriers that impede safety improvement. Given current knowledge about the magnitude of the problem, the committee believes it would be irresponsible to expect anything less than a 50 per cent reduction in errors over five years.

Safety is defined as freedom from accidental injury. This definition recognizes that this is the primary safety goal from the patient's perspective. Error is defined as the failure of a planned action to be completed as intended or the use of a wrong plan to achieve an aim. According to noted expert James Reason, errors depend on two kinds of failures: either the correct action does not proceed as intended (an error of execution) or the original intended action is not correct (an error of planning). Errors can happen in all stages in the process of care, diagnosis, to treatment, to preventive care.

**Types of Errors**

The IOM defines medical error as "the failure to complete a planned action as intended or the use of a wrong plan to achieve an aim." An adverse event is defined as "an injury caused by medical management rather than by the underlying disease or condition of the patient."

Most people believe that medical errors usually involve drugs, such as a patient getting the wrong prescription or dosage, or mishandled surgeries, such as amputation of the wrong limb. However, there are many other types of medical errors, including:

1. Diagnostic error, such as misdiagnosis leading to an incorrect choice of therapy, failure to use an indicated diagnostic test, misinterpretation of test results, and failure to act on abnormal results.
2. Equipment failure, such as defibrillators with dead batteries or intravenous pumps whose valves are easily dislodged or bumped, causing increased doses of medication over too short a period.
3. Infections, such as nosocomial and post-surgical wound infections.
4. Blood transfusion-related injuries, such as giving a patient the blood of the incorrect type. Misinterpretation of other medical orders, such as failing to give a patient a salt-free meal, as ordered by a physician.

Specific topics and practices reviewed in Making Healthcare Safer that derive from fields outside healthcare include:

- Incident reporting.
- Root cause analysis.
- Computerized physician order entry and decision support as a means of reducing medication errors.
- Automated medication dispensing systems.
- Barcoding technology to avoid misidentification errors.
- Aviation-style preoperative checklists for anaesthesia equipment.
- Promoting a "culture of safety".
- Crew resource management, a model for teamwork training and crisis response modelled after training approaches in aviation.
- Simulators (of patients or clinical scenarios) as a training tool.
- Human factors theory in the design of medical devices and alarms.

## Topic 9: Dashboards and Scorecards

**Objectives**

- To learn and define dashboards and scorecards.
- To understand and describe a scorecard and its use it in hospital operations.
- To learn and explain how to use dashboards in healthcare to improve performance.

## Introduction

Dashboards are a type of interactive user interface designed to deliver user-specific information relating to the health of a business, typically represented by metrics, indicators, and links to relevant reports.

One of the most complicated businesses to run today is a healthcare organisation and they are getting more difficult to manage every day. Executive leadership is continually faced with the challenge of doing more with less. A healthcare organisation’s staff is responsible for keeping track of hundreds of projects, initiatives, regulations, clinical outcomes, policies, and procedures.

A few well-chosen measurements (or key performance indicators) displayed in the format of an executive dashboard can be a powerful tool to keep everyone focused on the important issues and strategies that the hospital is striving to achieve. The measures are graphically displayed in an "at-a-glance" format that facilitates easy review and identification of which areas are doing fine and which areas need additional improvement. Indicators can include such items as financial viability, clinical outcomes, patient safety, quality of care, marketing and development, internal business procedures, and employee, patient, and physician satisfaction.

7 Benefits of Dashboards for Health

1. Graphical representation makes strategic data easy to understand
2. Make it possible to quickly assess an organisation's overall status
3. Concise presentation enables quick reviewing of KPIs and highlighting problems areas
4. Facilitates decision making by comparing the organisation's performance with predetermined benchmarks and standards
5. The consolidated format is linked to more detailed data, which supports in-depth consideration of issues when necessary
6. Focuses users on information about the indicators judged as the most important to the organisation
7. Helps in gaining financial support for current and future improvement efforts by highlighting the benefits of change initiatives

## **Dashboards**

Healthcare organisations are looking at Executive Dashboards–also referred to as key performance indicators (KPIs)–to ensure that diverse, key objectives are monitored. By aligning departmental and facility KPIs to overall health system KPIs, everyone in the organisation can work toward the strategy set out by the Board. Such a dashboard provides an at-a-glance review, saving hours of digging through reports. Moreover, communication of the strategic-based KPIs serves to reinforce positive behaviours.

