

Editorial

Quality and Accreditation

India is known for the size of its population—a large country with a huge population. Till lately, India's identification was for quantity not quality. But, the quality movement in India has begun.

Irrespective of which country you look at, quality has been a problematic area and often occurred more rapidly in the better economies of the world. Most of the countries struggled initially (Japan and South Korea), but determined efforts saw them scale unprecedented heights. After World War II, Japanese products were not known for quality, they were labeled 'Cheap' in comparison to Western products. The Japanese took quality initiatives in 1950s and, today, Sony, Panasonic, Honda, Toyota, Nikon, Canon are bywords in quality. Then came the Koreans. Their products in 1980s were also labeled 'Cheap'. Today, LG, Samsung, Hyundai are well-respected, good-quality products.

India's stock in quality products and services is also evolving rapidly, particularly in hospitality and IT sectors—TAJ, ITC, Oberoi groups in hospitality, TCS, Infosys and Wipro in the IT sector are well-known for their quality services. A total of five Indian companies are the recipients of the Deming Prize making the renowned total quality management (TQM) expert, Yasutoshi Washio opined a few years ago that 'Indian manufacturing quality will overtake that of Japan in 2013.' It has not quite happened in 2013, perhaps it will in 2023—the portents are there for all to see.

Compared to the manufacturing sector, healthcare quality has always been a trouble spot. Not just in India, but all over the world. It is partially due to the fact that healthcare is notorious in shunning change and adopting modern principle of service delivery and management.

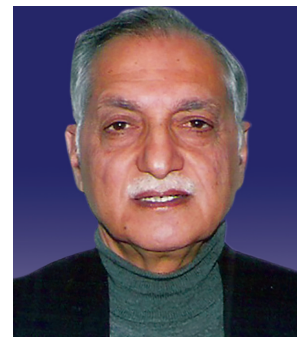
United States of America which is often used as the paragon in healthcare quality also found it tough to begin with. When a surgeon named Ernie Codman suggested what he called the 'End Result Idea', meaning codifying the results/outcomes of surgeries, the alarmed medical community at Massachusetts General Hospital (Harvard, Boston) was aghast. Doctors believed they were doing fine, they felt they knew what was best for the patient and did their best, if the patient did not do well it was not their fault. They were 'Gods'. Dr Ernie Codman was promptly banned, barred from work in penury. In 1918, the American College of Surgeons woke up to the fact that, 'All hospitals are accountable to the public for their degree of success ... if the initiative is not taken by the medical profession, it will be taken by the lay public.' The seeds of healthcare quality and patient safety were sown—it would culminate in the formation of Joint Commission International (JCI).

Around this time, in the early 1920s, Walter Shewhart was propagating the use of statistical methods in quality management. He was closely followed by two others whose names were forever to remain associated with quality—Edward Deming and Joseph Juran. Deming made a massive contribution to Japan's surge as a quality producer of goods. He taught quality improvement of products, design, testing and their sales. Juran was an evangelist in the field of quality management. Juran's trilogy of quality planning, quality control and quality improvement are still followed as also the Pareto principle. All these efforts of Deming and Juran caused a great improvement in manufacturing and service sectors, but healthcare was, as usual, slow to respond. It required the efforts of Donabedian who propounded the SPO principle—structure, process and outcome for healthcare quality to apply quality management principles in healthcare. Batalden et al expressed the meaning of quality in healthcare—'combined and unceasing efforts of healthcare professionals, patients and the families and researchers, payers, planners and educators to make the change that will lead to better patient outcomes (health), better system performance (care) and better professional development'.

Healthcare quality, therefore, means exceeding the expectations of patients (customer) every time and all the time ensuring 'First Do No Harm' to the patient.

Seven pillars of healthcare quality have been described in literature which are as follows:

1. Efficacy—The ability of care to improve health.
2. Effectiveness—The degree to which attainable health improvements are realized.
3. Efficiency—The ability to obtain the greatest health improvement at the lowest cost.
4. Optimality—The most advantage is balancing of costs and benefits.
5. Acceptability—Patient preferences about accessibility, patient-doctor relationship, availability of necessary amenities, effect of care and cost of care.



6. Equity—Fairness in distribution of care and its effect on health.
7. Legitimacy—Conformity to social preferences concerning the above six points.

While there is no dearth of quality tools—ISO, TQM, Kaizen, Six Sigma and Accreditation, it is the latter which has found universal acceptance. Accreditation is a methodology approved by World Health Organization for complete evaluation of an organization and all functions and processes leading to clinical outcomes. It is usually voluntary and aims at meeting agreed upon quality standards related to essential healthcare facilities. Accreditation is also a public recognition by a national body on the achievement of a set of standard by a healthcare organization, demonstrated through an independent external assessment of that organization's level of performance in relation to the standard. Accreditation relies on establishing technical competence of a healthcare organization in terms of accreditation standards in delivering services with respect to its scope. It focuses on learning, self-development, improved performance and reducing risk. Accreditation is based on optimum standards, professional accountability and encourages healthcare organization to pursue continual excellence. Accreditation also means putting systems in place in an objective, transparent and dynamic manner, by defining those systems, ensuring ownership and implementation by stakeholders.

There are a large number of accreditation bodies—Australian Council on Healthcare Standards of Australia, JCI of USA: QHA of UK, HAS of France. India has National Accreditation Board for Hospitals (NABH) and Healthcare Provider, both as an organization and its standards are recognized by ISQUA, the International Society of Quality and Accreditation—the accreditor of accreditation bodies of the world. NABH is thus the equivalent of any of the top-ranked accreditation bodies of the world and its standards are so recognized.

The NABH journey started in 2005 to 2006 when the Ministry of Tourism and World Trade Organization called upon Quality Council of India (QCI) to serve as the umbrella body to spearhead quality initiatives to promote medical tourism. The constitution and the structure for NABH was laid in the year 2006, and NABH was inducted as one of the four boards and QCI. It is made in India, for India and by India.

National Accreditation Board for Hospitals and Healthcare Provider is uniquely tailored for Indian healthcare, uses highly trained, qualified and experienced assessors. Assessments are comprehensive and multidisciplinary, centered on organizational and patient safety, and continuous quality improvement is an important goal; NABH has been growing rapidly since the first five hospitals were awarded the NABH certificate by the then President of India, Dr APJ Abdul Kalam, in 2006 to 2007. One milestone followed another as in 2007 to 2008, NABH became a member of International Society for Quality in Healthcare (ISQUA), founder member of Asian Society of Quality and Accreditation (ASQUA) and the Blood Bank Accreditation program was launched. The next year, the 2nd edition of standard was released and accredited by ISQUA. The Small Healthcare Organizations (SHCO) was also launched. In 2009 to 2010, the first Blood Bank was accredited, an memorandum of understanding (MOU) was signed with Ministry of Health for AYUSH accreditation standards and Central Government Health Scheme (CGHS) mandated NABH accreditation for empanelment. The following year, dental, allopathic clinics, imaging accreditation standards were launched, NABH—I (International) came into being and an MOU was signed with Philippines. A new set of standards (3rd edition) was launched (again accredited by ISQUA) and Employees Contributory Health Scheme (ECHS) (Ministry of Defence) signed an MOU mandating NABH accreditation for empanelment.

National Accreditation Board for Hospitals and Healthcare Providers growth continues with the greatest achievement coming in 2013 when NABH joined 14 countries whose organization has been accorded ISQUA recognition. Today, nearly 300 hospitals, blood banks, clinics, imaging and dental centers have achieved NABH accreditation and nearly 700 are in the queue.

Accreditation by NABH benefits patients, hospitals, staff and third parties [health insurance companies, (CGHS), (ECHS), etc.]. Despite, the need and benefits of accreditation the progress, though fairly rapid and satisfactory, has posed challenges in India where availability and affordability of healthcare continues to remain a challenge, ahead of assurance (quality and safety). As George Santanaya opined, 'Those who speak most of progress measure it by quantity and not by quality'. The challenge of movement from quantity to quality, the maintainance of quality and the challenge of accreditation to reaccreditation (CQI—continuous quality improvement) remains. Resource constraints, process constraints, lack of public awareness, patient education and ability to understand ailment and therapy technicalities and choices as also outcomes are a hindrance to quality and safety. Lack of quality data (nosocomial infections, patient falls and drug reactions) and their objective capture and assessment is also another major deterrent. Human factors, such as contentment and complacency and a nondemanding public, cause problems first in seeking and getting accreditation and then maintaining it. Another

major factor are lack of extensive data on the question—does accreditation (quality) help to reduce costs? Even when such data are available, it is not widely disseminated and discussed. The fact is that the two absolutes—improving quality always reduces costs and reducing costs will never improve quality—are ill-understood. Failure to comprehend, this ends up compromising clinical outcomes and thus business of healthcare.

India needs to do more to promote quality and accreditation—why not a ‘jago grahak jago’ campaign on quality in healthcare? Hospitals still not accredited need to realize that accredited hospitals report significant improvement in leadership, infection control, medication error reduction, medical record, management, staff training and professional credentialing as also quality monitoring.

Let me conclude by quoting ‘quality without efficiency is unsustainable, efficiency without quality is unthinkable’. Healthcare quality and safety in India is a long, torturous and tortuous journey but one that must be undertaken with guts, gusto and determination and accreditation (NABH) is a useful tool and ally in making this journey worthwhile and rewarding.

Narottam Puri

Chairman, National Accreditation Board for
Hospitals and Healthcare Providers
Emeritus Consultant, Department of ENT and
Head and Neck Surgery, Fortis Healthcare Ltd
Advisor, Fortis Healthcare Ltd
Advisor, Health Services
Federation of Indian Chamber of Commerce and Industry
Partner, Healthcare Consultancy Group, India

Brain Drain: Migration of Healthcare Professionals in a Globalized World

¹Gaurav Mahindra, ²Hamendra Kumar Dangi

ABSTRACT

Social, economic and technological developments due to globalization have led to a surge in international demand for skilled workforce. Developed economies have made concerted efforts in not only attracting but also in retaining such human capital. Healthcare sector has been no exception. With limited career opportunities within their own country and a host of pull factors in developed countries, India and other developing countries have seen an exodus of medical and other professionals, what is known as 'Brain Drain'. Shortages thus resulting from migration of health workers have even mitigated the effects of increased domestic healthcare spending. The health workers hold strategic importance in a nation's health systems and disease control initiatives. The resulting imbalances could have a detrimental effect on the social as well as economic fabric of such sending countries. This study is an effort in understanding the factors encouraging human capital flight and thus seeking short-term and long-term measures in dealing with it. This research brings forth strategies to deal with brain drain by forming mutually beneficial relationships with the diasporas. This reciprocity will lead to circulation of skills between source and receiving countries. Formulating suitable policies would ensure correcting the human resource imbalances within countries on a sustainable basis.

Keywords: Brain drain, Human capital flight, Migration of health workers.

How to cite this article: Mahindra G, Dangi HK. Brain Drain: Migration of Healthcare Professionals in a Globalized World. *Int J Res Foundation Hosp Healthc Adm* 2014;2(2):63-72.

Source of support: Nil

Conflict of interest: None

INTRODUCTION

The term 'Brain Drain' indicates the movement of skilled human workforce across geographies, essentially from the developing to the developed nations. These educated individuals envisage a more prosperous and brighter future for themselves by doing so. This topic has been a source of great debate and will continue to be due to its economic and social repercussions in particular. Most of the discussions

get focussed around its economic aspects but the impact of can be felt much beyond this aspect only.

It follows the overall trajectories and flow of human resources between geographies. It carries with it social as well as political implications for the source countries in particular. The irony here being many of the human resources developing countries lose to the wealthy countries are the exact people they can ill afford to, the highly skilled and educated ones.

Skilled human resources are increasingly been seen as the most valuable asset any society can possess. Any amount of technology innovation and advancement cannot replace human capital. Therefore considering its importance, brain drain or emigration of skilled professionals becomes an emotive issue in developing nations like India and China which need innovative ways to optimize their resources. Healthcare is a relevant concern here as it witnesses the greatest impact due to migration of doctors and medical professionals. Controlling the spread of various diseases is both a capital and manpower intensive activity. Such countries are already facing a huge socioeconomic burden of disease control. Ironically, they also experience the greatest exodus of educated and skilled healthcare professionals.

Over the years measures to control and benefit from such migration have been suggested by various authorities and policy makers. As the phenomenon of globalization spreads even more brain drain has gained more importance among various nations directly impacted. However, long-term measures to minimize its impact on vulnerable nations has remained an elusive and challenging endeavor. India and other developing countries can learn from in each other in strategising policies to attract and retain skilled human resources.

Scarce funding as well as insufficient technical and material resources to carry out research back home are among the major determinants in developing countries which lead to emigration of professionals (Popescu, Patrasca and Chivu 2006).

Despite all previous efforts, no universally accepted method has been established to tackle this issue. Source countries continue to be in a quandary regarding the merits and demerits of brain drain. Developed countries which receive such individuals are facing a shortage of skilled manpower and are therefore in favor of this phenomenon.

¹MBA Student, ²Assistant Professor

^{1,2}Faculty of Management Studies, University of Delhi, New Delhi, India

Corresponding Author: Gaurav Mahindra, MBA Student Faculty of Management Studies, University of Delhi, New Delhi-110007, India, e-mail: mahindra.gaurav@gmail.com

Their demand supply mismatch is a huge incentive for professionals to migrate abroad. The rationale or criteria that should be followed by policy makers and authorities' remains an area of concern for various healthcare managers and government agencies.

Changing demographics in countries is an important indicator of the future trend. Young and aspiring doctors look for a better future and wish to capitalize on their skills. This study was conducted among students of medical and dental streams to find out their individual reasons to migrate abroad.

The study conducted was instrumental in determining various factors having a significant impact on brain drain. A combination of socioeconomic factors along with opportunities for career development and education, international exposure and dynamics involving market forces were the key constituents in student decision making. These results provide a perspective on the various external and internal factors individuals consider before deciding on their future.

Like all events even brain drain has its positive and negative implications. A correct balance between the two is to be achieved. Therefore authorities must design a mechanism which can capitalize on the skills, knowledge and expertise acquired by the diaspora along with the huge flow of remittances which comes back to the source country. Simultaneously, initiate a process to strengthen domestic infrastructure and capabilities to attract talent and retain it.

Policy makers and authorities that are involved with human resources could consider these factors in their decision making in order to maximize domestic human capital. Therefore it is for each source country to make the most out of this, prepare and implement policies which deal with it effectively and urgently. Finding solutions to these demanding issues could pave the way in better utilization of the migrant knowledge, skills and innovative capabilities by the source country.

The remainder of the paper is structured as follows. The next section describes past data and literature pertaining to brain drain that has been reviewed. Followed by, the hypotheses assumed for the study. The aims and objectives of carrying out this study form the next section. An overview of the methodology including data source, sampling frame and empirical model undertaken in this study has been discussed in the following section. Subsequent section includes the analysis of the data using proposed model. Lastly, conclusion along with scope for further research is discussed.

Literature Review

The term 'Brain Drain' is the net flow of human capital expertise heavily in one direction (Salt 1997). The word 'Brain' explains any attribute, skill or competency that is

a potential asset. Whereas the word 'Drain' indicates this rate of exit, beyond the desired level leading to a shortage of talent. The overall implication is the exodus of the most talented at an appreciable, sometimes alarming rate (Bushnell and Choy 2001).

As early as in 1981, the dictionary of modern economics deciphered brain drain as: 'The migration of educated and skilled labor from poorer to richer countries.' Acquiring education is usually cheaper in poorer, labor surplus countries owing to government subsidy. These skills provide enhanced financial returns on moving to developed economies which often frame legislations to suit their own needs.

Human resources are a vital force in any nation's capacity building and capability enhancement. At the end of the day, every new technological innovation is due to human intervention. In addition, capable human expertise is also needed to ensure optimum utilization of technology. Therefore, scarcity of resources arising out of brain drain is of concern to all countries and more so to the developing countries. Also, education in developing countries is largely financed by public resources. Therefore, the damages are largely created in the source countries due to a misbalance between personal and public/social advantages (Bhagwati and Hamada, 1974).

Many wealthy countries follow selective immigration policies when it comes to human capital. As a result human capital tends to flow where it is plenty already (Easterly and Levine, 2001).

Although this problem saw its emergence as early as in the 1940's when European professionals emigrated to the UK and US, it was made an international agenda in 1973, when the UN Secretary General was requested to prepare a report on how to deal with this issue (Grubel and Scott 1977).

According to the United Nations (2002), the period between 1990 and 2000 saw international migrant number surge from 154 to 175 million.

In the 1990's, the phenomenon of brain drain saw a shift in focus from the 'pushing/supply factors' from developing countries to the 'pulling/demand factors' from the developed countries. Recent trends suggest that the competition for skilled professionals is only going to grow in the coming years.

Enhanced opportunities for professional development, international experience and financial rewards significantly impact an individual's decision to migrate. The lack of relations between professionals of a nation working and settled abroad with their home universities does not help the situation. This leads to low levels of interest among the migrated population to return to their home countries (Popescu, Patrasca and Chivu, 2006).

Many poor countries encounter an extra ordinarily high proportion of skilled nationals residing in rich countries.

Many of the developed countries have exceptionally high levels of skilled immigrants as compared to non-skilled immigrants.

The United States has been the main focal point for foreign skilled workers with nearly 40% of its foreign-born adult population having tertiary level education. Since the early 1990s, under the H1B temporary visa plan nearly 9,00,000 highly skilled professionals, essentially IT workers, from India, China, Russia and OECD countries (Canada, UK, Germany) have shifted base to the United States. Figures suggest nearly 32% of all foreign students studying in the OECD countries end up for work in US.

In 1999 as much as 25% of all H1B visa holders were previously students enrolled at US universities (Source: OECD observer).

These movements have been also been a result of selective dismantling of rich country barriers to immigration of the highly skilled from poor countries (Kapoor and McHale 2005). This trend is primarily due to gaining competitive advantage in emerging knowledge based industries, aging of rich country populations or due to broader globalization and trade by attracting the highly educated individuals.

Currently, those applying for the H1B visa are entitled to have the dual intent of attaining temporary work status but intending for permanent residency as well (Kapur and McHale 2005).

Between 2000 and 2003, the US congress increased the annual cap on temporary work visas for skilled professionals under its H1B visa program, from 115,000 to 195,000 (Source: OECD observer).

This increased competition for developing country talent affects their developmental prospects. Most importantly it might affect a source country's capability to build domestic institutions, infrastructure and long-term educational machinery. Medical professionals at many developing countries are unable to use advanced technology and infrastructure due to lack of access and availability which is not the case in developed nations (Hamilton and Yau 2004).

The irony of poor quality infrastructure builders are most likely to leave where institutional setup is needed the most (Kapur and McHale 2005). The disadvantages of emigration from a sender country can be equated to the advantages of immigration in a receiving country but with an opposite sign.

One of India's most prestigious establishments, the All India Institute of Medical Sciences witnessed 56 and 49% migration rate for graduate doctors between 1956 to 80 and 1990 to 1999 respectively (Desia, Kapur, McHale & Rogers 2009). A novel way of monetising the expatriates abroad was suggested by Professor Bhagwati in 1970's, termed as 'Bhagwati Tax'. This was intended to be levied

on all citizens abroad, similar to the way the Americans living outside their country are. Therefore, various control and compensation mechanisms become relevant in order to utilize its benefits and mitigate the challenges and reduce the negative impact.

On the other hand, there are arguments which are in favor of skilled professionals settling abroad. This viewpoint takes into consideration the human rights perspective. Since, a nation cannot impose sanctions on citizens from settling abroad, it should be able to nurture their loyalty instead. The diaspora should be integrated through more rights and incentives.

Important correlation was observed between (a) the strength of the relationship with one's former university/colleagues and (b) one's preference to come back and work in their home country (Popescu, Patrasca and Chivu 2006).

This would encourage inflow of skills, knowledge, expertise and remittances back into source country. Effective utilization of these precious resources in program implementation would ensure some respite from brain drain if not all. Optimum use of technology and manpower would enable improvement in domestic institutions, paving a way for the diaspora to even return back. Therefore, creating domestic innovation and knowledge centres along with connecting and networking with diaspora leads to improvement in a nation's infrastructure. These measures provide a roadmap for benefitting from the existing situation.

The repatriation measures should be gradual and selective. The process of bringing back diasporas should focus first and foremost on the best scientists and doctors in the priority areas in order to fill the gaps. This must begin with a better understanding of their expectations and providing enough incentives to fulfil their requirements.

Even the developed countries are formalizing strategies to bring back their own skilled professionals from other nations. In 2000, the Wolfson foundation, a research charity, along with the British government launched a controversial 5-years research award. It was a £20 million scheme which intended to bring back quality British expatriate scientists home (Source: OECD observer).

The time spent abroad after completion of studies is of considerable importance in deciding to stay abroad or not. It was observed, the more time spent abroad, the higher the chances of staying back (Popescu, Patrasca and Chivu 2006).

The future reintegration process should focus on the sociocultural aspect as well. Many professionals leave a country for various reasons. Therefore, their needs and aspirations need considerable attention before laying the foundation of their resettlement.

Hypothesis

Currently, wage differentials between developing and developed countries are large. A small increase in healthcare wages in source countries will not influence the supply of healthcare migrants significantly. Thus, the financial changes will have little impact. The requirement is to review the exodus from a social, political, and economic framework. Local security development needs to be emphasized. Hence, the following question gains significance, as to how socio-economic conditions influence human mindset? Therefore, the following hypothesis was formulated to answer the research question.

H₁: Improving domestic socioeconomic conditions balances brain drain.

Next consideration was about improving and increasing educational standards. Mobility of skilled professionals is a reality of the 21st century which we all need to accept. All countries irrespective of their standing in the world are competing with the best institutions for high quality manpower. It is wiser to accept and work positively to deal with this reality. Possible explanation could be the environment. Favorable and appropriate political decisions, infrastructure, technical know how, funding and scientific community are a few essential for science and technology to prosper. Developing countries generally lack these essentials. These expatriates can give immense contributions back home in their native countries. This could be done by developing joint research projects, training programs and teaching associations. The result could be far more effective flow of knowledge and information. Emigration of talented individuals provides a positive feedback motivating students to look forward to high quality education. This raises prospects for growth itself by improving human capital. This has led to the formulation of second hypothesis.

H₂: Enhancing educational infrastructure positively influences professional migration.

The importance of an international experience was considered next. Work experience in different societies and countries provides a rich experience along with the monetary gains accompanying it. It would be immature to create new obstacles to the movement of people between countries. Sharing of knowledge and expertise by professionals working overseas can be made possible by partnering their institutions in innovative programs. Flexible training schemes allowing overseas doctors to work in developing countries should be encouraged. Long-term partnerships, with the help of clinical and teaching infrastructure of institutions in developing countries could result in better research. Overseas doctor training schemes can be evaluated through an audit with regards to their utility and outcome. Therefore,

the possibility of involving well established foreign institutions in sharing their expertise arises. Hence, considering this point the following hypothesis was formulated.

H₃: Collaborating with Foreign universities improves educational experience.

Finally, remuneration parity between healthcare professionals with professionals in other sectors in the economy is crucial. India is an emerging economy which is driving prices higher each fiscal due to mismatched demand supply of resources. Also healthcare is one sector which is seen as a social service rather than any business opportunity. However, the fact remains inflation affects us all equally. Compounding this problem is the fact professional's in IT, services and manufacturing blue collar personnel show career advancement much faster than healthcare personnel. Therefore, medical and paramedical staff look for greener pastures abroad. Demographic realities in the developed economies are ensuring an ever increasing demand for healthcare. The present mismatch in the demand/supply relation among doctors abroad leads to increased exodus. Comparative salaries abroad are way more substantial and fuels better fulfilment of aspirations among the youngsters. Therefore ways and means to allow market to determine its own course needs to be considered. Hence, a hypothesis related to the market forces was made.

H₄: Bringing parity between healthcare and other industry sectors positively influences brain drain.

Objectives

The main objective of the study was to understand the influence of specific factors on the phenomenon of brain drain in the context of a developing country, such as India. Specifically the following objectives were framed:

- To determine the factors causing human capital flight.
- To understand the benefits and drawbacks of brain drain with respect to the source country.
- To identify intrinsic areas of improvement within a source country in order to control brain drain.
- To devise a mechanism for converting brain drain into wisdom gain.

METHODOLOGY

A structured questionnaire was used to conduct a survey in order to determine important factors considered by students in their decision making. The various responses were measured on the universally accepted Likert scale. The proposed model consisting of these potential factors was assessed using a structure equation model (SEM). The significance of statistics ensured a valid and reliable model leading to acceptance of various hypotheses which were assumed.

Research Design and Data Collection

The present study was a prospective, cohort study. A detailed review of the existing literature guided us in short listing certain key factors which influence brain drain. A model linking key factors for migration was hypothesized. A structured questionnaire was designed which was pilot tested at Maulana Azad Institute of Dental Sciences, Delhi. After considering the responses and difficulty levels suitable changes in the questionnaire were made. Subsequently, a survey data collection was carried out among undergraduate final year students from Medicine and Dental Streams at University College of Medical Sciences and Maulana Azad Institute of Dental Sciences, Delhi between 1st Jan, 2014 and 15th Feb, 2014.

MODEL LINKING VARIOUS FACTORS AFFECTING BRAIN DRAIN

Brain drain is a phenomenon which is influenced by number factors which could be either personal or societal in nature. Although it affects all the countries, its magnitude and impact is greatest with respect to developing countries. Developed/ industrialized nations continue to exert a pull force which enables enough incentives for skilled professionals to leave developing nations and fulfil their aspirations. Therefore a close examination reveals multiple reasons for the exodus. In this research, the most valid factors are chosen for empirical validation which could hold true for most developing nations.

The model proposed in this paper will be validated through SEM which is presented in Figure 1.

ANALYSIS

Proposed relationships among identified performance measurement model have been validated using parameter estimation and goodness-of-fit statistics of structural equation modeling (using AMOS 18.0). On the basis of results obtained, a model to link underlying factors and performance of relief logistics has been proposed.

Definition of Constructs

Based on detailed literature review, metrics were identified for the components of the proposed model. The theory postulates brain drain is largely influenced by four factors namely socioeconomic, career development opportunities, importance of foreign branding and local market forces. Thus in our data set for this model, we have five constructs and 15 indicators, each construct having multiple indicators variables (Table 1).

Items were measured on a five point Likert scale with 'strongly agree'(1) and 'strongly disagree' (5).

Socioeconomic factor was measured with the help of three items. It can be safely assumed that higher levels of aspirations fuel a desire for higher standard of living. High salary is not always sufficient to satisfy personal needs, therefore people look to migrate to those parts of the world which can offer them and their family a more comfortable lifestyle which is stress free and disease free. The various items for which the response was measured are 'lack of moral values' (SE1), 'population pressure' (SE2) and 'high pollution levels' (SE3).

