XVII National Seminar on

Hospital / Healthcare Management,

Medico Legal Systems

&

Clinical Research

(MMC Accredited)

1st and 2nd May 2015

Symbiosis Institute of Health Sciences (SIHS)
A Constituent of Symbiosis International University (SIU), Pune
It gives me immense pleasure to present to you the commemorative issue of the Symbiosis Health Times. This academic journal is one of the bulletins of Symbiosis Institute of Health Sciences that focuses on issues related to healthcare, which is one of India's largest sectors - in terms of both employment and revenue. The industry includes verticals such as hospitals, medical devices, medical tourism, pharmaceuticals, clinical trials, telemedicine, health insurance, medical equipment and healthcare IT.

The Indian healthcare industry has recently shown prodigious growth due to its increasing coverage, quality services and growing expenditure by both public and private stakeholders. India's competitive edge is its expanding collective of well-trained medical professionals. Moreover, the cost advantage compared to Western and other Asian countries is significant – the cost of surgery in India is one-tenth of that in the US or Western Europe.

If we are to consider our potential in terms of numbers, then India's healthcare market share is currently USD 65 billion. The hospital supplies and health care equipment segment is believed to be around USD 4.5 million. Health care delivery, i.e. hospitals, nursing homes, diagnostics centers and pharmaceuticals, constitutes 65 percent of the overall market. India will require around 6 to 7 lakh additional beds over the next 5 to 6 years, which creates an opportunity of more than USD 25 billion. According to the Department of Industrial Policy and Promotion, India's hospital and diagnostic centers attracted foreign direct investment worth nearly USD 30 billion between April 2000 and January 2015. Medical tourism in India is expected to touch USD 2 billion by the end of 2015. The telemedicine market in India, which was valued at USD 7.5 million in 2012 is expected to touch USD 18.7 million by 2017.

Of further note is the increased success rate of Indian companies in getting Abbreviated New Drug Application (ANDA) approvals. There are also plenty of opportunities in the medical devices industry as India has become one of the leading destinations for high-end diagnostic services. There is significant scope for enhancing healthcare services considering that healthcare spending as a percentage of GDP is rising. Rural India, which accounts for over 70 per cent of the population, is set to emerge as a potential demand source. Indian consumers have become more health and quality conscious. The bottom line, therefore, is that there are vast opportunities for investment in healthcare infrastructure in both urban and rural India.

In keeping with this optimistic outlook, I believe that this issue will enlighten all of you and give you valuable insight on a few of the topics mentioned above.

Happy Reading!

Dr. Rajiv Yeravdekar
Dean, Faculty of Health & Biomedical Sciences
Symbiosis International University
Dear Readers,

Greetings from Symbiosis!

Any industry, focused on growth and advancement, rigorously seeks out the information, as how technology is leveraged by the stakeholders for providing a safe and quality care to the dependent clientele. It is the technology, quite often becomes the differentiator between the trendsetter and the traditional business set up.

I am extremely happy to be associated with the publication of Symbiosis Health Times on the occasion of XVII National seminar on Hospital and Healthcare Management, Medico legal Systems and Clinical Research. This issue has made an attempt to bring close association between faculties from the different verticals of healthcare as well as industry experts.

The article on palliative care highlights the stress in improving the quality of life of rising aged population at an affordable cost. The HR managers in any corporate world are always engaged with eliminating the redundancy and at the same time optimizing the scarce resource by enhancing the job satisfaction at all levels. The article on factors affecting job satisfaction level among hospital staff is a real eye opener.

Articles and abstracts conveying various issues on creating awareness as diabetes, Quality enhancement through lean six sigma, inventory control in hospital, team building in hospital, personal protective equipment in dental practice, knowledge bytes and wellness quotes are worth reading.

I am sure, that the information given in this publication, makes an attempt provide an insight, about the happenings in the healthcare industry.

I personally thank my team mates from all the committees for making the journey successful.

**Dr. (Brig) A P Pandit**
Professor, Symbiosis Institute of Health Sciences
Editor

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**From the Editor's Desk**

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Abstracts
Introduction: Substantial improvement can be brought about in the hospital inventory and drug expenditure by inventory control techniques. These include Always Better Control (ABC) and Vital Essential Desirable (VED) analysis. The present study was planned to identify the drug categories which need stringent management.

Materials and Methods: The ABC and VED analysis of the drugs used by Guru Nanak Ramgharia Sikh Hospital, Nairobi, Kenya was conducted for the financial year 2012-2013 to identify the items needing stringent management control.

Results: The total number of the items used by the medical store was 3256. The total annual drug expenditure (ADE) was Rs. 194,208,967. By ABC analysis, it was found that 8.04%, 28.13% and 68.82% items belonged to A, B and C category respectively. Also, it showed the composite accounting for 70.06%, 25% and 5% of AV, BD & CE items. VED analysis showed that 36.54%, 56.32% and 7.12% were in V, E, and D category items respectively.

Conclusion: The study depicted the items belonging to category I which requires top managerial control, also the items belonging to categories II and III which require control by middle and lower managerial level respectively in order to have a better managerial control.
Introduction: Job satisfaction level of hospital staff can be a concern for management of hospital & there are various factors which can influence this level. Herzberg described them as hygiene factors & the motivators. The need of this study is to determine satisfaction level of staff & how intrinsic factors & extrinsic factors affect level of satisfaction among hospital staff.

Aims & Objectives: To determine level of job satisfaction among hospital staff & to study effect of intrinsic & extrinsic factors affecting job satisfaction among hospital staff.

Methodology: A job satisfaction scale & self administered questionnaire was administered among hospital staff after they consented to participate in this study (N=70). 62 responses were received. Frequency & percentage distribution analysis was done for job satisfaction, intrinsic & extrinsic factors. Spearman's Correlation coefficient & stepwise regression analysis was used for analyzing relation between these factors & job satisfaction levels.

Results: Job satisfaction was high among hospital staff, the total score being 20.89 ± 3.05. The intrinsic factors or motivation factors which affect the job satisfaction the most at 0.01 significance level are training, enjoying work, personal growth, getting recognized by senior or supervisor. All extrinsic factors or maintenance factors except excessive workload, highly correlate with job satisfaction level at 0.01, the salary & working environment being at top to influence job satisfaction. The extrinsic factors ($r^2=0.7, p<0.0001$) were more important than intrinsic factors ($r^2=0.3, p<0.0001$) to influence the job satisfaction among hospital staff.

Conclusion & Implications: This study concludes that maintenance factors were found to influence job satisfaction level more than motivation factors. Management should concentrate more on existence of extrinsic factors in order to maintain a reasonable level of satisfaction amongst staff as these plays an important role in retention of manpower in an organization.
Introduction: Information technology is increasingly recognized as an important tool for improving patient safety and quality of care, especially by promoting the practice of evidence-based medicine. Of all the health Information Technology (IT) in current use, the Electronic Medical Record (EMR) has the most wide-ranging capabilities and thus the greatest potential for improving quality.

The Electronic Medical Record (EMR) is an enabling technology that allows physician to pursue more powerful quality improvement programs than is possible with paper based records. However, achieving quality improvement through EMR use is neither low-cost nor easy. Though the benefits of using electronic health records (EHRs) are well-documented; however, a number of implementation barriers have impeded their widespread use.

Methodology: The main objective of this project is to explore, categorize, and analyze barriers perceived by physicians to the adoption of Electronic Medical Records (EMRs) in order to provide implementers with beneficial intervention options. To identify the various barriers a cross sectional survey was conducted among 50 doctors practicing across different set-ups in Ahmedabad and Vadodara. Using a structured questionnaire the data was collected indicating perception of doctors towards the usefulness of EMR and the challenges faced by them in its adoption.

Results: The findings of the study indicate that all doctors were found comfortable with use of technological gadgets. But still major percentage (74%) is not using EMR due to various reasons. 85% doctors were aware about the basic terms like HMIS (Health Management Information Systems), EMR, Cloud computing. While about 50% were aware about CPOE (Computerized Physician Order Entry) and PACSs (Picture Archiving And Communication System). Also a large proportion of doctors (72%) are neither formally trained for using EMR nor are been updated or reinforced for the same.

Conclusion: Therefore there is huge need of training and exposure for the doctors to make them knowledgeable about IT application in health. They also need to be enables with necessary skills and reduce the 'resistance to change' in this regard.

Around 42% doctors were neutral about their level of motivation towards using EMR. Also their neutrality was noted with regards to their choice of devices to be used for EMR. A huge number of doctors (62%) are still into paper based way of record keeping. Therefore looking into the challenges or barriers causing this situation we realize that the major hurdles are the lack of knowledge and proficiency in computer skills (56%) and also the deficiency of appropriate training (42%) for the doctors. However though financial constraints was not majorly reported, but the factors like non-existence of uniform standards (48%), non-compatibility towards technology and technical issues (62%), and dilemma towards security and privacy concerns are highly suggesting of the needs to take initiatives for reducing 'resistance to change' for encouraging the doctors to use EMR confidently.
Introduction: The goal of any hospital supply system is to ensure that there is adequate stock of required items, so that uninterrupted supply of all essential items is maintained. The management of inventory pares the avenues for optimizing the costs of services besides making available materials to the patients which increase the quality of health care services.

Of all the inventory control systems ABC and VED matrix is most suitable for medical stores. Hence the coupling of ABC and VED matrix for inventory in a hospital. ABC analysis popularly known as "Always Better Control" is a very useful approach to material management based on Pareto's principle of "Vital few and trivial many" based on the capital investment of the item.

Objective: An attempt was made to evolve a selective inventory control mechanism thorough ABC, VED and ABC-VED matrix analysis.

Methods: The study analyzed the annual consumption; the expenditure incurred for the dental consumables and developed a matrix based on ABC and VED analysis to narrow down the group of consumables for managerial monitoring.

