Measuring Operational Efficiency of 200 Bedded Super Specialty Hospital, Jaipur

By

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TO WHOMSOEVER MAY CONCERN

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The Candidate has successfully carried out the study designated to him during internship training and his approach to the study has been sincere, scientific and analytical.
The Internship is in fulfillment of the course requirements.
I wish him all success in all his future endeavors.

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In recognition of having successfully completed her
Dissertation in the department of

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She comes across as a committed, sincere & diligent person who has a strong drive and zeal for learning

We wish him/her all the best for future endeavors

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CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled **Measuring Operational Efficiency of 200 Bedded Super Specialty Hospital, Jaipur** and submitted by **Dr. Kalpana Bindal** Enrollment No. **0155** under the supervision of **Dr. S. D. Gupta** for award of MBA in Hospital and Health of the University carried out during the period from **15th February 2016 to 14th May 2016**embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other Institute or other similar institution of higher learning.

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ABSTRACT

Measuring Operational Efficiency of 200 Bedded Super Specialty Hospital

Kalpana Bindal

Advisor: Dr S. D. Gupta

Keywords: Quality Indicator, Operational Efficiency, Organizational Resources

Background: Quality orientation is an integral part of patient care.Quality indicators help in achieving these objectives. Health care is becoming transparent and customer focused. It is therefore becoming mandatory for the institution to monitor quality indicators/parameters and compare their performance level with the national standard or international bench marks. Quality indicators aim to detect sub-optimal care either in structure, process or outcome, and provide an opportunity to the individual institution to improve its quality of care through standardization of processes, procedures and treatment protocols.

Aim: To analyze the quality indicators of clinical departments as per NABH standards and guidelines in order to assess the operational efficiency and make improvement to enhance the compliance of standards of 200 bedded super specialty BhagwanMahaveer Cancer Hospital in Jaipur city

Objectives:

- To identify the indicators of quality assessment in the clinical departments of hospital, as per set NABH standards and guideline.
- To find out trends of functioning of clinical departments in last three months.
- To identify areas of potential improvements and develop recommendations in coordination with organizational resources for strengthening and enhancing the overall quality of Clinical departments.

Methodology: Place of study: 200 bedded super specialty hospital, in Jaipur; Study area: Departments taken into consideration for the study were Radiology Department, Operation

theatre, Intensive Care Unit, MRD Department, Patient Care Wards, Laboratory, Blood Bank department Study design: cross-sectional analytical study.

Data type: Primary and Secondary data has been collected in 3 month period. Method of data collection: Thedata will be collected through the primary and secondary sources. Primary data source- Direct observation (day to day); Secondary Data Source-Checklist, Auditing patient records(MRD) and HIS, Inpatient files, Interaction with the consultant, doctors and supporting staff.

Sample size: All the cases reported from 1st january'16 to 30 march'16 has been taken into consideration, except for the blood bank turnaround time calculation where our sample size is of 66 blood bag taken and sample size of 100 inpatient files per month taken for assessing inpatient indicators. Sampling method- simple random sampling method.

Results:

- Percentage of blood bag component wastage is higher in February month i.e. 9.6% which is due to mishandling of blood, shorter storage time for RDP and haemolysed blood.
- Percentage of Re dos increased from January to March i.e. 0.06% to 0.5% in laboratory which is due to dilution, clotted sample and haemolysed sample. Adherence to safety precautions by employee working in diagnostics was 75% by residents and 73% by technician which was due to negligent behaviour.
- Percentage of unplanned return to OT increased in February month i.e. 3.23% which was due to re exploration, flap necrosis and emergency tracheostomy.
- Needle stick injury cases has occurred in March month which was 7 and reason was untrained new nursing, ward staff and recapping.

Conclusions: The results should however be interpreted within the wider context of delivery of care and used with the sole aim of improving quality of care, rather than simply making judgments about it.Non-conformance could be due to various reasons. Shortage of man power, deficiency of trained manpower, injudicious work pressure, inadequate infrastructural and equipment support, lack of protocol, and personal issues are the few important causes of errors. These factors should be addressed before blaming a person.

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For a management student, the power of knowledge is unattainable unless an element of practical observation and practical performance is added. I consider myself to be fortunate for having been provided an opportunity to undergo dissertation at **BhagwanMahaveer Cancer Hospital and Research Centre**.

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LIST OF ABBRIVIATIONS-

OPD	Out-Patient Department
IPD	In-Patient Department
OT	Operation Theatre
ICU	Intensive Care Unit
CT	Computerized Tomography
USG	Ultrasonography
NABH	National Accreditation Board for Hospitals and Healthcare providers
NABL	National Accreditation Board for Testing and Calibration Laboratories
TAT	Turnaround Time
HR	Human Resource
PET-CT	Positron Emission- ComputerisedTomography
ED	Emergency Department
CBC	Complete Blood Count
MRD	medical record department
BMCHRC	BhagwanMahaveer Cancer Hospital and Research Centre
CSSD	Central Sterile Service Department
PACU	Post Anesthesia Care Unit
BPL	Below Poverty Line
PFT	Pulmonary Function Test
MIS	Minimally Invasive Surgery
UTI	Urinary Tract Infection
QI	Quality Indicator
ALOS	Average Length of Stay

Chapter 1: Introduction

1.1 Quality orientation is an integral part of patient care. Best possible care at the institutional level is not considered adequate in the present competitive environment. It should be visible, appreciated and comparable. Total Quality Management therefore, is essential to judge the appropriateness and effectiveness of medical care. Quality of service offered, result of intervention and treatment, undesirable outcomes, and other managerial and treatment related processes can be analyzed to define the scope of improvement. Quality indicators help in achieving these objectives. Health care is becoming transparent and customer focused. Patients and their relatives have the right to know the standard of care and its cost.

It is therefore becoming more and more mandatory for the institution to monitor quality indicators/parameters and compare their performance level with the national standard or international bench marks. Quality indicators aim to detect sub-optimal care either in structure, process or outcome, and provide an opportunity to the individual institution to improve its quality of care through standardization of processes, procedures and treatment protocols.

Quality of care can be defined as the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge and it can be divided into different dimensions according to the aspects of care being assessed.

Indicators have been defined in several different ways:

1. As measures that assess a particular health care process or outcome.
2. As quantitative measures that can be used to monitor and evaluate the quality of important governance, management, clinical, and support functions that affect patient outcomes.
3. As measurement tools, screens, or flags that are used as guides to monitor, evaluate, and improve the quality of patient care, clinical support services, and organizational function that affect patient outcomes.

Indicators provide a quantitative basis for clinicians, organizations, and planners aims to achieve improvement in care and the processes by which patient care is provided.

Indicator measurement and monitoring serve many purposes. They make it possible to: document the quality of care; make comparisons (benchmarking) over time between places (e.g. hospitals); make judgments and set priorities (e.g. choosing a hospital or surgery, or organizing medical care); support accountability, regulation, and accreditation; support quality improvement; and support patient choice of providers. The use of indicators enables professionals and organizations to monitor and evaluate what happens to patients as a consequence of how well professionals and organizational systems function to provide for the needs of patients. Indicators are, however, not a direct measure of quality. Because quality is multidimensional, understanding quality requires many different measures.

Indicators are based on standards of care. These can be evidence-based and derived from the academic literature (see, for example, Cochrane Collaboration literature syntheses, meta-analyses, or randomized controlled trials) or, when scientific evidence is lacking, determined by an expert panel of health professionals in a consensus process based on their experience. Thus, indicators and standards can be described according to the strength of scientific evidence for their ability to predict outcomes.

An ideal indicator would have the following key characteristics:

(i) indicator is based on agreed definitions, and described exhaustively and exclusively;
(ii) indicator is highly or optimally specific and sensitive, i.e. it detects few false positives and false negatives;
(iii) indicator is valid and reliable;
(iv) indicator discriminates well;
(v) indicator relates to clearly identifiable events for the user (e.g. if meant for clinical providers, it is relevant to clinical practice);
(vi) indicator permits useful comparisons; and
(vii) Indicator is evidence-based. Each indicator must be defined in detail, with explicit data specifications in order to be specific and sensitive. This is discussed in greater detail in a companion paper.

Indicators may vary in their validity and reliability. Validity is the degree to which the indicator measures what it is intended to measure, i.e. the result of a measurement corresponds to the true state of the phenomenon being measured. A valid indicator discriminates between care otherwise known to be of good or bad quality and concurs with other measures that are intended to measure the same dimension of quality. Reliability is the extent to which repeated measurements of a stable phenomenon by different data collectors, judges, or instruments, at different times and places, get similar results. Reliability is important when using an indicator to make comparisons among groups or within groups over time. A valid indicator must be reproducible and consistent.

Indicators should be based on the best available evidence. Sackett *et al.* describe this as 'the integration of best research evidence with clinical expertise and patient values'. The strength of evidence for an indicator will determine its scientific soundness or the likelihood that improvement in the indicator will produce consistent and credible improvements in the quality of care.

The implementation of quality indicators as a tool to assist quality improvement requires effective communication strategies and the removal of hindrances. Evidence suggests that monitoring operational efficiency and further providing feedback based on indicator data can be effective in changing health care professional practice. Monitoring the indicator data may also help to target specific quality improvement initiatives such as educational programs (trainings) and development of protocols (sops).

Clinical indicators measure the extent to which set targets are achieved. They are expressed as numbers, rates, or averages that can provide a basis for clinicians, organizations, and planners aim to achieve improvement in care and the processes by which patient care is provided. They can be measures of structure, process, and outcome, either as generic measures relevant for all diseases, or disease-specific measures that describe the quality of patient care related to a specific diagnosis.