Healthcare Metric Categories for Dashboards

- Clinical Quality
- Satisfaction

- Operational
- Financial
- Growth
- Social Accountability
- Market
- Specialities

**Balanced Scorecards**

The balanced scorecard is a strategic measurement and management system. It translates an organisation's mission and strategy into a balanced set of integrated performance measures. It complements the traditional financial perspective with other non-financial perspectives such as customer satisfaction, internal business process, and learning and growth. It also mixes outcome measures, the lagging indicator, with performance drivers, the leading indicator, because "outcome measures without performance drivers do not communicate how the outcomes are to be achieved".

The balanced scorecard can be used by hospitals to do the following:

- Clarify and gain consensus about strategy,
- Communicate the strategy throughout the organisation,
- Align departmental and personal goals to the strategy,
- Link strategic objectives to long-term targets and annual budgets,
- Identify and align strategic initiatives,
- Perform periodic and systematic strategic reviews, and
- Obtain feedback to learn about and improve strategy.

According to each perspective of the Balanced Scorecard, several key performance indicators (KPIs) can be used such as:

1. Financial
    - Cash flow
    - ROI
    - Financial Result
    - Return on capital employed
    - Return on equity

2. Customer
    - Delivery Performance to Customer - by Date
    - Quality Performance to Customer - by Quality
    - Customer satisfaction rate
    - Customer Loyalty
    - Customer retention
3. Internal Business Processes
    - Number of Activities
    - Opportunity Success Rate
    - Accident Ratios
    - Overall Equipment Effectiveness
4. Learning & Growth
    - Investment Rate
    - Illness rate
    - Internal Promotions
    - Employee Turnover
    - Gender Ratios

Measuring Performance at Healthcare Organisations

Challenges and Barriers

While developing and implementing BSCs the following seven challenges are most often encountered:

1. Obtaining approval to implement the BSC
2. Obtaining executive time and commitment.
3. Developing the value proposition for the customer perspective.
4. Deploying the BSC throughout the organisation.
5. Gaining commitment to implement the BSC.
6. Obtaining and cost-effectively interpreting timely data.
7. Keeping the scorecard simple and using it for learning.

# Topic 10: IT and Quality

**Objectives**

- To understand and explain the importance of technology in ensuring quality in
- healthcare.
- To learn and describe the barriers in adopting technology and how to overcome them.
- To enlist the various standards in technology which improves healthcare operations (e.g. HL&, DICOM, LOINC).
- To be able to define the various laws in healthcare quality and their importance.

## IT For Quality in Healthcare

Delivering quality health care requires providers and patients to integrate complex information from many different sources. Thus, increasing the ability of physicians, nurses, clinical technicians, and others to readily access and use the right information about their patients should improve care. The ability for patients to obtain information to better manage their condition and to communicate with the health system could also improve the efficiency and quality of care. This potential to improve care makes a broader diffusion of IT desirable.

### What is health information technology?

IT allows health care providers to collect, store, retrieve, and transfer information electronically. However, more specific discussion of IT in health care is challenging due to the lack of precise definitions, the volume of applications, and a rapid pace of change in technology. Similar terms can be used to define different products, and the exact functions of a system will depend on the specifics of its implementation in a given setting. Both the terms and functions also change over time. For example, computerised provider order entry (CPOE), which can minimise handwriting or other communication errors by having physicians or other providers enter orders into a computer system, can apply only to prescription drugs, or may also include additional physician orders, such as x-rays or other images, consultations, and transfers. For electronic health records (EHRs, also known as electronic medical records, automated medical records, and computer-based patient records, among other names), multiple definitions exist, depending on the constellation of functions that are included (Brailler and Tarasawa 2003).1 They can be used simply as a passive tool to

store patient information or can include multiple decision support functions, such as individualised patient reminders and prescribing alerts.

Quality and health information technology

Quality health care relies on physicians, nurses, patients and their families, and others having the right information at the right time and using it to make the right decisions. Yet the health information needed to make these decisions changes frequently; the guidelines and clinical evidence continually evolve, as does knowledge about the condition of the patient. IT may provide a tool to store, integrate, and update this information base.

Beyond improving care in individual settings, health IT also has the potential to address the problems presented by a fragmented delivery system. Most patients receive care from many disparate providers. The primary means of coordination is often through discussion with the patients about what other services they have received and what the other providers thought about their conditions. Information technology used across settings could create a "virtual" integrated delivery system without requiring formal mergers or affiliations.

**Technology Standards in Healthcare**

Health Care sector is an information-intensive sector with most of its sectors computerised. The extent of automation of information management functions affects the efficacy of health care operations.