Result: Of the 215 consumables used 13.5%(A category), 21% of the consumables (Category B) and 65.5%(C category). The VED analysis found 47% consumables as vital, 37.6% as essential and 15.4% as desirable category. ABC-VED matrix analysis categorized 51.6%, 33.5% and 14.8% of drugs as category I, II and III respectively.

Conclusion: Categorization by the ABC-VED coupling matrix model helps to narrow down on fewer consumables. The management of Category I consumables was monitored by top management resulting in better control on the annual expenses and at the same time making available the vital Category II by middle and Category III at lower managerial level.
Introduction: A growing line of research indicates a positive relationship between a healthcare organization's culture and various performance measures. In these studies, a key cultural characteristic is the emphasis placed on teamwork. None of the studies, however, have examined teamwork culture relative to patient satisfaction, which is now one of the most widely used performance measures for healthcare organizations.

Aim: Study of Effect of Team Work culture on patient satisfaction.

Objectives: a) To find out the relationship between teamwork culture of hospitals and patient reports of their satisfaction with the care they received; To study the impact of incorporating nurses in the patient care management team.

Material and Methods: The study setting was the Veterans Health Administration (VHA), Department of Veterans Affairs. The study sample consisted of 125 VHA hospitals for which independent and valid sources of data for culture and patient satisfaction were obtained. Each hospital's culture was assessed relative to 4 dimensions: teamwork, entrepreneurial, bureaucratic, and rational. Patient satisfaction data were studied for inpatients only.

Results: Results from multivariate regression analyses indicated a significant and positive relation between teamwork culture and patient satisfaction for inpatient care, and a significant and negative relation between bureaucratic culture and patient satisfaction for inpatient care. Additional analysis revealed an almost 1 standard deviation difference in patient satisfaction scores between hospitals in the top third and bottom third of the distribution for the teamwork culture measure.

Conclusion: Study results suggest that hospitals and possibly other healthcare organizations should strive to develop a culture, emphasizing teamwork and de-emphasizing those aspects of bureaucracy that are not essential for assuring efficiency and quality care.
**Introduction:** Diabetes Atlas published by the International Diabetes Federation (IDF) says that there were estimated 40 million persons with Diabetes in India in 2007 and predicted to rise to almost 70 million by 2025. It is estimated that every fifth person with Diabetes will be an Indian, earning India the distinction of being termed as “Diabetes Capital of the World”. Indians get Diabetes on average 10 years earlier than their Western counterparts. The annual cost for India due to Diabetes was about $38 billion in 2011. According to the WHO, if one adult in a low-income family has Diabetes, as much as 25% of family income may be devoted to diabetes care. Yet people don’t view Diabetes seriously. All these facts lead to demand for urgent steps to be taken in the form of lifestyle modifications and awareness to prevent Diabetic patient from complications.

**Objectives:** This study was undertaken with the aim to assess awareness regarding Diabetes Mellitus in Diabetic patients and event and factors associated with the level of knowledge.

**Methods:** A survey study was carried out with 100 Diabetic patients in Kayachikitsa (Medicine) department of A & U Tibbia College & Hospital, Delhi, India. Demographic details and 10 questions related to the patients' knowledge of the disease, its complications and self-care practices were asked. The scores were analysed against the variables to determine the factors affecting the scores. Appropriate statistical test was applied for data analysis.

**Results:** Out of 100 patients 49% were male and 51% were female with a mean age of 53.59±11 years. The average scores on all three aspects were observed to be 64.95 %. Poor knowledge (13%) was observed regarding HbA1c. Only 48% knew that Diabetes is a lifestyle disorder. Only 40% of respondents were aware of self-monitoring of blood glucose.

**Conclusions:** Education and counseling regarding all aspects of Diabetes is essential. An emphasis should be made on systematic and continuous education of medical and paramedical personnel, so that better care and education can be provided to the patients.
Articles
An observational study on ICD-10 and recommendations for its application

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Introduction

Human beings by their very nature find it easy and practical to communicate in words and signs, rather than numbers, since times immemorial. With the advent of computer systems and data overload, it becomes difficult to store retrieve and analyze data in textual format. Just the reverse, it is easy for software programs to deal in numbers instead of text.

Clinical coding is a scientific methodology of converting data related to Diagnoses of diseases, Causes of Deaths, Medical procedures and other health related matters from textual form to numerical or alphanumerical form, basis widely agreed and accepted classifications. This facilitates ease in recording, storage, retrieval and analysis of medical data as compared to the data in textual form. Medical classifications were first suggested and started around 17th and 18th centuries by the then well-known personalities like Florence Nightingale, John Graunt, William Farr, Dr. Jacques Bertillon and others, basically classifying the Causes of Deaths in the population.

The original version of classification underwent several upgrading, refinements and modifications over the centuries and the current version is the ICD 10 being used in India, implemented in India since the year 2000, though not uniformly across the country in all hospitals and Health services related organizations.

The name of ICD - International Statistical Classification of Diseases and Related Health Problems was given to this classification by World Health Organization. ICD is a health care classification system, which provides a system of diagnostic codes for the classification of diseases, including a wide variety of signs, symptoms, abnormal findings, complaints, social circumstances, and external causes of injury or disease.

This system facilitates the mapping of health conditions to corresponding generic categories together with specific variations, assigning a designated code for each of these health conditions, up to six characters long. Thus, major categories are designed to include a set of similar diseases or a group of diseases.

Hospital records provide a huge data base and systematic coding of medical records and analysis of this data base is extremely important for understanding and improving the public health situation of the country, by suitably and appropriately planning hospital loads and planning necessary interventions by public health authorities.

Analysis of mortality records of a facility will indicate those diseases and health problems which are the underlying causes of death in the particular area and will alert the public health authorities on the existing situation for necessary preventive, curative and rehabilitative actions.

Accurate cumulation of the health records from different hospital data bases are possible only if these records are coded uniformly using ICD 10. Such cumulated data base will reveal the country situation on the whole and is a necessary evidence for policy making. In the absence of a uniform classification of diseases it is difficult to use the data satisfactorily and accurately, for statistical analysis of illnesses or cause of death.

Hence 'A provisional classification of diseases and injuries for use in compiling morbidity statistics was prepared in 1942 in London by the Registrar General.' It was prepared with the purpose of providing a scheme for collecting and recording statistics of patients admitted to hospitals in the United Kingdom, using a standard classification of diseases and injuries, and was used throughout the country by governmental and other agencies.
The ICD underwent periodic revision and is currently in its tenth revision, the ICD-10. This version was developed in 1992 to track health statistics. ICD-11 is being planned for implementation in 2017. There are several advantages of a uniform statistical nomenclature and classification. There are many instances where, the diagnosis of the same disease has been described in three or four terms, and each term has been applied to as many different diseases. There are vague, inconvenient names being employed, or complications have been registered instead of primary diseases. Such use leads to skewing of the available data on health parameters and also causes confusion and errors in the analysis of health parameters.

Several countries have realized the disadvantages of textual data and have accepted to codify the medical data into ICD-10. Out of 192 member countries of WHO in the world, 109 countries have implemented ICD 10. The other countries have yet to implement ICD-10, and the World Health Organization has provided a deadline for 1st October, 2015 to be ICD-10 Ready state.

It is worth considering the various reasons for non-compliance of such an important classification as ICD-10 which was introduced by the World Health Organization in 1992-93 and a developing country such as India having embraced the classification. Some of the important reasons that came out during the study by CBHI are listed below, which when attended to, will help in early and easy implementation of ICD in India.

Currently, this being not implemented widely across the country, there is poor demand for coders and hence the newer generation has not realized the potential of this specialization.

Several Indian BPOs and KPOs (Medusind Solutions) are attracting business from hospitals and Health Care Centers across the world for codifying the medical notes into ICD, DRG and CPT codes. This has been made possible due to availability of good quality knowledge workers in India as compared to those in the developed markets.

Towards achieving the desired goal, a workshop was carried out by Government of India for Improving and Strengthening Use of ICD-10 and Medical Record System in India. A case study (2004-2005).

**Aim of the study :**

The study has been conducted with an aim of studying & reviewing of ICD 10 Coding & identify the reasons for poor adoption in Indian health care setting.

**Observation & findings**

Though the World Health Organization came up with ICD 10 as early as 1992 and India initiated the implementation program in the year 2000, even today the implementation and use of ICD is not 100%. Several hospitals have been using ICD 10 but a majority of the hospitals have found it difficult to fully implement the same.

There are several reasons for non-compliance.

Lack of man power, lack of training for use of ICD, lack of trained resources in some of the Government Hospitals and Doctors writing the medical notes or medical summary not using the standard or common terminology and use of self-designed abbreviations to save time, are some of the major restraints. limited resources for carrying out the day to day activities in treating patients, which keeps doctors busy enough and sometimes overburdened with activity of treating patients that they overlook the importance and the need of maintaining proper documentation of diagnosis in details and use several abbreviations to reduce time spent in documentation. As in many of the hospitals the responsibility of performing the coding is laid on the Medical Records Office which may not be fully geared up with the required resources. In addition the abbreviations and non-standard terminology used by treating doctors, adds to the difficulties faced by Medical Records personnel in converting text into codes.

Another important factor is the resource crunch in the Medial Records Office staff and lack of training itself for the Medical Records personnel, to carry out their day to day activity of maintaining textual records that they run short of time to add the activity of coding to their list of daily tasks.
Also, a vast majority of 'for profit' nursing homes or small hospitals operate almost at breakeven point and hence find it difficult to add resources for the use of ICD coding.

Hospitals and Nursing homes can use this trick to improve compliance. Prominent display of important ICD 10 codes relating to each department and in each of the wards of the departments so as to make the codes readily available for the doctors while writing or dictating notes for medical transcription. This will avoid duplication of efforts as well as errors in transcriptions.