A high population puts enormous pressures both on the resources as well as on local talent. Therefore, a successful career development would mean securing a postgraduate university degree which can differentiate talent. Developed countries through sustained quality standards over the years have built themselves a reputation of offering world class education opportunities which is an attraction for deserving students. This was measured through variables namely 'higher career development prospects abroad (CE1), 'international experience paying dividends (CE2) and 'more higher education opportunities abroad' (CE3).

Foreign institutions offering quality and meritocracy will most certainly attract a strong goodwill across the globe. This factor influences decision making among prospective students who wish to take advantage of any association with an institution of global repute and return back to their native country. The various incentives for doing so could be measured as variables namely 'improved status in society back home' (FB1), and 'securing important institutional positions on return' (FB2).

As emerging economies see a rise in per capita incomes, students aspire to fulfil their dreams where they get maximum dividends for their time, efforts and inputs. Therefore, market forces as a factor determine the trend in terms of the flow of professionals and students. This was measured through various items, 'mismatched demand supply abroad' (MF1). 'Higher job satisfaction abroad' (MF2), 'domestic

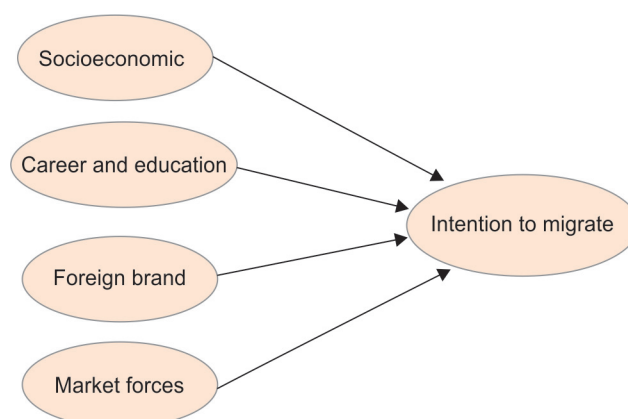


Fig. 1: Effect of various factors on intention to migrate

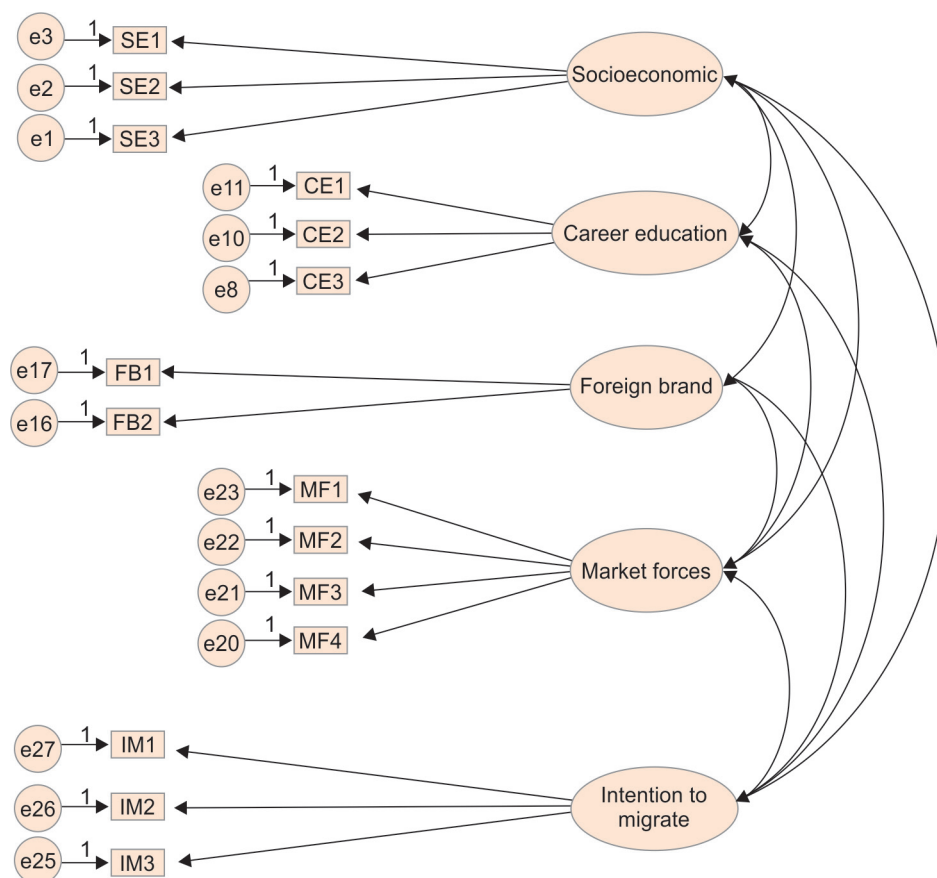


Fig. 2: Measurement model

Table 1: Definition of constructs

Variables	Constructs
Lack of moral values (SE1)	Socioeconomic Factors
Population pressure (SE2)	
High pollution levels (SE3)	
Career development prospects (CE1)	Career and education factors
International experience (CE2)	
Higher education opportunities (CE3)	
Improved status in society (FB1)	Foreign branding factor
Securing institutional positions (FB2)	
Mismatched demand supply abroad (MF1)	Market forces factor
Higher job satisfaction abroad (MF2)	
Domestic healthcare future (MF3)	
Medicine not merely a social service (MF4)	
Long-term desire (IM1)	Intention to migrate
Good financial offer (IM2)	
Concrete plans underway already (IM3)	

Table 2: Goodness-of-fit statistics for relief logistics—CFA model

Model	CMIN/DF	RMR	GFI	CFI	RMSEA	PCLOSE
Default model	1.303	0.072	0.906	0.962	0.048	0.539

healthcare future not encouraging' (MF3). 'Medicine not merely seen as social service' (MF4).

All the above listed factors are considered in the final decision making process. The intention to migrate was

measured through three variables namely 'long-term desire' (IM1), 'good financial offer' (IM2). and 'concrete plans underway already' (IM3).

Measurement Model

Validity of measurement model was tested on the basis of psychometric properties of measures. In the proposed model, the reliability and validity of five constructs were tested. To test the measurement model, all construct were allowed to freely correlate with each and the factor loading of one observed variable per construct was fixed to a value of unity. All measured variable were allowed to load on only one construct (Unidimensional) and the error terms were not allowed to correlate with each other. The measurement model is described in Figure 2.

The relevant model statistics are shown in Table 2. The Chi-square minimum/degree of freedom (CMIN/DF) value of 1.303 reported by our model indicates that model fits the sample data reasonably well. The root mean residual (RMR) value of model has been observed to be 0.072. Goodness of fit index (GFI) value of 0.906 and CFI value of 0.962 indicates good fit of model. Root mean square error of approximation (RMSEA) value equals 0.048 with PCLOSE value of 0.539 (> 0.5) further confirms fitness of model.

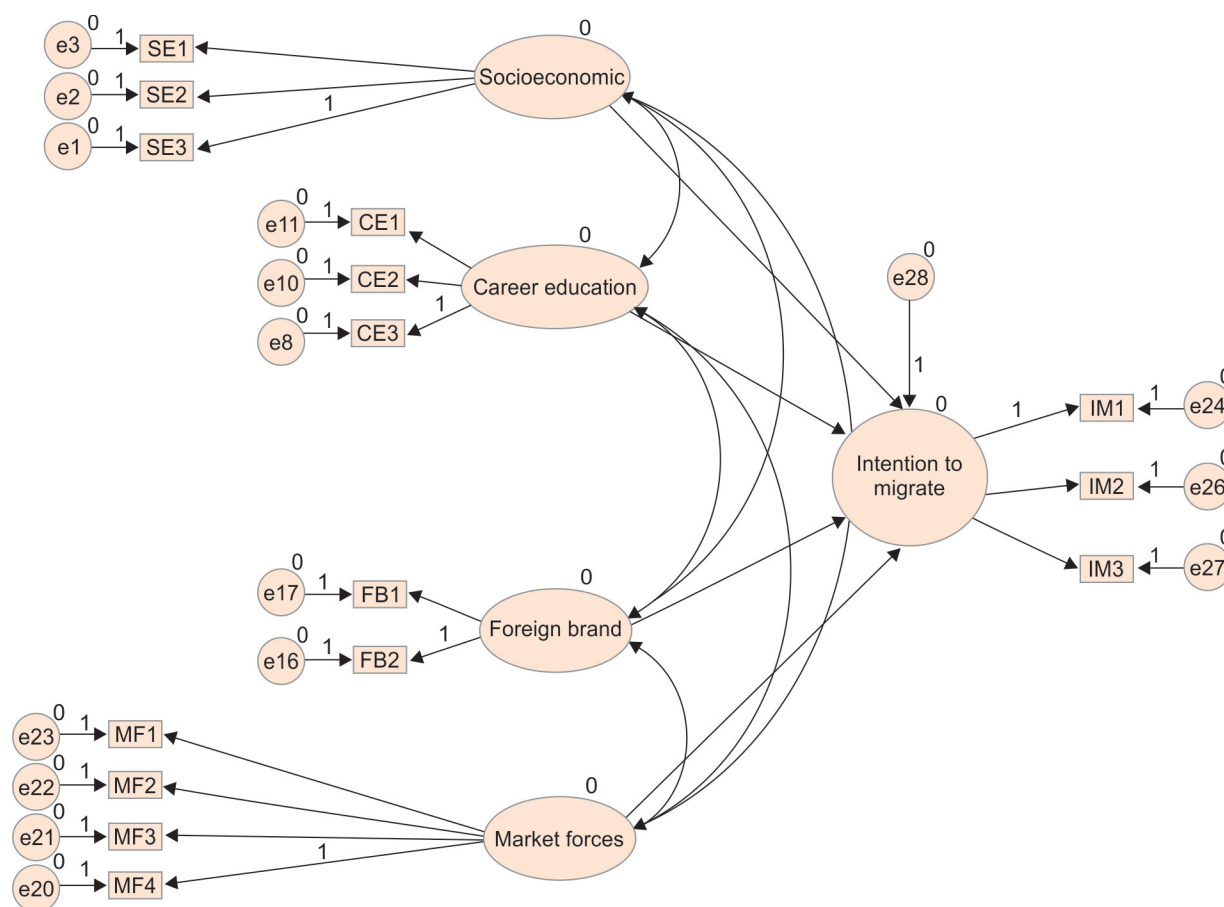


Fig. 3: Structural model

Table 3: Parameter estimates for the model

Path	Unstandardized regression weights	Standardized regression weights	SE	CR	p
Intention to migrate ← Socioeconomic factors	0.574	0.534	0.089	2.449	***
Intention to migrate ← Career and education factors	0.378	0.273	0.203	2.809	***
Intention to migrate ← Foreign brand factor	0.338	0.296	0.085	-0.517	***
Intention to migrate ← Market forces factor	0.281	0.252	0.162	1.631	***

***Indicate significance, $p < 0.001$ meaning p-value is smaller than (0.001), SE: Standard error, CR: Critical ratio

Structural Model, the Effect of Various Factors on the Intent to Migrate

The hypothesized model linking socioeconomic factor, career and education, foreign branding factor and market forces factor is shown in Figure 3. The model was tested using responses collected through sample survey.

The model was tested using responses collected through sample survey. The parameter estimated results, i.e. value of regression weights, standard errors, critical ratios of the model are presented in Table 3.

Standard errors are presented in Table 3. The values are ranging from 0.085 to 0.203 indicate that they are in good order. Further values of critical ratio were found to be significant at 0.001 level.

H₁ stated improving the domestic socioeconomic conditions balances brain drain. As indicated in Table 3, the

effect of socioeconomic factors is in hypothesized direction and it was statistically significant ($\text{std}_\beta = 0.534$, $p \leq 0.001$), therefore H₁ was supported. In H₂, it was stated that enhancing educational infrastructure positively influences professional migration. As indicated in Table 3 the effect of improved education and career opportunities is in hypothesized direction and it was statistically significant ($\text{std}_\beta = 0.273$, $p \leq 0.001$), thus we accept H₂. H₃ predicted that collaborating with foreign universities improves educational experience. As indicated in Table 3, the effect of foreign brand is in hypothesized direction and it was statistically significant ($\text{std}_\beta = 0.296$, $p \leq 0.001$), accordingly H₃. In H₄ it was predicted that bringing parity between healthcare and other industry sectors positively influences brain drain. As indicated in Table 3, the effect of market forces factor is in hypothesized direction and it was statistically significant

Table 4: Goodness-of-fit statistics for the model

Model	CMIN/ DF	RMR	GFI	CFI	RMSEA	PCLOSE
Default model	1.303	0.072	0.906	0.962	0.048	0.539

(std_β = 0.252, $p \leq 0.001$), thus we accept H₄. Findings of goodness-of-fit statistics are presented in Table 4.

CONCLUSION

Healthcare migration offers us a tremendous opportunity for further research. Better understanding is needed in terms of the scale and nature of skill shortages in wealthy countries. The study presented in this paper identified and explained the role of various factors that influence skilled personnel in their decision to migrate to developed economies in search of more fruitful professionals opportunities.

The socioeconomic conditions of a particular country do impact the exodus of its personnel. Due to excessive wage differentials between rich and poor countries, small increments in wages would have little consequences in impacting supply of healthcare professionals. Aspiring youngsters do wish to settle in a country which provides them adequate law and order for their safety. It is observed that high levels of environmental pollution and population density have adverse effects on the decision to migration.

Present study highlighted the importance of career development in the decision to migrate. Mobility of skilled and health professionals is a reality in this day and age and the competition among countries for acquiring talent is only growing each day. It is wiser to accept and work positively to deal with this reality.

It cannot be stressed enough that there is a high demand for both quality and quantity as far as educational institutes are concerned. Therefore, lack of job and education opportunities leads to foreign migration among people. Increasing the number of education institutions to feed the growing demand is certainly needed. Also local industries need to be engaged in order to match skill development to the job requirements. For this to be achieved the teaching curriculum needs to be periodically revised to cater to the industry needs and requirements.

Demographic profile in most developed countries has created an enormous demand for skilled personnel. A shortage of skilled human resources, created due to a mismatch in demand-supply dynamics attracts human capital from developing countries. Educated migrants are rewarded suitably for their efforts, time and skills fuelling a desire within to fulfil their aspirations.

Remuneration parity between healthcare professionals with professionals in other sectors in the economy is crucial. India is an emerging economy which is driving prices

higher each fiscal due to mismatched demand supply of resources. Also healthcare is one sector which is seen as a social service rather than any business opportunity. Compounding this problem is the fact professional's in IT, services and manufacturing blue collar jobs tread the path to carrier advancement much faster than healthcare personnel. Therefore, medical and paramedical personnel search for greener pastures abroad due to an ever increasing demand for healthcare in the higher income countries as a result of demographic realities and trends. Branding per se is a reflection of reliability and indicates good quality. Foreign universities and institutions of global repute offering opportunities to study and work are a great source of motivation and attraction among individuals.

Any international experience involving working with different people in diverse culture improves the technical know-how bringing with it crucial benefits as well. Doctors working overseas must search for ways and means to share their knowledge, expertise and resources.

Measures which can assist in attracting and reintegrating skilled professionals settled abroad could involve:

- Improving the academic and research system by initiating education and research reforms. Involving professionals who have demonstrated success measured through international accepted criteria.
- Creating a system of meritocracy in the country.
- Creating systems of excellence within a nation including elite institutes which have world class human financial and technical resources.
- Stimulating a culture of entrepreneurship within the country along with private research within an improved legal framework.

In the short-term authorities need to focus on stimulation and developing collaborations between professionals, doctors and skilled human resources with peers/institutions in their country of origin. This could be made possible by the following:

- Organizing international conferences, symposiums and workshops for doctors living abroad.
- Creating part time/visiting faculty jobs and positions for talent of international repute.
- Involving skilled human capital settled abroad to participate in projects in source countries for capitalizing on their knowledge and experience.

In the longer term approach, careful planning is needed to successfully integrate and reintegrate diasporas. The national education and research should see better integration with the international circuit. This approach needs both financial and cultural dimension with adequate focus on resource deployment. Highly skilled workforce gets attracted to world class centers of excellence. Therefore,

encouraging quality research along with improved atmosphere for innovation and entrepreneurship has a positive impact on talent retention and attraction.

Internationally, developing countries need to work in unanimity since they are the affected the most. The General Agreement on Trade in Services (GATS), is an international framework, a treaty of the World Trade Organization (WTO). It was created to allow and facilitate multilateral trading in the services sector. This will in turn promote free flow of service workers between countries. The collateral damage for countries, such as India would be possible increase in the rate of brain drain due to liberalized exchange in human workforce. GATS, could make human resource planning in source countries extremely difficult to manage since this treaty encourages free flow of personnel. Here, only with team work can the developing countries help themselves. It is important to make healthcare an exception to this treaty to protect the interest of millions in the developing world.

The present study has been restricted to India. Further, here responses have been gathered from the medical and dental sciences background. Therefore, the present study needs to be examined from contextual perspective.

There is an urgent need for better understanding of both the inward and outward flow of professional's through accurate and reliable data. This process would go a long way in understanding the consequences of such movement. Present study was confined to India only. Each country may have some specific metrics which affects them more. In this study, broadly four factors have been discussed which impact the decision to migrate. For a much broader perspective, few thought provoking questions can be considered for further study and a more detailed understanding on this subject.

First, what are the factors influencing migration of unskilled labor? Does the migration of skilled personnel have any relation with the demand for unskilled labor in the receiving country?

Second, if brain drain adversely impacts source country in its development, then limiting this phenomenon should be productive in nature. Do any kind of policy decisions on curbing brain drain have desirable long-term effects?

Third, this study is limited in its scope with respect to medical and dental streams. Are the factors discussed in this study equally applicable to other industry sectors namely Information Technology?

Finally, India although a developing country, has a large English speaking population. Do the above discussed factors hold true equally for non-English speaking country migrants? Do they have some other motivation and reasons for leaving their country?

BIBLIOGRAPHY

1. Adkoli BV. Migration of health workers: perspectives from Bangladesh, India, Nepal, Pakistan and Sri Lanka. In *Regional Health Forum* 2006;10(1):49-58.
2. Agrawal A, Kapur D, McHale J, Oettl A. Brain drain or brain bank? The impact of skilled emigration on poor-country innovation. *J Urban Econom* 2011;69(1):43-55.
3. Ahmad OB. Managing medical migration from poor countries. *BMJ*: 2005;331(7507):43.
4. Aiken LH, Buchan J, Sochalski J, Nichols B, Powell M. Trends in international nurse migration. *Health Affairs* 2004;23(3):69-77.
5. Beine M, Docquier F, Rapoport H. Brain drain and economic growth: theory and evidence. *J Develop Economics*, 2001;64(1): 275-289.
6. Beine M, Docquier F, Rapoport H. Brain drain and human capital formation in developing countries: winners and losers. *Econo-mics J* 2008;118(528):631-652.
7. Bhagwati J, Hamada K. The brain drain, international integration of markets for professionals and unemployment: a theoretical analysis. *J Develop Economics* 1974;1(1):19-42.
8. Bushnell P, Choy WK. Go West, Young Man, Go West! (No. 01/07). *New Zealand Treasury* 2001.
9. Chen L, Evans T, Anand S, Boufford JI, Brown H, Chowdhury M, Wibulpolprasert S. Human resources for health: overcoming the crisis. *Lancet* 2004;364(9449):1984-1990.
10. Commander S, Kangasniemi M, Winters LA. The brain drain: curse or boon? A survey of the literature. In *Challenges to Globalization: Analyzing the Economics*. University of Chicago Press; 2004. p. 235-278.
11. De Haas H. International migration, remittances and development: myths and facts. *Third World Quarterly*, 2005;26(8): 1269-1284.
12. Desai MA, Kapur D, McHale J, Rogers K. The fiscal impact of high-skilled emigration: Flows of Indians to the US. *J Develop Economics* 2009;88(1):32-44.
13. Docquier F, Rapoport H. Skilled migration: the perspective of developing countries (No. 2873). *IZA Discussion Papers* 2007.
14. Docquier F, Rapoport H. Globalization, brain drain, and development. *J Economics Liter* 2012;50(3):681-730.
15. Docquier F, Rapoport H. The economics of the brain drain. *J Econo Liter*, Forthcoming 2011.
16. Easterly W, Levine R. What have we learned from a decade of empirical research on growth? It is Not Factor Accumulation: Stylized Facts and Growth Models. *The World Bank Economic Review* 2001;15(2):177-219.
17. Giannoccolo P. The brain drain: a survey of the literature. *Università degli Studi di Milano-Bicocca*, Department of Statistics, Working Paper, (2006-03), 2009;02.
18. Grubel HG, Scott A. The brain drain: determinants, measurement and welfare effects. *Wilfrid Laurier Univ. Press* 1977.
19. Guellec D, Cervantes M. International mobility of highly skilled workers: from statistical analysis to policy formulation. In *International Mobility of Highly Skilled Workers* 2002;71-98.
20. Hamada K, Bhagwati J. Domestic distortions, imperfect information and the brain drain. *J Develop Economics* 1975;2(3):265-279.
21. Hamilton K, Yau J. The global tug-of-war for health care workers. *Migration Information Source* 2004.
22. Henderson LN, Tulloch J. Incentives for retaining and motivating health workers in Pacific and Asian countries. *Human Resources for Health* 2008;6(1):18.
23. Hongoro C, McPake B. How to bridge the gap in human resources for health. *Lancet* 2004;364(9443):1451-1456.

24. Available at: http://www.oecdobserver.org/news/archivestory.php/aid/673/The_brain_drain:Old_myths,_new_realities.html
25. Kangasniemi M, Winters LA, Commander S. Is the medical brain drain beneficial? Evidence from overseas doctors in the UK. *Social Science & Medicine* 2007;65(5):915-923.
26. Kapur D, McHale J. Are We Losing the Global Race for Talent?. *Wall Street J* A17;2005.
27. Kapur D, McHale J. Give us your best and brightest: the global hunt for talent and its impact on the developing world 2005.
28. Kapur D, McHale J. The global migration of talent: what does it mean for developing countries? 2005.
29. Mountford A. Can a brain drain be good for growth in the source economy?. *J Develop Economics* 1997;53(2):287-303.
30. Mullan F. The metrics of the physician brain drain. *New England J Med* 2005;353(17):1810-1818.
31. Observer OECD. The brain drain: old myths, new realities 2002.
32. Popescu D, Patrasca M, Chivu I. Tendencies of international career of romanian researchers: brain drain? *J App Quantit Meth* 2006;1(2):194-209.
33. Rao M, Rao KD, Kumar AK, Chatterjee M, Sundararaman T. Human resources for health in India. *Lancet* 2011;377(9765):587-598.
34. Salt J. International movements of the highly skilled (No. 3). OECD Publishing 1997.
35. Smith RD, Chanda R, Tangcharoensathien V. Trade in health-related services. *Lancet* 2009;373(9663):593-601.
36. Stilwell B, Diallo K, Zurn P, Vujicic M, Adams O, Dal Poz M. Migration of healthcare workers from developing countries: strategic approaches to its management. *Bulletin of the World Health Organization* 2004;82(8):595-600.
37. United Nations. Population Division. International Migration Report 2002 (Vol. 220). United Nations Publications 2002.
38. Wickramasekara P. Policy responses to skilled migration: Retention, return and circulation 2003.
39. Willis-Shattuck M, Bidwell P, Thomas S, Wyness L, Blaauw D, Ditlopo P. Motivation and retention of health workers in developing countries: a systematic review. *BMC Health Services Research* 2008;8(1):247.

Gap Analysis between Patients' Expectations and Services Provided by Pharmacy Store of a Tertiary Care Hospital

¹Jharna Bajpai, ²Nirmal K Gurbani

ABSTRACT

Pharmacy store of hospital is among one the major revenue generating area of hospital. Its performance can be a vital element in the success of any upcoming hospital. Nowadays, not only the availability of prescribed drugs matters but explanation of dose, frequency and duration of drugs to be taken, behavior of pharmacist and waiting time to get drugs play an important role in satisfaction of patients. The pharmacy store of the hospital provides more specialized and more time-saving services for patients. It also eases the financial burden on pharmacy users via drug discounts. A cross-sectional comparative study was conducted on 90 respondents. A self administered pre-designed, pretested, structured questionnaire was given to selected respondents on first contact to the pharmacy store of the hospital with the aim to study the perception of patients and hospital on various parameters. Seventy-one percent respondents appreciated the accessibility to pharmacy. When segregated by sociodemographic characteristics females showed greater level of satisfaction than males, respondents above 50 years of age, respondents who were unmarried, those who had come for a follow-up were most satisfied with services. Eighty-six percent respondents appreciated the politeness in communication by pharmacists. There was some discordance between the perception of patients and the perception of hospital in accessibility to pharmacy. A large number of respondents were satisfied with clarity and brevity of information given by pharmacy staff, the presence of pharmacist, and availability of prescribed drugs.

Keywords: Patient satisfaction, Pharmacy store, Tertiary care hospital, Perception of patients, Perception of hospital management.

How to cite this article: Bajpai J, Gurbani NK. Gap Analysis between Patients' Expectations and Services Provided by Pharmacy Store of a Tertiary Care Hospital. *Int J Res Foundation Hosp Healthc Adm* 2014;2(2):73-78.