Automation of information management has

- Reduced paper processing,
- Improved cashing,
- Improved management of decision making,
- Improved clinical and ancillary services (bedside systems and patient-side systems),
- Enabled over-lifetime integration of information related to the delivery of health care to a patient (an electronic patient record)

Standardisation

Standards can provide:

- Better communications between care providers, government, hospitals, and payers
- Facility to conduct an epidemiological study

- Ability to show the relationship between investments and health care outcomes or benefits versus costs
- Automatic transfer of medical information between hospitals and clinics to speed up patient care and reduce procedures, testing and administrative requirements.

Health Level Seven

Health Level Seven (HL7) is a messaging protocol for electronic data exchange in healthcare environments. The HL7 standard is supported by most system vendors and is used in most prominent hospitals around the world. HL7 is named after the seventh layer of the OSI model, the application layer, the only one this standard addresses.

## HIPAA And Other Quality Acts

HIPAA or 'The Health Insurance Portability and Accountability Act of 1996 (HIPAA) Privacy and Security Rule' is one Act which covers the confidentiality clause of Medical Record or Medical Information transmission in the USA.

The Administrative Simplification provisions of this act reflect the National Standards for electronic medical records transactions. The HIPAA confers right to a patient to see his/her medical records anywhere in the USA when the patient visits any Health care provider. A timeline of 30 days is mentioned with pay for costs of MR incurred. Further, the patient has the right to modify the medical record if she/he so desires and brings this to the notice of the health care provider (HCP) with a period of 60 days (with additional 30 days extra time given to the HCP.

In India, two acts deserve mention here.

*The Mental Health Act, (1987) (Vol. 14, Chapter 3, Section 13.1)*

The Act covers the confidentiality clause of Medical records for patients having a mental illness. The Mental Health Act, (1987) (Vol. 14, Chapter 3, Section 13.1) stipulates that the Inspecting officer must not disclose the personal medical records and health information of a patient so inspected who is having a mental illness.

*Code of Ethics Regulations (2002) (Part III, Section 4, Chapter 1, Section 3.1) (Medical Council of India)*

This Act covers the need for Electronic Health records, Code of Ethics Regulations. (2002) (Part III, Section 4, Chapter 1, Section 3.1) (Medical Council of India) indicates that MR should be preferably stored and kept in a computerised format for quick retrieval.

**LEARNING METHODOLOGY:**

Courses consist of interactive lessons including reading material, images, and graphical representations.

Different instructional techniques are used such as Storytelling, videos, case studies, examples, questions and practice sessions with reinforcement feedback.

**KEY LEARNINGS:**

The journey to improve quality begins with listening to or observing people with complaints and then working towards improving the processes involved. Some the criteria involved in quality management within the healthcare domain includes:

Period of hospitalisation

- Utilisation of medical-technical equipment
- Type and number of laboratory services required
- Waiting time for receiving care in outpatient departments
- Time span until a patient receives care from the emergency team

The different quality standards for hospitals include:

- The PCDA Methodology
- POKA-YOKE
- FOCUS PDCA
- Lean thinking
- ISO standards
- Six Sigma
- Kaizen
- Benchmarking
- Quality Function Deployment (QFD)
- Failure Mode and Effects Analysis (FMEA)

Accreditation is the process of evaluating and recognising excellence of healthcare delivery for whole hospitals, integrated service delivery networks and other such systems as well as professional activities.

Certification is the process through which individual facilities are provided and the organisations will undergo the assessment by a third-party auditor.

JCI is an international accreditation system some of the hospitals opt for JCI because it helps to attract patients through medical tourism. The focus areas of JCI include: Assessment of patients, utmost care of the patients, patient and family rights, strict infection control for the safety of the patients, education, and documentation.

QCI is an autonomous body set up by Government of India along with the partners like CII, FICCI and ASSOCHAM to establish and operate accreditation structure in the country.

National Accreditation Board for Hospitals & Healthcare Providers (NABH) thus constituted as a constituent board of Quality Council of India, in the year 2006 to establish and operate accreditation programme for healthcare organisations.

CPA is an act to provide for better protection of the interests of consumers and for that purpose to make provision for the establishment of consumer councils and other authorities for the settlement of consumers disputes and for matters connected therewith.

Some of the medical errors are Diagnostic error, Equipment failure, Infections, Blood transfusion-related injuries, and Misinterpretation of other medical orders.

Some of the methods to reduce errors include Incident reporting, Root cause analysis, Automated medication dispensing systems, Bar coding technology, Aviation-style preoperative checklists for anesthesia equipment and so on

Direct Costs, indirect Costs and impact on health-care workers are some of the impacts of adverse events.

General Safety Strategies and System Design Principles helps in prevention of medical errors.

IT allows health care providers to collect, store, retrieve, and transfer information electronically. health IT also has the potential to address the problems presented by a fragmented delivery system.