"***Quality indicators help us to identify weather we are performing as per the standard"***

Quality Management is more recent philosophy that uses managerial concept centered on quality improvement and satisfaction of customer. The present understanding of quality management for healthcare improvement can be attributed to the work of industrial quality expert W. Edwards Deming and Joseph M. Juran and the work of distinguished health system researcher and professor Avedis Donabedian, who pioneered quality assessment. Two key elements of QM is technical quality and customer satisfaction. Technical quality focuses on the competency of provider as well as accurate and proper procedures and care. This particular type of quality determines requirements of clinical care. Customer satisfaction on the other hand is based not only on the technical quality provided but also the attributes such as empathy, reliability, responsiveness, communication and caring to define a patients perception of quality and satisfaction (Bowens, Swan and Koehler, 1994).

1.2 Aim of the Study:

To analyze the quality indicators of clinical departments as per NABH standards and guidelines in order to assess the operational efficiency and make improvement to enhance the compliance of standards of 200 bedded super specialty Bhagwan Mahaveer Cancer Hospital in Jaipur city.

1.3 Objectives of the Study:

- To identify the indicators of quality assessment in the clinical departments of hospital, as per set NABH standards and guideline
- To find out trends of functioning of clinical departments in last three months.
- To identify areas of potential improvements and develop recommendations in coordination with organizational resources for strengthening and enhancing the overall quality of Clinical departments

Chapter 2: Review Literature

Study on usefulness of monitoring of the National Accreditation Board for Hospitals and Healthcare Providers (NABH) core indicators in blood transfusion and in the maintenance of hemo-vigilance

Some earlier studies explained the utility of monitoring of core indicators in transfusion medicine. Mwangi (2009) advocated that hemovigilance data had given transfusion services a clear understanding of problems associated with transfusion that need to be solved so as to improve transfusion safety. Dhingra (2004) conducted a study on the challenges in global blood safety and presented the World Health Organization's (WHO) integrated strategy for blood safety. This provided invaluable information on the current status of the global blood supply, identifying problems and prioritizing needs, and was useful in monitoring progress and trends.

Ayob (2010) also concluded that hemovigilance program required expertise and resources that should be utilized to correct deficiencies that were already apparent and obvious. The data collected should be accurate and should be used in formulating guidelines, standards, and policies, and to affect appropriate interventions.Similarly, Arewa (2009) also explained that a system of hemovigilance if incorporated into the blood transfusion service would promote effective monitoring of blood transfusion and reduce wastage of scarce blood/blood products. Jain and Kaur (2012) proved that a well-functioning hemovigilance system could be used as quality indicator for monitoring the blood transfusion safety, and also contribute significantly to evidence-based transfusion medicine.

Ness et al. (1990) conducted a study on the differentiation of delayed serologic and delayed haemolytic transfusion reactions: incidence, long-term serologic findings, and clinical significance. He indicated that transfusion complication could only be adequately addressed by an active prospective surveillance program. Elements of bedside monitoring and blood bank review must be incorporated. Monitoring for transfusion complications is important as a means of improving patient care and designing research priorities.

CDC Guideline for Prevention of Catheter-associated Urinary Tract Infections, 2009

Populations are at highest risk of mortality from urinary catheters- Low-quality evidence suggested that older age, higher severity of illness, and being on an internal medicine service compared to a surgical service were independent risk factors for mortality in patients with indwelling urinary catheters. Both studies evaluating these risk factors found the highest risk of mortality in patients over 70 years of age. Low-quality evidence also suggested that CAUTI (catheter associated urinary tract infection) was a risk factor for mortality in patients with catheters.

Minimized urinary catheter use and duration in all patients, particularly those who may be at higher risk for mortality due to catheterization, such as the elderly and patients with severe illness can prevent catheter associated urinary tract infection.

An observational study was conducted to assess the impact of a CAUTI quality improvement prevention bundle that included institution-wide standardization of and training on urinary catheter insertion and maintenance practices, daily review of catheter necessity, and rapid review of all CAUTIs.

Results showed that implementation of the CAUTI prevention bundle was associated with a 50% reduction in the mean monthly CAUTI rate (95% confidence interval: -1.28 to -0.12; P = .02) from 5.41 to 2.49 per 1000 catheter-days. The median monthly catheter utilization ratio remained unchanged; ∼90% of patients had an indication for urinary catheterization. Forty-four patients experienced 57 CAUTIs over the study period. Most patients with CAUTIs were female (75%), received care in the paediatric or cardiac ICUs (70%), and had at least 1 complex chronic condition (98%). Nearly 90% of patients who developed a CAUTI had a recognized indication for initial catheter placement.

A **pressure ulcer** is defined as "a localised injury to the skin and/or underlying tissue usually over a bony prominence, as a result of pressure, or pressure in combination with shear". They are six classes of pressure ulcer, grades 1-4, unstageable and deep tissue injury.

Figures show that despite an increase in technology and medical advances, the incidence and cost of hospital acquired pressure ulcer management are extensive and increasing.[8] The cost of treating these mainly preventable occurrences in the United Kingdom (UK) fluctuates from £1.4- £2.1 billion annually or 4% of the total National Health Service (NHS) expenditure.[9] In one Irish study, the cost of treating a patient with several Grade 4 pressure ulcers over a five month period to total healing was €119,000 [10]. However, a successful outcome is not always likely as complications often arise in the grade 3 and 4 stage pressure ulcers, causing infection and in some cases even death.

According to Land, pressure ulcer prevention is such a vital recurring aspect of nursing care that many staff fail to concede its importance and consequence in maintaining standards of care. Conversely, evidence has shown that patient acuity and nursing assignments have amplified in the last 30 years. The challenge of this demanding environment impacts on nursing staffs' ability to practice quality care, show support, and act as a good role model for newly qualified or junior staff.

According to Dealey, prevalence is described as a "snapshot" and is an effective tool for identifying where the pressure ulcers occurred, the grade of pressure ulcer, and the site of occurrence. This prevalence acts as a reference point measurement and can be used to monitor developments or the effectiveness of a prevention programme. An incidence is a measure of the risk of developing some new condition within a specified period of time. One study showed a prevalence of 13% in a short stay ICU whilst it increased to 42% for a long stay unit. Incidences of pressure ulcers in ICU's vary between 10-41%.

Surgical site infections (SSIs) continue to occur and remain a significant cause of disability among operated patients, in spite of the substantial advances in our understanding of their epidemiology, pathogenesis, and prevention.

Harvard Medical Practice Study I (HMPS-I) by Brennan et al- study, over 30 000 medical records of non-psychiatric patients discharged from 51 acute care hospitals in New York State in 1984 were randomly sampled and reviewed for evidence of adverse events and negligence. An adverse event was defined as an injury that was caused by medical management (rather than the underlying disease) and that prolonged the hospitalization,

produced a disability at the time of discharge, or both. . The authors identified that the state wide incidence rate of adverse events was 3.7%, with 27.6% of these adverse events due to negligence. Although 70.5% of adverse events led to minor or moderate health impairment with complete recovery, 2.6% caused permanent total disability and 13.6% caused death.

The **report "To Err is Human: Building a Safer Health System", by the US Institute of Medicine;** report identified that preventable medical mistakes occurred with high frequency in hospitals in the US and abroad, and were responsible for annual costs in the billions, prolongation of hospital stay, and permanent and severe physical disability. It was estimated that about 7% of hospitalized patients are exposed to potential harm from medication errors, and up to 17% of patients admitted to an intensive care unit may eventually suffer a severe adverse event and the number of deaths attributable to preventable medical adverse events in US hospitals was conservatively estimated to lay somewhere between 44 000 and 98 000 per year, exceeding the number of deaths due to car crash, breast cancer, or AIDS.

Surveillance of HAI is an indispensable tool in infection control. The need to compare rates in one institution with those in others has led to the development of national surveillance systems and risk-stratification models. A great deal of progress toward comparability of SSI rates has been made, but the problem of risk stratification for the purposes of comparing patient populations are still under debate and need further research.

Needle Stick Injury (NSI) According to a **CDC study** reported in several of the reviews, approximately 384,000 NSI are estimated to occur annually to hospital workers in the US, and more than 800,000 to all HCW combined (hospital and non-hospital settings).

The risk of NSI for any individual HCW depends on a number of factors, including frequency of potential contact, i.e., the number of procedures or needle manipulations performed; the type and duration of procedure; manual vs. instrumented tissue retraction during suturing and cutting; and the emergent status of the case

The overall risk of NSI also seems to depend on medical specialty area. For example, 6 % to 50 % of operating room (OR) and delivery room personnel report at least one blood contact per procedure, and 1 % to 15 % of their procedures include at least one NSI. In contrast, needle sticks to anesthesiologists are relatively rare, occurring at a rate of about

1.4 injuries per 100 procedures. Among physician specialties, injury rates appear to be highest for surgeons, with 2.6 NSI per 100 procedures for residents and 2.3 per 100 procedures for attending surgeons. Among all occupational groups, nurses are the most likely to experience NSI, reporting 50 % to 75 % of all injuries within a given institution. Physicians generally rank second among hospital staff, with the rankings of other groups (phlebotomists, housekeeping staff, laboratory personnel).

The **World Health Organization (WHO) defines fall** as an event which results in a person coming to rest inadvertently on the ground, with the inability to correct in due time and is determined by circumstances involving multiple factors that affect stability. It is estimated that, in 2002, around the world, 391,000 people died due to this phenomenon. According to the same organization, these figures turn falls into the second main cause of death by involuntary accidents, immediately following on traffic accidents.