Source of support: Nil

Conflict of interest: None

¹Quality Executive, ²Professor

¹Bhagwan Mahaveer Cancer Hospital and Research Center (BMCHRC), Jaipur, Rajasthan, India

²Department of Pharmaceutical Management, Institute of Health Management and Research, Jaipur, Rajasthan, India

Corresponding Author: Jharna Bajpai, Quality Executive 59, Devi Path, Near Soni Hospital, JLN Marg, Jaipur-302004 Rajasthan, India, Phone: +918290598300, e-mail: drjarnabajpai@gmail.com

INTRODUCTION

In recent years, awareness has risen on how patients perceive the quality of their healthcare. Consequently measuring patient satisfaction has become an important tool to gain attention and value among the healthcare consumers as well as competitors. Measuring patient satisfaction encompasses evaluating patient's perceptions and determining whether they felt that their needs met.¹ Research in the area of 'Hospital Administration in India' is still in its infant stage. To mention a few important research works carried out in India, a reference can be made to Sreenivas² who examined why the hospital administrator should take patient-satisfaction seriously as a measurement. He further explained the methodology to evaluate the patient satisfaction. The patient satisfaction is the real testimony to the efficiency of hospital administration. Satisfaction or dissatisfaction refers to emotional response to the evaluation of services, consumption and experience. As the hospital serves all the members of the society, the expectations of the users differ from one individual to another individual, because everyone carries a particular set of thoughts, feelings and needs. Hence, determination of patients' real feelings is very difficult. It is the responsibility of the administrator to put himself in patient's shoes (empathy). Patients from certain expectations prior to the visit. Once patients come to the hospital and experience the facilities, they may then become either satisfied or dissatisfied. The concept of patient satisfaction is rapidly changing to customer's delight which means the patient is not only cured of his ailments but is also pleased with the amenities provided to him by the organization and its staff. The role of manpower does play a very important role in patient satisfaction. A medical institute is a complex organization and every employee directly or indirectly involved in rendering services is important for the patient.³ The healthcare system is basically a service based industry and customer satisfaction is of the utmost importance just as in other services-oriented systems.⁴ The Maslow's theory of hierarchy of needs is famous theory which says that man is wanting animal and his motives go on changing. The fulfilled motive no longer remains a motive; once one's need is fulfilled the other takes the place.⁵

Pharmacy store of the hospital constitutes one of the largest revenue generating area of a hospital. The

performance of the pharmacy department can be a vital element in the success of a hospital. The high cost of medications and drug-related technology, combined with the potential impact of medications and pharmacy services on patient-care outcomes and patient safety make it imperative that pharmacy departments perform at the highest level possible. However, the increasing complexity and range of medicines and a greater awareness of medication errors have facilitated a change toward a patient-centered role.⁶

The pharmacy store provides more specialized and more time-saving services for patients. It also eases the financial burden on pharmacy users via drug discounts. Aside from the money saved on travel, the pharmaceutical costs may also be reduced. The pharmacy store of the hospital benefits the patients by making available the prescribed drugs, thus helping the patients to avoid the difficulties in gathering drugs from various outside pharmacy stores. As prescribing preferences are different at different places, the prescribed medicines may not be available at many places, but is definitely available in the pharmacy of the hospital from where the prescription is generated.

As pharmacy is the exit point of hospital, patients wish to get the drugs as early as possible to get relief from their sufferings. Long waiting time, nonavailability of drugs, contributes to dissatisfaction and ultimately the reputation of the hospital gets tarnished. Nowadays, not only the availability of prescribed drugs matters but also the explanation of dose, frequency and duration of the treatment by the pharmacist, behavior of pharmacist and waiting time to get the drugs play an important role in satisfaction of patients. Thus, there was a need of an evaluation tool which identifies the gap between the patients' expectations and the services provided by the pharmacy store of the hospital and to suggest measures to fill the lacunae. The present study aims to identify gaps between patients' expectations and services provided by pharmacy of tertiary care hospital and to determine the impact of various sociodemographic factors on the level of satisfaction.

MATERIALS AND METHODS

Research Design

The present cross-sectional study was conducted among patients and patients' attendants attending the pharmacy store of a tertiary care hospital in Mumbai. The period of this study was 2 months (April 2013-June 2013). One month was devoted for data collection. On an average, 5 patients/attendants were interviewed per day, so $25 \times 5 = 125$ questionnaires were filled. Out of those, only 90 questionnaires were found to be completely filled, i.e. the response rate was 72% and incomplete response rate was 28%. Incomplete questionnaires were discarded and not incorporated

in the data entry and analysis, therefore sample size was restricted to 90 only. Remaining 1 month was given for data compilation, data analysis, drawing conclusions and recommendations.

Tools and Techniques

Respondents were selected by 'convenient sampling' technique. The research tool was a structured, self-administered bilingual questionnaire. For the validity and reliability of questionnaire, pre-test on questionnaire was conducted on 30 patients in the hospital (study site). The Cronbach's alpha was applied for reliability analysis of the questionnaire for satisfaction and value resulted to be 0.77. According to this result, some questions were rewritten to eliminate ambiguity. Nominal scale and Likert five points scaling was used for measuring the satisfaction level. The rating was done as following:

5: extremely satisfied, 4: very satisfied, 3: satisfied, 2: not satisfied, 1: dissatisfied. The difference between 1: dissatisfied and 2: not satisfied is on the basis of: non satisfied leaves open the possibility of eventually being satisfied, as some scope is there to achieve satisfaction. Dissatisfied implies that they could not be satisfied, a failure to make them satisfied. If any respondent got confused between 'not-satisfied' and 'dissatisfied', he was explained the difference between the two options.

The instrument was given to the patients and patients' attendants on their entry to the pharmacy. The respondents filled the questionnaire on the basis of their perception and simultaneously another set of questionnaire was being filled by the observer who judged the services and pharmacy staff to compare patient satisfaction with our observations, as per the parameters finalized by the hospital itself which are as under:

For accessibility to pharmacy:

5: distance should be covered in less than 3 minutes

4: distance should be covered in 3 to 5 minutes

3: distance should be covered in 5 to 8 minutes

2: distance should be covered in 8 to 10 minutes

1: distance should be covered in more than 10 minutes

For waiting time to get the medicines:

5: waited for less than 5 minutes

2: waited for 5 to 10 minutes

3: waited for 10 to 15 minutes

4: waited for 15 to 20 minutes

5: waited for more than 20 minutes

The criteria for politeness of communication of staff were as follows:

One mark each was awarded for each of the following gestures done:

- The pharmacy staff must greet the patient

- A welcoming smile should be rendered
- They should be attentive to the queries of patient
- Quality of voice tone should be mild
- If they are asking the patient to wait, define a time limit.

The criteria for clarity and brevity of information by the staff were as follows:

One mark each was awarded for each of the following gestures done:

- Prompt response to the queries.
- If the answer given by the staff is specific and to the point.
- If the answer given by the staff in the language the patient understands.
- Non involvement of the staff in unnecessary communication with the patient.
- Use of nonmedical terminologies while explaining the drugs to the patient.

By this technique, it became possible to compare patient's expressed satisfaction with the observation. Apart from these parameters, remaining questions were to be answered in either 'Yes' or 'No', so there was no need of any set criteria. They were to be seen on the spot.

Ethical Considerations

The institutional Ethical committee approved methodology and data collection procedure of the study. Participation was purely voluntary for the respondents. A patient attending the out patient department pharmacy and having age above 18 years was included in the study after taking informed consent. No pressure or inducement of any kind was applied to encourage an individual to become included in the study. Before participation, all respondents were notified about the study's aim, objectives and methods. Any patient had the right to abstain from participation or to terminate participation at any time. The identity of individuals from whom information is obtained in the course of the study was kept strictly confidential. No information revealing the identity of any individual was included in the final report or in any other communication prepared in the course of the study. Patient working in the healthcare facility and patients with serious physical or mental pathologies, such as terminal disease and psychosis were excluded from the study.

Statistical Methods

Data were analyzed using the SPSS statistical software program version-16. First, the mean, median, mode, standard deviation was calculated, and then test of significance applied to calculate the p-value at the 95% confidence interval. To find out the correlation between the perception of patients and perception of hospital, the Karl Pearson's correlation coefficient was calculated.

RESULTS

Results are presented in Tables 1 to 4, followed by interpretations as under:

Ninety-five percent respondents appreciated the availability of prescribed drugs. Less than 50% respondents appreciated the explanation of dose, frequency and duration of drugs and 56% respondents appreciated explanation of intake of drugs in the language patients' understand. Sixty-eight percent showed satisfaction with waiting time to get the drugs.

On segregation according to sociodemographic characteristics, females were found to be relatively more satisfied with the services of pharmacy than males, respondents above 50 years of age showed higher satisfaction than those belonging to age group 18 to 50 years. Respondents having academic qualification below X standard were relatively more satisfied than those who had gone to senior secondary school, graduates and postgraduates. Unmarried respondents showed greater level of satisfaction than married respondents. Degree of satisfaction in decreasing order was found from organization, insurance and self finance in terms of medical expenses borne by the respondents. Cross tables were made and test of significance was applied to various determinants. It showed statistical significant association of

Table 1: Sociodemographic distribution of respondents in a tertiary care hospital

<i>Variables</i>	<i>Percentage of respondents (N = 90)</i>
<i>Gender</i>	
Males	53.3
Females	46.6
<i>Age group</i>	
18-50 years	88.8
Above 50 years	11.1
<i>Educational qualification</i>	
Postgraduates	34.4
Graduates	43.3
Up to senior secondary	10.0
Below X standard	12.2
<i>Marital status</i>	
Married	74.4
Unmarried	25.5
<i>Medical expenses</i>	
Organization	13.3
Insurance	26.6
Self finance	60.0
<i>Socioeconomic status</i>	
Below ₹ 20000/month	17.7
₹ 20000-50000/month	41.1
Above ₹ 50000/month	41.1
<i>Type of consultation visit</i>	
First visit	54.4
Follow-up	45.5

Table 2: Frequency and percentage distribution of satisfied respondents with various parameters of pharmacy

Parameters	Frequency of satisfied respondents (N = 90)	Percentage of satisfied respondents (N = 90)
Signage to pharmacy	67	74.4
Accessibility to pharmacy	64	71.1
Satisfaction with waiting time to get drugs	61	67.7
Politeness of communication of pharmacy staff	77	85.5
Clarity and brevity of information given by pharmacy staff	78	86.6
Presence of pharmacist	80	88.8
Availability of prescribed drugs	85	95.0
Explanation of dose, frequency and duration of drugs to be taken	48	53.4
Explanation of intake of drugs in the language patients understand	50	56.0
Warmly reception at the pharmacy counter	70	78.0

Table 3: Frequency and percentage of satisfied respondents according to sociodemographic characteristics

Variables	Frequency of satisfied respondents	Percentage of satisfied respondents
Gender		
Males (N = 38)	31	81.5
Females (N = 42)	34	80.9
Age		
18-50 years (N = 64)	45	70.3
Above 50 years (N = 26)	21	80.7
Academic qualification		
Postgraduates (N = 31)	13	41.9
Graduates (N = 39)	20	51.3
Up to senior secondary (N = 09)	3	33.3
Below X standard (N = 11)	9	81.8
Marital status		
Married (N = 67)	41	61.2
Unmarried (N = 23)	18	78.2
Medical expenses		
Organization (N = 12)	9	75
Insurance (N = 24)	16	66.6
Self finance (N = 54)	33	61.1
Socioeconomic status		
Below ₹ 20000/month (N = 16)	8	50
₹ 20000-50000/month (N = 37)	28	75.6
Above ₹ 50000/month (N = 37)	22	59.4
Type of consultation visit		
First visit (N = 49)	39	79.6
Follow-up (N = 41)	36	87.8

Table 4: Relation between perceptions of patients and hospital

Parameters	Karl Pearson's correlation coefficient
Accessibility to pharmacy	-0.41
Satisfaction with waiting time to get drugs	0.65
Politeness of communication of pharmacy staff	0.80
Clarity and brevity of information given by pharmacy staff	0.84

satisfaction with waiting time to get the drugs with gender and type of consultation visit.

Karl Pearson's correlation test has been applied on four parameters to find out the relation between the perceptions of patients and perceptions of hospital (see Table 4). This test was applied to find out the correlation between two sets of data (perceptions of patients' and perceptions of hospital) and to measure how well these two are related. The perception of hospital was judged on the criteria discussed under section: tools and techniques and the perception of patients' were decided by the responses filled by the patients in the questionnaire.

There was some discordance between the perception of patients and perception of hospital in accessibility to pharmacy as a low negative relationship occurs between the two. A negative correlation indicates that high scores in one data set are associated with low scores in the other data set. This means that the hospital perception and patients' perception for accessibility to pharmacy is different. In remaining other services of pharmacy, concordance was there. A positive correlation indicates that same scores have been imparted to both the variables. For waiting time to get the drugs, a positive correlation exist, the criteria set by hospital for waiting time to get the drugs and the perceptions of patients' stood together which means the responses filled by the patients are related to the criteria set by hospital.

DISCUSSION

Over the last two decades, the role of the pharmacist has changed. The new role has evolved from the traditional activity of mere dispensing medications to broader responsibilities of pharmaceutical care.⁷ Pharmaceutical care requires a much more intimate and intensive relationship between the pharmacist and patient than simple pharmaceutical dispensing.⁸ Seventy-one percent respondents appreciated the accessibility to pharmacy. This study is consistent with the study conducted by KS Prasanna et al.⁹ In their study, the results of this finding were approximately 80%. Around 52% respondents appreciated the explanation given by the pharmacist of dose, frequency and duration

Table 5: Comparison of the findings reported in the literature with this study

Parameters	KS Prasanna <i>et al</i>	EPY Muhondwa	PR Sodani <i>et al</i>	John Paul T Cuevas	Present study
Satisfaction with accessibility to pharmacy	80%	-	-	-	71%
Satisfaction with explanation given by the pharmacist of dose, frequency and duration of drugs to be taken	86%	-	-	-	52%
Satisfaction with waiting time to get medicines	53%	69%	-	-	67%
Satisfaction with politeness of communication of pharmacy staff	-	-	70%	-	86%
Satisfaction with warmth of reception	-	-	70%	-	78%
Satisfaction with the availability of prescribed drugs	-	-	-	40%	95%

of drugs to be taken. This observation is different with the study conducted by KS Prasanna *et al*⁹ showing to this as 86%. Around 67% respondents appreciated waiting time to get medicines, this observation when compared with those reported by KS Prasanna *et al* shows satisfaction to be 53%.¹² In another study conducted by EPY Muhondwa *et al*, around 69% respondents were satisfied with the waiting time.¹⁰ Approximately 86% respondents appreciated the politeness of communication of pharmacy staff and 78% appreciated warmth of reception at the pharmacy counter. This observation is consistent with the study conducted by PR Sodani *et al*.¹¹ Around 95% respondents were satisfied with the availability of prescribed drugs, which is in contrast to the study conducted by John Paul T Cuevas, who found around 40% of the respondents to be satisfied.¹² A comparative picture of above mentioned studies with this study is summarized under Table 5.

Consistencies and variability in data suggest that parameters for satisfaction of patients cannot be generalized and these would vary from situation to situation besides impact of various socioeconomic, cultural and geographical aspects. It is commonly believed that satisfaction with healthcare may be dependent upon variables, such as social class, marital status, gender and in particular age group.¹³ There was statistical significant association between waiting time to get drugs and gender,¹⁴ males were more apprehensive, the reason behind this could be that they want to get themselves free from the hospital as soon as possible so that they get involved in other tasks. Also a statistical significant association was seen between type of consultation visit and waiting time as the ones who came for follow-up became more acquainted with the waiting time. A statistical significant relationship also occurred between politeness of communication of pharmacy staff and patients who came for a follow-up. The reason could be that the patients who visited for a follow-up might become acquainted with the communication of staff and had an image in their mind about their communication skills as compared to the ones who came for the first time. There has

been no study conducted yet to assess the relation between the perception of patients and perception of hospital.

CONCLUSION

The study showed that a large number of respondents were satisfied with clarity and brevity of information given by pharmacy staff, the presence of pharmacist and availability of prescribed drugs. Not much respondents responded positively for waiting time to get the drugs. This should be aimed to attain maximum satisfaction as no customer likes to wait in service industry and hospital is no such exception. Around 50% respondents showed satisfaction with explanation of dose, frequency and duration of drugs in the language, the patients' understand, the hospital should provide necessary training to its concerned staff for improving the satisfaction level of patients. The assessment between perception of patients and perception of hospital showed that hospital considered the location and accessibility of pharmacy to be satisfactory, but in reality, the respondents were not satisfied with this. This should be worked upon either by the hospital on the basis of detailed analysis of responses from not satisfied and dissatisfied categories.

REFERENCES

1. Lis CG, Rodeghier M, Gupta D. Distribution and determinants of patient satisfaction in oncology: a review of the literature. Patient preference adherence. Dovepress 2009;3:287-304.
2. Talluru S, Prasad G. Patient satisfaction: a comparative study. J Academy Hospital Administration 2003;15(2).
3. Waseem Q, Khan NA, Naik AA, *et al*. a case study on patient satisfaction in SMHS Hospital, Srinagar. JK-Practitioner 2005; 12(3):154-155.
4. Turhal NS, Basak E, Mahmut G. Patient satisfaction in the outpatients' chemotherapy unit of Marmara University, Istanbul, Turkey: a staff survey. BMC Cancer 2002;2:30.
5. Amitabha C, Saha TK, Karmakar PR, *et al*. Patient satisfaction evaluation in CGHS dispensaries in Kolkata, India. IOSR J Dent Med Sci 2013;6(4):13-19.
6. Morecroft CW, Thornton D, Caldwell NA. In patients' expectations and experiences of hospital pharmacy services qualitative study. Health expectations: Int J Public Participation in Health Care and Health Policy 2013;16(2).

7. Berger B. Building an effective therapeutic alliance: competence, trustworthiness and caring. *Am J Hospital Pharm* 1993;50(11): 2399-2403.
8. Sleath B. Pharmacist patient relationships: authoritarian, participatory, or default. *Patient Educ Couns* 1996;28(3):253-263.
9. Prasanna KS, Bashith MA, Sucharitha S. Consumer satisfaction about hospital services: a study from the outpatient department of a private medical college hospital at Manglore. *Indian J Community Med* 2009;34(2):156-159.
10. Muhondwa EPY, Leshabari MT, Mwangu M, et al. Patient satisfaction at the Muhimbili National Hospital in Dar Es Salaam, Tanzania. *East African J Public Health* 2008;5(2):70.
11. Sodani PR, Kumar RK, Laxman S. Measuring patient satisfaction: a case study to improve quality of care at public health facilities. *Indian J Community Med* 2010;35(1):52-56.
12. John PT. Patient satisfaction of the healthcare services provided by the Zamboanga city medical center outpatient department (dissertation). Ateneo de Zamboanga Univ; 2008. p. 15.
13. Asma I. Patientsatisfactionwithhealthservicesattheoutpatientdepartment of Indira Gandhi Memorial Hospital, Male Maldives (dissertation). Faculty of Graduate Studies. Mahidol Univ; 2008. p. 48.
14. Patavegar B, Shelke S, Adhav P. A cross-sectional study of patient's satisfaction toward services received at tertiary care hospital on OPD basis. *National J Community Med* 2012;3(2):236.

RESEARCH ARTICLE

Patient Satisfaction Survey at a Tertiary Care Speciality Hospital

¹Neeraj Garg, ²Shakti Kumar Gupta, ³R Mahesh

ABSTRACT

Introduction: Patient satisfaction is one of the most important parameters of quality. The measurement of patient satisfaction is an important tool for research, administration, and planning. Client satisfaction is a crucial index for determining the quality services and the way in which they are provided by medical staff. The patient satisfaction is of paramount importance in ensuring better quality on the way to total quality management. Patient satisfaction survey are important from the view of improvement of quality of services and to attain the maximum satisfaction of the in-patients.

Aims and objectives: The aim of the study is to assess the level of satisfaction of in-patients at Tertiary care speciality hospital and to find out the causes for dissatisfaction. The objectives set were, to study the level of satisfaction of in-patients in private and General wards at Tertiary care speciality hospital and to find the causes for dissatisfaction, if any and suggest remedial measures.

Methodology: A questionnaire based study where views of inpatient were taken regarding various clinical and support services. The data were collected from different patient care areas over a period of 2 months, and analyzed to determine the biggest dissatisfying factors among the patients.

Observations: More than 88% of the patients have rated the services as Excellent/Good. The areas where the satisfaction level is low is the cleanliness specially in the toilets and the quality of food served to the patients. As far as clinical care is concerned 95% of the patients are satisfied with the level and expertise of professional care but suggested for development of soft skills in doctors and paramedics.

Conclusion: The study suggests that a majority of in-patients are highly satisfied with the services of the Hospital. The study recommends for the need to develop soft skills among Doctor and paramedics and to improve upon the level of cleanliness and quality of dietary services.

Keywords: Patient satisfaction, Soft skills, Cleanliness in toilets, Dietary services.

How to cite this article: Garg N, Gupta SK, Mahesh R. Patient Satisfaction Survey at a Tertiary Care Speciality Hospital. *Int J Res Foundation Hosp Healthc Adm* 2014;2(2):79-83.

Source of support: Nil

Conflict of interest: None

INTRODUCTION

Patient satisfaction is one of the most important parameters of quality. The measurement of patient satisfaction is an important tool for research, administration, and planning.¹ Client satisfaction is a crucial index for determining the quality services and the way in which they are provided by medical staff. Satisfaction with the physicians, nurses, equipment, housekeeping, billing, and food services were the main determinants of overall satisfaction in hospitalized patients.² The patient satisfaction is of paramount importance in ensuring better quality on the way to total quality management, because the patient (customer) is the one who decides the quality, who accepts the goods/services, who makes the other to accept it, who decides your market strategies, who gives correct feedback about the performance of the hospital, and makes success the program of total quality management.³ Patient satisfactions is an indicator of how the patient has perceived the other qualitative aspects of care and can be used as a proxy measure of those aspects.⁴ Patient satisfaction is a pre-requisite for achieving the goals of healthcare as it influences the patient's decision to follow prescribed treatments and seek professional healthcare in the future. Patients are capable of assessing the quality of care, they receive as they pay attention to all components of care — the science of medicine, the art of care, and the amenities of care.⁵ Hospital satisfaction questionnaire asked respondents general questions relating to reception/administration, hospital cleanliness, signage, hospital food, etc.

Patient satisfaction survey are important from the view of improvement of quality of services and to attain the maximum satisfaction of the in-patients.

A cross-sectional study of satisfaction of in-patients in a Private Medical College Hospital in AP by Rajagopal Rao Kodali, P Sita Ramacharyulu⁶ showed that the satisfaction of in-patients expressed by majority was good followed by fair,

¹Lieutenant Colonel, ²Medical Superintendent

³Assistant Professor

¹MOHS, Army Hospital (Research and Referral), Delhi Cantt New Delhi, India

²Dr RP Centre for Ophthalmic Sciences, All India Institute of Medical Sciences, New Delhi, India

³Department of Hospital Administration, All India Institute of Medical Sciences, New Delhi, India

Corresponding Author: Neeraj Garg, Lieutenant Colonel MOHS, Army Hospital (Research and Referral), Delhi Cantt New Delhi, India, e-mail: drneerajgarg1974@gmail.com

bad, very good, and very bad. The satisfaction expressed was more with nursing services followed by doctors and billing and least with housekeeping.

The study recommends that the doctors and nurses should be motivated by conducting CME programs, seminars, and sensitization workshops periodically. Medical and nursing audits can be introduced to improve the quality of medical care and to reduce the cost to the patient. Housekeeping staff should be posted in all the wards round the clock in sufficient numbers and maintain the neatness of the wards by using disinfectants and their work should be supervised from time to time.

Examining the relationship between patient-centered care (PCC) and outcomes by Poochikian-Sarkissian S, Sidani S, Ferguson-Pare M, Doran D⁷ to examine the extent to which staff nurses provided PCC, as perceived by staff nurses and patients, and to explore the relationships between implementation of PCC and patient outcomes, confirms that implementation of PCC is expected to improve patient outcome by increasing patient self-care ability and improving satisfaction with care and quality of life.

A population-based survey using PPE-15: relationship of care aspects to patient satisfaction in Hong Kong. Wong EL, Leung MC, Cheung AW, Yam CH, Yeoh EK, Griffiths S, Source School of Public Health and Primary Care, the Chinese University of Hong Kong, HKSAR, Hong Kong, China. lywong@cuhk.edu.hk.⁸

The mean global satisfaction scores for public and private hospital care were 7.3/10 and 7.8/10, respectively. By adjusting patient demographics, the regression models show that 'want to be more involved in decision made about the care and treatment', 'respect for patient's dignity', 'patients' family have enough opportunity to talk to doctor' and 'tell about danger signals regarding illness/treatment after went home' are major determinants of the global satisfaction scores. Study concludes that communication, respect and patient engagement in provider-patient relationship are important in determining patient's satisfaction. Training and healthcare education curriculum could take this into account for ensuring the quality of PCC.

Patient experience of nursing quality in a teaching hospital in Saudi Arabia.

Al Momani M, Al Korashy H, Source Department of Nursing Administration and Education Department, King Saud University, Riyadh, Kingdom of Saudi Arabia.⁹

The findings of this study demonstrate negative experiences of patients with nursing care in dimensions of information, caring behavior, and nurse competency and technical care. Awareness of the importance of these dimensions of nursing care and ongoing support to investigate patients' perception periodically toward quality of nursing care are critical to success the philosophy of patient centered healthcare.

Another study done on patient satisfaction in Cyprus concludes that nurses should be made more sensitive and aware of the importance of patients' information and autonomy as well as their rights in general. Additionally, an effort should be made to improve hospitalization services and more specifically, food, where more dietary options should be given, as well as some measure taking for restricting the noise.¹⁰

Another study done to assess that factors affecting patient satisfaction in a Dental College in Tumkur City suggests that measures have to be undertaken in order to fulfill the void by placing signboards, explaining the treatment procedure/ or any delay to built a good rapport with the patient. But only targeting a reduction in complaints is not a sign of improvement. What is needed is an effective evaluation of the accessibility of procedures and proof of real action, to encourage and support complaints.¹¹

AIMS AND OBJECTIVES

Aims

To study the level of satisfaction of in-patients at Tertiary care speciality hospital and to find out the causes for dissatisfaction.

Objectives

1. To study the level of satisfaction of in-patients in private and general wards at Tertiary care speciality hospital.
2. To find the causes for dissatisfaction, if any and suggest remedial measures.

Methodology

Study area: Tertiary care speciality hospital, cardioneuro centre, eye hospital and cancer hospital.

Study population: The study population was the in-patients from different wards including general wards and the private wards.

Sample size: A sample size of 384 has been determined at 95% confidence level with 5% precision.¹²

Study design: Cross-sectional descriptive study.

Duration of study: Two months (January and February, 2013).

Tool: The Northwest Territories (NWT) Hospital satisfaction questionnaire used in hospital in Fort Smith, was used as it is a valid tested tool.¹³

Observations

Following are the major observations:

- About 25% of the patients are from Delhi, while remaining 75% are from other states (Tables 1 and 2).
- UP, Haryana and Bihar constitutes more than 50% of the patients coming to Tertiary care speciality hospital.