Outsourcing for ICD coding is available, as many Indian BPOs and KPOs are doing ICD coding for hospitals and Health Organizations across the developed countries where ICD coders are very expensive to employ as full time employees. These BPOs and KPOs, while attracting hospitals from developed countries for Medical Transcriptions also provide ICD coding along with CPT (Common Procedure Terminology) and DRG (Diagnoses Related Classification) classifications and grouping with universally acceptable turnaround times.

**Major Recommendations**

All Government and Private health and medical institutions in the country should essentially use ICD 10 in their records and reports and the same should be ensured by all concerned authorities through well designed guidelines, directives and continued monitoring.

All medical and health institutions, including hospitals of any size, in the country should equip themselves with WHO publication on ICD 10 (3 volumes) as a reference and ICD 10 codes relevant to each medical specialty be prominently made available in concerned wards in the hospitals. No medical record should remain without ICD 10 code for the diagnosed disease.

CBHI should be appropriately further strengthened and equipped to efficiently function as National Nodal Institute on ICD 10 with the objective of further strengthening use of ICD-10, its continuous monitoring, evaluation and capacity building including creation of Master-Trainers.

WHO may consider setting up of WHO Collaborating Centre on Family of International Classification of Diseases and Related Health Problems for SE Asia Region, on priority basis, at CBHI, Dte. General of Health Services, Govt. of India, New Delhi

**Manpower Capacity Building for ICD 10 use**

All State/UT authorities should formulate a plan for regular orientation training on the use of ICD 10 and every medical and health institution should make efforts to keep their medical/nursing/paramedical staff duly oriented on ICD 10 through well drawn and regularly conducted Orientation Programs in their institutions.

The syllabi and curricula of undergraduate and postgraduate medical as well as paramedical courses in India should appropriately cover the teaching on ICD 10 and its appropriate use.

**Operational Plan for implementation of ICD 10, its Monitoring and Evaluation**

States/UTs should set up a task force for time-bound implementation and monitoring of ICD 10 use. They should maintain a database of various medical and health institutions using/not using ICD 10 and ensure that all these institutions use ICD 10.

WHO may develop offline software package for ICD 10 coding of disease nomenclatures and provide it for its use in various medical/health institutions in India. Computerized user manual/self-learning module for ICD 10 may be prepared and circulated through website of CBHI. Further, online help and a newsletter on ICD 10 aspects may be established through CBHI website. CBHI should make an inventory of all such vendors which are involved in designing the health information system using ICD 10 and share the list with States/UTs for getting the institution specific hospital information system designed through a suitable agency.
Directives need to be issued from heads of the medical/health institutions to all concerned Medical / Nursing / Paramedical personnel of all departments in the medical/health institutions for ensuring completion of medical records of both outpatient and inpatient departments, and for clearly writing diagnosis using standard medical terminology, while avoiding the abbreviations.

Data on morbidity/mortality based on Medical Records should be regularly compiled, analysed and should form the part of various documents/reports of the medical/health institutions including their annual report.

There should be regular visits / interaction by CBHI to facilitate the speedy implementation of ICD 10 in the States/UTs.

**Strengthening Medical Record Unit/Department and Computerized Medical Record System**

The medical record system in each medical/health institution should be computerized with appropriately designed software for both outpatient and inpatient records, while using meticulously designed formats, local area network as well as internet facility in all the departments/wards of the medical/health institution.

The medical record department in each medical/health institution should be given highest priority and be headed by a senior level expert/officer of the same rank as in other existing technical departments in the same institution. The medical record department should be equipped with requisite number of trained personnel of different categories like medical record officer, Dy. Medical Record Officer, Assistant Medical Record Officer, Sr. Medical Record Technician, Medical Record Technician and other support staff in order to efficiently handle and manage the medical record system of the institution. The standardized staffing pattern of medical record department, keeping in view the bed strength in an institution be worked out by the concerned State/UT authorities and medical record departments in various medical and health institutions be equipped accordingly.

All the technical functionaries in the medical record department be trained through the prescribed training programs and such training personnel should not be diverted to other departments. The contribution of medical record department functionaries in any of the research papers be duly acknowledged.

There should be clear guidelines for period of retention of medical records for both outpatient and inpatient departments and after the said period, they must be destroyed. This will provide adequate space for the records. Central computers have been introduced in some of the hospitals to enhance the efficiency of ICD coding & recording.

Photostat machines have been provided Junior Medical Record Technicians and Chief Medical Record Officers have been trained for ICD coding Training centers should be introduced, either private or Government so that ICD training can be imparted to more and more individuals making ICD coding widely prevalent in the country

Importance of ICD 10 coding is emphasized through monthly bulletins of Medical Record Dept. Training of doctors and MRD personnel in ICD 10 Doctors to be made aware of problems created by abbreviations Strict instructions and directions given to all to implement ICD 10 and no file without ICD 10 code will be taken by MRD

Prominent display of important ICD 10 codes relating to each department and in each of the wards of the departments so as to make the codes readily available for the doctors while writing or dictating notes for medical transcription. This will avoid duplication of efforts as well as errors in transcriptions.

A form can be developed to be attached on the front of case sheet which will be signed by consultants, Sr. Resident in which columns for provisional final diagnosis and ICD 10 coding are there.

Maintenance of Clinical Records Act (MOCRA) needs to be brought out.

**To summarize the major limitations faced by some of the hospitals:**

1. Manpower resources (Medical Doctors as well as non-medical staff) with Knowledge of ICD 10 coding
2. Computerization of Medical Records
3. Training in operating computers
4. Development of software programs such that unless ICD 10 code is filled, discharge summary will not be generated as such ICD 10 coding is being done.

5. Management of Medical Records Office to gear up for implementation of ICD-10. Medical Record Departments are not given the due priority, the implementation has not been taking place and thus advised that time has come now to accord the due priority to Medical Record Departments and to provide the necessary financial and technical inputs to ensure the implementation of ICD 10.

6. Non availability of clear diagnoses and treatment in the medical papers sent to Medical Records Office.

7. Due priority to Medical Record Departments and to provide the necessary financial and technical inputs to ensure the implementation of ICD 10.

Conclusions

Implementation of ICD 10 is a very important factor in improving the country's Health Care programs and is beneficial to all the stake holders.

Hospitals and Health Care facilities across the country should develop a road map to fully implement ICD-10 at least by 1st October, 2015 which is the final target deadline issued by WHO for all countries to implement ICD-10 and use it fully in all medical records from the said date.

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Introduction

Two billion people are now affected by hidden hunger – almost a third of the world's population.¹² This hidden form of malnutrition is caused by a deficiency of vital micronutrients (vitamins, minerals and trace elements) in the body. Deficiencies of vitamin A, iodine and iron are the three forms of malnutrition prioritized by the international community; zinc deficiency is also being targeted. These problems are particularly widespread and have serious consequences. The human body needs only very small amounts of micronutrients but it cannot produce them itself; they have to be supplied through diet. Individuals become deficient in micronutrients when they do not have enough to eat or when their diet is insufficiently varied or unbalanced. The purpose of the article is to provide policy makers, agronomists, food and nutrition security planners, programme implementers and health workers with the information needed to better understand, promote, support and implement food-based strategies to combat micronutrient deficiencies in their respective countries. The article will appeal to professionals in the sectors of food security, nutrition, public health, horticulture, agronomy, animal science, food marketing, information, education, communication, food technology (preservation, processing and fortification) and development.

The public health importance of micronutrient malnutrition in the developing world was recognized and acknowledged globally in December 1992, at the FAO/WHO International Conference on Nutrition, where representatives of 159 countries agreed to eliminate the iodine deficiency disorders and vitamin A as public health problems by the end of the century and to substantially reduce Fe-deficiency anaemia by one-third of the 1990 levels with priority given to food based strategy. Food based approaches were also emphasized at the Policy Conference on Ending Hidden Hunger (Montreal 1991), held to pursue the micronutrient goals of the World Summit for Children (New York 1990). At these conferences, policy makers and planners recognized that short-term interventions have a role to play in providing specific target groups with vitamin and mineral supplements for varying periods of time. However, it was stressed that only food-based approaches can prevent micronutrient deficiencies in a sustainable manner for most of the population.³

Approaches to combat micronutrient malnutrition:
There are three main food based approaches to prevent and combat vitamin and mineral deficiencies, which can be deployed individually or in combination: short-term supplementation; medium-term food fortification; and a long-term focus on balanced nutrition (dietary diversification). These approaches to reducing malnutrition are complementary rather than mutually exclusive. A coherent and multi sectorial approach including health, food security and agriculture is, therefore, of prime importance.

Benefits of food based approaches:
They are preventive, cost-effective and sustainable.
They can be adapted to different cultural and dietary traditions and locally feasible strategies.
They are broad-based, aiming to improve the overall quality of the diet of a population; they can address multiple nutrient deficiencies simultaneously.
Because the amounts of nutrients consumed are within normal physiological levels, the risk of toxicity is minimized.
Food-based strategies support the crucial role of breast feeding and the special diet and care needs of infants and young children.
Food-based approaches foster the development of sustainable, environmentally sound food production systems.
Agricultural planners are alerted to the need to protect the micronutrient content of soils and crops.
Food-based strategies build partnerships among governments, consumer groups, the food industry and other organizations to achieve the shared goal of overcoming micronutrient malnutrition.
It provides wide population coverage. Combined nutrient fortification can address multiple deficiencies. It encourages industries to be socially concerned and to add nutritional value to their products. It provides opportunities for consumers to become involved in food quality issues and creates demand for safe, wholesome food.