According to the ***Inspecção-Geral das Actividades em Saúde*** **(IGAS**), in the Portuguese National Health Service, 4,200 accidents were registered in 2006, 2007 and January 2008 (a total of 25 months), related to patients' falls from stretchers or beds. In this study, it was ascertained that, in 85 of these cases, the patients ended up dying. The IGAS indicates that these falls took place in bathrooms, armchairs, wheelchairs and on slippery floors. IGAS found that, in January 2008, 13% of the stretchers at 65 National Health Systems units (415) possessed no side rails, nor did 8,200 beds. This corresponds to 33% of all beds at the hospitals studied. In the same report, it is acknowledged though that the hospitals have made efforts to increase the number of protection structures. Due to this situation, we consider that this represents a severe public health problem, which affects these patients' increased discomfort and risk and entails possible implications for the hospitalization time, with a consequent increase in hospital costs, human and material resources.

In recent years, nurses have globally been more attentive to patient falls. Nevertheless, it remains a reality that has been insufficiently documented and studied. On the other hand, the introduction of preventive measures to enhance patient safety not only needs better knowledge on this phenomenon, in each particular context, but also the mobilization of all stakeholders for the development of a culture of care quality.

Chapter 3: Study Methodology

Place of study:

200 bedded super specialty hospital, in Jaipur

Study area:

Departments taken into consideration for the study were Radiology Department, Operation theatre, Intensive Care Unit, MRD Department, Patient Care Wards, Laboratory, Blood Bank department

Study period:

The time frame of the study was three months (15th February to 8th May)

Study design:

Study type used was cross-sectional analytical study.

Study tool: Direct observation, SOPS, Checklists and Records.

Data type:

Primary and Secondary data has been collected for the study.

Sample size:

All the cases reported from 1st january'16 to 30 march'16 has been taken into consideration, except for the blood bank turnaround time calculation where our sample size is of 66 blood bag taken and sample size of 100 inpatient files per month taken for assessing inpatient indicators.

Sampling method: simple random sampling method

Method of data collection: The data will be collected through the primary and secondary sources. The sources will be as follows-

Primary Data Source- Direct observation (day to day)

Secondary Data Source-

- Checklist (Quality Indicator Formats)
- Auditing patient records(MRD) and HIS
- Inpatient files of the patient admitted in the wards
- Interaction with the consultant, doctors and supporting staff
- Recording data in the departments

Data management:

- A self developed Excel sheet for calculation of percentage of quality indicators.
- Format for recording the quality indicators.
- Graphical representation for analysis of data
- Implicit interpretation of the same.
- Recommendation relevant for the outcomes from the above.

Data quality:

Data is validated/cross checked by:-

- Direct Observation
- Auditing patient records in MRD

Chapter 4: Results and Discussion

INDICATORS FOR BLOOD BANK-

1. Percentage of blood bank component wastage
2. Percentage of blood and blood component transfusion reaction
3. Turnaround time for issue of blood and blood component

TABLE 4.1: Percentage of blood bank component wastage-

Month	Total Blood Component	Wastage
Jan	1577	84
Feb	1228	118
March	1713	63

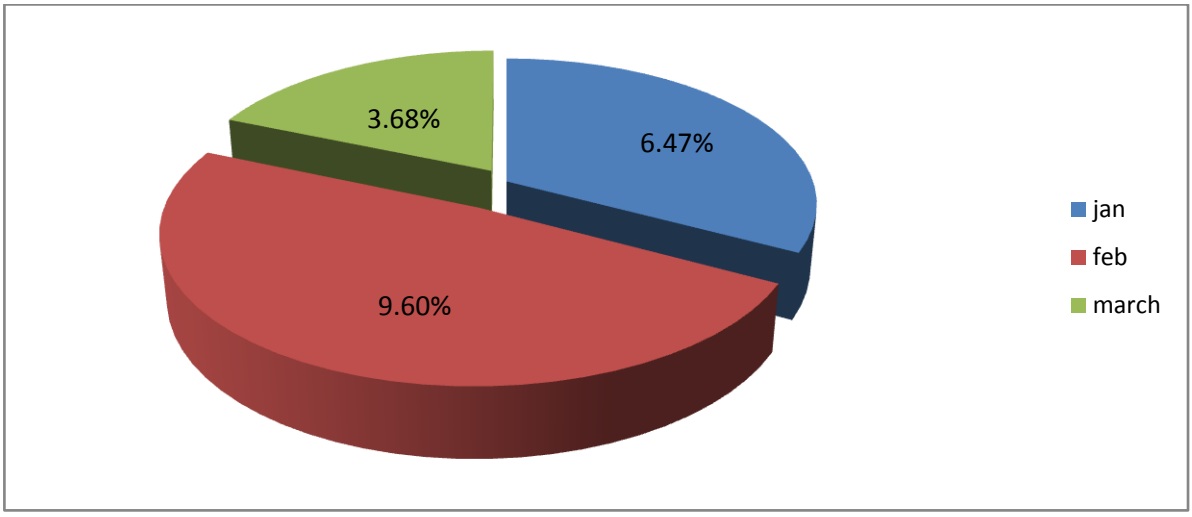

FIGURE 4.1: percentage of blood bank component wastage

Results- shows that % of blood bags wastage are increasing from January to February that is 6.47% to 9.6% and then it decreased in march to 3.68% but blood bag wastage is still there.

Different **reasons** for blood bag wastage are-

- Mishandling of blood
- Positive infection case
- Insufficient collection volume

- Haemolysed blood
- For RDP more than 5 days storage
- Bag leakage

TABLE 4.2: Percentage of Transfusion Reactions among the patients who received blood transfusions

Month	No. of transfusion	No. of transfusion reaction
Jan	983	2
Feb	1144	0
March	1206	0

Results- shows that only 0.2% cases reported for blood transfusion reaction in January month and no other case is reported in February and march.

Reasons-

- Leukocyte related reaction
- Cases are under reported.

Turnaround Time for Issue of Blood and Blood Component-

= sum of time taken*100/ total no of blood and blood component issued

= 1950*100/66 = 29.5 min

100% of the requisitions are responded within 30 min

The **reason** behind this is that the requisition slip reaches blood bank along with the attendant but the blood requisition is already informed on the extension which helps the blood bank to prepare and dispatch the required stuff timely.

INDICATOR FOR LABORATORY AND RADIOLOGY-

1. Percentage of Re dos in laboratory
2. Percentage of Re dos in radiology
3. Percentage of reporting error in laboratory
4. Percentage of reporting error in radiology
5. Percentage of Adherence to Safety Precautions by Employee working in Diagnostics

TABLE 4.3: Percentage of Re dos from total no of test performed in biochemistry and haematology of laboratory

Month	No. of Re dos	No. of test performed
Jan	6	9897
Feb	18	10484
march	51	11030

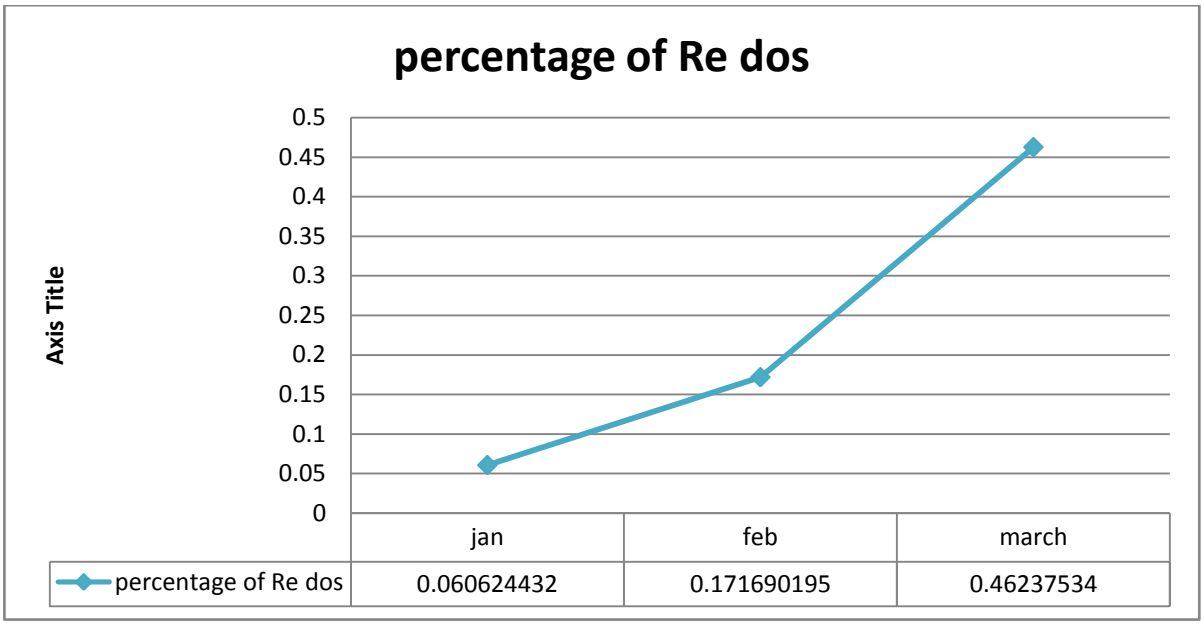

FIGURE 4.2: Percentage of Re dos in laboratory

Results- shows that percentage of repeat test are increasing from January to March ie. From 0.06% to 0.46%. Increase in no of repeat test shows improper utilization of resources.