Table 1: Patient's response to the questionnaire

S. no.	Service provided	Excellent	Good	Satisfactory	Poor
1.	How respectful was the receptionist/administration?	21.5%	59.1%	19.3%	0%
2.	How clean was the hospital?				
	Wards	21.0 %	72.6%	5.4%	1.1%
	Toilets	8.6%	46.2%	40.9%	4.3%
	Linen	9.4%	60.7%	29.6%	0.5%
3.	How helpful were the signs/directions?	19.9%	62.4%	16.1%	1.6%
4.	How was the hospital food?	5.4%	57.5%	32.3%	4.8%
5.	How were the services of medical records persons you received (time taken in preparation of case file at the time of admission)?	14.0%	66.1%	19.9%	0%
6.	How helpful and prompt was the person sitting in billing section?	10.7%	64.0%	24.2%	1.1%
7.	How helpful were the MSSO/social guides?	19.9%	52.7%	25.3%	2.1%
	<i>Healthcare providers</i>				
	Nurses				
8.	What do you think about the care you received from the nurses?	52.1%	38.7%	8.6%	0.5%
9.	How respectful were the nurses?	25.8%	63.4%	10.7%	0
10.	How well did the nurses answer your questions?	17.2%	58.1%	24.7%	0
	Doctors				
11.	What do you think about the care you received from the doctors?	62.4%	33.3%	4.3%	0
12.	How respectful were the doctors?	20.4%	65.6%	14.0%	0
13.	How well did the doctors answer your questions?	16.7%	44.6%	37.1%	1.6%
	<i>Paramedical services</i>				
14.	What do you think about the care you received from the paramedical professional (for example, the lab technologist who drew your blood, the ECG Technician, Refractionist)?	7.5%	74.2%	17.2%	1.1%
15.	How well did the paramedical professional answer your questions?	7.5%	66.7%	25.8%	0%

Table 2: Patient's concurrence for treatment/procedure

S. no.	Concurrence for treatment/procedure	Yes	No
1.	Was your treatment/procedure clearly explained to you?	97.3%	2.7%
2.	Were you involved in decisions affecting your care?	97.8%	2.1%
3.	Were you kept informed about the care planned for you?	97.3%	2.7%

- Cancer hospital has 85% of the patients coming from outside Delhi, which reflects toward non-availability of cancer treatment facility in other parts of the country as well the quality of care being provided by cancer hospital.

Major reasons for coming to Tertiary care speciality hospital is the reputation of the Institute as well lack of facilities in local hospitals.

- More than 88% of the patients have rated the services as excellent/good.
- Less than 1% of the patients have rated the services as poor.

Common Feedbacks given by Patients

1. Better coordination among various clinical departments.
2. Improvement in the security system and installation of CCTV cameras, in various areas of the institute like emergency, outpatient department, etc.

3. Training of doctors/nurses and paramedical and other support staff in soft skill.
4. Requirement of TV/Music system in the wards.
5. Improvement in the quality of food.
6. Better maintenance and upkeep of the toilets.

CONCLUSION

1. Approximately 25% of the admitted patients are from Delhi and rest 75% are from other parts of the country (Table 3).
2. Out of the 75% more than 50% are from UP, Bihar and Haryana and other parts of the country contribute just 25% of the patients.
3. Major reasons for coming to Tertiary care speciality hospital is the reputation of the institute as well lack of facilities in local hospitals. This reflects toward the requirement of developing quality medical services in different parts of the country (Table 4).
4. The level of satisfaction among the in-patients at Tertiary care speciality hospital and various centers is quite high. More than 88% respondents have labeled the overall satisfaction as excellent/good (Table 5 and Graph 1).
5. More than 70% of the respondents have rated most of the parameters as good or excellent.
6. The two area where there is a felt requirement of improvement are:
 - Cleanliness of toilets

Table 3: Demographic distribution of the patients

Hospital area	Delhi	Haryana	Uttar Pradesh	Bihar	Rajasthan	Others
Main hospital	30%	13.5%	26.5%	11.9%	5%	12.7%
Cardioneuro centre	21.1%	17.8%	31.1%	15.6%	4.4%	10.0%
Eye hospital	33.3%	11.8%	24.7%	15.1%	5.9%	8.6%
Cancer hospital	15%	10%	30%	5.5%	4.5%	35%
Average	25%	13.3%	28.1%	12%	5%	16.6%

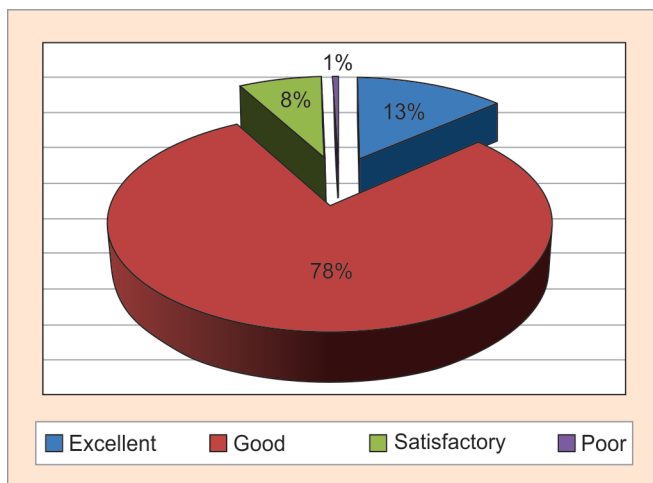
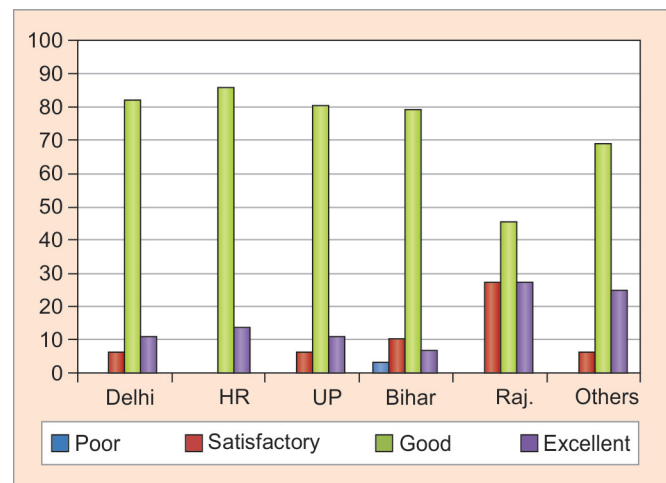
Table 4: Reason for coming to Tertiary Care Speciality Hospital

Hospital area	Lack of availability of facility in local hospital	Unable to afford treatment in local hospital	Reputation of Tertiary Care Speciality Hospital	Any other
Main hospital	33.46%	10.76%	48.84%	6.92%
Cardioneuro centre	32%	16.66%	34%	9%
Eye hospital*	50.54%	46.24%	69.35%	7.53%
Cancer hospital	35%	17.5%	40%	7.5%

*Cumulative percentage is more than 100% as patients have more than one reason for coming to Tertiary Care Speciality Hospital

Table 5: Overall level of satisfaction

Hospital area	Excellent	Good	Satisfactory	Poor
Main hospital	26.92%	59.23%	13%	0.84%
Cardioneuro centre	8.9%	76.7%	14%	0.4%
Eye hospital	13.4%	78.49%	7.53%	0.54%
Cancer hospital	20%	70%	9.5%	0.5%
Average	17.3%	71.1%	10.9%	0.7%

**Graph 1:** Overall level of satisfaction**Graph 2:** Level of satisfaction among patients from different states

- Dietary services
7. **Medical care:** Doctors—Approximately 95% of the respondents have labeled the care given by doctors as excellent/good and 85% have labeled that the doctors were respectful (excellent/good). While on the contrary 61% of the patients have labeled the responses of doctors as excellent/good for the queries of the patients, and remaining 39% have labeled it as satisfactory or poor. Similarly 24.73 and 25.81% of respondents have labeled the response as satisfactory or poor for nurses and paramedics respectively. These findings are in consonance

with the findings of the study A population-based survey using PPE-15: relationship of care aspects to patient satisfaction in Hong Kong Wong EL, et al (Table 1).

Patient satisfaction is an indicator of how the patient has perceived the other qualitative aspects of care and can be used as a proxy measure of those aspects. The study concludes that the overall level of satisfaction at Tertiary care speciality hospital and various Centres is quite high and encouraging, but there is always a scope of improvement. The level of satisfaction among patients from different states is quite high and almost same (Graph 2).

REFERENCES

1. WHO. World Health Organization, Technical Report Series 706. 1984.
2. Donabedian A. The definition of quality and approaches to its assessment. Ann Arbor, Michigan: Health Administration Press 1980.
3. Demir CCY. Determinants of patient satisfaction in a military teaching hospital. J Health Quality 2002;24(2):30-34.
4. Institute of Health Management Research.
5. KGN. Customer Satisfaction in Hospitals. Indian Express 2001.
6. Kodali RR, Ramacharyulu P. A cross-sectional study of satisfaction of in-patients in a private medical college in AP Indian J Med Science [Internet]. 2011. Available at: file:///c:/users/dell/desktop/thesis wor ppt final/pat sat/pat sat survey ROL/A cross sectional study of satisfaction of ... [Indian J Med Sci. 2011] - PubMed - NCBI.htm.
7. Poochikian-Sarkissian S, Sidanis F-PM. Examining the relationship between patient centered care and outcomes. Can J Neurosci Nurs. [Internet]. 2010. Available at: file:///c:/users/dell/desktop/thesis wor ppt final/pat sat/pat sat survey ROL/Examining the relationship between patie... [Can J Neurosci Nurs. 2010] - PubMed - NCBI.htm.
8. Wong EL, Leung MC, Cheung AW YC. A population-based survey using PPE-15: relationship of care aspect to patient satisfaction in Hong Kong. Int J Qual Health Care. [Internet]. 2011. Available at: file:///c:/users/dell/desktop/thesis wor ppt final/pat sat/pat sat survey ROL/A population-based survey using PPE-1... [Int J Qual Health Care. 2011] - PubMed - NCBI.htm.
9. Momani MAKH. Patient experience of nursing quality in a teaching hospital in Saudi Arabia. Iran J Public Health [Internet]. 2012. Available at: file:///c:/users/dell/desktop/thesis wor ppt final/pat sat/pat sat survey ROL/Patient experience of nursing quality i... [Iran J Public Health. 2012] - PubMed - NCBI.htm.
10. Merkouris A, Andreadou A, Athini E, Hatzimbalasi M, Papastavrou E, Dean A, et al. Assessment of patient satisfaction in public hospitals in Cyprus: a descriptive study. Health Science Journal 2013;7(1):28-40.
11. Kashinath KR, Bharateesh JV, Agali C. Factors affecting patient satisfaction among those attending an Outpatient Department of a Dental College in Tumkur City – a survey. J Dent Sci Research 2010;1(2):1-10.
12. Jawaha SK. A study on out patient satisfaction at a Super-specialty Hospital in India [Internet]. Internet Journal of Medical Update - Ejournal. 2007. p. 1. Available at: http://www.ajol.info/index.php/ijmu/article/view/39849.
13. Smith F. Northwest Territories Hospital satisfaction questionnaire; 2005. p. 1-14.

Need for Asset Management Systems to Improve Efficiency of Biomedical Engineering Department in Hospital

¹Amrita Patel, ²Kasturi Shukla, ³Uday Uttekar, ⁴Mahesh Mane, ⁵Rekha Dubey, ⁶Hem Chandra

ABSTRACT

Introduction: With advanced medical equipments being developed everyday, hospitals have assets that need expert maintenance in order to ensure their proper functioning. This study was undertaken to understand the problems related to asset management faced by the biomedical engineering department (BMED) at a 390 bedded tertiary hospital in Pune, Maharashtra.

Materials and methods: The cross-sectional study was conducted at a 390 bedded tertiary care hospital in Pune, India during May 2013. The BMED staff was interviewed to identify the problems faced by them in the current manual system of equipment record maintenance and the need for a computerized BMED record system. Data from January to April 2013 were analyzed to measure total number of entries/month, time required/entry and related errors.

Results: An average of 16 hours per month were spent on manual data entry of equipment maintenance and errors due to manual system led to problems like inaccurate reports to calculate breakdown time of equipments.

Conclusion: Computerized system software is the need of the hour for managing biomedical equipments. This will save many man-hours and also make the system more efficient.

Keywords: Asset, Biomedical equipment, Manual errors.

How to cite this article: Patel A, Shukla K, Uttekar U, Mane M, Dubey R, Chandra H. Need for Asset Management Systems to Improve Efficiency of Biomedical Engineering Department in Hospital. *Int J Res Foundation Hosp Healthc Adm* 2014;2(2): 84-86.

¹Student, ²Faculty, ³Manager, ⁴Assistant Manager
⁵General Manager, ⁶Professor and Head

^{1,2}Department of Post Graduate Program in Healthcare Services Program, Sancheti Healthcare Academy, Pune Maharashtra, India

^{3,4}Department of Biomedical Engineering, Aditya Birla Memorial Hospital, Pune, Maharashtra, India

⁵Department of Patient Services, Aditya Birla Memorial Hospital, Pune, Maharashtra, India

⁶Department of Hospital Administration, Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow, Uttar Pradesh, India

Corresponding Author: Kasturi Shukla, Faculty, Department of Post Graduate Program in Healthcare Services Program Sancheti Healthcare Academy, Shivaji Nagar, Pune Maharashtra, India, e-mail: k_agnihotri1@yahoo.co.in and kasturiagnihotir@rediffmail.com

Source of support: Nil

Conflict of interest: None declared

INTRODUCTION

As the healthcare industry is focusing on achieving top-line growth, it is facing major challenges in managing medical equipment, which include tracking and managing assets, complying with ever-changing regulatory standards, guarding against equipment failures, and managing clinical equipment inventory.¹ With advanced medical equipments being developed everyday, hospitals have assets that need expert maintenance in order to ensure their proper functioning. As in any high-technology enterprise, asset management in a hospital or healthcare network begins with an accurate inventory of the equipment installed, together with the ability to track the service history of each item of equipment and the related costs.^{2,3} In accordance to the same, this study was undertaken to understand the problems related to asset management faced by the biomedical engineering department (BMED) at a 390 bedded tertiary hospital in Pune, Maharashtra.

MATERIALS AND METHODS

Study design and settings: The cross-sectional study was conducted at a 390 bedded tertiary care hospital in Pune in the state of Maharashtra, India during the month of May 2013 after receiving approval from the hospital authorities. The selected hospital has a specialized BMED to maintain the critical as well as the noncritical medical equipments in the hospital and the authorities wanted to improve the efficiency of the presently existing manual system of data keeping at the department. This study was aimed at studying the working of the BMED and suggests recommendations for improvement if any.

Subjects: The staff working in the BMED was selected for the study. This included the senior manager, manager, four biomedical engineers and the clerk of the BMED.

Instrument: Based on the observations of work process flow at the BMED for a week, important variables for the study were identified on the basis of which the data collection methods were developed. Personal interviews were

Table 1: Errors due to absence of standard data entry system

Months	Total entries	Errors in name of equipment	Errors in entering asset codes	Errors in entering name of department	Errors in entering am/pm
Jan. 13	377	11	2	9	2
Feb.13	246	11	4	6	1
Mar.13	346	7	3	7	1
Apr.13	323	2	2	4	0

Table 2: Time required for manual data entry

Months	Total entries	Time required for manual data entry hours
Jan. 2013	377	19
Feb. 2013	246	12
Mar. 2013	346	17
Apr. 2013	323	16

conducted individually with all the staff members of the BMED to identify the problems faced because of the current system of maintaining the records of the equipments which was a manual system. Interviews were conducted in an unstructured manner so that responses were not restricted due to structured questions. These were useful to obtain the most relevant information. It was also useful in knowing the perception of the respondents. Registers maintained at the BMED were used to gather data for the study. The sources of data were the service reports registers, annual maintenance contract and comprehensive maintenance contract registers (AMC/CMCR), Excel spread sheets maintained by the BMED staff, calibration register, scrap material register. These registers were manually maintained and updated regularly by the staff.

Study procedure: In the initial first week, an observational pilot study and personal interviews were conducted to identify the crucial variables in the records. According to the observations, the data from the registers maintained in the department were studied and analyzed to gather data on the two crucial variables, i.e. time required for manual data entry and the errors occurring during the monthly data entries.

The service reports for the equipments in the hospital were manually filled in by the biomedical engineers. At the end of the day, these reports were supposed to be refilled into the Microsoft excel sheets being maintained by the department. This computerized data were then used to generate performance reports for the equipments and to measure the down time of the critical equipments. As there was a double entry system, i.e. manual and then again into the system there was considerable time being spent on the same process. The biomedical engineers sometimes did not get time for making the computer entries and this leads to piling up of work. Data from the months of January to April 2013 were analyzed and the following variables were measured:

- Total number of entries in each month.

- Time required for making the entries. (Average time taken by each biomedical engineer to make one entry was calculated by observing them while making the entries and noting down the time taken. This average time was then multiplied to the total number of entries).
- Errors due to absence of a standard entry system.

RESULTS

The BMED engineers work with a team of technicians and are mainly responsible for the repairs of the medical equipment in the hospital. In addition to this they are also responsible for the annual maintenance, calibration of the medical equipments and take regular rounds to check working of all the equipments. BMED engineers do the data entry of all the service reports, however due to time constraints they are sometimes unable to enter all data on the same day.

It was observed that all the data entry related to the maintenance of the equipments of the hospital was being done manually. There was no specialized software which could be used for all the data maintenance work. Maintaining separate registers for each of the details lead to segregation of data and hence it was difficult to club all the details of particular equipment at one place during decision making. Paper based registers were difficult to maintain as they had to be stored properly to prevent damage. Problems were faced when equipment was transferred from one department to other as there was no record of such transfers. There was no provision for reminders for due dates for calibration of equipment. The manager had to spend time to prepare the monthly reports to be sent to the top management as there was no provision to generate these reports automatically. As there was no customized software for data entries following problems, such as manual errors, no discipline among employees, real time updating not possible, data entry work getting piled up and then done hastily at the end of the month were faced. There was no provision for automatic generation of reports of the assets.

On an average 16 hours per month were being spent due to repetitive data entry. Manual errors were occurring as there was no standard system for entries of data (Table 1). These errors resulting in inaccurate reports while calculating the breakdown time of the equipments. There was redundancy in data entry done by the junior manager as well as the

engineers. This led to wastage of manpower hours (Table 2). There was no provision by which the data of the assets could be linked to the hospital management system. This had a negative impact on management decision making in terms of time as they had no direct access to the data and had to ask the department for the information before taking any decision.

This table depicts the errors occurring due to the manual entry of the data. Most important are the errors occurring in the am/pm entry for the time of call received to the time the call is completed. This error causes the downtime of the equipment to be calculated inaccurately. This incorrect calculation affects the further reports which are submitted to the top management of the hospitals.

Table 2 depicts the time required for the manual entry of the data of the equipment breakdowns. This time required doubles up when there is repetitive data entry by different employees. Thus, on an average 16 extra hours/month could be saved if the system was computerized with an advantage of reduced errors.

DISCUSSION

The present study aimed at finding the problems faced by the BMED due to the current system of data entry which was manual. Analysis of the data pointed out to the flaws of using a paper based system in order to maintain the assets of the hospital. Manual errors occurring and the redundancy in the data entry led to decrease in the efficiency of the functioning of the department. The efficiency can be improved and accurate management decisions can be made by understanding the importance of using an asset management system in the hospital.

Asset management systems can help hospitals and healthcare organizations increase equipment availability, reduce operating and maintenance costs and maintain higher quality requirements. This optimized performance includes the ability to manage the complete life cycle of all critical assets—beginning with planning and procurement and extending through deployment, tracking, maintenance and disposal.⁴ Hospitals abroad that have embraced asset management systems developed by companies, such as Intel, Philips, IBM and Infor have realized many immediate

and long-term advantages including direct, indirect and opportunity cost savings.^{4,5}

The advantages of outsourced vs hospital owned BMED can also be compared. On one hand, outsourcing provides specialized services at a fixed cost but suffers from disadvantages like difficulty in choosing the best provider, poor quality control, decreased company loyalty and a long bid process.⁶ On the other hand, hospital owned BMED ensures better quality control, enhanced accountability with better hospital understanding due to internal staff. In addition to electronic asset management software, the option of outsourcing vs own BMED may be considered by hospital administration for future management.

CONCLUSION

Implementation of asset management systems has helped in eliminating time-consuming manual audits. It has also improved asset reconciliation and gained the accurate data needed to more strategically plan for future data needs. In order to improve the efficiency of the department, the management should implement asset management system which will help reduce the time required for the data entry and will also reduce the number of errors occurring.

REFERENCES

1. Intermezzo 2. Asset management. Medicamundi 48/3 2004/11. Available at: http://www.healthcare.philips.com/pwc_hc/main/about/assets/docs/medicamundi/mm_vol48_no3/13_Intermezzo_2.pdf. Accessed on 18th November 2013.
2. Infor EAM Healthcare Edition (2012). Available at: www.infor.com/content/brochures/eam-healthcare.pdf. Accessed on: 10th December 2013.
3. Enhancing access to healthcare through innovation—Medical technology in India. PwC (2011) https://www.pwc.in/assets/pdfs/pharma/PwC-FICCI-Medical_Technology_in_India.pdf. Accessed on: 14th January 2014.
4. Need for asset management in corporate hospitals and trust hospitals. White paper. Available at: <http://www.levantare.co.in/>. Accessed on 14th November 2013.
5. IBM asset management solutions, White Paper. Sep 2007. Available at: <http://www-935.ibm.com/services/us/en/business-services/ibm-asset-management-solutions.html>. Accessed on 19th December 2013.
6. Outsourcing. Reference for business. Encyclopedia of business. 2nd ed. Available at: <http://www.referenceforbusiness.com/small/Op-Qu/Outsourcing.html>. Accessed on 1st June 2014.

A Comparative Study of Hand Hygiene Practices in Operation Theaters in Tertiary Level Hospitals in Delhi, India

¹Parmeshwar Kumar, ²Shakti Kumar Gupta, ³Arti Kapil, ⁴Aarti Vij, ⁵IB Singh

ABSTRACT

Background: Healthcare associated infections (HCAs) are directly related to the hand hygiene practices. Differences in implementation of practices may exist among hospitals despite standard guidelines.

Objective: To compare the hand hygiene practices in the operation theaters of tertiary care hospitals in Delhi.

Design and setting: A 6-months descriptive and cross-sectional study conducted in operation theaters of tertiary level, referral public and private sector hospitals in Delhi.

Materials and methods: Six leading multispecialty hospitals, three each from the private and public sectors were selected through purposive sampling. The sample comprised of cases from one major operation theater (OT) from each hospital conducting general surgery cases (10% of all cases).

A performa with 24 parameters was designed using the Center for Disease Control Guidelines for hand hygiene. Hospitals were analysed in categories and also independently.

Results: One thousand nine hundred and twenty observations were analyzed from six hospitals. The level of compliance was higher among the private sector and the autonomous hospital. Statistically significant differences were observed with groups of hand hygiene parameters namely hand washing, selection of hand hygiene agent, skin care, and educational programs and surgical scrub, but not regarding hand hygiene policy or technique. Comparison of five hand hygiene practices strongly recommended by CDC practices revealed significant differences. Adherence to hand washing practices was 76%,

surgical scrub practice was 85% and overall compliance of hand hygiene practice was 80.5%.

Conclusion: The study revealed gaps in implementation of hand hygiene practices despite standard guidelines. In future, post interventional studies may reflect the extent of improvement of these practices through reduction in HCAs.

Keywords: Hand hygiene practices, Operation theater, Surgical scrub.

How to cite this article: Kumar P, Gupta SK, Kapil A, Vij A, Singh IB. A Comparative Study of Hand Hygiene Practices in Operation Theaters in Tertiary Level Hospitals in Delhi, India. *Int J Res Foundation Hosp Healthc Adm* 2014;2(2):87-93.

Source of support: Nil

Conflict of interest: None declared

INTRODUCTION

Hand hygiene is a general term that applies to either hand washing, antiseptic hand wash, antiseptic hand rub, or surgical scrub.²

Healthcare associated infections (HCAs) are directly related to the hand hygiene practices. The increase in HCAI would mean an increase in cost incurred by the institution and the patient. Considering the resource and financial constraints as well as higher patient load in Indian hospitals, following the standard hand hygiene practices is vital.¹ Although, standard guidelines exist, there may be differences in implementation of the guidelines among hospitals especially in the absence stringent healthcare regulations.¹³ The study was undertaken to compare the hand hygiene practices in the operation theaters of tertiary care referral hospitals in Delhi.

MATERIALS AND METHODS

Study setting: Tertiary level hospitals in Delhi, with three hospitals each from the private and public sectors selected through purposive sampling based on permission from authorities.

Study period: The study was conducted for a period of 6 months from Oct 2010 to April 2011 commenced after obtaining clearance from ethics committee.

Study design: The study was descriptive and cross-sectional in nature.

¹Assistant Professor, ²Medical Superintendent
³⁻⁵Professor

¹Department of Hospital Administration, Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow, Uttar Pradesh, India

²Dr RP Centre for Ophthalmic Sciences, All India Institute of Medical Sciences, New Delhi, India

³Department of Microbiology, All India Institute of Medical Sciences, New Delhi, India

^{4,5}Department of Hospital Administration, All India Institute of Medical Sciences, New Delhi, India

Corresponding Author: Parmeshwar Kumar, Assistant Professor, Department of Hospital Administration, Sanjay Gandhi Postgraduate Institute of Medical Sciences, Raebareli Road, Lucknow-226014, Uttar Pradesh, India, Phone: 08765977620, e-mail: drpkaiims@gmail.com

Study sample: Comprised of one major operation theater each from the six hospitals. Only general surgery cases were selected, since it was felt that comparing hand hygiene practices of disparate specialties between different hospitals would not elicit accurate results. Specialized trauma care hospitals, single speciality hospitals and septic or emergency operation theaters were excluded from the study.

Keeping in view the constraints of time allotted by the hospitals for the study, 10% of the total number of general surgery cases being operated during the month was studied as sample of the population. Accordingly, 15 cases from autonomous hospital and 13 cases each from the other five hospitals were studied (a total of 80 cases). The auditees included all the surgical personnel associated with the cases including the scrubbed and the non-scrubbed staff.

Tools

Performa

The Center for Disease Control Guidelines for hand hygiene in healthcare settings (monthly morbidity and mortality weekly report-2002) was taken as a base document to design a performa comprising of 24 parameters. This was pilot tested and used as the tool.

The performa was divided into seven groups (Table 1).

Data Processing and Analysis

For convenience of processing the data, the six hospitals were divided into three categories:

- Public sector hospitals—A and B
- Accredited private sector hospitals—Hospitals C, D and E
- Autonomous government hospital—Hospital F

However, on occasions where the parameter itself warranted separate analysis, or were strongly recommended (category 1A) by CDC guidelines, interhospitals analysis also performed.

Statistical significance of the difference between categories/individual hospitals were determined using the fisher's exact test and chi-square test to calculate the p-values. The software SPSS Version –16.0 and software Stata 9.1 was used as the tool.

RESULTS

A total of 1920 observation were made from 80 cases studied in the six hospitals. The outcomes have broadly divided into the following heads (Table 1):

1. Parameters related to hand washing practices (parameters 1-16): groups 1 to 6
2. Parameters pertaining to surgical scrub (parameters 17-24): group 7

1. **Hand washing:** The overall compliance with the eight parameters was 74.6%, with public sector hospitals having compliance of 66%, private sector—76% and autonomous—87% (A = 70%, B = 62%, C = 84%, D = 86%, E = 59%, F = 87%) (Table 2). Results with certain individual parameters deserve mention. Decontamination of hands before individual catheter insertion, etc. that do not require special surgical procedure was only being followed 71% cases in public sector hospitals as against 95% in private sector and 100% cases in autonomous hospital. Decontamination after contact with patient's intact skin was only 50% among public sector hospitals as against 79.3% in private hospitals and 100% in autonomous institution. Adherence to practice of hand washing after removal of gloves was poor (60%) except in the autonomous institution (100%). The compliance with hand washing practices before use of cafeteria service was 100%.