**Dietary diversification:**
Both cereal staples and household diets can be manipulated to enhance the content of micronutrients and/or alter the levels of absorption modifiers to improve micronutrient bioavailability. Diversified diet will provide different vitamins and minerals and helpful to mitigate the micronutrient requirement. Any programme that increases the production of micronutrient-rich foods is likely to have a beneficial effect on the micronutrient status of a population. The implementation of such a programme requires that certain conditions such as water availability, appropriate fertile soils, and seeds and seedlings of satisfactory quality are met. It also requires a strong commitment by the agricultural extension service to disseminate techniques of small-scale fruit and vegetable production. This implies that agricultural training and extension programmes and research institutions pay sufficient attention to these foods. Produce from home gardens may be consumed primarily by the family or sold, partially or entirely, to commercial markets in large urban areas. The produce may also be sold for export. When existing demand for fruits and vegetables is not met by the available supply, the result is higher consumer prices. The poor suffer more from this market situation because they are not able to afford the higher prices, nor can they afford expensive animal products. Small scale community vegetable and fruit gardens and school-based gardening programmes will increase the availability of seasonal fruits and vegetables.

Planners often pay less attention to the commercial production of micronutrient-rich foods because the rural poor, who are often considered the major target group for nutrition interventions, usually consume limited amounts of commercially produced foods. Government authorities concerned with the commercial sector are generally unaware of nutrition issues. Horticultural products (fruits and vegetables) are increasingly being commercialized in many developing countries. They often provide high financial returns per hectare for fertile soils located near large markets. New export markets and growing urban markets enable improved economies of scale. Different kind of oil seed production and palm oil production in the underdeveloped countries may be helpful for micronutrient availability. Beverages like vitamin C rich fruit juices are in demand to improve the bioavailability of iron. The micronutrient level can be maintained by improving food storage, preservation, using food safety methods and by improving the food preparation methods at home. The micronutrient levels can also be increase by proper plant selection and breeding. The intake of micronutrient can increase by using different kinds of animal foods.

**Food fortification:**
Fortification is defined by the *Codex Alimentarius* as the addition of one or more essential nutrients to a food, whether or not it is normally contained in the food, for the purpose of preventing or correcting a demonstrated deficiency of one or more nutrients in the population or specific population groups. Fortification is synonymous with enrichment. Restoration means that nutrients are added to a food to compensate for the loss of nutrients during processing. Generally, food fortification is undertaken at the industrial level, although food fortification can also take place at the household or community levels. Mass fortification refers to the addition of micronutrients to foods commonly consumed by the general public (such as cereals and condiments), which is instigated, mandated and regulated by the government sector. Universal fortification refers to the fortification of foods consumed by animals as well as humans, with iodization of salt as the main example. Targeted fortification programmes also exist, for example the distribution of biscuits fortified with a certain number of vitamins and minerals in school food programmes. Furthermore, fortification of some foods (e.g. wheat flour) with specific nutrients at specific levels may be either mandatory (legislated through governments) or voluntary. The fortification vehicle can be either a staple food, or a more-processed commercially-available food, and many have been tried.

Fortification of foods is one intervention for the prevention and control of micronutrient malnutrition, along with other food-based approaches and supplementation, the mix of interventions depending on the local situation, experience, commitment and resources, and infrastructure. Fortification has the advantage of requiring relatively less change in consumer behaviors and food habits than the other interventions, although this approach does not mean that nutrition education and social marketing can be ignored. Without convincing consumers and policy makers of the need and benefits of fortification, its sustainability will always be at risk. The World Bank (1993) has identified micronutrient interventions in general and food fortification in particular, as amongst the most cost-effective of all health interventions.
and as a major factor in the control of the micronutrient deficiencies in the industrialized world. In the past fortification efforts have been less effective, both in terms of start-up and sustainability, in developing countries compared with the more industrialized world. However, in the last few years the experience in many countries of Latin America, especially with vitamin A in sugar and with Fe and B-vitamins in cereals indicates the potential for considerable expansion of fortification as an approach to address micronutrient malnutrition in the developing world. Indeed, fortification of appropriate food vehicles is being used as a public health intervention in many developing countries. Policy support, feasibility and safety, multiple sector involvement, economic and marketing incentives, information, education and communication, monitoring, sustainability and food regulatory system are the key elements of food fortification process.

Fortified food is also important in crisis situations. In situations of fragility triggered by economic crises, natural disasters or long-term violent conflict, diet is often inadequate and unbalanced, so food fortified with vitamins or minerals is distributed to prevent malnutrition. This distribution of fortified foods in crisis situations is in line with the objectives of the United Nations. Where local markets can supply an adequate variety of food, dietary diversification can also be promoted by means of cash transfers or vouchers.

The use of iodine fortified salt in India is mandatory under the National Iodine Deficiency Disorder Control Programme. In 2000, the Darjeeling district of West Bengal became the first place in India to fortify wheat flour. Now it is estimate that 2.2 million tons of wheat flour is being fortified every year in India in the states of Delhi, Rajasthan, Madhya Pradesh, Andhra Pradesh, Kerala, and West Bengal. This amounts to 12% of the industrially milled wheat flour in the country. Flour fortification is supported by the government of India, several state governments and their ministries and departments dealing with cereal grains and food distribution. Active involvement of international agencies, national health and nutrition research institutions, and flour milling professionals have contributed toward wheat flour fortification.

Supplementation:

Oral supplements in capsule, tablet or syrup form provide immediate relief to vulnerable populations and age groups with special micronutrient needs (eg, pregnant and lactating mothers, preschool children). Certain micronutrients, such as vitamin A, can be provided as high-dose supplements twice per year. Most other vitamins and minerals (eg, iron, zinc, iodine) need to be provided in daily doses. In some cases supplementation for women during adolescence and through the childbearing years, especially during pregnancy, needs to be continued indefinitely. Food supplements are highly concentrated vitamins and minerals produced by pharmaceutical manufacturers in the form of capsules, tablets or injections and administered as part of health care or specific nutrition campaigns. Medical staff working for national health services, supported by organisations such as UNICEF, distributes vitamin capsules and iodine and iron tablets widely to infants, women of child-bearing age and women who have given birth without prior assessment of their individual needs. The World Bank estimates that the per capital cost per unit is low: a dose of vitamin A, for example, is estimated to cost between USD 1.00 and USD 2.5 per capita. The cost of iron is put at between USD 0.5 and USD 3.17 per capita. The greatest cost-benefit effect comes from giving supplementary vitamin A to children under the age of two, because the damage caused by micronutrient deficiency in the early years of life is irreversible. The United Nations' 'Scaling Up Nutrition' (SUN) initiative refers to the unique 'window of opportunity' represented by an individual's first thousand days of life, starting from conception. However, older people, displaced persons and refugees may also suffer specific deficiencies.

In severe deficiency diseases supplementation is the effective tool for treatment. Evidence has shown that the rate of conversion of -carotene in fruits and vegetables to retinol is less than desired, young children cannot eat enough fruits and vegetables to meet their Vitamin A requirements. This limits the effectiveness of dietary diversification as a means of delivering Vitamin A. West and colleagues (1999) showed in a double blind cluster randomized trial that weekly low dose Vitamin A supplementation (7000μg of retinol equivalents) in malnourished pregnant women in Nepal reduced maternal mortality by 49%. Thus weekly supplementation could have a major effect on mortality in pregnant women in developing nations. Indian studies revealed that six monthly dosing of children between the ages of 6-11 months with Vitamin A (100,000 IU) and children 12-59 months (200,000 IU) has been found to lower the incidence of keratomalacia by about 80%. A community trial of Vitamin A administration alongside polio vaccine in house to house campaigns showed that the incidence and severity of measles infection reduced following administration. At present in India iron, vitamin A supplementation, supplementary feeding programme and mid-day meal programme is running to fulfill the nutrient requirement. Iron supplementation has proved more challenging than vitamin A supplementation because the supplement must be taken daily and sometimes has unpleasant side effects; consequently, there have been problems with the logistics of supply and sometimes with compliance among clients. As a result 40% to 60% of the children in most
developing countries continue to suffer from iron deficiency anaemia and many more have functionally significant iron deficiency. In settings where the risk of zinc deficiency is high and where other strategies may be difficult to implement in the short term, the distribution of zinc supplements as prophylaxis may be considered.

**CONCLUSION:**
Reducing and preventing malnutrition requires coordinated global action. Micronutrient deficiencies usually impact on public health and affect entire populations, so action is needed at national and international level. Efforts should be accelerated towards food based strategies, while periodic supplementation should be combined in the interim with these food fortification and dietary diversification intervention programs. Such supplementation programmes should be evidence based, multinutrient in approach and backed up with other complementary public health interventions.

**References:**

Introduction
End-of-life situations are among the most prominent areas of controversy in contemporary bioethics. End-of-life decisions, including limitation of life prolonging treatment, may be emotionally, ethically and legally challenging. Caregivers who question expenditures on futile care and treatment compounded by diminishing resources worldwide can find themselves at odds with patients and family members who stress patient autonomy. Medical professionals know intuitively that certain interventions near the end of life can neither extend life nor improve the quality of life remaining. In addition to medical futility, concerns about international economic pressures and enhanced recognition of patient autonomy lead to questions as to the appropriateness of withdrawing life-sustaining treatment, assisted suicide and euthanasia. [1]

56 million deaths occur per year in the world, 85 % of which are in developing countries. The total number of people affected each year in the world by end-of-life care is about 300 million people, about 5 % of the world's population.[2] This makes quality end-of-life care a global public health problem and the need to conceptualize quality end-of-life care as a public health problem, especially in developing countries like India.

Aim
The authors discuss the medical, ethical, legal, and psychosocial challenges, strategies to quality end-of-life care in India with a focus on available international guidelines, recommendations and practices.

Objectives
Good end-of-life care is based on the understanding that death is inevitable, and a natural part of life.

The main objective of end-of-life care are: to maintain the comfort, choices, and quality of life of a person who is recognised to be dying (in the terminal phase); to support their individuality; and to care for the psychosocial and spiritual needs of themselves and their families. Support for families, if needed, continues after death as bereavement care. End-of-life care also aims to reduce inappropriate and burdensome healthcare interventions and to offer a choice of place of care when possible.