Reasons-

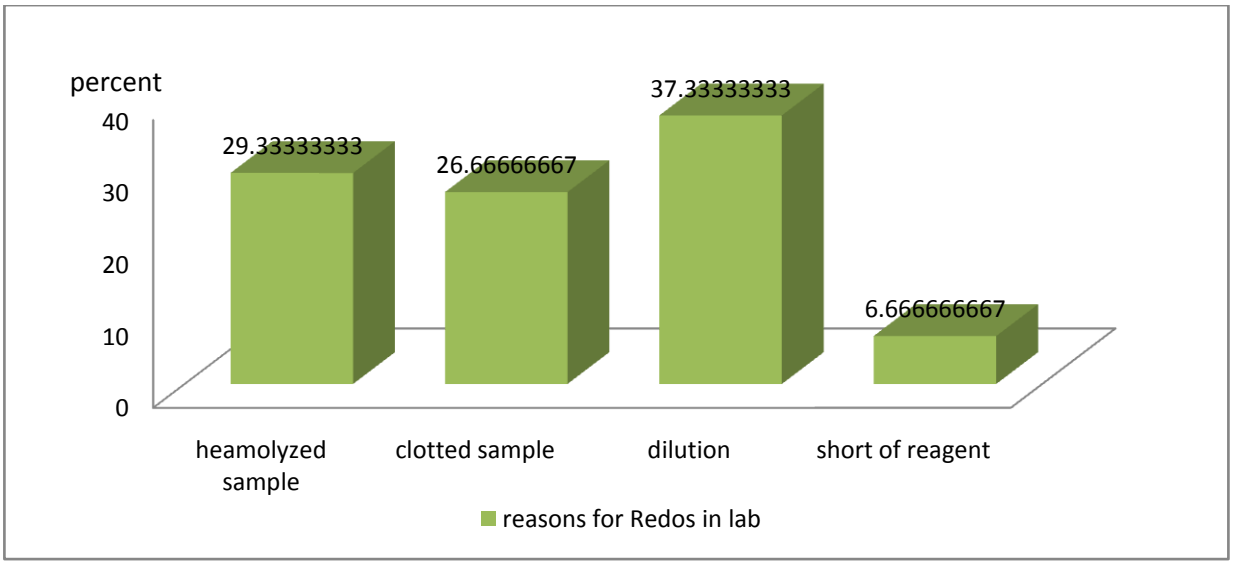

FIGURE 4.3: percentage of reasons responsible for Re dos in laboratory

Table 4.4: Percentage of Re dos from total number of test performed in Radiology department-

Month	No. of Re dos	No. of tests performed
Jan	13	2616
Feb	13	2893
March	26	3157

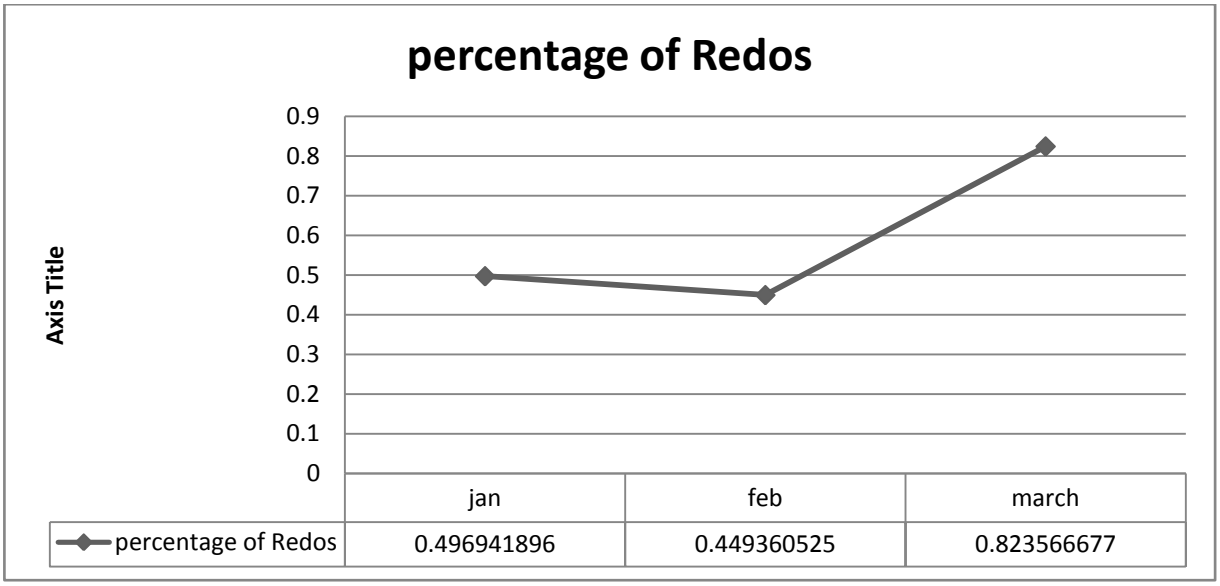

FIGURE 4.4: percentage of Re dos in radiology department

Results- shows that case of Re dos which is 0.5% in January month increases to 0.8% in March which needs to be improved to provide quality of healthcare.

Reasons- The basis reported reasons by radiology staff was:

1. Movement of the patient and
2. Breathing during x-ray shoot.

TABLE 4.5: Reporting Error from total number of test performed in Laboratory-

	No. of reporting error	No. of test performed
Jan	0	14133
Feb	0	14858
March	0	15683

Table 4.5 shows that during study period there was no reporting error observed in laboratory.

TABLE 4.6: Reporting Error from total number of test performed in Radiology department-

	No. of reporting error	No. of test performed
Jan	0	2616
Feb	0	2893
March	0	3157

Table 4.6 shows that during study period there was no such reporting error observed in radiology department.

TABLE 4.7: Percentage of Adherence to Safety Precautions by Employee working in Diagnostics-

Staff	No of employee adhering to safety precautions	No of employee sampled
Technicians	11	15
Pathologist	8	8
Residents	6	8

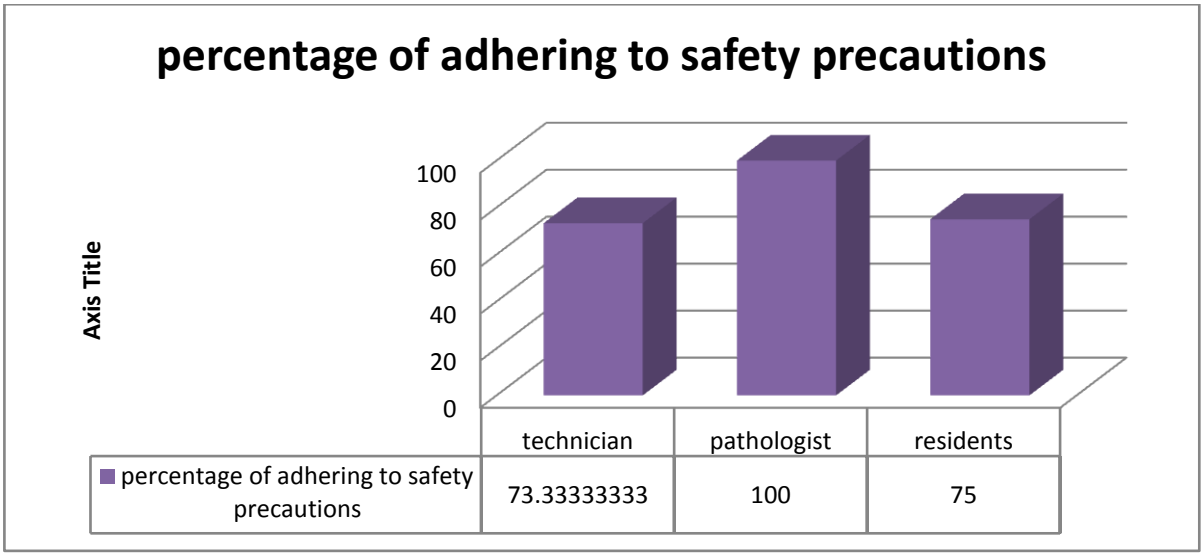

FIGURE 4.5: percentage of employee adhering to safety precautions in diagnostics

Results- shows that safety adherence of staff is appreciable as there is 100% conformance by pathologist and 75% by residents and 73% by technicians still there is potential for improvement.

Reasons- for not adhering to safety precautions by staff is due to their negligent behaviour.