When the hospitals were compared using statistical tools, the difference in hand washing practices was statistically significant ($p < 0.001$) (Table 3) with public sector institutions meeting all eight parameters on only six occasions (out of 26 cases), private sector on 20 (out of 39 cases) and autonomous on all 15 occasions.

2. **Hand hygiene technique:** Personnel in all hospitals followed the World Health Organization (WHO) recommended hand hygiene technique for hand washing (Table 2).
3. **Hand hygiene agents:** The hand washing agents being used were all found to be as recommended by the CDC guidelines. There were as follows:
 - a. **Soap based anti-septic hand wash:** Sodium Laureth sulphate and NaCl were used in public sector hospital A.

Table 1: Groups of hand hygiene parameters

Groups	Groups of hand hygiene parameters	No. of parameters
1.	Hand washing and hand antiseptic	8
2.	Hand hygiene technique	1
3.	Selection of hand hygiene agents	2
4.	Skin care	1
5.	Policy regarding other aspects of hand hygiene	2
6.	Healthcare worker educational and motivational programs	2
7.	Surgical scrub	8
Total		24

Note: Groups 1-6 pertain to hand washing parameters and group 7 pertains to surgical scrub parameters

Table 2: Hospital-wise compliance of hand washing parameters against guidelines

Groups	Public sector (68.2%)		Private sector (75.2%)			Autonomous (84.7%)	Overall compliance
	A	B	C	D	E	F	
Hand washing	70%	62%	84%	86%	59%	87%	74.6%
Hand hygiene technique	100%	100%	100%	100%	100%	100%	100%
Hand hygiene agent	100%	50%	73%	50%	88%	100%	77%
Skin care	0%	0%	0%	100%	0%	80%	30%
Policy	77%	92%	77%	100%	100%	80%	85%
Educational programs	84%	77%	100%	100%	85%	50%	82.6%
Total							75.0%

Table 3: Statistical significance of hand washing parameters among categories of hospitals

Groups	No. of parameters	Public sector (N = 26) n [#]	Private sector (N = 39) n [#]	Autonomous hospital (N = 15) n [#]	p-value
Hand washing	8	6 (23%)	20 (51.2%)	15 (100%)	<0.001
Hand hygiene technique	1	26 (100%)	39 (100%)	15 (100%)	-
Hand hygiene agent	2	26 (100%)	28 (73%)	15 (100%)	<0.001
Skin care	1	0 (0%)	13 (33.3%)	3 (20%)	<0.001
Policy regarding hand hygiene	2	17 (69.2%)	33 (84.6%)	10 (73.3%)	0.061
Educational programs	2	15 (61.5%)	35 (89.7%)	9 (60%)	0.008

Note: #ⁿ: Number of cases meeting all the parameters; N: total no. of cases for the category; values in percentage: n[#] × 100/N

- b. *0.4% chlorhexidine hand wash*: The autonomous institution used this product on a majority of occasions—43%. Only one public sector hospital B used it (28% occasions).
- c. *Chlorhexidine 0.5% with ethanol combination*: This product was preferred in the private sector hospitals; overall use—33% cases.
- d. *Alcohol based (75% isopropyl alcohol) hand rubs*: This was used in all hospitals; most commonly before or after direct contact with patients; overall use—33%.
- e. *Iodine preparations (5% betadine or 7% povidone iodine)*: The private sector hospitals had an overall use of 35% for iodine based products, while the other hospitals did not use it for this purpose.
- f. *Non-antimicrobial soap*: Only hospital B (17%), hospital E staff (on 44% the occasions) used non-antimicrobial soap for hand washing. The overall use of non-antimicrobial soap was 8 and 21% in public and private sector hospitals respectively.

All healthcare workers (HCWs) in both public sector hospitals and autonomous hospital claimed satisfaction with the products. Contrastingly, 65% HCWs across the spectrum in private hospitals complained of some form of irritancy with products currently in use.

The procedure of topping-off of partially empty dispensers with soap with known propensity for bacterial contamination has been discouraged in 100% cases in all hospitals except private hospital E which had 0% compliance (Table 2).

4. *Skin care*: Eighty percent of the workers in the autonomous hospital and 100% workers in private hospital D reported to have been provided with emollients and creams.

5. Policy regarding other aspects of hand hygiene, such as wearing of gloves by non-scrubbed staff likely to come in contact with blood and other infectious material (BOIM), revealed that no HCWs in any hospitals except private hospitals B (100% cases) wore gloves.
6. *Health workers' awareness and motivational programs*: The autonomous hospital had only 20% of staff who had attended any hand hygiene awareness program. All other hospitals had personnel having attended some form of education program. In 80% of cases in hospital F, there were systems in place for monitoring adherence to recommended hand hygiene practices. The public sector hospitals had monitoring only in 61.5% cases.

The differences between the categories of hospitals were statistically significant with respect to the groups of hand washing, selection of hand hygiene agents and skin care (Table 3).

Strongly recommended hand hygiene practices: Five hand hygiene practices have been considered essential and are strongly recommended under the category 1A of CDC guidelines.

Interhospital comparison between the groups of hospitals regarding the strongly recommended hand hygiene practices is shown in Graph 1.

The autonomous hospital had an overall compliance of 80% followed by private hospitals with 67.8% and then by public sector hospital with 62% compliance with the strongly recommended practices.

This was despite the observation that 28% of cases in private sector met with all five of the parameters as against the autonomous which had only 6.6% cases meeting all five practices. On no occasion did the public sector hospital meet with all the five strongly recommended practices.

The differences were statistically significant ($p < 0.001$).

The overall compliance with hand washing practices was 75% (Graph 2); the level of compliance with standards higher among the private sector and the autonomous hospital.

Surgical Scrub

Compliance for surgical scrub practices against the guidelines was 85%. The category wise compliance was as follows (Graph 3):

- Autonomous hospital F — 91%
- Public sector — 83%
 - a. Hospital A — 70%
 - b. Hospital B — 80%
- Private sector — 80%
 - a. Hospital C — 67%
 - b. Hospital D — 82%
 - c. Hospital E — 80%

The comparison as three categories was not significant ($p = 0.09$) but as individual hospitals, the difference was statistically significant ($p < 0.001$).

All HCWs observed in public sector hospitals and autonomous hospital F adhered to the recommended practice of removal of rings, watches, etc. while scrubbing as against 74% in private hospitals.

Only 47% of scrubbing staff in hospital F and 92% of hospital E performed the recommended cleaning of subungual region before the first case of the day. All others practiced it on 100% occasions. Healthcare worker in all hospitals except hospital F (80%) kept their fingernails shortened.

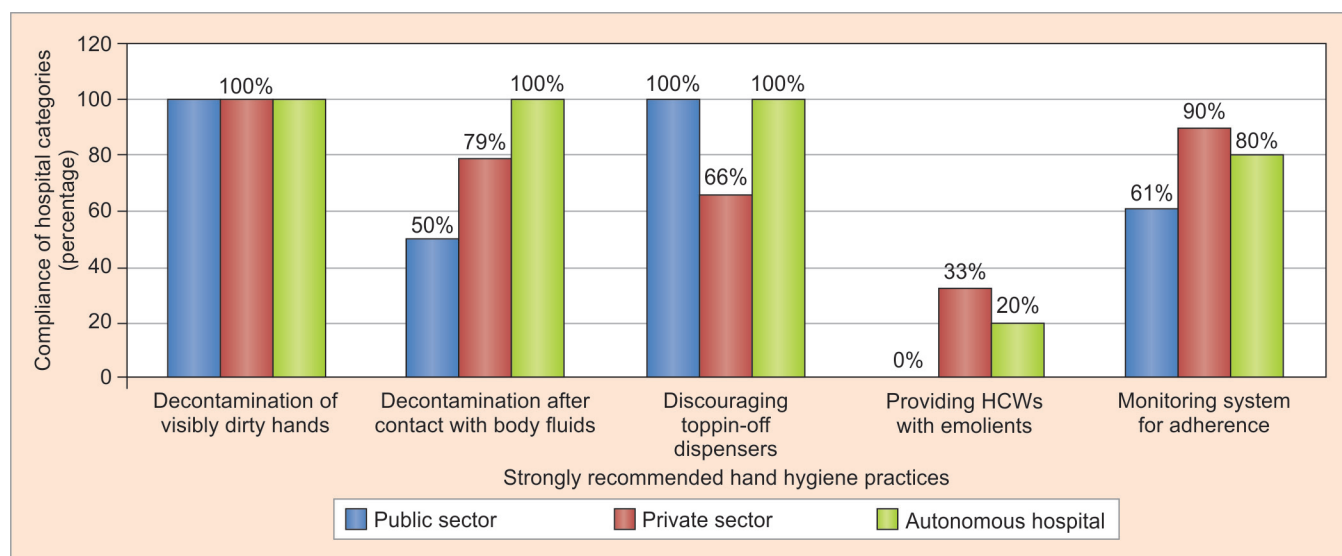
The technique followed for alcohol based or antiseptic soap based scrub was correct in all cases. However, only personnel in hospital F gave sufficient time (4-8 minutes) on all occasions for hands to dry before donning gloves.

The overall compliance among hospitals for hand hygiene practices against standard guidelines was 80.5%. Category-wise autonomous hospital — 89%, private sector — 78%, public sector — 74.5% (Graph 4).

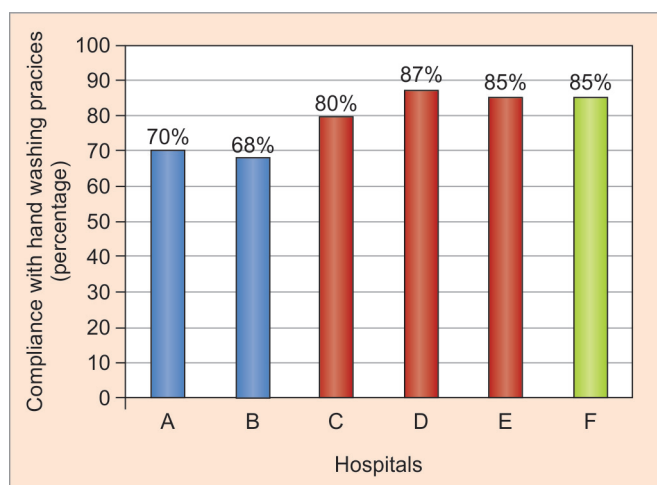
DISCUSSION

The study reveals a significant gap between hand hygiene practices in operation theaters in Delhi and that promulgated by standard guidelines, and more so in case of hand washing than surgical scrubs. The autonomous hospital performed better than private and public sector hospitals when analysed as categories and individually, on several parameters. Adherence to hand washing practices with non-surgical procedures, such as catheter insertion and decontamination after contact with intact skin and removal of gloves was poorer in public sector hospitals. This is in keeping with the general propensity of lower compliance with non-surgical procedures. In a study in 2013 of 207 procedures of catheter insertion revealed 57.9% of hand disinfection before patient contact and 45.5% hand disinfection before aseptic procedure.

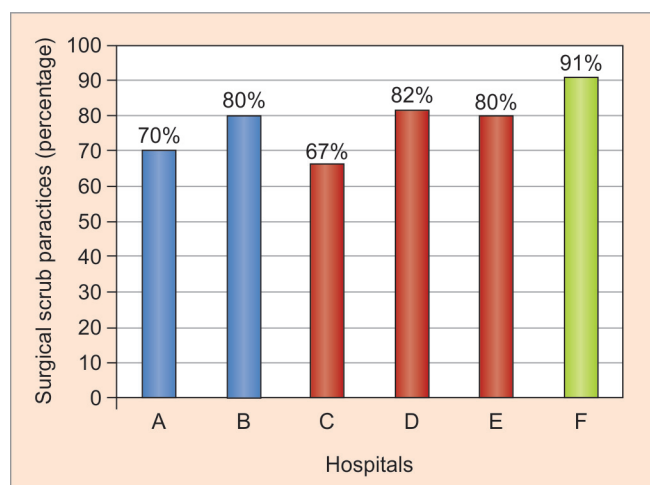
Since, the publication of the WHO guidelines in 2009,³ there has been a global awareness about hand hygiene techniques could probably explain the correct practice of hand hygiene techniques by the operating rooms personnel across all hospitals. Though, all hospitals used CDC



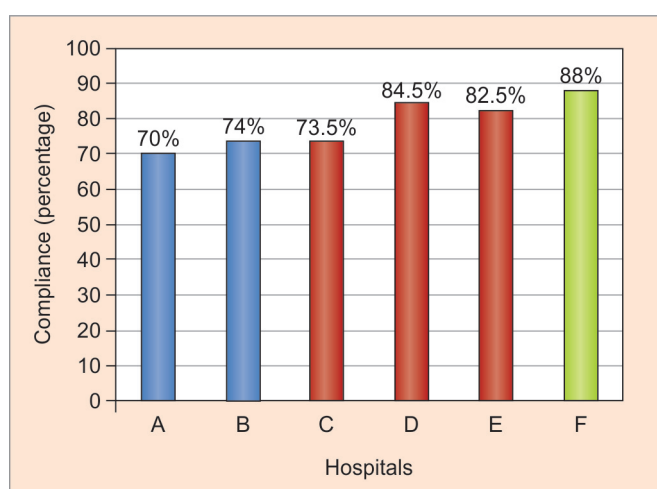
Graph 1: Comparison among categories of hospitals for strongly recommended hand hygiene practices. The practices are hand washing with soap and water in case of hands visibly dirty or soiled with BOIM, decontamination with antimicrobial soap and water or alcohol-based hand rub after contact with body fluids excretions, mucous membrane, etc. if hands are not visibly soiled, topping-off of half empty soap dispensers with soap is to be discouraged, hand lotions or creams are recommended to be provided to the HCWs to minimize the occurrence of irritant contact dermatitis and a monitoring system must be in place to ensure adherence of HCWs to the hand hygiene practices



Graph 2: Compliance of hand washing practices among individual hospitals. A and B represent public sector hospitals; C, D and E are private sector hospitals and F is autonomous hospital



Graph 3: Interhospital comparison of surgical scrub practices. A and B represent public sector hospitals; C, D and E are private sector hospitals and F is autonomous hospital



Graph 4: Overall compliance of hand hygiene practices among hospitals. These include hand washing practices and surgical scrub practices. A and B represent public sector hospitals; C, D and E are private sector hospitals and F is autonomous hospital

recommended hand hygiene agents, the choice of product differed significantly. Hundred percent of the HCWs in both public sector hospitals and autonomous hospital claimed satisfaction with the products Iodine based products, known to have some irritancy potential,⁶ were used exclusively by private sector hospitals and may account for the finding that 65% HCWs in private hospitals complained of some form of irritancy with products. This is despite the fact all HCWs in private hospitals and no HCW in public sector hospitals were provided with emollients, known to reduce contact dermatitis.¹¹ Unlike studies in the western world, the adherence with hand washing practices before use of cafeteria service was very high. This may reflect not only difference in eating habits deep rooted cultural or even religious beliefs related to hand washing, but also the concept of inherent hand hygiene, a subject in the realm of behavioral sciences.⁸

Five hand hygiene practices considered essential and strongly recommended under the category 1A of CDC guidelines are:

- Hand washing with soap and water is recommended in case of hands visibly dirty or soiled with BOIM.
- Hand decontamination is essential with antimicrobial soap and water or alcohol based hand rub after contact with body fluids excretions, mucous membrane, etc. if hands are not visibly soiled.
- Topping-off of half empty soap dispensers with soap is to be discouraged.
- Hand lotions or creams are recommended to be provided to the HCWs to minimize the occurrence of irritant contact dermatitis.
- A monitoring system must be in place to ensure adherence of HCWs to the hand hygiene practices.

An analysis of individual hospital reveals that the order of compliance with strongly recommended practices is—Hospital D (private) > F (autonomous) > C (private) > A (public) > E (private) > B (public), the difference is statistically significant. The practice of topping-off of partially empty dispensers with soap with known propensity for bacterial contamination was observed in private hospitals and probably reflects an attempt at cost containment. Although, only a small percentage of staff at the autonomous hospital had attended any hand hygiene awareness program, majority of the staff in that hospital (80%) claimed that there were systems in place for monitoring adherence to recommended hand hygiene practices. The role of educational programs in better compliance in HH practices has been studied extensively and endorsed.⁴

Compliance for surgical scrub practices against the guidelines was high (85%). Relatively lower adherence to practices, such as removal of rings prior to surgery by

private hospital staff, indicate a lack of policy implementation, despite several study findings demonstrated that skin underneath rings is more heavily colonized than comparable areas of skin on fingers without rings.^{13,5} Despite scoring high in most scrub related parameters, autonomous hospitals did not appear to have a policy on subungual practices. Though, CDC recommends that the first scrub of the day must include cleaning underneath fingernails and studies prove that natural nails tips should be kept short to prevent SSI, the autonomous hospital fared far worse than other hospitals in this regard.

In keeping with global trends, Povidone-iodine and chlorhexidine gluconate were observed to be agents of choice among than surgical team members. Both are recommended by the CDC guidelines despite chlorhexidine having longer residual effect, since both have been proven to be equally efficacious in reducing chances of surgical site infection (SSI).⁹ Surprisingly, despite the higher patient load in autonomous hospital, only HCWs in this hospitals allowed sufficient time for drying of HH agent before donning gloves.

As an endorsement of training and good policy implementation all scrubbed staff was observed to have followed the correct technique of surgical scrub again a result of the WHO focus on safe surgery.¹⁴

A limitation of the study was that, although covert observation was attempted, the findings may not precisely reflect actual practices as a result of Hawthorne effect. Additionally, a larger sample size of hospitals may have helped in offsetting the effect of poorly performing hospital in a particular group.

Despite the drawbacks, the study illustrates that adherence to hand-hygiene guidelines by OT staff is low, which potentially increases the risk of HCAs. Significant gap was observed in hand hygiene practices between hospitals and against the standard guidelines. Importantly, the study helped to identify those parameters which were exclusively being non-complaint by specific category of hospitals and some deficiencies that may serve as representative all categories of hospitals in India.

Adherence to HH practices requires a multi-factorial approach. In a landmark study, the investigators identified hospital wide predictors of poor adherence to recommended hand hygiene measures.¹⁰ These included professional category, time of day/week, type and intensity of patient care. Future studies need to focus on these predictors especially in reference to operation theaters. Several studies have elucidated educational and behavioral interventions for better adherence.^{3,7} They have also revealed perceived barriers to adherence, such as skin irritation caused by hand hygiene agents, inaccessible hand hygiene supplies,

interference with HCW — patient relationships, patient needs perceived as apriority over hand hygiene, wearing of gloves, forgetfulness, lack of knowledge of guidelines, insufficient time for hand hygiene and high workload and understaffing. Similar studies in Indian settings are essential to identify the gaps and reduce HCAI. Post interventional studies will assist in not only channelizing limited resources toward achieving the best outcome but also help in customizing the intervention measures to the groups of healthcare personnel.

This may pave the way for the formulation of a standardized hand hygiene policy for operation theaters across the country thereby ensuring a better healthcare delivery system. As a cornerstone of patient safety, hand hygiene practices would also go a long way in making the hospitals a safer place, both for the patients and the HCWs.

ACKNOWLEDGMENTS

We thank the administration of all the hospitals for granting permission to conduct the study in their hospital. We also wish to acknowledge the support lent by the surgical staff in the operation theaters.

REFERENCES

1. Camins BC, Fraser VJ. Reducing the risk of healthcare associated infections by complying with CDC hand hygiene guidelines. *Joint Commission J Quality and Patient Safety* 2005 Mar;31(3):173-179.
2. Centers for Disease Control. Guidelines for Hand hygiene in healthcare settings. *MMWR* 2002;51 (No. RR-16):3.
3. Conly JM, et al. Hand washing practices in an intensive care unit: the effects of an educational program and its relationship to infection rates. *Am J Infect Control* 1989;17:330-339.
4. Doron SI, Kifuji K, Hynes BT, Dunlop D, et al. A multifaceted approach to education, observation, and feedback in a successful hand hygiene campaign. *Jt Comm J Qual Patient Saf* 2011 Jan;37(1):3-10.
5. Field EA, McGowan P, Pearce PK, Martin MV. Rings and watches: should they be removed prior to operative dental procedures? *J Dent* 1996 Jan-Mar;24(1-2):65-69.
6. Kampf GI, Reise G, James C, Gittelbauer K, Gosch J, Alpers B. Improving patient safety during insertion of peripheral venous catheters: an observational intervention study. *GMS Hyg Infect Control* 2013 Nov 6;8(2):18.
7. Kretzer EK, Larson EL. Behavioural interventions to improve infection control practices. *Am J Infect Control* 1998 Jun;26(3): 245-253.
8. O'Boyle CA, Henly SJ, Larson E. Understanding adherence to hand hygiene recommendations: the theory of planned behavior. *Am J Infect Control* 2001 Dec;29(6):352-360.
9. Jarra OA, McCormack DJ, Ibrahim S, Shipolini AR. Should surgeons scrub with chlorhexidine or iodine prior to surgery? *Interact Cardiovasc Thorac Surg* 2011 Jun;12(6):1017-1021.
10. Pittet D, Mourouga P, Perneger TV. Compliance with hand washing in a teaching hospital. *Ann Int Med* 1999 Jan 19; 130(2):126-130.

11. Visscher M. Effect of topical treatments on irritant hand dermatitis in healthcare workers. *Am J Infect Control* 2009 Dec 1;37(10):842.
12. WHO guidelines on hand hygiene in healthcare. First global patient safety challenge clean care is safer care. Geneva: World Health Organization; 2009. Available at: http://whqlibdoc.who.int/publications/2009/9789241597906_eng.pdf. Web accessed on 12.06.13.
13. Wynd CA, Samstag DE, Lapp AM. Bacterial carriage on the fingernail of OR nurses. *AORN J* 1994 Nov;60(5):796, 799-805.
14. WHO guidelines on safe surgery 2009. Second global patient safety challenge safe surgery saves lives. Geneva: World Health Organization; 2009. Available at: http://whqlibdoc.who.int/publications/2009/9789241598552_eng.pdf. Web accessed on 02.3.11.

To Formulate a Selective Patient Safety-related Policy for a Tertiary Care Hospital

¹S Singh, ²Shakti Kumar Gupta, ³S Arya, ⁴V Aggarwal

ABSTRACT

Patient safety is the absence of preventable harm to a patient during the process of healthcare (WHO). Accuracy of patient identification remains a priority focus of healthcare organization. Identifying patients accurately presents many unique challenges in today's healthcare settings. We need to understand how human factors can be used to reduce adverse events. Using a human factor approach, the human system interface can be improved by providing better designed system and processes. This involves simplifying processes, standardizing procedures, providing back up when human fails, improving communication, redesigning equipment and engendering a consciousness of behavioral organization and technological limitation that lead to error. The above study was an initiative toward simplifying processes and standardizing procedures. It was a descriptive cross-sectional study carried out between April to August 2013. The tool used was a check list made after an exhaustive review of literature and validated by experts in quality assurance from NABH accredited private hospitals. The study population of 100 people which included doctors, nurses, paramedical staff and quality managers of tertiary care public and private hospitals were approached for interaction against the back drop of the check list. Response rate was 61%. Policy was framed after incorporating inputs from responses received against the back drop of the check list.

Keywords: Patient identification policy, Patient safety.

How to cite this article: Singh S, Gupta SK, Arya S, Aggarwal V. To Formulate a Selective Patient Safety-related Policy for a Tertiary Care Hospital. *Int J Res Foundation Hosp Healthc Adm* 2014;2(2):94-102.

Source of support: Nil

Conflict of interest: None

INTRODUCTION

The issue of human errors in complex systems has been a topic of debate for decades. In the aviation industry system

failures cause great publicity and are addressed quickly for a very simple reason: aviation accidents attract great attention because they involve a large number of people and resources. Accidents and complications are common in health care as well, and can be deadly. However, they happen one or two at a time and are far less dramatic. Only in the 1990s did errors in healthcare settings begin to draw public attention.¹ Patient safety is an essential and vital component of quality care. Healthcare providers face many challenges in today's healthcare environment in trying to keep patients safe. Patient safety is a discipline in the healthcare sector that applies safety science methods toward the goal of achieving a trustworthy system of healthcare delivery.² Patient safety is also an attribute of healthcare systems; it minimizes the incidence and impact of, and maximizes recovery from, adverse events.^{3,4}

In 1999, the Institute of Medicine (IOM) described the healthcare system as fractured, prone to errors, and detrimental to safe patient care. It defined patient safety as freedom from accidental injury and further stated that ensuring patient safety involves the establishment of operational systems and processes that minimize the likelihood of errors and maximize the likelihood of intercepting them when they occur.⁵

STRATEGIES TO IMPROVE PATIENT SAFETY²

Developing Protocols and Guidelines¹

One of the ways to avoid human error is to reduce reliance on short-term memory. This limited cognition should be used to perform only essential tasks. Checklists, guidelines, and reminders are successful tools for workers to ensure better patient communication. Simple examples, such as identification by color coding or eliminating drugs that sound or look alike have proved to be effective.

Increasing Patients Involvement⁶

Patients can play a key role in ensuring that healthcare is safe.⁶ Increasing patient awareness of safety issues is a powerful but underused strategy toward improving the quality of healthcare. With emerging consumerism, patients are better aware of problems that occur in hospitals; they become active players in the system. Increased patient awareness can be a crucial part of risk-prevention.⁷

¹Senior Resident, ²Medical Superintendent, ³Professor

⁴General Manager

^{1,3}Department of Hospital Administration, All India Institute of Medical Sciences, New Delhi, India

²Dr RP Centre for Ophthalmic Sciences, All India Institute of Medical Sciences, New Delhi, India

⁴Max Hospital, New Delhi, India

Corresponding Author: S Singh, Senior Resident, Department of Hospital Administration, All India Institute of Medical Sciences, New Delhi, India, e-mail: sheetalsingh2003@hotmail.com

Leadership Commitment to Safety Culture¹

Leaders of healthcare organizations need to become patient safety champions and encourage an organizational culture where disclosing adverse events and investigating root causes is not only nonthreatening but also an organic part of the organizational process. Every organization should maintain a continuous focus on redesigning and improving safety systems, especially in the intensive care unit, emergency room, and operating room. Training on safety issues for medical personnel is also recommended. Hospital administrators must initiate change management programs to build support for patient safety and get leaders across the organization committed to a prevention program.⁸

Educating Healthcare Providers on Safety Culture⁹

Hospitals play an important role in educating and training. On-site experience and continuing education for staff help establish positive attitudes toward preventing adverse events. Teaching hospitals have a responsibility to instruct residents regarding importance of patient safety and demonstrate how to scan for potential problems and intercept adverse events.