Limitations to quality EOLC in India
In India, the limitations to smooth practice of EOLC results from unawareness of ethical issues, culture of heroic “fighting till the end,” lack of palliative care orientation and legal and administrative prejudices. India scores badly in public awareness of EOLC, due to their reluctance to openly discuss death and dying in all parts of India except in Kerala, where there exists a community-driven hospice service. The growth and acceptability amongst public and professionals has been rudimentary in India. The need for social and legal reform, however, is of vital importance to India for several reasons. There is an unbearable financial burden to the average patient as healthcare expenses are borne mostly by the individual. Lack of appropriate policies for limiting life support make fair distribution of scarce facilities impossible in this populous country. Finally, a technologically lingering death takes away the serenity and dignity accorded to it by the prevailing cultural traditions and beliefs.

There is a lack of adequate researches/studies in India, considering its unique social, cultural, economic and legal complexities on various aspects of EOLC. The Indian physician's attitude, which would appear to favor limitation of therapies, is severely hampered in practice by the lack of safeguards in the form of legal guidance. Reports of the
rates of EOLD in India are scarce. However, LAMA in India often refers to a unilateral withdrawal decision by the family mainly because of unbearable financial and other burdens, especially since the private sector dominates health-care delivery.

Cultural influences and professional factors affect EOLC practices. [3] There are a number of cross-cultural issues like language and communication barriers, communication of 'bad news', locus of decision-making, informed consent, advance care planning, use of 'aggressive' measures, that effect decision making. There are several impediments to change in critical care practices in India: The approach to the patient is generally “paternalistic” as the concept of autonomy is weak in the prevailing cultural ethos. The physician's orientation by his training is only to a curative rather than palliative approach to disease no matter the phase of the illness. The physician is generally fearful of being accused of providing sub-optimal care or of possible criminal liability of limiting therapies. Adding to his dilemma there is a virtual absence of legal guidelines relating to deaths in intensive care units in India. It would appear, based on small surveys that legal anxieties have been the most important factor to obstruct appropriate EOLDs and “good patient death”.

Material and Methods

Indices of measurement
Through end-of-life-care, we aim to minimize interventions that are futile or burdensome and that are not expected to ease symptoms. Towards that purpose, several scoring systems have been in vogue to identify correctly patients who will actually benefit.

End-of-life care requires a superior level of expertise, knowledge and competence in the ICU. It is therefore important for medical, paramedical and mental health professionals to be aware of these issues to provide effective and satisfying end-of-life care to patients. Measuring the quality of dying and death [QODD Score] includes obtaining from patients their preferences about dying and death and comparing these preferences to reports from family members after death. [4,5] This could be a standard instrument to use for clinical, educational, research and quality control purposes in the ICU.

The frailty index is based on the concept that frailty is a consequence of interacting physical, psychological, and social factors. As deficits accumulate, people become increasingly vulnerable to adverse outcomes. The frailty index is calculated as the number of deficits the patient has, divided by the number of deficits considered. [6] American Medical Association (AMA) guidelines mention that in the absence of a clearly articulated standard, physicians may consider the following points to determine if a treatment is medically futile-the goal of the treatment, the likelihood of achieving treatment goal, the risks, costs, and benefits to the patient of pursuing the intervention, compared with alternatives and the individual needs of the patient. [7]

The Quality of Death Index devised The Economist Intelligence Unit's research team scores countries across four categories-basic end-of-life healthcare environment, availability of end-of-life care, cost of end-of-life care and quality of end-of-life care. [Figure 1] the EOLC pathway has been described by Saunders et al [8] and Maher et al.[9]

Discussion and analysis

End-of-life care is that period when life is artificially prolonged for a chronically or a terminally ill patient. A life-sustaining intervention is futile if reasoning and experience indicate that the intervention would be highly unlikely to result in a meaningful survival for that patient. In that case, doctors and family both then, may decide together to replace life-prolonging treatments by treatment that provide relief from pain and facilitate a peaceful, dignified process of dying. In contrast, euthanasia or Physician Assisted Suicide is a situation when a doctor, after great deliberation, induces the death of a patient who requests him for it. While the decision for euthanasia is always unilateral and taken by the individual, the decision for withholding end-of-life care is never unilateral. [10]

The international scenario

World Health Organization defines palliative care as “an approach that improves the quality of life of patients and their families facing the problems associated with life threatening illness, through the prevention and relief of
suffering, by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual'.[11] The recognition of palliative care as an integral part of cancer control policy and the guidelines for morphine in cancer pain relief by the WHO made in the 1990s propelled the national policies of many countries to implement palliative care in the last 20 years.

To this day, very few countries have taken the radical approach of accepting the direct termination of life by a medical practitioner. Most countries stick to the traditional interdiction of voluntary active euthanasia. Countries such as the US have an established tradition of legal experience with this sort of medical decision making, acceptable standards are clearly defined and widely accepted, whereas in Italy, this practice has not taken root yet[12]. In a study in Norway, where Euthanasia and physician-assisted suicide (PAS) are illegal, anaesthesiologists, male doctors and doctors below 50 more frequently reported having hastened the death of a patient and forty-four per cent of the respondents reported that they had terminated treatment at the family's request not knowing the patient's own wish[13] Assisted suicide (AS), not being regulated by law in Switzerland, leads to an influx of people-'suicide tourists'-coming to Switzerland, for the sole purpose of committing suicide, including neurological and rheumatic disease patients.[14][Richmond et al[15] in analyzing the End of Life Choice Bill for New Zealand, discusses that the legislation would make it possible for any person over the age of 18 to request and receive euthanasia, expose medical practitioners who attempted to deter applicants too vigorously to the possibility of legal action on the grounds of attempting to frustrate the applicant's wishes, compromise the ability of practitioners to opt out on conscience grounds, allow the easy circumvention of reporting requirements for each event, provide minimal protection against some people suffering euthanasia without consent or request, and exempt medical practitioners providing euthanasia services from prosecution for any action in the provision of such services, even if they were negligent.

Withholding life-sustaining treatments (WHLST) and withdrawing life-sustaining treatments (WDLST) occur in most intensive care units (ICUs) around the world to varying degrees, and most ethicists and medical organizations state that there is no moral difference between WHLST and WDLST. [16] several studies have been done on EOLC practices.[17,18,19]

**Indian scenario**

End-of-life care requires dealing with challenging issues along various dimensions: physical, psychological, social and cultural especially in India, where end-of-life needs differ according to their belief systems and values relating to life and death in general. In turn, these are influenced by the position they occupy along various dimensions, such as class, religion, caste, community, language, gender. It is therefore important for medical, paramedical and mental health professionals to be cognizant of these factors so as to provide effective and satisfying end-of-life care to patients.

**The recommendations of the Indian Society of Critical Care Medicine** [20] mention that the physician has a duty to disclose to the capable patient or family, the patient's poor prognosis with honesty and clarity when further aggressive support appears non-beneficial. The physician should initiate discussions on the treatment options available including the option of no specific treatment. When the fully informed capable patient or family desires to consider palliative care, the physician should offer the available modalities of limiting life-prolonging interventions.

Limiting factors in improving quality of end-of-life care in developing countries are unawareness of ethical issues, culture of heroic "fighting till the end," lack of palliative care orientation and legal and administrative prejudices.[21] While India is ranked 37th on the quality of death index (a measurement of EOL care in 40 countries),[22] there are areas within this country such as Kerala[23] and Gujarat[24] where palliative care is well established. In India, there is no Policy at a national level on Palliative and EOL Care. Palliative care is mentioned in the National Cancer Control Program, but specific guidelines are lacking. Palliative Care, also needed in other incurable conditions such as AIDS and end stage chronic medical diseases, remain neglected.

Indian laws pertaining to treatment of terminally ill patients are dealt under section 14, 21 of Indian constitution and section 76, 81, 88, 306 and 309 of Indian Penal Code. [25] A recent judgment by the Supreme Court of India has legalized the withdrawal of life support measures in patients in persistent vegetative state.[26] If a patient is 'incompetent' (includes minor, person of unsound mind) and is unable to take decisions for end of life, the doctor has
to take a decision in the 'best interests' of the patient based upon an informed body of medical opinion of 3 experts [preferentially one neurologist, one psychiatrist, and another physician]. [27] Informed consent is undoubtedly necessary when withdrawing life support in a brain dead patients. However, legality and ethics of an informed consent in such cases is controversial.