OPERATION THEATRE INDICATOR-

1. Percentage of modification of anaesthesia plan
2. Percentage of unplanned ventilation following anaesthesia
3. Percentage of adverse anaesthesia event
4. Anaesthesia related mortality
5. Percentage of unplanned return to OT
6. Percentage of re-scheduling of surgeries
7. Percentage of cases who received appropriate prophylaxis antibiotics within specified time frame
8. OT utilization rate

TABLE 4.8: Percentage of Modification of Anaesthesia Plan-

Month	No. of patient whom anaesthesia plan modified	No. of patient underwent anaesthesia
Jan	2	246
Feb	4	278
march	2	275

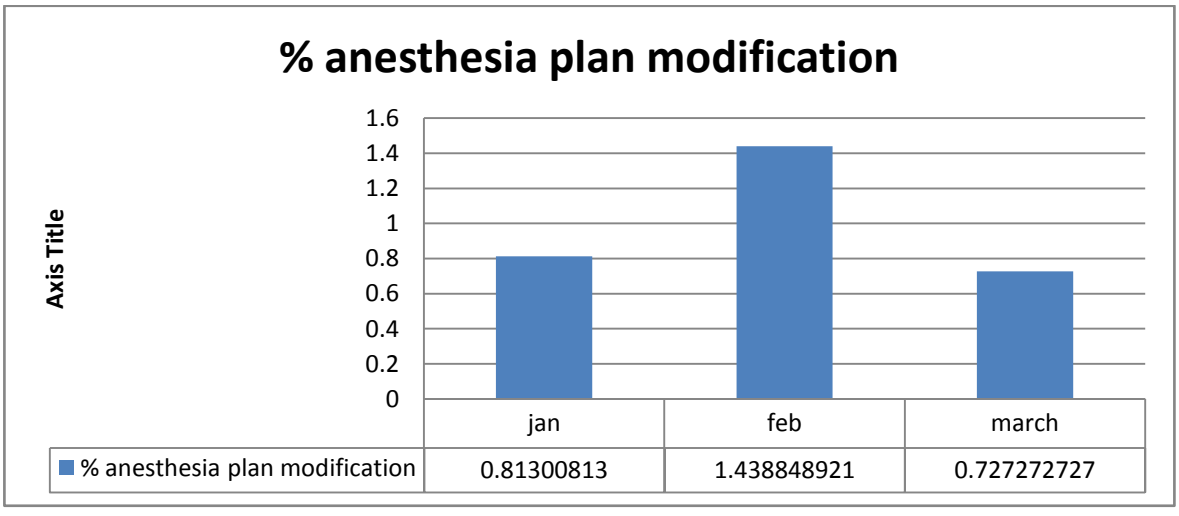

FIGURE 4.6: percentage of anaesthesia plan modification

Results- show that percentage of modifications in anaesthesia plan increased from January to February that is%. 0.8% to 1.4% and the decreasing in March to 0.72

Reasons- high risk patients

Patient has co morbidities.

TABLE 4.9: Percentage of Unplanned Ventilation following Anaesthesia-

Month	No. of patient require unplanned ventilation following anaesthesia	No. of patient who underwent anaesthesia
Jan	0	246
Feb	0	278
March	0	275

Table 4.9 shows that during study period no patient required unplanned ventilation following anaesthesia.

TABLE 4.10: Percentage of Adverse Anaesthesia Event-

Month	No. of patient developed adverse anaesthesia event	No. of patient underwent anaesthesia
Jan	0	246
Feb	0	278
march	0	275

Table 4.10 shows that during study period patient who underwent anaesthesia didn't develop any adverse anaesthesia event.

TABLE 4.11: Anaesthesia Related Mortality Rate-

Month	No. of patient who died due to anaesthesia	No of patient who underwent anaesthesia
Jan	0	246
Feb	0	278
march	0	275

Table 4.11 shows that during study period, patients who underwent anaesthesia did not die due to anaesthesia.

TABLE 4.12: Percentage of Unplanned Return to OT-

Month	No of unplanned return to OT	No of pt operated
Jan	7	246
Feb	9	278
march	4	275

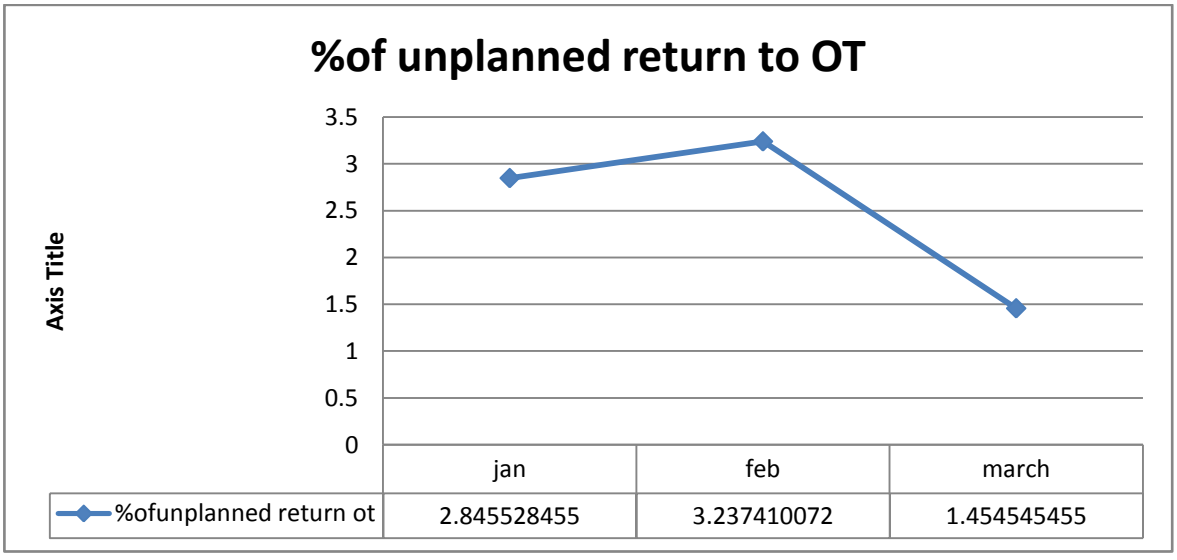

FIGURE 4.7: percentage of unplanned return to OT

Results- shows that percentage of unplanned return to OT increased from January to February that is 2.9% to 3.2% and then decreased in march up to 1.5% but unplanned return to OT is still there.

Reasons-

- Free flap re-exploration
- Flap necrosis
- Emergency tracheostomy

TABLE 4.13: Percentage of Re-scheduling of Surgeries-

Month	No. of cases re-scheduled	No of surgeries performed
Jan	6	246
Feb	6	278
march	10	275

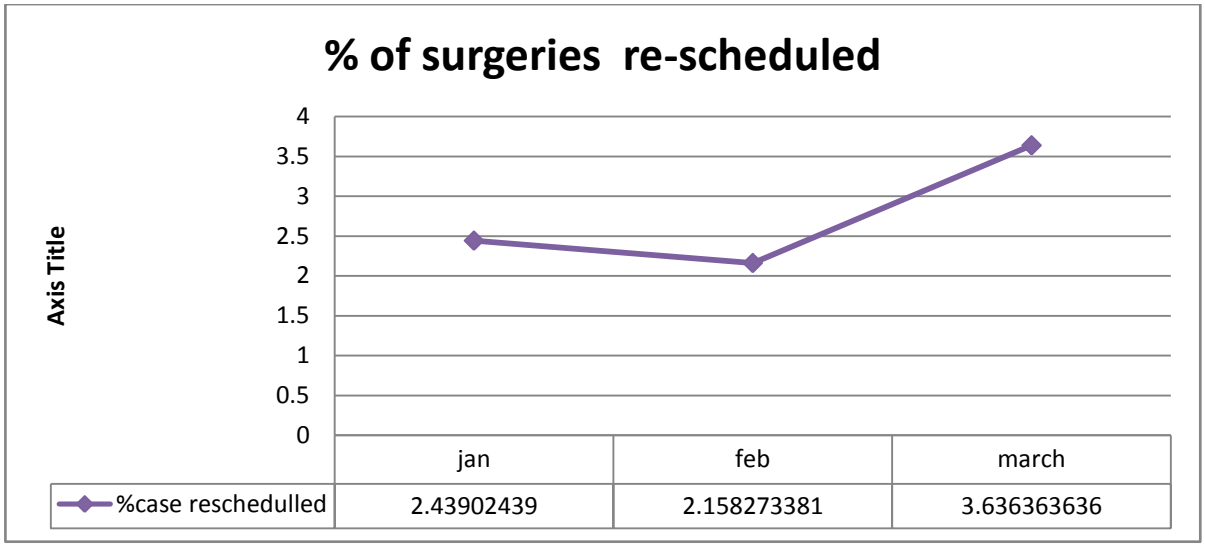

FIGURE 4.8: Percentage of surgeries re-scheduled

Results- shows that percentage of re-scheduling of surgeries decreased from January to February that is 2.45% to 2.16% and then it increased in march to 3.6%.

Reasons-

- Patients may not be fit
- Reports are abnormal
- Emergency case is there.
- Pre-pone cases

TABLE 4.14: Percentage of cases who received appropriate prophylaxis antibiotics within specified time frame-

Month	No. of pt received appropriate prophylactic antibiotic	No. of surgeries performed
Jan	246	246
Feb	278	278
march	275	275

Table 4.14 shows that during study period, all patient who underwent surgery, received appropriate prophylactic antibiotic within specified time frame.