Creating a Culture of Safety¹⁰

- Hospitals should refrain from assigning fault to individuals and foster the attitude that mistakes are a chance to learn and improve care.
- Processes to improve quality should be established among hospitals.¹¹
- Patient safety should become part of performance assessment and accountability.

2014 joint commission national patient safety goals: Among numerous patient safety Goal one of the most important national patient safety Goal of 2014. is¹²

Improve the accuracy of patient identification.

Use at least two patient identifiers when providing care, treatment or services.

PATIENT IDENTIFICATION POLICY FOR A TERTIARY CARE HOSPITAL

To improve the accuracy of patient identification is one of the national patient safety goal given by Joint Commission 2012 and so it is one of the patient safety issues selected for formulating policy.

Need for the Study

Throughout the healthcare industry, the failure to correctly identify patients continues to result in medication errors, transfusion errors, testing errors, wrong person procedures,

and the discharge of infants to the wrong families. Between November 2003 and July 2005, the United Kingdom National Patient Safety Agency reported 236 incidents and near misses related to missing wristbands or wristbands with incorrect information. The quantum of error in patient identification in our country is not clear because of lack of reliable and validated data. The problem of patient identification is compounded further because there are no standard guidelines on this subject. We should have standard policy for identifying patients in hospital. Hence, there is need for the conduct of this study.

METHODOLOGY

It was a descriptive cross-sectional study carried out between April to August 2013. The study population included Doctors, Nursing personnel, Paramedical staff and quality managers of tertiary care hospital from one public and two private hospitals. Check list was made after an exhaustive review of literature which was then improvised. Validation of the checklist was done by experts in quality assurance from NABH accredited private hospitals. Subsequently, interaction was done with study population against the back drop of the check list and patient identification policy was formulated.

Analysis and Results

One hundred people which included doctors, nurses, paramedical staff and quality managers of tertiary care public and private hospitals were approached for interaction against the back drop of the check list. Total response rate was 61%. Seventeen doctors responded out of 25 doctors approached, 20 nurses responded out of 25, 21 quality managers interacted out of 25 and 11 paramedical responded out of 25 approached. Policy was framed after incorporating inputs from responses received against the back drop of the check list.

Tertiary care hospital	<i>Quality operating process</i>	<i>Document no:</i>
	Manual of operations	Date of issue:
	Patient identification policy	

PATIENT IDENTIFICATION POLICY FOR A TERTIARY CARE HOSPITAL¹³

Service name:	Patient identification policy for a tertiary care hospital
Date Created:	
Approved by:	Name: Signature:
Reviewed by:	Name: Signature:
Issued by:	Name: Signature:
Responsibility of updating:	Name: Signature:

Tertiary care hospital	<i>Quality operating process</i>	<i>Document no:</i>
	Manual of operations	Date of issue:
	Patient identification policy	

PURPOSE¹⁴

This policy provides guidance to the staff to make sure the correct identity of all patients at all times and to restrict the risk of misidentification and adverse outcomes of care.

This policy applies to all patients who are in receipt of care or treatment from tertiary care hospital healthcare staff. This involves the following patients:

- All in-patients (including those waiting in emergency department undergoing assessment and investigations prior to admission).
- Patients receiving treatment/consultation in outpatient department
- Patients attending day care units for treatment.

SCOPE

This policy is applicable to all members of staff who deal with patient care.

Staff Includes

- Clinicians/Surgeons
- Associated health professionals
- Nursing staff
- Phlebotomists
- Pharmacists
- Staff involved in the management of patient care through the booking and management of appointments, admissions, transfers and any other action where the identification of the patient must be accurate and valid.¹³

Tertiary care hospital	<i>Quality operating process</i>	<i>Document no:</i>
	Manual of operations	Date of issue:
	Patient identification policy	

WHAT IS THE PROCESS FOR IDENTIFYING PATIENT WITH ID BAND?¹³

- The hospital staff should make sure that all in-patients must wear ID Bands.
- Before carrying out any intervention or procedure, staff undertaking the intervention or procedure should confirm the patient's identity.
- No procedure or intervention should be performed if the patient has no ID band.
- Where it is essential to remove a patient's ID band, for whatever reason, it is the responsibility of the staff, removing the wristband to ensure that it is replaced without delay. If this is not possible, then they should

make sure that the reason for removal is documented in the patient's records.

- At least two identifiers (e.g. patient's full name and date of birth) must be used to verify a patient's identity. Neither of these identifiers should be the patient's room number or location.

Identifiers used for Identification of Patients in a Tertiary Care Hospital

- First and last name of the patient spelt in full – Initials are not permitted¹⁵
- Tertiary care hospital - UHID
- Date of birth
- IP No.

What are the Steps to Identify the Patients?

There are three steps to identify patients. These should be undertaken in the following order (if the first is not possible, undertake the second, etc):¹⁶

- Ask patient's name and date of birth. Check this is well-matched with the patient's ID band.

Tertiary care hospital	<i>Quality operating process</i>	<i>Document no:</i>
	Manual of operations	Date of issue:
	Patient identification policy	

- If the patient is incapable to tell their name or in case of comatose patients, refer to the ID band and, if possible confirm the information by asking family member, attendant or another member of the clinical staff who was taking care of the patient.
- Ask patient's relative/attendant to identify the patient by name and/or date of birth. Do not read out the name or date of birth to the attendant let the attendant / relative tell the name and date of birth of the patient.

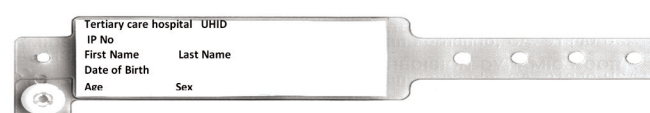
What are the Types of Identification Band?

There are two Types of Identification Bands

1. *White bracelet:* For those patients who do not have any known allergies.¹³

The ID band must contain the readable information of the patient in black text on a white background:

IN CASE PATIENT IS ADMITTED IN WARD



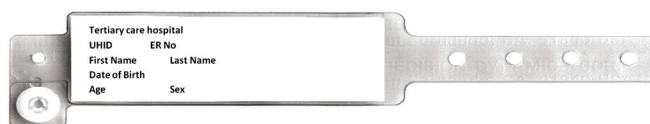
Tertiary care hospital	<i>Quality operating process</i>	<i>Document no:</i>
	Manual of operations	Date of issue:
	Patient identification policy	

IN CASE PATIENT IS IN EMERGENCY DEPARTMENT

Before Registration of the Patient - Temporary ID Band can be used

ER No.	
First name	Last name
Date of birth	
Age	Sex

After Registration of Patient – Permanent ID Band



2. **Red bracelet:** Patients who have an allergy or gives history of allergy.

- All patients must be enquired if they are allergic to anything when they are admitted/treated. Note that an 'allergy' can include latex and other material components as well as medicines.
- Patients with a known allergy should wear an additional red identity band on the same wrist/ankle. This will act as a caution signal to staff to refer to the patient's medical notes for further details.
- Information to be recorded on the red band:



Tertiary care hospital	Quality operating process	Document no:
	Manual of operations	Date of issue:
	Patient identification policy	

RESPONSIBILITIES OF THE STAFF¹⁷

Director/Medical Superintendent/Nursing Superintendent: Responsible for ensuring that this policy is implemented operationally and monitored.

- Should ensure that staff in their areas are aware of the policy. Understand it and implement it.
- They should ensure that failures to comply with the policy are reported via the incident reporting system and the appropriate action is taken to prevent recurrence.
- Investigating failures to act in accordance with the policy and also ensure that corrective action is taken to prevent a recurrence.

Responsibility of Clinicians/Surgeons

- Any clinician/surgeon who removes an ID band (to perform a procedure/or examination) should ensure that another one is applied.

- The clinician before performing any treatment should check the ID band beforehand to ensure the correct patient.
- They should check the patient's identity and a signed consent form before commencing surgery.

Clinical and Nonclinical Staffs should

- Maintain the standards in this policy and accept accountability for their practice.
- Report all failures to comply with the policy via the risk incident system.
- Ensure that patients are identified using accurate personal details.
- Ensure that all patient details entered by them onto the ID bands are valid and accurate.
- Ensure that any ID band removed by them (or where more appropriate, another member of staff) is replaced without delay and that the information on the replacement ID band is valid and accurate.

Tertiary care hospital	Quality operating process	Document no:
	Manual of operations	Date of issue:
	Patient identification policy	

If immediate replacement is not possible then it is the responsibility of the member of staff to make clear options for the patient's correct identification.

Staff at Central Admission Office

- Ensure that correct patient details are entered at the time of registration.
- Validating the information given by the patient and/or their career /relative.

Any member of staff if discovers that a patient does not have an ID band then he/she has to assume responsibility for correctly identifying them. In general it will be nursing staff that will be responsible for the generation and application of the patient ID band. However, it is the responsibility of all staff to check the validity and correctness of patient identification before carrying out any actions relating to patient care.

WHERE IDENTIFICATION OF PATIENT IS MUST?¹⁸

The list below is not exclusive. Patients should always wear an identification band.

- Blood sampling
- Blood transfusion
- Collecting of patient bodily fluid samples
- Confirmation of death
- Administration of all medicines
- Surgical intervention and any invasive procedure

- Transport/transfer of the patient
- X-rays and imaging procedures

Alert!

Do not proceed with any procedure if the patient has no ID band
The ID band must be replaced by the nurse caring for the patient
before the procedure can begin

Tertiary care hospital	Quality operating process	Document no:
	Manual of operations	Date of issue:
	Patient identification policy	

WHEN TO PUT ID BAND?**Patients Admitted in a Hospital**

All in-patients (including those waiting in the emergency department undergoing assessment and investigations prior to admission) must wear an identification (ID) band for safety purposes unless patient refuses to wear one or it is contrary to the patient's well-being.

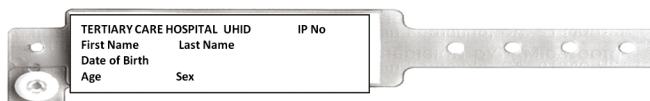
The ID band must be applied to patient on admission to hospital, or once the patient has entered a department for treatment by the assigned nurse.

ID BAND SHOULD ALSO BE APPLIED TO⁸

- Patients in the emergency department who have been through triage and are receiving treatment
- Patients in the day care

The ID band should be worn on the dominant arm that is the side used for writing, it is then less likely to be removed when for example, intravenous access lines are inserted.

The ID band must have the following information:



The patient's room number or location should never be used for identification

The initials of patient's name should never be used for patient identification

Tertiary care hospital	Quality operating process	Document no:
	Manual of operations	Date of issue:
	Patient identification policy	

WHEN PATIENT IS TRANSFERRED WITHIN THE HOSPITAL?¹⁹

When patient is transferred within the hospital the staff who receives the patient shall check the patient wristband, with the patient, if the patient is capable to do so, along with the medical record for positive patient identification.

When the Patient is Transferred from other Hospital

Patients who are transferring in from other hospitals will have a tertiary care hospital ID Band applied immediately on arrival.

In Case ID Band is Damaged

If the patient ID band is removed, faded damaged or unreadable, a replacement ID band will be applied right away, by the assigned nurse who is taking care of the patient.

The ID band must not be removed until discharge procedure is completed

DEPARTMENT OF EMERGENCY

At the time of initial assessment by CMO and nurse, a temporary ID band will be applied to the patient by the assigned nurse. The ID band must contain the following clearly written, legible information of the patient in black text on a white background:

Temporary ID Band which is Applied before Registration of the Patient

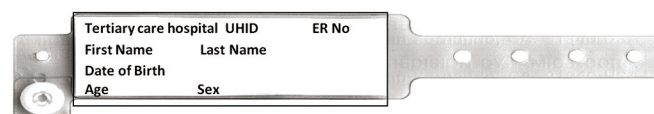
ER No	
First name	Last name
Date of birth	
Age	Sex

Temporary band should be replaced by permanent ID Band by assigned nurse after the registration of the patient.

Tertiary care hospital	Quality operating process	Document no:
	Manual of operations	Date of issue:
	Patient identification policy	

After Registration of the Patient—Permanent ID Band

The band will contain the following information:



In case of allergy, the patient in emergency department should wear additional red band along with white colored ID Band specifying the name of allergy

Transfer of a Patient from Emergency Department to Ward

The staff receiving the patient shall check the patient's ID band with the patient, if the patient has the capacity to

do so, along with the medical records for positive patient identification. The ID band will be changed to identify which ward the patient has been admitted.

SPECIFIC SITUATIONS

Uncomprehending Patients

Patients who are incapable of confirming their own identity (too young, unconscious, incoherent, language difficulties). An accompanying adult must answer on behalf of them.

Language Problem

An interpreter must be used if there is language problem. In case interpreter is not available in hospital the interpreter should be contacted on phone.

Tertiary care hospital	Quality operating process	Document no:
	Manual of operations	Date of issue:
	Patient identification policy	

Unknown and Unconscious Patients

In the event of unknown and unconscious patients (such as trauma patients), and where there is no possibility of positively identifying the patient. The identification is made by means of a band which must have the following information:

Unknown male/female
Date of arrival
Time of arrival

Along with the ID band, preferably the photograph of the patient should be taken and the print out should be kept in patient record for identification purpose
--

Patient with Missing Limbs

If a limb is missing then bands must be securely attached to the patients clothing using strapping, on an area of the body which is clearly visible. The band must be reattached as clothing is changed, and must accompany the patient at all times. In emergency or operative situations where clothing is removed, identification must be attached to the patient's skin using see-through plastic adhesive film.

Deceased Patients

All deceased patients MUST be correctly identified with 2 identification bands—one attached to the wrist and one attached to the ankle. If a limb(s) is missing then attach one label to an available limb and the other to the patient's skin using transparent tape.

Tertiary care hospital	UHID	ER No./IP No.
First name	Last name	
Date of birth		
Age	Sex	
Religion (if known)		

Tertiary care hospital	Quality operating process	Document no:
	Manual of operations	Date of issue:
	Patient identification policy	

Theater/Sedated Patients

Patient identification is confirmed by theater staff prior to being anesthetized according to operating theater procedures.

Where the ID band is attached to the patient's wrist it will compromise patient safety hence ID band should be applied to the patient's ankle by the assigned nurse before shifting patient to theater.

Extreme Emergencies

Clinical care may take priority over attaching an ID band to the patient in extreme emergencies and possibly life-threatening situations. The nurse responsible for patient care at the point of time must take appropriate steps to identify the patient using the hospital number and/or the ED number. Once the surname, forename, date of birth, gender and hospital number are confirmed, a new ID band must be attached to the patient immediately.

NEONATES

Color coded ID band are used for Babies identification. Blue colored ID band are used for male and pink for female infant.

Two ID band should be applied to two separate baby limbs by the assigned nurse immediately after the birth. Two people (either a doctor and nurse or nurse & hospital attendant) will accompany the baby from OT/Labor room to NICU/Nursery. The minimum information mentioned on the ID bands is mentioned below:

Tertiary care hospital	Quality operating process	Document no:
	Manual of operations	Date of issue:
	Patient identification policy	

Male



Female



Additional Identifier

A color coded card should be attached to the baby's warmer/cot displaying the following information.

Full name of mother:	Weight:
Gender:	
Date of birth:	
Time of birth:	

Tertiary care hospital	Quality operating process	Document no:
	Manual of operations	Date of issue:
	Patient identification policy	

In Case of Twins,²⁰

Twins should be named as Twin 1 and 2.

The following identifiers must be included in the babies' ID bands.

Twin 1		Twin 2	
Full name of mother		Full name of mother	
Time of birth	Date of birth	Time of birth	Date of birth
Gender	Weight	Gender	Weight

MOTHER

After delivery of the baby, mother to be given an additional ID band with the following baby's details.

Full name of mother:	Weight:
Gender:	
Date of birth:	
Time of birth:	

OUTPATIENT DEPARTMENT

- a. *Registration:* In the outpatient clinic setting, verification of the patient will be made by the staff posted at registration when the patient arrives and get him/her self registered. Staff posted at registration counter will ask the patient or their care taker /relative to state:

- Patient's full name
- Father name
- In case of females father name/husband names
- Patient's date of birth
- Age
- Gender
- Patient's address (permanent)
- Phone number

Tertiary care hospital	Quality operating process	Document no:
	Manual of operations	Date of issue:
	Patient identification policy	

The staff on registration counter will be responsible for validating the information given by the patient and/or their caretaker/relative.

IMPORTANT	
<ul style="list-style-type: none"> • Check for multiple patient registrations • Patients can give more than one name and date of birth/naming date especially non-English speakers • Always ask for complete name of the patient • Do not use initials of the patient's name for registration 	

- b. *Consultation:* The healthcare professional should verbally and positively identify the patient prior to treating or examining the patient. If the patient is unable to positively identify themselves, verify the information by asking family member, caretaker or another member who may be accompanying them to the clinic.

The following details should be verbally confirmed/ matched before examining the patient by the consultant.

- Patient's full name
- Patient's date of birth
- Patient's address.

DAY CARE PATIENTS

All patients attending in day care for day treatment MUST wear an identity bracelet for safety purposes. The ID band should be applied to the patient on arrival of the patient by assigned nurse.

Tertiary care hospital	Quality operating process	Document no:
	Manual of operations	Date of issue:
	Patient identification policy	

BLOOD TRANSFUSION

It is applicable to all nurses and doctors initiating the transfusion of blood and blood products.

The bedside check is an important step in preventing transfusion error. Two practitioners are responsible for positive patient identification.

- Check verbally
- Check ID band

In case of any doubt regarding patient's identity—Do not give blood.

RADIOLOGY

It is the ultimate responsibility of the technician to ensure that the correct patient is being examined according to the request that has been made.

If the patient details stated on the request form are incomplete or have not been completed correctly, further information must be obtained before an exposure is performed. The exposure must not be performed until the patient's identification has been verified.

Situations where a Patient may not Wear an ID Band

- If the band causes skin irritation
- If patient removes ID band

If a patient is unable to wear an ID band due to their clinical condition an alternative method of identification, where possible, should be sought, e.g. label affixed to the patient's gown.

Tertiary care hospital	<i>Quality operating process</i>	<i>Document no:</i>
	Manual of operations	Date of issue:
	Patient identification policy	

INCIDENT REPORTING SYSTEM

Any staff member if finds any deviation from this policy must make an incident report and submit it to his/her superior or In-charge of the respective area.

This would include an incident that has occurred as a result of misidentification and also 'near miss' situations where the error has been detected before an incident has taken place.

Action in the Event of an Error

- The root cause analysis of the event should be done. The report should be submitted to the administrator within 48 hours of the event.
- The required corrective and preventive actions must be taken to prevent future occurrence of such events. Action may include further training, etc.
- Any actual error must be explained to the patient involved and, if the patient consents, to relatives/careers. The patient should be kept fully apprised of the action the staff have taken and any necessary future action.

HOW TO MONITOR COMPLIANCE TO THE POLICY?

Monitoring of compliance with this policy can be carried through audits and therefore audits will be organized by the administrative department on quarterly basis/by annually in all clinical areas.

- The audit will investigate:
- The number and percentage of patients wearing ID bands
- The accuracy and reliability of the information included on them
- The reasons why patients may not be wearing wristbands
- The efficacy of alternative arrangements deployed when patients are not able to wear ID bands
- The number of safety incidents reported which relate to ID bands in any way.

Tertiary care hospital	<i>Quality operating process</i>	<i>Document no:</i>
	Manual of operations	Date of issue:
	Patient identification policy	

Apart from regular audit, at local level all incidents should be discussed with the team at team meetings following an incident and where appropriate a review undertaken, identifying any actions necessary to prevent future errors.

- Do's and Don'ts to prevent misidentification.²¹
- Do identify the patient correctly on admission.

- Do ensure that you have the full birth-registered name of the patient. The initials of patient's name should never be used for patient identification
- Do check again with the patient that all the details are correct, when you apply an ID band.
- Do regularly check the legibility of ID bands. Replace any bands, in which any part of the patient's details has become illegible.
- Do always check the details of patients even if you think you know them well.
- Do double check verbally and physically that the details of a patient matches the details on a fully completed request form, especially if another member of the healthcare team has completed the form.
- Do label samples taken from the patient straight away. The safest way is to label the bottles after the sample has been taken and before leaving the patient's bedside.

Do Not

- Do not read the patients details to them and allow them to passively agree with you. Ask the patient to give you their full details.
- Do not take blood from a patient without checking the patients' details against a fully completed request form.
- Do not label a sample bottle before you take blood. You may get distracted before you have completed the task.
- Do not perform two tasks at the same time, e.g. taking blood from several patients and labelling them afterwards or filling out request forms for several patients at the same time.
- Do not perform tasks remotely from the patient if at all possible. Try to fill out request forms and complete tasks at the patient's bedside.

Recommendations

In a tertiary care hospitals with mandates of education, research and patient care as its mission. Improving patient safety is a multi faceted tasks which will require involvement of all the players in a healthcare system.

The special emphasis shall be on the following points:

- The role of hospital leadership in making patient safety a priority
- The need to improve reporting to capture the extent and causes of adverse events
- The role of a 'just' organizational culture in learning from mistakes
- The need for training and education for professionals, patients and families.
- Next steps is to find out what causes adverse events and how to prevent them.

One of the ways to avoid human error is to reduce reliance on short-term memory. This limited cognition should be used to perform only essential tasks. Checklists, guidelines and reminders are successful tools for workers to ensure better patient communication. Simple techniques like identification by color coding or eliminating drugs that sound or look alike have proved to be effective in patient safety. Just formulations of guidelines, policies are not enough to have patient safety culture in an organization. Implementation and further monitoring is vital.

Strengths

Our study has several strengths, like we had used validated checklist. The checklist formulation included individuals from different professions who are directly or indirectly related to the hospital services.

Limitations

Our study has few limitations like, this was a study conducted in a tertiary care hospital hence the results of this study cannot be generalized to secondary and primary care hospital.

REFERENCES

1. Wong, Jiahui Wong BH. Strategies for hospitals to improve patient safety: a review of the literature. The Change Foundation; 2004. p. 1-40.
2. Emanuel L, Berwick D, Conway J, Combes J, Hatlie M, Leape L, et al. What Exactly Is Patient Safety? *Advances in Patient Safety: New Directions and Alternative Approaches* 2008;1A:1-18.
3. Bates DW, Cullen DJ, LAPNL. Incidence of adverse drug events and potential adverse drug events. *JAMA* 1995;274(1):29-34.
4. Classen DC, Pestotnik SL. Adverse drug events in hospitalized patients. *JAMA* 1997;277(4):301-306.
5. Christopher, Error DL. Government reported by the U. Medical errors in the USA: human or systemic? *Lancet* 2011 Apr 16;377(9774):1289.
6. Pascale Carayon University of Wisconsin - Madison KEWU of WH and C. Patient Safety: The Role of Human Factors and System Engineering. *Stud Health Technol Inform* 2011; 23-46.
7. Morey JC, Simon R, Jay GD, Wears RL, Salisbury M, Dukes KA, et al. Quality of Care Error Reduction and Performance Improvement in the Emergency Department through Formal Teamwork Training: Evaluation Results of the MedTeams Project 1553-1581.
8. Management IP, Letens G. Transformational Change: A Multilevel Evolutionary Perspective Geert Letens; 2009.
9. Carayon P, Gurses AP. Chapter 30. Nursing Workload and Patient Safety — A Human Factors Engineering Perspective 2000;(1).
10. Baker DP, Day R, Salas E. Teamwork as an essential component of high-reliability organizations. *Health services research* 2006 Aug;41(4 Pt 2):1576-1598.
11. World Health Organization. Human Factors in Patient Safety Review of Topics and Tools; 2009. p. 1-55.
12. The Joint Commission. National Patient Safety Goals Effective; 2014 Jan:1-17.
13. Lucas A. Positive Identification of Patients Royal United Hospital Bath, NHS. 2010 Feb:1-19.
14. Ogden G. Trust policy and procedures for patient identification, Derby Hospital NHS. 2013;(September 2010):1-20.
15. Norris B, Sevdalis N, Bothwell S, Ranger C, Rose T. The role of patient identification in patient safety 2005(July).
16. Policy and procedure on Identification of Patients, Nottinghamshire Healthcare NHS 2013;(4).
17. Sheahan S. Patient Identification Policy & Procedure, Mid Western Regional Hospital, Limerick; 2010. p. 1-11.
18. Patient Identification Policy, Cardiff and vale university Health Board; 2015:1-13.
19. Stott R. Patient Identification Policy, Doncaster and Bassetlaw Hospitals, NHS. 2013;7(April 2013):1-32.
20. Patient Identification Policy, Gateshead Health NHS. 2014;1-33.
21. Alison Kelly DCN. Patient identification policy, University Hospital of South Manchester, NHS. 2011. p. 1-26.

Technical Specification and Bid Evaluation: Major Bottlenecks in Equipment Procurement in a Public Sector Tertiary Care Hospital

¹Shweta Prabhakar, ²AK Singhal, ³Shikha Vardhan

ABSTRACT

Introduction: The innovation of modern medical equipment with wide diversity has contributed immensely in improving the quality of healthcare and state of health profile of nations. For effective and efficient control on procurement of medical equipment, it is required to control the lead time (internal) as limited scope exists in case of external lead time.

Objectives: The study was conducted to analyze the lead time with an aim to identify the issues/bottlenecks and to suggest the appropriate remedial measures in a public sector Tertiary care Hospital.

Materials and methods: A retrospective exploratory study was undertaken. A total of 50 such capital equipment was procured in this hospital during March 2007 to 2010 (3 years) were included in this study.

Results: It was observed that the procurement procedure in public sector tertiary care hospital is as per the standard guidelines prescribed by Government of India in General Financial Rules and guidelines issued by MOHFW and DGHS in this regard. The lead time analysis showed that there is a variation in the total lead time, internal lead time (ILT), external lead time (ELT) and their components. It was observed that ILT2 and ILT4 component constituted around 70% of the total ILT for almost all the equipments under study. In case of ELT, 75% time was consumed by ELT1, i.e. the delivery time and receipt of equipment.

Conclusion: Since activities in both ILT2 and ILT4, i.e. laying down the technical specification and bid evaluation are the responsibility of the individual department, the overall delay can also be attributed to the individual departments. This is in contrast to the general impression that there is delay on the

part of purchase department. On an analysis of lead time as per VED category, it has been concluded that no concept of VED analysis is applied in the procurement of equipment. On further analysis of lead time analysis, it was concluded that the shortest time was taken by proprietary purchase followed by open tender and maximum time in open tender where approval from higher authority was required.