Method for withdrawal of life support measures may include 'Do not resuscitate order', withholding use of new medications and slow de-escalation of treatment. [28,29]

**Figure 1: Overall country wise Quality of Death Index score**

![Quality of Death Index score graph]

**Table No.1 Measurement frame work for end of life care (Ref.8)**

<table>
<thead>
<tr>
<th>Care pathway /settings</th>
<th>Measures of structure</th>
<th>Measures of Process</th>
<th>Measures of outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiation of discussion, assessment, care planning &amp; choice</td>
<td>Training programs in place for communication skills</td>
<td>Number of clinicians trained</td>
<td>Patient/carer experience of communication with clinicians (views of informal carers-Evaluation of Services-VOICES)</td>
</tr>
<tr>
<td></td>
<td>Training programs in place for assessment of patient’s need. Agreed care plan format</td>
<td>No. of assessors trained No. of patients with care plans and preferred place of care recorded</td>
<td>% of patients for whom preferred place of care is achieved</td>
</tr>
<tr>
<td>Hospital</td>
<td>Senior leadership Discussions at Board level</td>
<td>No. of patients formally assessed by specialist palliative care team</td>
<td>Carer report of experience of care in hospital (VOICES)</td>
</tr>
<tr>
<td></td>
<td>No. of clinicians trained in discussing end of life care Specialist palliative care team</td>
<td>No. of patients dying by following care pathway or equivalent in place Participation in care pathway for dying audit</td>
<td>Results of care pathway for dying audit</td>
</tr>
<tr>
<td></td>
<td>No. of wards trained in care pathway for dying or equivalent</td>
<td></td>
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</tr>
</tbody>
</table>

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### Table No.1 Continute

<table>
<thead>
<tr>
<th>Care pathway /settings</th>
<th>Measures of structure</th>
<th>Measures of Process</th>
<th>Measures of outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambulances</td>
<td>Policies in place regarding Do Not Attempt Resuscitation (DNAR) Policies regarding urgent transfer out of hospital for dying place</td>
<td>Measures to be agreed at a local Level</td>
<td>Measures to be agreed at a local level</td>
</tr>
<tr>
<td>Hospices</td>
<td>No. of hospices/ Beds No. of specialist staff</td>
<td>No. of patients dying in hospices by following care pathway for dying or equivalent in place</td>
<td>Carer report of experience of care delivered in hospices (VOICES)</td>
</tr>
<tr>
<td>Support for Carers</td>
<td>Education and training programs for carers Respite care facilities</td>
<td>No. of carers with a care plan</td>
<td>Carer report of their own experience of support and care (VOICES)</td>
</tr>
<tr>
<td>Bereavement</td>
<td>Education and training for health and social care and widespread provision of Appropriate Information</td>
<td>No. of carers supported by care after death section in care pathway for dying audit</td>
<td>Carers report of their own experience of support and care after bereavement (VOICES)</td>
</tr>
</tbody>
</table>

**Figure 2: The end of life care pathway [NHS UK, NCPC UK]**

![Diagram of end of life care pathway](image)
Figure 2: Continue

Table No.2 Proposed work force groups (8)

<table>
<thead>
<tr>
<th>Group definition</th>
<th>Minimum levels of skills and knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group A</strong> – Staff working in specialist palliative care and hospices who essentially spend the whole of their working lives dealing with end of life care. This includes: Physicians in palliative medicine, palliative care nurse specialists and allied health professionals, hospice pharmacists, senior palliative care and social care staff working in or with hospices.</td>
<td>All staff should have the highest levels of knowledge, skills and understanding through specialist training as part of further specialist registration and/or continuing professional development (CPD). These should include communication skills, assessment, advance care planning and symptom management as they relate to end of life care.</td>
</tr>
<tr>
<td><strong>Group B</strong> – Staff who frequently deal with end of life care as part of their role. This includes: Secondary care staff working in A&amp;E, acute medicine, respiratory medicine, care of the elderly, cardiology, oncology, renal medicine, long term neurological conditions, intensive care, hospital chaplains and some surgical specialties</td>
<td>Staff will need to be supported to enable them to develop or apply existing skills and knowledge to end of life care through CPD, or further specialist training and overcome any personal or team barriers. This group has the greatest potential training need who may be key in the ‘trigger’ discussion at the start of the pathway and with ongoing continuity of care. These should include communication skills, assessment, advanced care planning and symptom management as they relate to end of life care.</td>
</tr>
<tr>
<td><strong>Group C</strong> – Staff working as specialists or generalists within other services who infrequently have to deal with end of life care. This includes: Other professionals working in secondary care or in the community for example, care home staff and extra care housing staff, day centre and social care staff not involved in hospices, as well as domiciliary care.</td>
<td>This group must have a good basic grounding in the principles and practice of end of life care and be enabled to know when to refer or seek expert advice or information.</td>
</tr>
</tbody>
</table>
Recommendations

Interventions required to improve quality of end of life care:

Measurement Indices are basic end-of-life care environment, availability, cost and quality of EOLC. Focal points for improving the quality of end-of-life care are - receiving adequate pain and symptom management, avoiding inappropriate prolongation of dying, achieving a sense of control, relieving burden, and strengthening relationships with loved ones. The first step therefore will be to collect information towards an assessment of existing capacity for delivering end-of-life care in developing countries. The next step will be to strengthen existing capacity. It is recognized that "bottom up" approaches to capacity strengthening, with strong participation from people in developing countries, are more effective than "top down" approaches led only by people from developed countries. Large-scale educational programs for public health workers and for the public, population based strategies to destigmatize death and mainstream it into health systems, and changes in social policies are also required. Quality end-of-life care indicators are required to be routinely included in annual indicators of health system performance. Finally, improvement in quality end-of-life care will require health research and publications, to fully grasp the possible contextual understandings and meanings that patients attribute to their wish to die, how they can be influenced by communication with caregivers and relatives. Research is also needed among different patient groups who face significantly different disease trajectories. There is a need to integrate palliative care into health-care training and the national medical, nursing and allied health council should structure and implement palliative care education into basic health-care training.

Key areas to be focused on

1. **Raise the profile of end of life care**: Hospitals should engage with schools, care homes, hospices, independent and voluntary sector providers to raise the profile of end of life care and to change attitudes to death and dying in society.

2. **Strategic approach to commissioning** led by hospitals is vital because the services required by people approaching the end of life span different sectors and settings. An integrated approach to planning, contracting and monitoring of service delivery should be taken across health and social care.

3. **Identifying people approaching the end of life**. A major workforce development initiative is needed, with particular emphasis on staff for whom end of life care is only one aspect of their work. They need adequate training on identifying those who are approaching the end of life, in communicating with them or in delivering optimal care. Professional regulatory bodies and higher educational institutions will need to be engaged in this endeavor.

4. **Care planning**. All people approaching the end of life need to have their needs assessed, their wishes and preferences discussed and an agreed set of actions reflecting the choices they make about their care recorded in a care plan. The care plan should be subject to review by the multi-disciplinary team, the patient and carers as and when a person's condition, or wishes, change.

5. **Coordination of care**. Within each local health economy mechanisms need to be established to ensure that each person approaching the end of life receives coordinated care, in accordance with the care plan, across sectors and at all times of day and night. Hospitals should develop a central coordinating facility providing a single point of access through which all services can be coordinated.

6. **When to initiate EOL discussion**. Conditions where EOLC discussion can be initiated are: Advanced age coupled with poor functional state due to one or more chronic debilitating organ dysfunction. e.g., end-stage pulmonary, cardiac, renal or hepatic disease for which the patient has received/declined standard medical/surgical options. Catastrophic illnesses with organ dysfunctions unresponsive to a reasonable period of aggressive treatment, Coma (in the absence of brain death) due to acute catastrophic causes with nonreversible consequences such as traumatic brain injury, intracranial bleeding or extensive infarction, Chronic severe neurological conditions with advanced cognitive and/or functional impairment with little or no prospects for improvement, e.g. advanced dementia, quadriplegia or chronic vegetative state, Progressive metastatic cancer where treatment has failed or patient has refused treatment, Post-cardiorespiratory arrest poor neurological recovery after at least 3 days (7 days in case of therapeutic hypothermia), Comparable clinical situations coupled with a physician prediction of low probability of survival, Patient/family preference to limit life support or refusal to accept life support.
Conclusion
The Medical Council of India has included the palliative care in its curriculum by starting a PG course.[24] Quality critical care requires that the practice be well grounded in ethical principles and that the ICU staff is trained in the skills of end-of-life care. A consensus regarding the practices relating to end-of-life care in Indian ICUs should eventually lead to the evolution of appropriate legislation in keeping with the changing needs of critical care practice. More research from Indian perspective will help study the core issues of developing palliative care in Indian setting keeping in mind the ethical, spiritual and legal issues.

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26. Reportable item no. 1A, Court no.6, Section X. Supreme Court of India, writ petition no. 115 of 2009, ArunaRamchandraShanbaug Vs Union of India. Available from URL: www.supremecourtofindia.nic.in/outtoday/wr1152009.pdf..
Introduction
The Lean philosophy originated with the TOYOTA Corporation and involves a set of tools and techniques to improve the effectiveness. In Healthcare, the Lean approach follows a patient's journey through the system to identify steps that benefit patient care in order to eliminate “Waste” or those steps that add no value. Healthcare Management has become a matter of consideration all over the world. This is especially because of health cautiousness among the new generation for providing better health services, all over the world to the patients of all ages, and providing qualitative treatment to the patients for their quality lives. This requires special attention by all concerned, those who work in healthcare industry. With more & more specializations in the healthcare area, equal attention for improvement in the healthcare management is the need of the day.

The Healthcare should have to work on three various areas related to a) Technology b) Human Resource & c) Reduction in cost. All these three areas require the specialized treatment to overcome quality problems with minimum possible costs. There is now consideration of the implementation of the Lean Management System for managerial improvements. The more attention is but necessary by all those organizations which are working in developing countries like India and the Asian countries with the development of the Science & Technology. Unfortunately, we are coming across new challenges before healthcare industry which can only be met out by the use of Lean Management System. Presently this is newer concept in the system of management; however, the critical appraisal of such system with some parameters is but essential. The Medical & Paramedical sectors working in healthcare can be effective, only when they have proper coordination and working with lesser cost and that too for the noble cause to serve poor section of the society. Hence this article presents a view of Lean Management System.

Aim and Objective of the Study
The basic objective of the Lean management is to provide value service to the patient

Discussion and Analysis
What is Lean?
Lean is not a programme, it is not a set of quality improvement tools, it is not a quick fix, it is not a responsibility that can be delegated. It is on the contrary Cultural transformation that changes the working of the organizations. Lean Enterprise is a systematic approach to “Identifying and eliminating waste (Non-value added activities) through continuous improvement by flowing the product at the pull of the customer in pursuit of perfection”.

The activity which is unnecessary or unwanted is termed as non-value activity. These activities should be identified and then simplified, reduced or eliminated. This will reduce the cost of product & the customer will get the product as reasonable price.

By the application of Lean services, the services are provided in best possible manner with less wastage & improvement in quality. Defects, overproduction, waiting time, non-utilization of employees or under-utilization of employees must be brought under control for the control on wastage of resources like manpower, time, material, system & methods.