TABLE 4.15: OT Utilization Rate-

Month	OT utilization time in hours	Resource hours
Jan	26*4*3.58= 372	26*8*4= 832
Feb	25*4*4.57= 457	25*8*4= 800
march	27*4*4.4= 476	27*8*4= 864

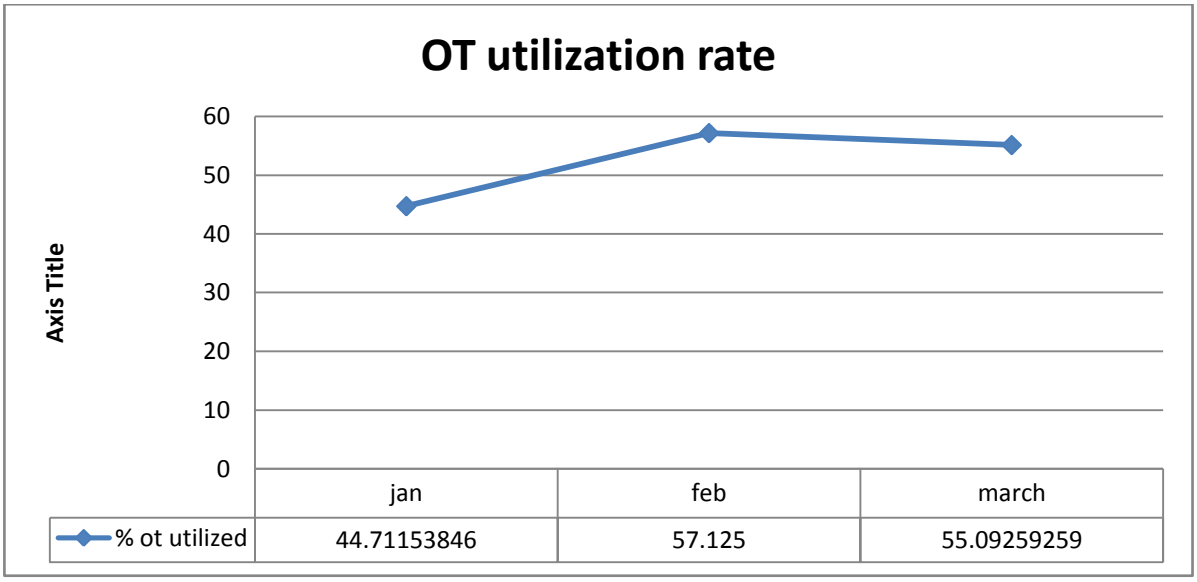

FIGURE 4.9: OT utilization rate

Results: shows that OT utilization rate increased from January to February that is 44.7 to 57 and then it decreased in March till 55.1 but under-utilization is shown.

Reasons-

- Induction to extubation time is recorded only.
- Pre-operative movement of patient not included and post-operative time
- OT cleaning is done after each procedure which consumes time.

INDICATORS OF INTENSIVE CARE UNIT-

1. Urinary tract infection rate
2. Ventilator associated pneumonia rate
3. Blood stream infection rate
4. Surgical site infection rate

Urinary tract infection rate-

A urinary tract infection, commonly referred to as a UTI, occurs when microorganisms such as bacteria, viruses, or fungi enter the urinary system and multiply. Urine is normally sterile or free from microorganisms.

UTI impacts on cost of treatment:

_ Increased hospitalization

_ Frequent lab investigations.

_ Increased cost of medication

_ May require transfer to ICU.

TABLE 4.16: Number of urinary catheter associated UTI from no of urinary catheter days

Month	No, of urinary catheter associated UTI	No. of urinary catheter days
Jan	2	709
Feb	8	838
march	2	910

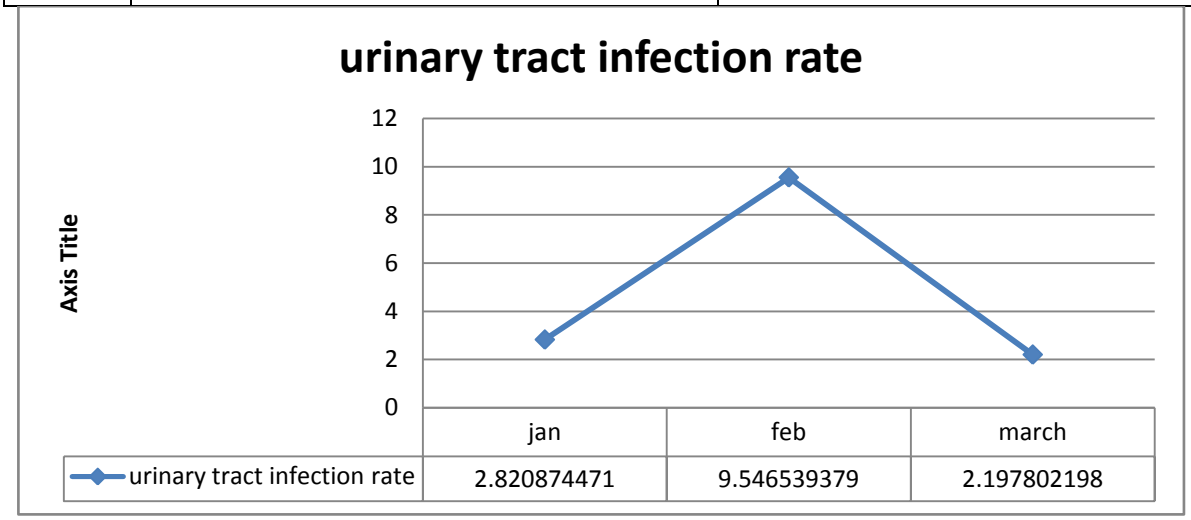

FIGURE 4.10: urinary tract infection rate

Results- shows that UTI rate increased in February from 2.8% to 9.5% and then decreased in March till 2.2% but we need to improve upon the same so as to provide quality healthcare, with no secondary complications to patient.

Reasons-

- Fail to follow aseptic technique
- Negligence of staff
- Lack of hand hygiene
- No proper cleaning of urinary area

TABLE 4.17: Ventilator Associated Pneumonia Rate-

Month	No. of ventilator associated pneumonia	No. of ventilator days
Jan	2	121
Feb	0	74
march	0	61

Table 4.17 shows that 2 cases of ventilator associated pneumonia happened in January month but still we need to improve upon it.

TABLE 4.18: Blood Stream Infection Rate-

Month	No. of central line associated BSI	No. of central line days
Jan	1	573
Feb	1	532
march	2	638

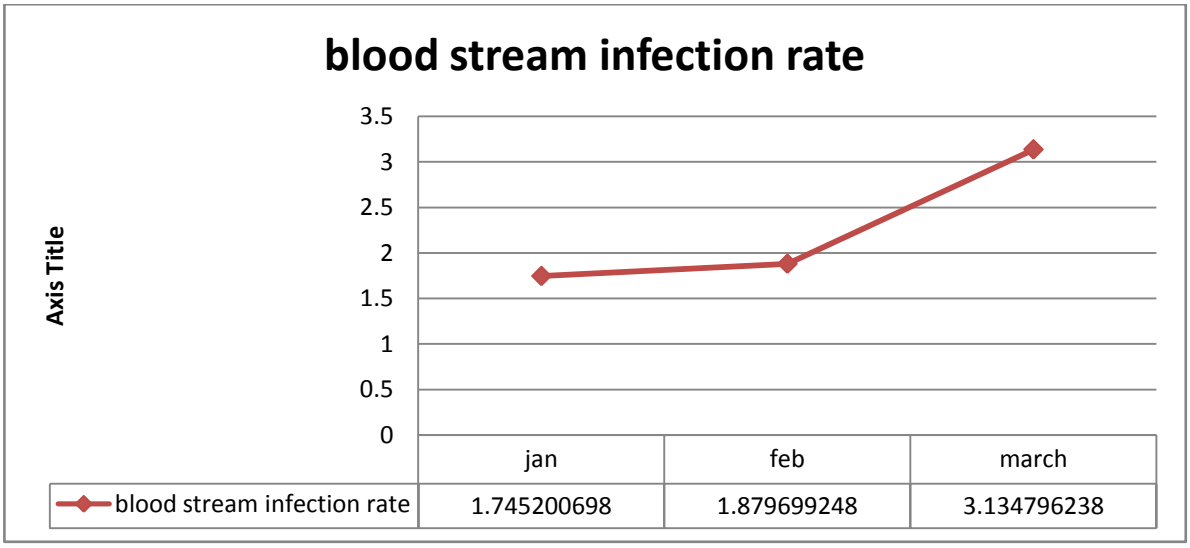

FIGURE 4.11: blood stream infection rate

Results- shows that rate of blood stream infection gradually increased from January ie. 1.8% to march ie. 3.1% which we need to improve upon to provide quality healthcare.

Reason- Negligence by staff and fail to follow aseptic techniques and improper dressing.

Surgical Site Infection Rate-

Surgical procedures increase a patient's risk of getting an infection in the hospital. Surgery directly invades the patient's body, giving bacteria a way into normally sterile parts of the body. An infection can be acquired from contaminated surgical equipment or from healthcare workers. Following surgery, the surgical wound can become infected. Other wounds from trauma, burns, and ulcers may also become infected

TABLE 4.19: number of surgical site infection from total number of surgeries performed

Month	No. of surgical site infection	No. of surgeries performed
Jan	2	234
Feb	1	278
march	4	275

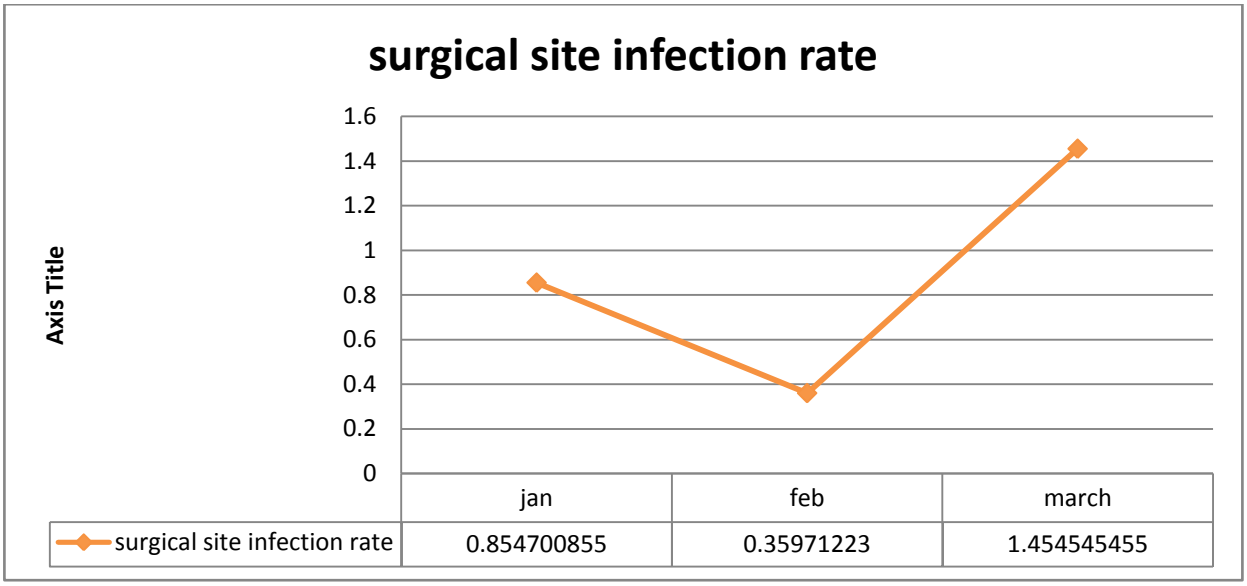

FIGURE 4.12: surgical site infection rate

Results- shows that rate of surgical site infection decreased from January ie. .85% to February ie.0.4% but then increased in march ie. 1.5% which we need to improve upon.