Keywords: Capital equipment, Procurement, Internal lead time, External lead time, VED, Public sector tertiary care hospital.

How to cite this article: Prabhakar S, Singhal AK, Vardhan S. Technical Specification and Bid Evaluation: Major Bottlenecks in Equipment Procurement in a Public Sector Tertiary Care Hospital. *Int J Res Foundation Hosp Healthc Adm* 2014;2(2): 103-110.

Source of support: Nil

Conflict of interest: None

INTRODUCTION

Health technologies and medical devices are crucial in the prevention, diagnosis and treatment of illness and diseases, as well as patients' rehabilitation. In recent years, the need of improved Healthcare Technology Management (HTM) practices have been recognized and addressed at numerous international forums. The factors identified are mainly related to inadequate planning, inappropriate procurement, poorly organized and managed healthcare technical services, and a shortage of skilled personnel. The health facilities in many countries, like India, are overburdened with many problems, one of which is non-availability and/or non-functioning of medical equipments.¹

Since the declaration of Alma-Ata in 1978, World Health Organization (WHO) had highlighted the importance of appropriate technology and better standardization of health and medical technologies. World Health Organization launched a global action plan on management, maintenance and repair of medical equipments. The 113th session of the executive board in January 2004 concluded that countries need to develop national regulations, systems for quality assurance, procedures for procurement and risk assessment. These provided a useful foundation and reference for healthcare technology, policy formulation and implementation.²

The innovation of modern medical equipment with wide diversity has contributed immensely in improving the

¹Medical Superintendent, ²Additional Medical Superintendent and Associate Professor, ³Assistant Professor

¹Swasthya Hospital and Medical Research Center, Ahmednagar, Maharashtra, India

²Department of Hospital Administration, Dr Ram Manohar Lohia Hospital and PGIMER, New Delhi India

³Department of Community Medicine, Dr Ram Manohar Lohia Hospital and PGIMER, New Delhi, India

Corresponding Author: Shweta Prabhakar, Medical Superintendent, Swasthya Hospital and Medical Research Center, Ahmednagar, Maharashtra-414001, India, Phone: 09049497553, e-mail: shweta19dec@gmail.com

quality of healthcare and state of health profile of nations.³ Current estimates of medical equipment show that there are around 6,000 distinct device types and entities and 750,000 brands and models on the market, available from over 12,000 manufacturers worldwide. The spectrum of equipment ranges from simple one to the more sophisticated ones. Health facilities have to cope with this wide range of products. It has become difficult for developing countries to select and obtain the technologies appropriate to their needs.¹ With increasing dependence on medical equipment, the importance of investments in medical equipment cannot be denied. The purchase process for medical equipment and services may vary from one organization to another but there are some key elements that are common throughout in all types of organizations. In public sector healthcare institutions, there is a common perception that the procurement process for equipment has an unusual long gestation period. This, at times, results in cost overrun and procuring outdated technology. This results in waste of already meager resources in the hospital, which in turn leads to a decrease in the quality of health care services. An effort should be made at all stages of procurement which should facilitate acquiring the latest equipment keeping in mind the rapidly changing scenario of hospital equipment and technologies.⁴

For effective and efficient control on procurement of medical equipment, it is required to control the lead time (internal) as limited scope exists in case of external lead time. The internal and external lead time has various components and hence the bottlenecks, which necessitates the need of the present study. The study aimed to explore and identify the challenges associated with the lead time of capital medical equipments. The study was undertaken for medical equipment costing more than 10 lakh so as to focus on the core issues involved in the procurement process of major equipment in a central government tertiary care hospital, Delhi. Hence, the study was undertaken with the following objectives:

1. To conduct the lead time analysis of capital medical equipment (costing >10 lakh) in public sector tertiary care hospital.
2. To identify the issues/bottlenecks in various stages of procurement process of medical equipment in public sector tertiary care hospital.
3. To suggest the appropriate remedial measures to overcome the identified bottlenecks.

MATERIALS AND METHODS

The hospital under study is one of the largest hospitals of Central Government in Delhi, with 1100 beds and having

various superspecialty services, and large number of sophisticated equipment.

A retrospective exploratory study was undertaken at a public sector tertiary care hospital during March 2007 to 2010. A total of '50' medical equipment, costing more than 10 lakh, procured during the above said period of 3 years (March 2007- March 2010) were studied. As per the purchase guideline of DGHS, the procurement cycle of the hospital under study has various steps/stages (Fig. 1). The lead time of equipment under study has been divided into internal and external and they are further subdivided into various subcomponents (Table 1) based on the equipment procurement cycle of the hospital under study.

The data on lead time (internal and external) for each of the capital equipment under study was collected using the structured proforma with respect to the department (where it was used), criticality of the equipment (VED) and type of purchase process involved for it. Each equipment case history was explored retrospectively from the 'records' and by verbal 'interview' from the concerned heads of the department, officer-in-charge and purchase department.

The equipments records were scrutinized for primary data from (a) purchase files of equipments for internal lead time assessment, which consisted of demand performa, note-sheets of all relevant date, specification formulation, documents related to tender process, comparative charts of technical and financial bids, sanction performa, supply order, document related to internal payment; (b) equipment record file in stores for external lead time assessment which depicted information like receipt of equipment, installation report, satisfactory report and final bill payment. Besides records, the personal interview was also conducted with 'head of the departments', 'officer-in-charge' and 'staff' handling the equipment.

The collected data for each of the capital equipment was compiled on a master chart on Microsoft Excel and SPSS software with respect to the department, criticality of the equipment (VED) and type of purchase process involved for it. The data were analyzed for the 'average duration' for internal and external lead time for each variable under study and depicted graphically using bar diagram and pie charts beside tabular presentation.

RESULTS

The procurement cycle of equipment in this hospital follows general financial rules⁵ and policies and procedures of purchase of goods, issued by Ministry of Finance Department and purchase guidelines issued by DGS and D,⁶ guidelines issued by Integrated Finance Division of Ministry of Health and Family Welfare and Empowered Procurement Wing of DGHS, etc. (Fig. 1).

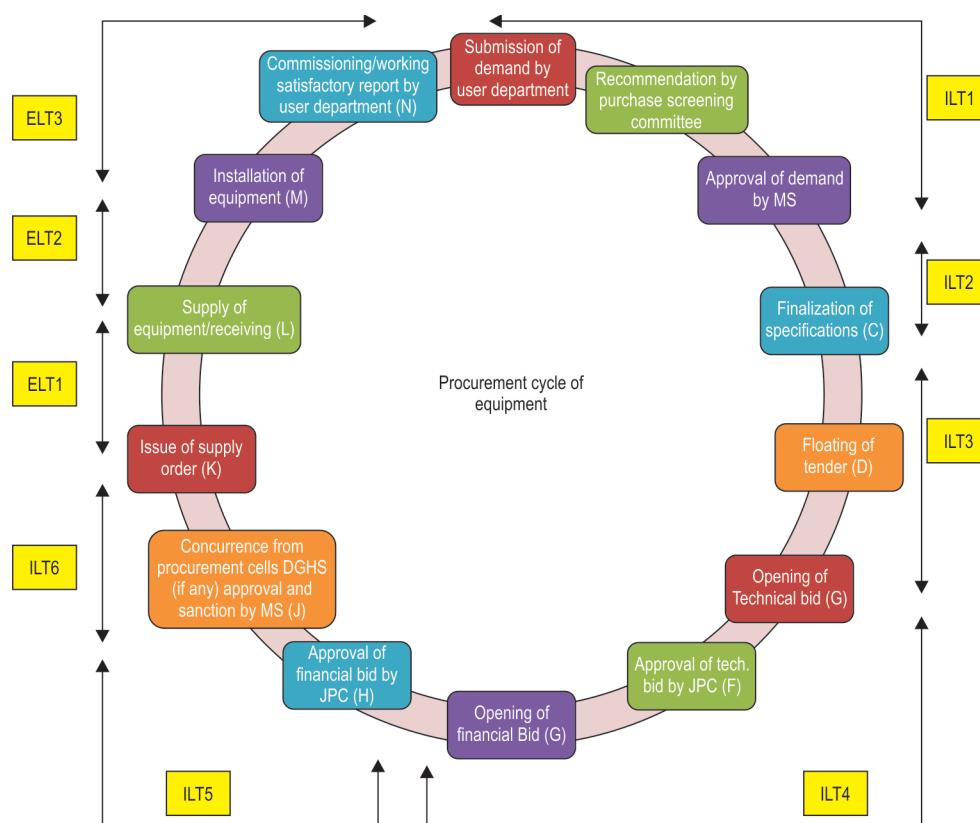
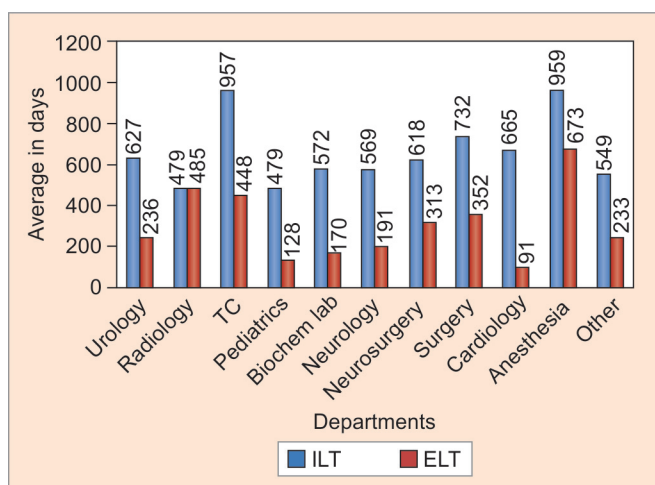


Fig. 1: Procurement procedure of equipments in a public sector tertiary care hospital (under study)



Graph 1: Department-wise analysis of lead time analysis

Department-wise Analysis of Lead Time of Capital Equipment

The data of present study indicate that capital equipment in various departments had different internal and external lead time (ILT and ELT). The highest 'average ILT' was seen in equipment belonging to Trauma centre/casualty and anesthesia department while the lowest 'average ILT' was observed in pediatrics and radiology department. Similarly, the highest 'average ELT' was seen in equipment belonging to anesthesia followed by radiology department, whereas lowest 'average ELT' was seen in cardiology and pediatrics department (Graph 1).

Internal Lead Time—Department Wise

The subcomponents wise analysis of ILT is depicted in Table 2. The highest value of maximum ILT subcomponent was observed as follows: ILT1: anesthesia, ILT2: surgery, ILT3: pediatrics, ILT4: trauma care centre/Casualty, ILT5: radiology and ILT6: anesthesia. On the contrary, lowest value of minimum ILT subcomponent was observed as follows: ILT1 and 2: radiology, ILT3: neurosurgery, ILT4: pediatrics, ILT5 and 6: cardiology.

Intra departmental observations: It was observed that major components of ILT in almost all the departments was ILT4 followed by ILT2, i.e. technical bid evaluation followed by framing the specifications. The other components of ILT did not consume abnormal time.

External Lead Time—Department Wise

The subcomponents wise analysis of ELT is depicted in Table 3. The highest value of maximum ELT subcomponent was observed as follows: ELT1 and 2: anesthesia, ELT3: radiology. On the contrary, lowest value of minimum ELT subcomponent was observed as follows: ELT1: 'laboratory and blood Bank', ELT2: pediatrics, and ELT3 anesthesia and cardiology.

It was further observed that ELT1 was the major time component vis-a-vis of total ELT in almost all the departments followed by ELT2 component. However,

Table 1: Internal and external lead time categorization

Time period in days	
<i>Internal lead time</i>	
ILT1	From demand forecasting to the demand approval
ILT2	From demand approval to the specification formulation
ILT3	From specification formulation to the floating of tender document
ILT4	From opening of tender to the tender approval by JPC
ILT5	From JPC approval to the approval by competent authority (MS/DGHS)
ILT6	From approval/sanctioning of competent authority to the issue of supply order
<i>External lead time</i>	
ELT1	From the issue of supply order to the receipt of equipment at store
ELT2	From the receipt of equipment to the installation in the department
ELT3	From the installation to the commissioning of equipment, working satisfactory report by user department

Table 2: Department-wise different components of ILT

Department	ILT1			ILT2			ILT3			ILT4			ILT5			ILT6		
	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
Urology	30	285	122.5	81	283	174.75	21	253	91	98	230	164.50	28	101	70	1	9	4.25
Radiology	4	48	30.83	0	252	92.83	3	213	69.17	78	303	181	0	288	88.17	1	43	17.33
Trauma center	11	331	119.67	17	230	150	28	79	47.33	320	665	518.33	0	122	49	9	135	73
Pediatrics	0	150	36.67	0	627	163	1	313	115.67	56	259	144.67	0	47	14.83	1	13	4.17
Laboratory and blood bank	1	165	70	118	220	178.17	13	138	51.33	161	354	256.67	6	15	9.17	0	35	6.33
Neurology	44	156	81.33	93	193	159.67	59	135	84.33	190	288	223.33	7	38	17.67	2	4	3
Neurosurgery	14	263	112.67	0	218	132.67	14	59	36	15	715	286.33	27	53	44	4	12	6.67
Surgery	9	288	66.17	30	690	286.50	23	201	68.17	231	372	277.33	6	129	30.33	1	6	3.17
Cardiology	37	72	51	90	196	133.33	42	261	188	157	510	285.33	4	6	5.33	1	3	2
Anesthesia	4	360	161.25	30	321	168	12	179	79.25	225	854	487.75	0	72	22	1	152	40.25
Others	5	60	30.17	0	251	91.17	12	205	74.67	156	635	332.17	6	10	7.17	2	35	13.17

Figures in days

Table 3: Department-wise different components of ELT

Department	ELT1			ELT2			ELT3		
	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.
Urology	2	148	92	5	279	124	0	71	20.25
Radiology	37	690	252.17	45	160	91.50	26	274	141.50
Trauma center	212	306	247.67	125	315	191.67	0	22	9
Pediatrics	37	114	80	0	135	35.67	0	60	12.50
Laboratory and blood bank	10	91	33.17	7	174	58.83	0	331	78
Neurology	54	124	89.33	42	81	56.67	8	84	45.33
Neurosurgery	30	224	128.67	0	138	89	0	227	95.67
Surgery	27	443	210.17	18	248	104.50	0	155	37.17
Cardiology	2	99	50.33	21	57	36	2	7	5
Anesthesia	80	690	264.50	258	597	403.25	0	15	5
Others	60	395	181.33	18	72	44.50	0	22	7.33

Figures in days

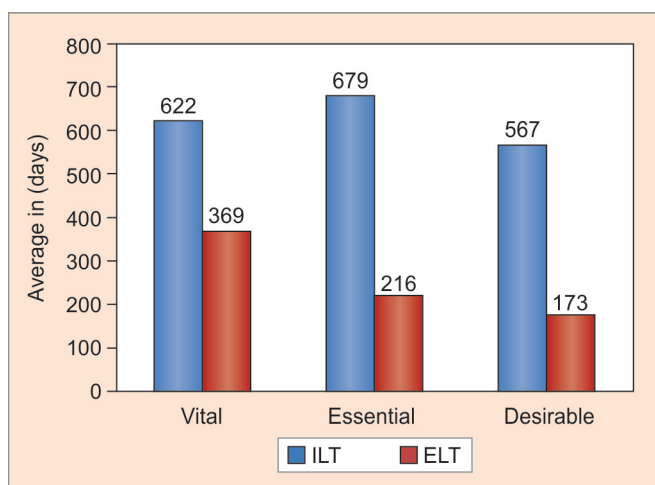
there was an aberration in anesthesia department where the situation was reverse.

Criticality of Equipment for Analysis of Lead Time of Capital Equipment

Based upon the classification of all equipment under study as per VED analysis, the observations were analyzed in respect

of ILT and ELT. The classification of various equipment was decided in consultation with respective HODs on their perception about the criticality of equipment. After classification, '29 equipments' were vital, '15' as essential and '6' as desirable category.

On study of ILT and ELT among the above category of equipments, it was observed that the highest 'average ILT'



Graph 2: Criticality wise (VED) average lead time analysis

was seen in equipments belonging to 'essential' category and followed by 'vital' category while lowest 'average ILT' was observed in 'desirable' category. Similarly, the highest 'average ELT' was seen in equipments belonging to 'vital' category followed by 'essential' category and lowest 'average ELT' was seen in 'desirable' category (Graph 2).

Internal Lead Time—Criticality Wise

The subcomponents wise analysis of ILT indicates that the highest value of maximum ILT was for ILT1 and 2: essential category, ILT3: desirable category, ILT4, 5 and 6: vital category. On the contrary, lowest value of minimum ILT subcomponent was observed as follows: ILT1: desirable category, ILT2: vital category, ILT3: essential category, ILT4, 5 and 6: desirable category (Table 4).

Intra departmental observations: It was observed that major components of ILT in almost all the three categories was ILT4 followed by ILT2, i.e. technical bid evaluation followed by framing the specifications. The other components of ILT were not that time consuming.

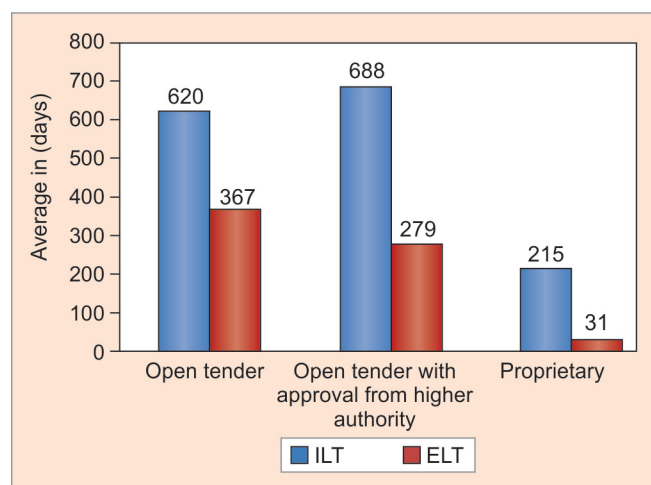
External Lead Time—Criticality Wise

The subcomponents wise analysis of ELT is depicted in Table 5. The highest value of maximum ELT subcomponent was observed as follows: ELT1 and 2: vital category, ELT3: essential category. On the other hand, lowest value of minimum ELT subcomponent was observed as follows: ELT1: 'essential' category, ELT 2 and 3: desirable.

It was further observed that ELT1 was the major time component vis-a-vis of total ELT in all three categories followed by ELT2 and ELT3 component.

Purchase Process-wise Analysis of Lead Time of Capital Equipment

The data were analyzed in respect of different purchase process, i.e. 'open tender', 'open tender with higher authority



Graph 3: Purchase process-wise average lead time analysis

approval', 'proprietary purchase'. It was observed that the highest 'average ILT' was seen in equipment purchased through 'open tender with higher authority approval' followed by 'open tender' while lowest 'average ILT' was observed in 'proprietary purchase' process. Similarly, the highest 'average ELT' was seen in equipment purchased through 'open tender' followed by 'open tender with higher authority approval' and lowest 'average ELT' was seen in 'proprietary purchase' (Graph 3).

Internal Lead Time—Purchase Process Wise

The subcomponents wise analysis of ILT as per purchase process of equipment indicates that the highest value of maximum ILT was for ILT1 and 2: 'open tender', ILT3 and 4: 'open tender with higher authority approval', ILT5: 'open tender' and ILT 6: 'open tender with higher authority approval'. On the contrary, lowest value of minimum ILT subcomponent was observed from ILT1 to 6: 'proprietary purchase' (Table 6).

External Lead Time—Purchase Process Wise

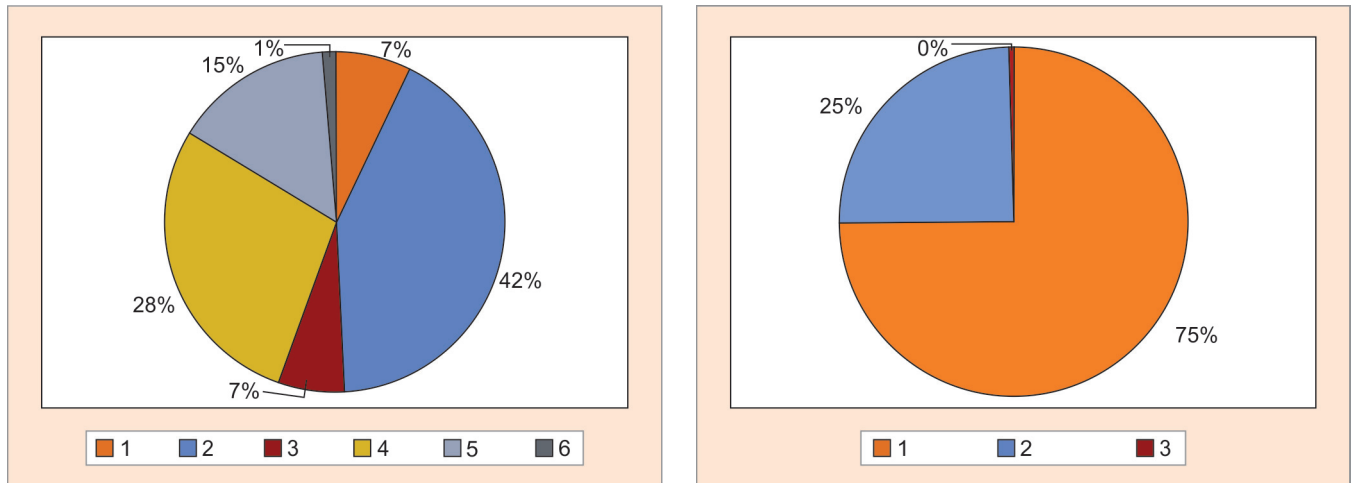
The subcomponents wise analysis of ELT indicates that the highest value of maximum ELT from ELT1 to 3 was for open tender', and lowest value of minimum ELT subcomponent was observed from ELT1 to 3 for 'proprietary purchase' (Table 7).

Internal Lead Time (Total)

It has been observed, that taking average of all equipment under study, ILT2 component constitute about 42% of the total ILT followed by ILT4 constituting 28% as shown in Figure 2.

External Lead Time (Total)

Similarly, the ELT1 constitute about 75 % of the total ELT followed by ELT2 constituting 25% as shown in Figure 2.



Total internal lead time: It has been observed, taking average of all equipments under study, ILT2 component constitute about 42% of the total ILT followed by ILT4 constituting 28% as shown in above graph

Total external lead time: Similarly, the ELT1 constitute about 75% of the total ELT followed by ELT2 constituting 25% as shown in above graph

Fig. 2: Comparison of total internal and external lead time

Table 4: Criticality-wise different components of ILT

Type of category	ILT1			ILT2			ILT3			ILT4			ILT5			ILT6		
	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.
Vital	0	360	66.17	0	321	115.14	3	261	85.83	15	854	300.14	0	288	37.45	1	152	17.45
Essential	5	288	94.80	81	690	226.27	21	201	67	98	570	249.53	6	129	32.20	0	75	9.67
Desirable	1	150	48.67	0	627	205.83	1	313	88	56	295	208.83	0	13	7.50	0	26	7.67

Figures in days

Table 5: Criticality-wise different components of ELT

Type of category	ELT1			ELT2			ELT3		
	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.
Vital	2	690	182.10	0	597	136.48	0	274	50.17
Essential	2	443	103.60	5	165	62.40	0	331	50.40
Desirable	22	395	113.33	4	174	57.50	0	7	2.33

Figures in days

Table 6: Purchase process-wise different components of ILT

Type of process	ILT1			ILT2			ILT3			ILT4			ILT5			ILT6		
	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.
Open	1	288	74.50	0	627	176.75	12	261	83.55	78	715	248.75	6	129	24.70	1	75	12.15
Open tender with approval from higher authority	0	360	71.96	0	690	161.19	3	313	85.74	173	854	316.89	0	288	36.3	0	152	16.15
Proprietary	11	128	66.67	0	81	27	1	21	12	15	98	56.33	12	75	46.67	1	13	6

Figures in days

Table 7: External lead time (process-wise)

Type of process	ELT1			ELT2			ELT3		
	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.
Open tender	10	690	186.70	0	597	116.30	0	331	64
Open tender with approval from higher authority	2	690	137.48	7	468	107.56	0	274	34.41
Proprietary	11	128	66.67	0	81	27	1	21	12

Figures in days

DISCUSSION AND CONCLUSION

It has been observed that the procurement procedure in the hospital under study is as per the standard guidelines prescribed by Govt of India in General Financial Rules⁵ and guidelines issued by MOHFW and DGHS⁶ in this regard.

In lead time analysis, it was observed that there is a variation in the total lead time, ILT, ELT and their sub-components for each of capital equipment and in different departments. The longest average total ILT was seen in equipment belonging to anesthesia department and minimum belonging to radiology and pediatrics department, although the procurement process remains the same for all the departments of the hospital.

It was further observed that out of the average total ILT, maximum time was taken by ILT4 followed by ILT2 component. Since activities in both ILT2 and ILT4, i.e. laying down the specification and technical bid evaluation are the responsibility of the individual department. Hence, the overall delay can also be attributed to the individual department. It was further observed that ILT2 and ILT4 component constituted around 70% of the total ILT for almost all the equipment under study. This gives us the assumption that in order to reduce the ILT significantly and effectively, intervention at the departmental level is needed for strengthening and expediting the procedure. On interview with the concerned HODs, it was felt that inadequate knowledge about the procurement procedure, lack of adequate information on product, lack of clarity among the team members about the specifications to be framed, influence of the bidders on the experts, time constraints with the experts and lack of secretarial support to the committee are some of the important factors contributing to the delay at the departmental level.

In case of ELT, 75% time was consumed by ELT1, i.e. the delivery time and receipt of equipment. This time can be marginally reduced by imposing strict conditions on the suppliers regarding delivery time. However, it has a limited scope since most of the equipment are imported and have to be shipped from abroad. Further, in many equipment installation and commissioning process took longer time, since there was delay in site preparedness before installation of equipment.

In the process wise lead time analysis, it was concluded that the shortest time was taken by proprietary purchase followed by open tender and maximum time in open tender with approval from higher authority.

In view of the inherent procedure involved in all three types of purchase procedures, these observations are on the expected lines. However, it was also observed here that the ILT2 and ILT4 component of internal lead time had the major time share in all the three types of process. Hence,

there is a scope to reduce the total lead time further in all the three categories here also by adopting and expediting the process at the departmental level. In addition, the time can be further reduced, in case policies are reviewed in respect of inadequate bid response and financial powers of competent authorities, since these two are also the bottleneck areas.

On an analysis of lead time in VED category, it has been concluded that no concept of VED analysis is applied in the procurement of equipment. This is evident from the fact that the minimum lead time was seen in desirable followed by maximum in essential or vital equipment. Hence, there is a need to develop the procurement process in line with the VED analysis. During the study and on interview with the user, officials of purchase department VED concept was not found in practice at any level.