It is a man who coordinates all activities related to production so proper care of human resource is an essential function of management. Proper selection of personnel, optimum utilization of efficiency, qualitative training & development programme, will form the base for upliftment of the organization. The healthcare industry is related to the provision of quality services to the needy patients and to the poor of the country. The policy of the organization should be pro-poor & Lean management shall make it possible for growth & prosperity of the organization.

With the above explanation, Lean management can be defined as follows:

“An organizations’ s cultural commitment for applying the scientific methods to designing, performing and continuously improving the work delivered by team of the people, measurably better value for patients & other stake holders”
Thus, when organizational culture is changed, it results in reduction in cost & increase in efficiency. Lean management will further improve the quality of work with minimum cost, this is value addition to the product.

The Six Principles of Lean Management

1. Continuous Improvement:
   Japanese management thinkers always work on the principles of continuous improvement (Kaizen). Healthcare management has the regular chance of improvement in product. It is related to the lives of the human being so utmost care is essential while drafting the organizational policies. Replacement of process should have scientific method or base and scope for evaluation. The attitude of the top management should be positive & on the principle that existing policies & process are always subject to improvements. The training & development should be continuous process. Reluctance to change by the senior staff should be avoided.

2. Creation of Value:
   Every management at all levels in healthcare will benefit by the policy of value addition. Reduction in medical errors, reduction in nursing time, increase in operating room turnover, immediate response to casualty & serious patients will add to the value of the processes. Every organization engaged in healthcare should frame its own value stream map (Organization chart). This will help in increasing the efficiency of the manpower, maximum utilization of time & proper utilization of available resources.

3. Proper Explanation of Purpose/Objective:
   Healthcare organizations are complex in their working. Priority of tasks are hence properly defined. Senior management role in Lean management is to provide the priority & tasks to each individual working in the organizations. There should be continuous flow of communications from top level management to lower level management & vice versa. In all healthcare organizations for better understanding, communication & conversation should be following the principle of single pace order.

4. Lean is the respect for the people who do the work:
   Appreciation for achievers is essential. It is not the matter at which hierarchy line they are working. Higher level management must support the improver. Frequent visits to the workplace is essential. Lean has the potential to term the organization into a community of innovators. Various departments such as nursing, flow process, material management, and housekeeping should coordinate & collaborate their work for desired results.

5. Lean is Visual:
   In a lean hospital or clinic, there should be the space for visual centers. This is for the display of relevant data. The measures like staff meeting will help employee to explain their work, application of task & their achievements. Visual tracking center information is ever changing, so, the tools for display should be conveniently used for making possible changes. The displayed things must be facts. This will help to all concerns for providing the information of the organization.

6. The Flexible Approach:
   Processes are designed to obtain the desired results. If there is a shortfall in attainment of the objective related to the processes or goals, there should be an arrangement to change the process or policy. This provision for the adoption of change in a policy is called as Flexibility. The standards are to be set which are to be compared with actual performance. The deviation is to be studied & the possible changes are to be made. Especially, the emergency department should be highly flexible & adoptable as the situation arise.

Why Lean Management in Healthcare?
To avoid the waste of any kind related to manpower, materials, techniques, systems & methods, Lean management will help the organization. The defects are to be minimized or the organization should be having a policy of Zero tolerance defect. These are related to medication, procedure, diagnosis, missing information, wrong paper works, faulty software and lack of standard work. Lean management will frame the policy related to minimization of defects. Overproduction possibility is to be reduced by Pharma industries because it results in wastage as unsold Pharma products too have an expiry date. There should be minimum waiting time for bed assignments, minimum time for the discharge of the patients, minimum time for pathological tastes & results, to avoid any type of delay from admission level to the discharge of the patients.
Lean management provide base for proper use of employee knowledge, skills & abilities of the employees as well as the cost of inventory is reduced and unwanted procedures are controlled by Lean management. Thus, Lean management will serve the poor & needy of the society for whom health organizations have an obligation to perform.

**Teams in Lean Management:**
Management is a team effort & not a function of an individual. Team building process carry much importance in healthcare management. The person, the system & the technology is the base of healthcare organizations. Efficient & skillful persons by means of properly designed systems & the application of latest technology will frame the best possible team in healthcare management. Patient care team with technology based personnel such as X-ray technicians, pathological persons, specialist doctors, availability of medicines will help proper treatment to the patient at the proper time, so this is a team management. Team, and evaluation, solicitation & distribution are the four processes in Team building efforts. The team work starts from admission of the patient and ends with satisfactory discharge of the patient. This is a part of Lean management where the customer/patient is fully satisfied.

**Conclusion**
1. Lean management is an innovative management approach which is successful in healthcare organizations.
2. Lean management plays an important role in improvement of quality of work & efficiency of the people.
3. Lean management helps in reduction of costs in providing services through reduction in wastages.
4. This approach helps in transfer of organizational culture from inside out which provides challenges & opportunities.
5. For the effective application of this approach, all related persons should change their mindsets & provide the scope for lower level management to develop the learning attitude & chance for career advancement.
6. The basic objective of the Lean management is to provide value service to the patient.
7. In the era of science & technology, Lean management will help the healthcare organizations to sustain & excel in today's competitive world market.

**References**
Analysis of presence of fatigue and its effects on nurses

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Introduction

WHO expert committee on nursing defines the nursing services as the part of the total health organization which aims to satisfy major objective of the nursing services is to provide prevention of disease and promotion of health. Nursing profession is considered a caring profession to begin with, it was an art and a vocation.

Nursing includes the promotion of health, prevention of illness, and the care of ill, disabled and dying people. Nursing is the most significant area due to the nature of the job as she has to act like Florence Nightingale (sister) day and night and has to come up to the expectations of doctors and patients.

Fatigue- Physical and Mental

Fatigue is physical and/or mental exhaustion that can be triggered by stress, medication, overwork, or mental and physical illness or disease.

Everyone experiences fatigue occasionally. It is the body's way of signaling its need for rest and sleep. But when fatigue becomes a persistent feeling of tiredness or exhaustion that goes beyond normal sleepiness, it is usually a sign that something more serious is amiss.

Physically, fatigue is characterized by a profound lack of energy, feelings of muscle weakness, and slowed movements or central nervous system reactions. Fatigue can also trigger serious mental exhaustion. Persistent fatigue can cause a lack of mental clarity (or feeling of mental "fuzziness"), difficulty concentrating, and in some cases, memory loss.

Chronic fatigue syndrome is a debilitating and complex disorder characterized by profound fatigue that is not improved by bed rest and that may be worsened by physical or mental activity. Persons with this disease most often function at a substantially lower level of activity than they were capable of before the onset of illness.

Nurses provide a majority of direct patient care in hospitals including assessment, monitoring, evaluation, and delivery of care or treatment plans. Thus, the performance of nurses during their daily work tasks is likely closely linked to patient outcomes. In addition, nurses are often exposed to high physical and mental demands in their work, and several previous studies have identified nurses as having a particularly high risk among healthcare workers for developing occupational illnesses and injuries.

In any given context within the healthcare domain, the specific causal or most critical factor(s)leading to safety or quality performance decrements may vary. Numerous studies have sought to improve worker performance and safety by focusing on a specific task, healthcare specialty, or environmental factor. While many of these studies have demonstrated a reduction in errors or injuries, they were narrowly focused and their results may only be valid in a specific context. Few studies have considered potential pervasive factors (e.g., sleep deprivation and fatigue) that might influence performance across workers, tasks, and contexts.

Healthcare workers, and more specifically registered nurses, perform tasks consisting of diverse physical and mental activities. As such, “total fatigue”, the interactions between its underlying dimensions, and the effects of these dimensions on performance, should all be further studied.

Problems and Challenges Facing Nursing Services

- Lack of adequate training.
- Problems of personnel management.
- Inadequate number of nursing staff.
Lack of motivation.
No autonomy in nursing activities and no involvement in planning
No career mobility.
Poor role model.
Non-nursing activities.
No research scope.
No proper authority.
Professional risk/hazards.

Objectives
To analyse the presence of physical and mental fatigue and its effects on the work performance of nurses in a hospital

Methodology
The study was conducted in a 370 bedded hospital in the National Capital City-New Delhi. The study lasted for a period of one month

Study Instrument
An open ended questionnaire was adopted and modified, which comprised of total 18 questions. Most of the questions followed five point Likert scale ranging from Strongly disagree to strongly agree.
Remaining of the questions pertained to demographic details of the nurses.

Study Procedure
Registered nurses were given a questionnaire for analysis of presence of fatigue and its effects on their work performance
Care was given while distributing questionnaire. Forms were given in a lot of few groups and not all the forms simultaneously to all nurses.
Name of the nurse was intentionally not mentioned to avoid chances of bias and make the nurse feel comfortable while filling the form. Non compulsion of name ensured confidentiality of information filled by the nurses.
All questions in the questionnaire were open ended except for the last column of suggestions. Open ended questionnaires can be better analysed quantitatively against set standards.
Responses were filled in an online form on Google Drive and the responses were then converted to Microsoft Excel.
Responses from Microsoft Excel were transferred to SPSS software where all the responses were analysed using the “Cross Tab” tool in Descriptive statistics under the “Analyze” Tab.
Results were studied and graphs made for each research question. These graphs were then copied to Microsoft Excel.