Reasons- wound infection, patient not following proper antibiotic course, dressing not changed timely.

INDICATORS FOR INPATIENT DEPARTENT-

The Inpatient Quality Indicators are a set of measures that provide a perspective on hospital quality of care using hospital administrative data. These indicators reflect quality of care inside hospitals. Implications:

- Can be used to help hospitals identify potential problem areas that might need further study.
- Provide the opportunity to assess quality of care inside the hospital using administrative data found in the typical discharge record.

1. Time for initial assessment of indoor patient by doctor
2. Percentage of Cases wherein Screening for Nutritional Needs has been done
3. Percentage of Inpatients wherein Nursing Care Plan documented

TABLE 4.20: Time for initial assessment of indoor patient by doctor-

Jan- 50.3 min	Feb- 62 min	March- 64 min

Results- shows that time for initial assessment of indoor patient gradually increased from January ie. 50.3 min to March ie. 64 minute. And ideally it should be within one hour.

Reason- Only negligence of duty doctor could be assigned to this non- conformance, shortage of duty doctor

TABLE 4.21: Percentage of Cases wherein Screening for Nutritional Needs has been done-

Jan- 74%	Feb- 73%	March- 78%

Results- shows that percentage of screening for nutritional needs increased from January ie. 74% to March ie. 78%.

Reasons-

- Lack of accountability in dietician, shortage of dieticien
- Increase workload on dietician, files not there

TABLE 4.22: Percentage of Inpatients wherein Nursing Care Plan documented-

Jan- 100%	Feb- 100%	March- 100%

Table 4.22 shows that each and every inpatient record has nursing care plan documented ie. 100%.

PATIENT SAFETY INDICATORS-

The Patient Safety Indicators are a set of measures that screen for adverse events that patient experience as a result of exposure to the health care system. These events are likely amenable to prevention by changes at the system or provider level.

Clinical process interventions also have strong evidence for reducing the risk of adverse events related to a patient's exposure to hospital care interventions also have strong evidence for reducing the risk of adverse events related to a patient's exposure to hospital care.

1. Incidence of medication error
2. Percentage of adverse drug reaction
3. Incidence of fall
4. Incidence of bed sore after admission
5. Incidence of needle stick injury

Incidence of Medication Error-

Medication error could be due to wrong prescription, dosing and due to communication gap (Verbal /written).

TABLE 4.23: Total no of medication error from total number of patient days

Month	Total no. of medication error	No. of patient days
Jan	0	3559
Feb	0	3731
March	0	3943

Table 4.23 shows that during study period no incidence of medication error has occurred.

TABLE 4.24: Percentage of Adverse Drug Reactions-

Month	No of adverse drug reaction	No. of discharges/ death
Jan	0	1087
Feb	0	1078
March	0	1121

Table 4.24 shows that during study period no incidence of adverse drug reaction has occurred.

Incidence of Falls-

An untoward event which results in the patient coming to rest unintentionally on the ground or on other lower surface. Fall could be accidental, anticipated physiological or unanticipated physiological.

Implications-

This is a safety issue for a patient in ICU.

Accidental fall could lead to morbidity, prolonged stay and customer dissatisfaction

TABLE 4.25: number of falls from total number of patient days

Month	No. of falls	Total no. of patient days
Jan	0	3559
Feb	0	3731
March	0	3943

Table 4.25 shows that during study period no incidence of fall is observed.

Incidence of Bed Sore after Admission-

Decubitus ulcer and pressure sore are synonyms. Decubitus is derived from Latin word decumbere means "to lie down. Since pressure sore can develop from other positions, it is called Pressure sore. Prolonged uninterrupted pressure over bony prominences causes necrosis and ulcer

TABLE 4.26: number of patient develop new or worsening of pressure ulcer from total number of discharges and death

Month	No. of pt who develop new pressure ulcer	No. of discharges/ death
Jan	0	1087
Feb	0	1078
March	0	1121

Table 4.26 shows that during study period no incidence of bed sore has occurred after admission.

Incidents of Needle Stick Injury-

A penetrating stab wound from a needle (or other sharp objects) that may or may not be associated with the exposure to blood or other body fluid.

Implication-

Needle stick injuries can cause transmission of blood borne pathogens. Needle stick injury can occur due to faulty handling of needle syringe with needle, suture needle, recapping of needle, and faulty disposal. Annual incidence ranges from 600,000 to 800,000 at global level.

TABLE 4.27: number of renteral exposures from total number of inpatient days

Month	No. of renteral exposures	No. of inpatient days
Jan	0	3559
Feb	0	3731
march	7	3943

Results- shows that during march 7 incidents of needle stick injury has occurred.

Reasons-

- Negligence by staff
- Recapping
- Untrained new staff/ students, ward ladies

INDICATORS FOR MEDICAL RECORD DEPARTMENT-

1. Percentage of medical records not having discharge summary-
2. Percentage of medical records having incomplete consent
3. Percentage of missing records
4. Mortality rate
5. Bed occupancy rate

TABLE 4.28: number of discharges without discharge summary, incomplete consent and missing records from sample size of 100 files.

Month	Total files	Without discharge summary	Incomplete consent	Missing records
Jan	100	0	0	0
Feb	100	0	0	0
march	100	0	0	0

Table 4.28 shows that during study period , among 100 medical record sample, none of the files has missing records, incomplete consent and without discharge summary.

Mortality rate-

TABLE 4.29: number of deaths from total number of discharges and deaths

Month	No. of death	No of discharges / deaths
Jan	36	1087
Feb	36	1078
March	38	1121

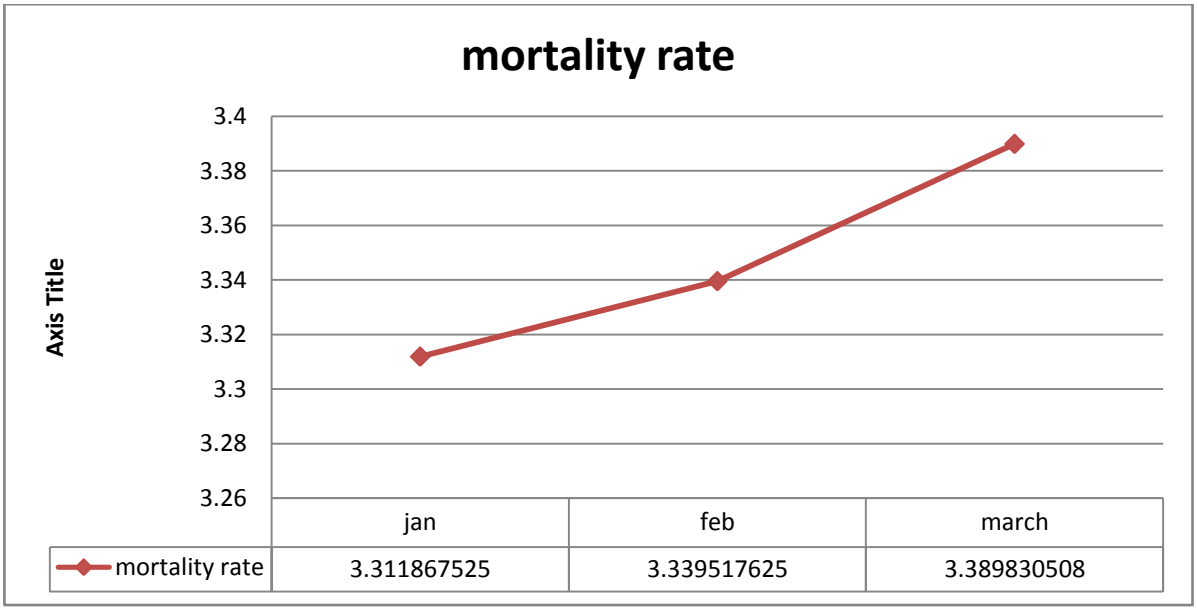

FIGURE 4.13: mortality rate

Results: shows that during study period mortality rate remain almost same ie. 3.3%

Reasons- terminally ill patient/ critical patient

Bed Occupancy Rate-

TABLE 4.30: number of inpatient days from number of available bed days

Month	No. of inpatient days	No. of available bed days
Jan	3559	6200
Feb	3731	5800
march	3943	6200

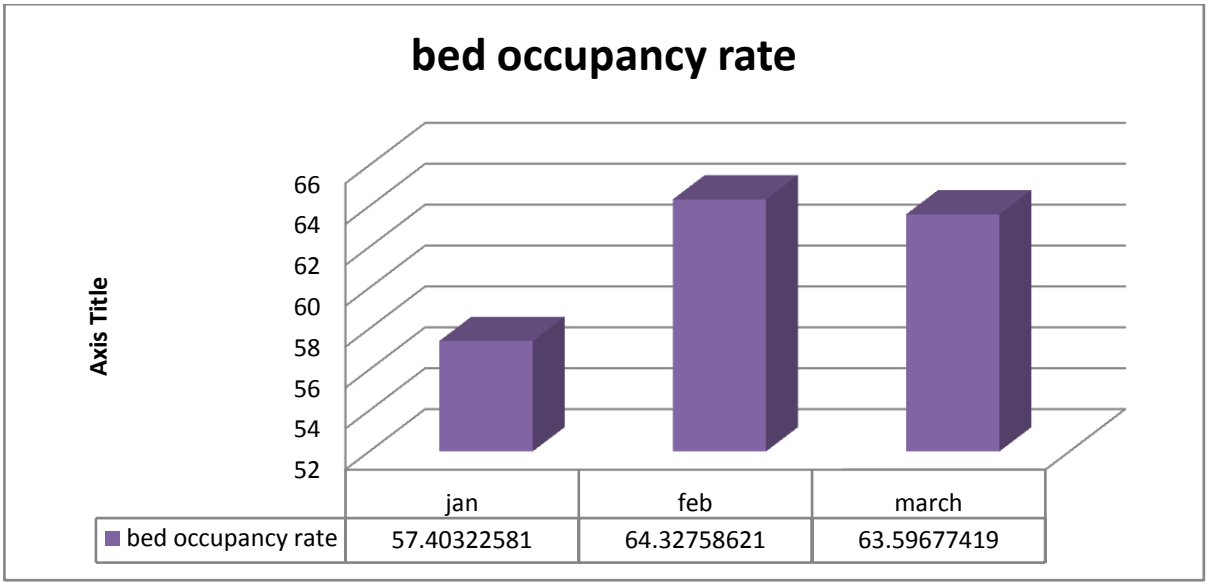

FIGURE 4.14: bed occupancy rate

Results- shows that bed occupancy rate is increasing from January to march ie. 57.4% to 63.6% respectively.

Reasons-

- OPD conversions are more
- Number of surgery has increased.

Chapter 5: Recommendations-

To Reduce Reporting Errors

There are different points where we need to work

- The first level of discrepancy is at the front office so lot of precision is advised there and also some appraisal for the one who does not makes such mistakes like: employee of the month"
- The labelling of samples can be done by putting printed stickers.
- The entry should be legible ie block letter should be used to write requisitions/for Provisional report

To Reduce Re dos in Lab

1) During collection:

- One should not shake the vaccutainer after sample collection
- Blood should not be injected in vaccutainer along with the needle
- One should not collect sample from I .V .line, as medicines are being injected through the same route.
- Labelling to be done properly on vaccutainer, to avoid confusions
- Only personnel with required technical qualification should collect sample for laboratory and regular training programmes should be organized for them

2) During processing**:**

- Regular calibration of equipment on due dates should be done.
- Proper handling of the sample should be done and it should be just turned gently and not vigorous shaking.
- Above all awareness of the staff should be raised by continuous training

To Reduce Re dos in Radiology:

- We see the main reason is breathing which can again be reduced by proper communication to the patients as well as technicians
- Regular training and raising the awareness level.

Rescheduling of Surgeries:

- As OPD time last till 2.00pm thus Pre anaesthetic check-up timing should be fixed by 2.00 pm, and no new cases should be added unless it is urgent.
- Proper entry in the booking register explaining the status of the patient as in where is the patient admitted.
- Duration of surgery should be written so as to schedule another case
- For cases which are late by half an hour without intimation to the in-charge should be cancelled and the next patient should be taken in.
- There should be complete co-ordination between doctors and nurses
- Rising the awareness level by training

Rescheduling in itself adds up to so many related costs as if Overtime, operation theatre charges and dissatisfaction to patient

To Reduce Adverse Event in Anaesthesia:

- Precision from surgeon side is recommended

To Reduce Blood Component Wastage:

- Mishandling of blood should be stopped
- Expiry timing for the following should be known:
  For FFP more than 24 hour storage
  For RDP more than 5 days storage
  For packed cell more than 42 hour, so try using them within time frame.
- Now the quantity of blood components storage should be optimum.
- Bag leakage on weighing scale can be stopped by proper balancing.
- The ice pack can be changed after 2 hour to maintain the temperature in operation theatre for long surgeries.

For Better Data Management:

- Awareness about the importance of discharge summary/medical record should be communicated on regular basis at the ward level/front office
- Prompt access to photo copy machine after office hrs.

For Reducing Urinary Tract Infection:

- Appropriate Urinary Catheter Use
- Insert catheters only for appropriate indications, and leave in place only as long as needed.
- Avoid use of urinary catheters inpatients and nursing home residents for management of incontinence.
- For operative patients who have an indication for an indwelling catheter, remove the catheter as soon as possible postoperatively, preferably within 24 hours, unless there are appropriate indications for continued use.
- Aseptic Insertion of Urinary Catheters
- Ensure that only properly trained persons (e.g., hospital personnel, family members, or patients themselves) who know the correct technique of aseptic catheter insertion and maintenance are given this responsibility.
- In the acute care hospital setting, insert catheters using aseptic technique and sterile equipment.
- Following aseptic insertion of the urinary catheter, maintain a closed drainage system.
- Maintain unobstructed urine flow.

To Prevent Bed Sores:

- Risk Assessment

IF a vulnerable elder is admitted to an intensive care unit or a medical or surgical unit of a hospital and cannot reposition himself or herself or has limited ability to do so, then risk assessment for pressure ulcers should be done on admission because risk assessment can predict pressure ulcer formation in such high-risk groups and forms the basis for intervention.

- Positioning Needs and Pressure Reduction

IF a vulnerable elder is identified as at risk for pressure ulcer development or a pressure ulcer risk assessment score indicates that the person is at risk, then a preventive intervention addressing repositioning needs and pressure reduction (or management of tissue loads) must be instituted within 12 hours because reduction or elimination of risk factors can prevent pressure ulcer formation.

- Nutrition

IF a vulnerable elder is identified as at risk for pressure ulcer development and has Mal-nutrition (involuntary weight loss of 10% over 1 year or low albumin or prealbumin levels), then nutritional intervention or dietary consultation should be instituted because poor diet, particularly low dietary protein intake, is an independent predictor of pressure ulcer development

- Pressure Ulcer Evaluation

If a vulnerable elder presents with a pressure ulcer, then pressure ulcer should be assessed for location, depth and stage, size, and presence of necrotic tissue because baseline assessment guides interventions, provides data for later comparison to evaluate healing, and can help predict time to healing

To Avoid Adverse Events:

- Common ICU errors are related to treatment, procedure, ordering or carrying out medication orders, reporting or communication, and failures to take precautions or follow protocols
- Critically ill patients are at high risk for complications due to the severity of medical conditions, complexity of treatments, poly pharmacy, and technology based interventions.
- Nearly all ICU patients suffer from potentially harmful events. Nearly half (45%) of the adverse events are preventable

5.2Limitations of the Study

The major LIMITATION of my study was that the data collected had lot of discrepancies since some of the indicators were monitored from the month of February and staff being less familiar with the formats, lead to the discrepancies.

5.3 Strength of the Study

The departments were highly cooperative when it came to providing information and helping out in data collection for the study. Also, the HOD's of the departments were open to the idea of an analysis of operational efficiency of their department and were positive about any suggestions given to them.

Chapter 6: Conclusion

The conclusions drawn from my study were as follows:

Quality indicators can be used to provide helpful information for individuals, practices and organizations in general practice and primary care about the quality of the care that they provide. The results should however be interpreted within the wider context of delivery of care and used with the sole aim of improving quality of care, rather than simply making judgments about it. By developing and using QI's to improve care for patients, general practice can strengthen its partnership and engagement with patients and with other sectors of our healthcare system

Non-conformance could be due to various reasons. Shortage of man power, deficiency of trained manpower, injudicious work pressure, inadequate infrastructural and equipment support, lack of protocol, and personal issues are the few important causes of errors. These factors should be addressed before blaming a person. Complacent attitude and lack of commitment could also be responsible for certain errors though it is infrequently observed in a sensible unit. Majority of errors are not caused by individual inadequacies but are a product of defects in the system of care. Therefore, before doing error surveillance, ambiguity of practice in offering various services should be eliminated.

Health Care providers must know what is expected from them. Guidelines, protocols, systems and processes developed locally with reference to national/international guidelines and recommendations should be in place. Protocols should be in written form and adequate training should be given to the people who are expected to follow the protocol. Development of local guidelines/processes etc. should be done in consultation with the stake holders to break the resistance and to create a sense of ownership. This exercise should be done in piecemeal and training should be imparted as the systems and processes are being developed and implemented. Noncompliance to monitoring and record keeping should be done regularly to find out the magnitude of problem and area of concern. Writing protocols is relatively easy but implementation of the same and to conduct compliance monitoring is difficult to accomplish. Non-adherence to established standards of care have been related to poor outcomes.

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