Results
Out of 99% female nurses, 78% of whom are in the age group of 18-25 years, 60% suffer from Physical fatigue and about 45-60% of nurses suffer from mental fatigue.
27% nurses admit to taking shortcuts in patient care and a whopping 68% nurses modify their standards at work to get their work done.
Nearly half of the nurses surveyed, slept on an average for 6-7 hours per day and about 33% of them slept for just 5-6 hours a day. These figures point towards lack of sleep (sleepiness) which itself is a major cause of fatigue.
Even with the amount of stress and fatigue nurses are in, 71% agreed to be following Safe Nursing Practices which shows their dedication and sincerity towards their profession.
Discussion
The study clearly shows that Nurses are physically and mentally fatigued which is adversely affecting their work performance. Many nurses take short cuts in patient care.
Previous researches have been conducted on the effect of sleeplessness and work performance which measures lack of sleep as a cause of reduced work performance. In this study it was found out that, most of the nurses are getting proper amount of sleeps, but their work performance is gradually getting diminished which clearly indicates presence of fatigue.

Scope of Improvement
Nurses want to work in their designated wards only. At times, they have to work in other wards also owing to absenteeism of nurses in those wards. This adds on to their work pressure and stress.
Stress free work environment should exist. A major cause of stress can be some ongoing ailment or ill health. A nurses in ill health should be granted leave easily without much formalities. Only if nurses are in good health themselves, can they work stress free.
At times, nurses have to be engaged in unnecessary activities, which do not form a part of their job profile. For instance housekeeping. A no of times nurses have to take up the responsibility of housekeeping staff. Nurses feel, this is against the standards of Nursing.
Attendants along with the patients sometimes create problems for the nursing staff. To many attendants makes nurses lose their concentration, addressing to unnecessary queries interference by the attendants. No of attendants accompanying the patients should be restricted to the minimum.
The three shift duty hours are a cause of stress. Duty hours should be reduced further for a stress free environment.
Nurse: Patient is very low. There are fewer nurses per patient than actually required. Hence an attempt should be made to increase the Nurse Patient ratio.

Appendix

![A MEASURE OF PHYSICAL FATIGUE](image)
References
1. Linda D. Scott, Cynthia Arslanian-Engoren, and Milo C. Engoren. Association of sleep and fatigue with decision regret among critical care nurses.

Introduction
The operation theatre is a major cost centre for a hospital in the sense that a hospital can generate substantial revenue from even a single surgery. Therefore, surgical operations are such an integral part of a hospital's daily routine that the delay in one can proliferate into a “domino effect” of inefficiencies in operation theatre scheduling[1].

It is no wonder, then, that a major source of frustration and inefficiency in the operation theatre is prolonged or procedural delays. Delays are a cause for worry for hospital top brass since not only are they counter productive, but also result in major revenue losses, much to the detriment of the hospital's finances and reputation[2].

The present study attempts to ascertain the causes of delay and puts forth various recommendations to reduce the same.

Glossary

<table>
<thead>
<tr>
<th><strong>Abbr.</strong></th>
<th><strong>Full forms</strong></th>
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<tbody>
<tr>
<td>HMIS</td>
<td>Hospital Management and Information System</td>
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<tr>
<td>OR</td>
<td>Operation Room</td>
</tr>
<tr>
<td>OT</td>
<td>Operation Theatre</td>
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<tr>
<td>PAC</td>
<td>Pre Anesthetic Care</td>
</tr>
<tr>
<td>PACU</td>
<td>Post Anesthetic Care Unit</td>
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<tr>
<td>WIN</td>
<td>Wheel in</td>
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<tr>
<td>WOUT</td>
<td>Wheel out</td>
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Aim and Objectives
Aim: To study the turnaround time and utilization of operation theatres.
Objectives:
- Analysis of causes of delay.
- Calculation of turnaround time.
- Operation room utilization.
- Time utilized against allocated.
- Resources utilized for one surgery.
- Revenue Analysis.

Scope & Limitations of the study
Different OT have their unique problems. Causes of delay which we have studied are applicable to that particular OT may not be true for other OT. So you need to study again that particular OT.
Different definition of turnaround time.
Review of Literature

The managerial aspect of providing health services to patients in hospitals is becoming increasingly important. Hospitals on one hand want to reduce costs and improve their financial assets; while on the other hand, they want to maximize the level of patient satisfaction. One unit that is of particular interest is the operating theatre. Since this facility is the hospital's largest cost and revenue centre, it has a major impact on the performance of the hospital as a whole. Managing the operating theatre, however, is hard due to the conflicting priorities and the preferences of its stakeholders, but also due to the scarcity of costly resources. Moreover, health managers have to anticipate the increasing demand for surgical services caused by the aging population. These factors clearly stress the need for efficiency and necessitate the development of adequate planning and scheduling procedures.

The first reference dating from 1971 describes turnaround time as the time interval between Electrocardiogram printing and placement of the printout in the patient chart. Assessing turnaround times can help to analyse workflows in hospital information systems. The objectives were to collect relevant literature with respect to this kind of process times in hospitals and their respective domains. Studies were included if precise definitions of turnaround times were available. A generic timeline was designed through a consensus process to provide an overview of these definitions.

A variety of turnaround time definitions in different clinical domains were identified. Starting and end points vary between these domains. To illustrate those turnaround time definitions, a generic timeline was constructed using preferred terms derived from the identified definitions. Using turnaround times to benchmark clinical workflows is still difficult, because even within the same clinical domain many different definitions exist. Mapping of turnaround time definitions to a generic timeline is feasible.

In the past 60 years, a large body of literature on the management of operating theatres has evolved. Magerlein and Martin review the literature on surgical demand scheduling and distinguish between advance scheduling and allocation scheduling. Advance scheduling is the process of fixing a surgery date for a patient, whereas allocation scheduling determines the operating room and the starting time of the procedure on the specific day of surgery. Blake and Carter elaborate on this taxonomy in their literature review and add the domain of external resource scheduling, which they define as the process of identifying and reserving all resources external to the surgical suite necessary to ensure appropriate care for a patient before and after an instance of surgery. They further more divide each domain in a strategic, administrative and operational level, although these boundaries may be vague and interrelated. Przasnyski structures the literature on operating room scheduling based on general areas of concern, such as cost containment or scheduling of specific resources.

The aim of this literature review is threefold.

First, we want to provide an updated overview on operating room planning and scheduling that captures the recent developments in this rapidly evolving area. In order to maintain a homogeneous set of contributions, we do not enlarge the scope to operating room management and hence exclude from this review topics such as business process re-engineering, the impact of introducing new medical technologies, or facility design. In other words, we restrict the focus to finding out the root causes of delay in the scheduled lists. For the above said mapping of time for turnaround of operating theatre becomes essential.

Second, we want to structure the obtained information in such a way that research contributions can easily be linked to each other and compared on multiple facets, which should facilitate the detection of contributions that are within a specific researcher's area of interest.

Third, pooling literature in a detailed manner enables the identification of issues that are currently (not) well covered and examined.

Turnaround Time

Turn around time is the time taken from the completion of one surgery to the beginning of the next surgery. Turn around time, or turnover time, can have different meanings and implications for different roles within an operation room (OR).

For example, the surgeon may describe turnaround time as the time between the “incision close” of patient $n$ to the “incision open” of patient $n+1$. 
Variance of Turnaround Time in the Operation Theatre

**Methodology**

We distributed a questionnaire to all the residents of Surgical Specialties & Anesthesia, and OT staff nurses, and asked them to state five main causes of delay as per their perception.

A total of 90 questionnaires were distributed, out of which 35 were OT staff nurses, 35 resident doctors of various surgical specialties and 20 anesthesiology residents.

**Data Analysis and Interpretation**

<table>
<thead>
<tr>
<th>Causes of ‘Start time operative delay’</th>
<th>Surgeon’s Responses</th>
<th>Nurses’ Responses</th>
<th>Anesthesiologist Responses</th>
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</thead>
<tbody>
<tr>
<td>Lack of preparation of OT</td>
<td>66%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Limited availability of trained supporting staff</td>
<td>44%</td>
<td>60%</td>
<td>34%</td>
</tr>
<tr>
<td>PAC reviewed in immediate pre-operative period</td>
<td>28%</td>
<td>22%</td>
<td>60%</td>
</tr>
<tr>
<td>Lack of teamwork, and communication gap</td>
<td>24%</td>
<td>44%</td>
<td>50%</td>
</tr>
<tr>
<td>Lack of proper planning</td>
<td>22%</td>
<td>42%</td>
<td>38%</td>
</tr>
<tr>
<td>Late arrival of surgery residents</td>
<td>-</td>
<td>22%</td>
<td>44%</td>
</tr>
<tr>
<td>Patient positioning, Monitor attachment, cautery application, intravascular access, invasive monitoring establishment</td>
<td>-</td>
<td>40%</td>
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</table>

**Observations and Findings**

At the completion of data analysis, the main inefficiencies identified are as follows:-

- Inaccurate estimation of the duration of surgery disturbs the further schedule of surgeries.
- Lack of standardization in worker responsibilities leading to task delays as time is wasted in deciding who should complete the tasks.
- Poor communication leading to process delays (Ex: Delay in the wheeling in of next patient due to not being aware of when the surgery preparation was completed).
- Deficient teamwork due to staff that is not cross trained to aid with tasks outside of their area whenever required.
- Revenue Loss

_Symbiosis Health Times 2015_
Inadequate utilization of OT results in:

- Wastage of resources and time.
- Loss of image and spoken reputation.
- Shift of loyal patients, especially the corporate clients

**Recommendations**

- Induction manual
- Role of Hospital Administrator - “Management by walking around”
- Periodic staff training
- Immediate reporting of cancelled operation through HMIS for optimal utilization of OT time.
- Close coordination with other departments

**Communication Triggers**

Communication breakdowns occurred in several critical locations in the turnaround flow pathways creating lag time.

**Conclusion**

The five main inefficiencies of operating rooms should only be used as guidelines because each surgery department is unique and can have unique problems.

It is important for everyone involved to have a clear understanding of what the objectives are and how achieving them will contribute to the whole department.

It is also important to note that solutions created are sometimes difficult to justify with cost.

Finally, it is extremely important to compare with past performance of your own surgery department

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