In DGHS guidelines, certain time frames have been suggested for various activities of procurement for central government hospital. In our study, the lead time (ILT and ELT) has been found to be much higher than the suggested time lines in most of the equipment under study. In certain isolated cases, the lead time (ILT and ELT) is exceptionally long and inordinate delay in whole process. In such isolated cases, the major reasons for delay was technical bid evaluation and in some cases, retendering, unusual delivery time/installation and commissioning.

Therefore, it is concluded that, on taking the average of all equipment under study, ILT 2 component constitute about 42% of the total ILT followed by ILT 4 constituting 28% of the total ILT suggesting that laying down the specification and technical bid evaluation are two major bottlenecks in procurement process of capital equipment at a public sector tertiary care hospital.

RECOMMENDATIONS

Standardized specifications need to be developed for commonly used equipment and these can be submitted along with submission of demand to purchase department to cut short the delay in ILT2 component.

A standing technical bid evaluation committee should be constituted in each department for technical bid evaluation. The committee should finalise the evaluation in a fixed time bound manner at that place only. The committee members should be trained in regards to purchase procedures and relevant instructions/guidelines issued in this regard by the various authorities.

The practice of categorization of equipment according to VED analysis concept should be introduced in the hospital for effective procurement process.

The delegation of financial powers to the sanctioning authority should be reviewed periodically keeping in view the current cost of equipment and need of technology in

the hospitals of today. This will avoid unnecessary delay in finalization of purchases where sanction of higher authority is required in the present scenario.

It is much advisable to develop a time bound SOP for the purchase section of the hospital. The SOP should contain detailed steps of procedures, authority and responsibility at each level of hierarchy, rules and regulations regarding tendering process, delegated financial powers, payment procedures, etc.

REFERENCES

1. Kaur M, Fagerli T. Caroline Temple Bird, Andreas Level, Willi Kawohl. Cited in Department of Health Service Provision- WHO-(2000), 'How to manage series for healthcare technology, Guide 3.' How to Procure and Commission your Healthcare Technology'. Available at: http://www.who.int/management/procure_commission_healthcare.pdf.
2. Technical discussions on 'The role of medical devices and equipment in contemporary health'. EM/RC53/Tech. Disc. 2 2006. Available at: www.siteresources.worldbank.org/intmnaregtophealth/resources/role_medical_devices_heal. Last visited on Pvt Ltd. 2012-01-24.
3. Gupta S, Kant S. Strategies for hospital equipment planning and selection. In Hospital Store Management: An Integrated Approach. 1st ed. Jaypee Brothers Medical Publishers Pvt. Ltd. 2007;129.
4. National Institute of Health and Family Welfare, PG. Certificate course in Hospital Management Module. Equipment and Material Management 2002;24.
5. Swamy's compilation of 'General Financial Rules 2005'.
6. Government of India. Ministry of Finance. Department of Expenditure. Manual on Policies and Purchase of Goods and Services, 2006 Aug 31.

An Assessment of Diagnostic Equipment Utilization in a Tertiary Healthcare Setup: A Key to Economical Patient Management

¹Poonam Chaudhary, ²Pankaj Kaul

ABSTRACT

Equipment utilization management is the evaluation of the medical equipment necessity, appropriateness, and efficiency of the use in the healthcare services or procedures. The investment on an equipment is said to be a good one if it shows a utilization coefficient of 50% or above.

The study was descriptive observational in nature and was conducted in the Histopathology Department, PGIMER, Chandigarh. The data for the entire year of 2012 was collected by studying various records of the department including purchase files, inventory registers, log books and service records of medical equipments.

The results indicated that the Utilization Coefficients of various diagnostic equipments in the department of Histopathology, PGIMER, Chandigarh for the year 2012 were in the order of 58.1, 62.1 and 60.4% for high cost, medium cost and low cost equipments respectively.

On an average, the utilization coefficient of medical equipments under study (Year 2012) of the Histopathology Department, PGIMER, Chandigarh, was found to be 60.2% (above 50%). This figure reflects that the budget spent on average medical diagnostic equipment in this department is very much justifiable. The study also showed that the cost incurred on various cost categories of diagnostic equipments, i.e. the low, medium and high cost equipments was also equally important.

Keywords: Low, Medium and high cost diagnostic equipments, Utilization coefficient, Break down, Equipment down time and daily work load.

How to cite this article: Chaudhary P, Kaul P. An Assessment of Diagnostic Equipment Utilization in a Tertiary Healthcare Setup: A Key to Economical Patient Management. *Int J Res Foundation Hosp Healthc Adm* 2014;2(2):111-116.

Source of support: Nil

Conflict of interest: None declared

¹Senior Medical Laboratory Technologist, ²Tutor Technologist

¹Department of Anatomy, Government Medical College and Hospital, Chandigarh, India

²Department of Histopathology, Postgraduate Institute of Medical Education and Research, Chandigarh, India

Corresponding Author: Poonam Chaudhary, Senior Medical Laboratory Technologist, Department of Anatomy, Government Medical College and Hospital, Sector 32, Chandigarh-160030 India, e-mail: purnima_chaudhary@rediffmail.com

INTRODUCTION

Hospitals have undergone a quantum change in concept and care provisioning from ancient days to present era. The information explosion and technological advances have revolutionized the medical care. The sophistication in the medical field has led to the development of specialized care centers in an attempt to provide high quality care. Modern medical technology has contributed immensely in improving the quality of healthcare and state of health profile of nations. The advancement has been mainly due to: improved diagnostic facilities; sophisticated equipments, and spectacular progress in development in surgical procedures.¹

The introduction of state of art technology has resulted in metamorphic changes in diagnostic and therapeutic modalities in patient care activities. This has led to enhancement of quality of life and decreased morbidity and mortality rates.¹

Medical equipments contribute to almost 40 to 50% costs in a tertiary hospital setup. The medical equipment though cutting edge at the time of purchase poses threat of inevitable obsolescence within 6 to 7 years of installation. This problem is compounded by the fact that most of such equipments are imported and very few local reputed manufacturers exist in India. This leads to putting higher treatment costs and further to lesser competitive edges and low utilization rates resulting in undesired operating margins.²

The availability and utilization of various healthcare equipments at all levels in the health system for effective and efficient service delivery, was also emphasized in the Alma-Ata declaration at the International Conference on Primary Health Care in 1978, which was later included into the strategy of Health for all by 2000 AD.³

Medical equipment is an integral part of the physical infrastructure of a healthcare setup. It is an important means of providing various services to the people. So, in a way it can be said that these equipments are of utmost importance and have become a necessity in almost all activities whether diagnostic, therapeutic, or supportive in nature.³

Many costly medical equipments are lying in the hospitals which are either never installed or are out of order for want of spares or proper maintenance. These types of

happenings are very common and most of the big government hospitals are plagued with this problem, which not only gives bad publicity to the hospital administration but also leads to wastage of scarcely available resources of the country. Proper planning of medical equipment in a hospital will not only economize on resources but will also result in availability of maximum equipment in functional state all the time.⁴

Most of the states and other organizations in India have laid down rules and regulations for the procurement of equipments and other supplies in the hospitals. The basic rationale behind all these rules, regulations and procedures is to maximize the value of the money invested in the purchase of equipment.⁵

It should be the earnest endeavor of the management and the users to optimize the equipment utilization to obtain maximum returns for the capital invested. In an era of cost-intensive medical care, every equipment being installed in healthcare institutions need to be fully and properly utilized.

An optimum utilization of equipment will result in as follows:

- Optimum patient handling and rapid turnover.
- Minimum possible cost of healthcare.
- Quality patient care and satisfaction.

Utilization essentially means the use of the equipment to the full potential.⁵

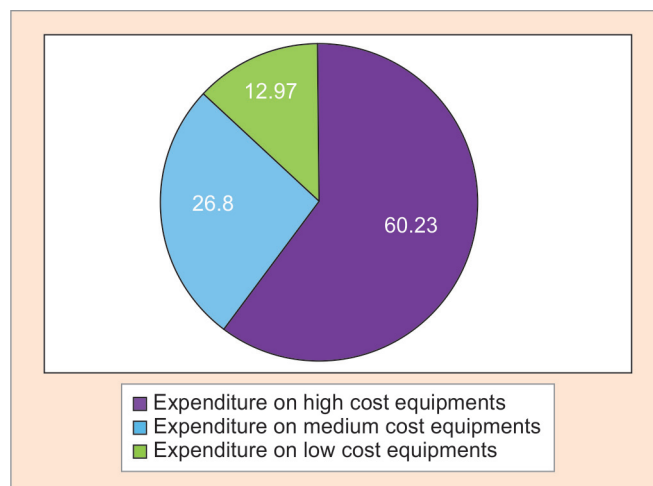
As of now for the smooth functioning of any healthcare facility that is from primary health center to a tertiary care institute effective management as well as maintenance play a major part.⁶

AIMS AND OBJECTIVES

1. To enumerate the various diagnostic equipments used in random in various sections of the department.
2. To categorize them into the low, medium and high cost equipments based on their procurement cost.
3. To find the utilization coefficient of these equipments individually during the year 2012 (January 2012 to December 2012) for 12 months.

MATERIALS AND METHODS

The study was conducted in the Histopathology Department, PGIMER, Chandigarh. PGIMER, Chandigarh is a medical education and research institute. It has educational, medical research and training facilities for students of various categories other than imparting tertiary healthcare services in North India. The tools and techniques applied in the study are presented in Table 1.



Graph 1: Percentage of expenditure on medical equipments

RESULTS AND ANALYSIS

Analysis of Objective 1

To enumerate the various diagnostic instruments used for random in the various sections of the department, a final list of 50 medical diagnostic equipments were selected for the study as presented in Table 2.

There are mainly ten sections of the Department of Histopathology equipped with sophisticated medical diagnostic equipments according to the requirement of laboratory investigations. An average number of five equipments was selected from each section for the study.

Analysis of Objective 2

This section analyses the cost categorization and the percentage of expenditure incurred on these medical diagnostic equipments (Table 3 and Graph 1).

Based on the procurement cost, these medical diagnostic equipments were categorized into the low, medium and high cost equipments as presented in Table 3. For this purpose, the inventory and stock registers of the department were studied for the purchase orders of the equipments under study and their procurement costs were recorded. A final list of 30 medical equipments of different cost categories used for various techniques/purposes was prepared. These included 10 each of low, medium and high cost medical diagnostic equipments.

On analyzing the cost of these medical equipments, it was also observed that most of the equipments were of foreign origin and their procurement costs were available as per the respective foreign currency and hence they were converted into Indian currency, i.e. rupees to make the study simple and comparable.

On analyzing the data, it was observed that out of total expenditure of ₹ 4,64,87,345/-, 60.23% (₹ 2,79,99,328/-)

Table 1: Tools and techniques employed

Purpose/Objective	Preliminary analysis
Tools and techniques used	Observation methods (study of records mentioned in log books, inventory/stock register of each medical equipment under study) Frequencies charts Tabulation presentations Pie charts
Purpose/Objective no. 1	To enumerate the various diagnostic equipments in different sections of the department.
Tools and techniques used	For this objective, four-step methodology was followed <i>Step 1:</i> A complete list of all medical equipments used in the various sections of the department was prepared. <i>Step 2:</i> These were arranged as per their locations, i.e. various sections/labs of the department. <i>Step 3:</i> Major diagnostic equipments from each section were selected by stratified random sampling method. <i>Step 4:</i> A total no. of 50 medical diagnostic equipments were selected for the study.
Purpose/Objective no. 2	To categorize them into the low, medium and high cost equipments based on their procurement cost.
Tools and techniques used	All the medical diagnostic equipments under study were categorized into three as per their procurement cost as follows: Low cost (Procurement cost less than 5 Lakhs) Medium cost (Procurement cost falling between 5 and 10 Lakhs) High cost (Procurement cost more than 10 Lakhs)
Purpose/Objective no. 3	To find the utilization coefficient of these equipments individually during the year 2012 (January 2012 to December 2012) for 12 months.
Tools and techniques used	Utilization coefficient was calculated using the following formula Utilization coefficient = $(A \times B / C \times D) \times 100$ Here, 'A' the no. of days the medical equipment was actually used during the year 2012. For this, time period of the equipment down time was calculated and deducted from total working days ('C'). 'B' the no. of hours the equipment was actually used for a working day (average time taken by a procedure on that equipment, * average no. of procedures performed in a working day). Time taken for each procedure was asked and daily work load status was observed from the log books of all the months of 2012. The technologists were also enquired as to the uses/functions of the medical diagnostic equipments under study. 'C' the no. of days the medical equipment could have been available (if there was no down time and the equipment was put in working order). For this, PGIMER Calendar of the year 2012 was taken to find out the total no. of working days as follows: Total no. of days in 2012 = 366 (2012 being the leap year) Total no. of sundays in 2012 = 53 Total no. of gazetted holidays = 17 Total no. of OPD holidays = 11 Hence, total no. of working days were = $366 - (53 + 17 + 11) = 285$ days So, 'C' was taken as 285 days for all the calculations. 'D' the no. of hours the medical diagnostic equipment could have been available in a working day (if there was no equipment down time and the equipment was put in working order). There were total 233 full working days (Monday to Friday; working timings 9 am to 5 pm and 1 hour lunch break) and 52 half working days (Saturdays). Total working hours = $(233 \times 7) + (52 \times 4) = (1631 + 208) = 1839$ hours Hence, average total working hours in a day was 6.45 hours $(1839/285)$. So, 'D' was taken as 6.45 working hours on daily basis for the calculation of utilization coefficient of medical equipments.

was spent on high cost medical equipments, 26.8% (₹ 1,24,58,608/-) was spent on medium cost equipments and the remaining 12.97% (₹ 60,29,409/-) was spent on the low cost medical equipments (Graph 1).

Analysis of Objective 3

The utilization coefficient of these medical diagnostic equipments were calculated individually for the year 2012 (January 2012 to December 2012) as per the formula stated in the methodology and is presented in Table 4.

Results of the above calculations were based on the criteria that if the utilization coefficient was less than 50%, it was considered to be under-utilized and hence not a good investment and *vice versa*. However, life-saving equipments cannot be subjected to this kind of assessment.

Percentage Utilization Coefficient of Medical Diagnostic Equipments

The average percentage of utilization coefficient of different cost categories of medical diagnostic equipments is presented in Graphs 2 to 4.

Table 2: Selection of medical diagnostic equipments section wise

Sl. no.	Name of the departmental section/lab (location of equipment)	Quantity of medical diagnostic equipments selected for the assessment of equipment utilization coefficient
1.	EM Lab	01
2.	Grossing lab	05
3.	Processing lab	06
4.	Microtomy lab	06
5.	Staining lab	06
6.	Immunohistochemistry lab	04
7.	Molecular lab	05
8.	Reporting lab	08
9.	EM processing lab	05
10.	Cryo/Frozen lab	04
	Total	50

Table 3: Expenditure spent on medical diagnostic equipments

Sl. no.	Name of medical equipment	Department section/lab (location of equipment)	Procurement cost per unit in ₹	Cost cate- gory low/ medium/high	Qty.	Total procurement cost in ₹
1.	Transmission electron microscope	Electron microscope lab	94,52,570	High	01	94,52,570
2.	Thermo-shandon work station	Grossing lab	11,22,000	High	02	22,44,000
3.	Autopsy saw with HEPA bone dust collector	Grossing lab	1,14,000	Low	01	1,14,000
4.	Bone saw	Grossing lab	5,73,800	Medium	02	11,47,600
5.	Automated tissue processor with fume exhaust system	Processing lab	9,40,929	Medium	02	18,81,858
6.	Rapid multifunctional microwave tissue processor	Processing lab	11,12,162	High	01	11,12,162
7.	Embedding consol system	Processing lab	2,27,000	Low	02	4,54,000
8.	Fully enclosed tissue processor	Processing lab	18,10,500	High	01	18,10,500
9.	Rotary microtome	Microtomy lab	6,53,112	Medium	02	13,06,224
10.	Automatic microtome knife sharpener	Microtomy lab	5,57,000	Medium	02	11,14,000
11.	Automated microtome	Microtomy lab	6,60,700	Medium	02	13,21,400
12.	Autostainer	Staining lab	10,53,000	High	02	21,06,000
13.	Binocular research microscope	Staining lab	3,56,440	Low	04	14,25,760
14.	Automated immunostainer	Immunohistochemistry lab	13,41,000	High	01	13,41,000
15.	Antigen retrieval system decloaking chamber	Immunohistochemistry lab	1,22,700	Low	01	1,22,700
16.	Cold centrifuge	Immunohistochemistry lab	3,74,563	Low	02	7,49,126
17.	PCR machine with microfuge	Molecular lab	4,46,600	Low	02	8,93,200
18.	In situ hybridizer	Molecular lab	4,81,442	Low	01	4,81,442
19.	Gel documentation system	Molecular lab	3,68,410	Low	02	7,36,820
20.	Trinocular research microscope	Reporting lab	3,90,000	Low	01	3,90,000
21.	Binocular research microscope with dual viewing attachments	Reporting lab	7,36,925	Medium	02	14,73,850
22.	Binocular research microscope (ten header)	Reporting lab	7,85,580	Medium	02	15,71,160
23.	Image analyzer fully automatic for DMRB microscope	Reporting lab	6,78,500	Medium	01	6,78,500
24.	Binocular research microscope for transmitted light with photomicrography attachment camera	Reporting lab	17,80,399	High	02	29,11,800
25.	Digital imaging system for TEM 906 consisting of CCD camera	Em processing lab	19,54,560	High	01	19,54,560
26.	Ultramicrotome and accessories	Em processing lab	29,11,800	High	01	29,11,800
27.	EM automated tissue processor	Em processing lab	9,40,929	Medium	01	9,40,929
28.	Diamond knife	Em processing lab	5,11,662	Medium	02	10,23,324
29.	Ultra low deep freezer	Cryo/frozen lab	3,31,840	Low	02	6,63,680
30.	Cryostat with UV disinfection system	Cryo/frozen lab	10,76,690	High	02	21,53,380
Total expenditure = ₹ 4,64,87,345/-						

The average utilization coefficient of high cost medical equipments is 58.10% (Graph 2), for medium cost medical equipments is 62.10% (Graph 3) and that of low cost medical equipments is 60.40% (Graph 4).

DISCUSSION

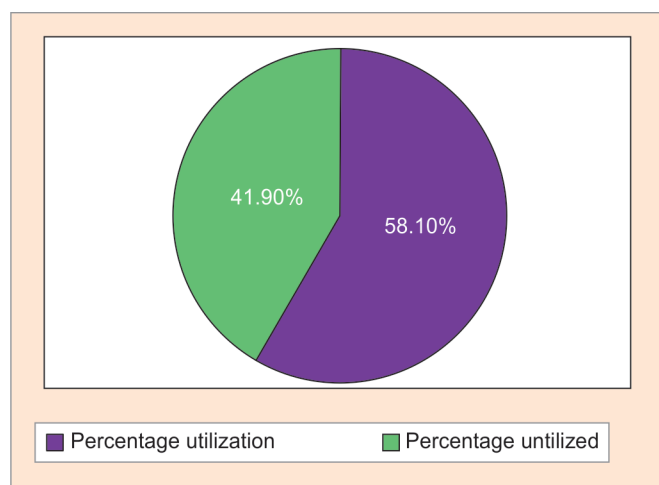
The hospital spends a heavy sum of money on the procurement of state of the art equipment every year as per the needs and demands stated by the various departments of the hospital. Most of them have to be imported from foreign countries. Thus efficient utilization of such equipments is a major area of concern and also formed the basis of this study.

Planning and acquisition of medical equipments is a continuous process. Decision-makers are seldom trained or have the awareness of modern technology. These persons may not be responsible for its eventual operation and maintenance. There is a lack of coordination among agencies involved in various processes, from demand generation to procurement, finance and maintenance. Investment and

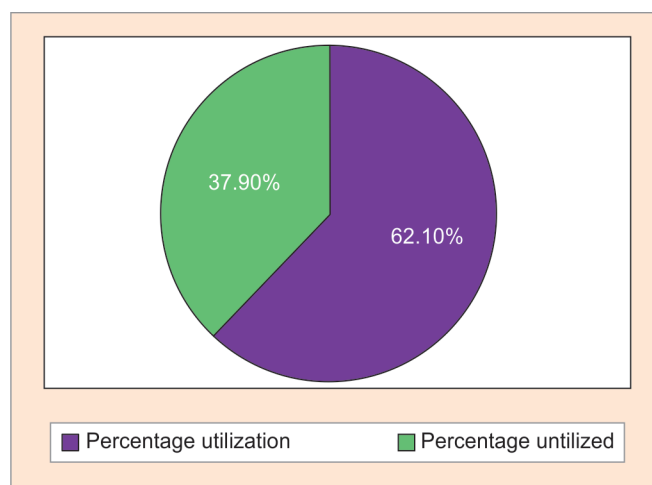
recurring costs are unsustainable. Equipment selection is not done as per the morbidity pattern or skills available to make the best use of the equipment but rather for prestige, craze for the latest and the best. If a hospital does not have a systematic purchase and maintenance plan for the medical equipments, it can lead to high cost, inadequate and improper utilization of the equipment. So, it has become mandatory to become the cost conscious and to be assertive of the cost benefits. Cost reduction is needed to be effected without affecting the quality and effectiveness of the services. Moreover, the medical equipments have applications only for the patients and have an impact on human lives and therefore, need to be dealt with in quite a different manner as compared to the other industries. It is imperative to assess its operative functionality and utilization by equipment audit, maintenance and repair. Hospital and clinical administrators are also faced with the expectation for return on investment that meets accounting guidelines and financial pressures.

Table 4: Utilization coefficient of medical equipments under study (Year 2012)

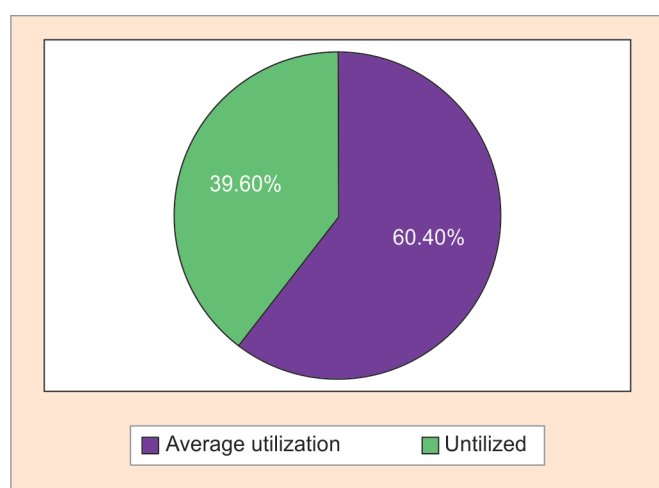
S. No.	Name of medical equipment	Department section/lab	Cost category low/medium/high	Utilization coefficient (%)
1.	Transmission electron microscope	Electron microscope lab	High	69.8
2.	Thermo-Shandon work station	Grossing lab	High	74.8
3.	Autopsy saw with HEPA bone dust collector	Grossing lab	Low	52.7
4.	Bone saw	Grossing lab	Medium	54.3
5.	Automated tissue processor with fume exhaust system	Processing lab	Medium	55.6
6.	Rapid multifunctional microwave tissue processor	Processing lab	High	55.8
7.	Embedding consol system	Processing lab	Low	75.3
8.	Fully enclosed tissue processor	Processing lab	High	61.0
9.	Rotary microtome	Microtomy lab	Medium	83.6
10.	Automatic microtome knife sharpener	Microtomy lab	Medium	31.0
11.	Automated microtome	Microtomy lab	Medium	54.3
12.	Autostainer	Staining lab	High	77.8
13.	Binocular research microscope	Staining lab	Low	50.0
14.	Automated immunostainer	Immunohistochemistry lab	High	40.0
15.	Antigen retrieval system decloaking chamber	Immunohistochemistry lab	Low	54.3
16.	Cold centrifuge	Immunohistochemistry lab	Low	47.7
17.	PCR machine with microfuge	Molecular lab	Low	70.0
18.	<i>In situ</i> hybridizer	Molecular lab	Low	43.4
19.	Gel documentation system	Molecular lab	Low	36.6
20.	Trinocular research microscope	Reporting lab	Low	74.4
21.	Binocular research microscope with dual viewing attachments	Reporting lab	Medium	77.5
22.	Binocular research microscope (Ten header)	Reporting lab	Medium	85.3
23.	Image analyzer fully automatic for existing DMRB microscope	Reporting lab	Medium	34.1
24.	Binocular research microscope for transmitted light with photomicrography camera	Reporting lab	High	35.6
25.	Digital imaging system for TEM 906 consisting of CCD camera	Em processing lab	High	62.0
26.	Ultramicrotome and accessories	Em processing lab	High	52.7
27.	Em automated tissue processor	Em processing lab	Medium	93.0
28.	Diamond knife	Em processing lab	Medium	52.7
29.	Ultra low deep freezer	Cryo lab	Low	100
30.	Cryostat with UV disinfection system	Cryo lab	High	51.2



Graph 2: Average utilization coefficients of high cost medical equipments



Graph 3: Average utilization coefficients of medium cost medical equipments



Graph 4: Average utilization coefficients of low cost medical equipments

In addition to the above mentioned bottlenecks, the hospital is a matrix organization and it definitely increases the challenges faced by the hospital administrators right from the time the equipment is procured to its optimum utilization.

CONCLUSION

The high cost medical equipments showed an average utilization coefficient of 58.1%, medium cost categories equipment showed 62.1% and that of low cost categories was 60.4%. Thus, on an average the utilization coefficient of medical equipments under study (Year 2012) of the department of histopathology, PGIMER, Chandigarh was found to be 60.2%.

On an average, the utilization coefficient of medical equipments under study (Year 2012) of the Department of histopathology, PGIMER, Chandigarh, was found to be

60.2% (above 50%). This figure reflects that the budget spent on average medical diagnostic equipment in this department is very much justifiable.

The study also showed that the cost incurred on various cost categories of diagnostic equipments, i.e. the low, medium and high cost equipments was also equally important since each category of medical equipment was used to an equal potential.

ACKNOWLEDGMENT

We would like to acknowledge the unconditional support and patience of our friend, Mrs Adarsh Bala, Assistant Librarian, GMCH, Chandigarh, who has spent hours with us in preparing the manuscript other than providing the relevant literature. We also thank the entire faculty and staff members of Histopathology Department, PGIMER, Chandigarh for their persistent support.

REFERENCES

1. Introduction to Management II: Essentials of Logistics and Equipment Management. New Delhi: IGNOU School of Health Sciences, 2010. p. 45.
2. Rajpal AS. Future trends in healthcare Industry in India. Express Healthcare. (Anniversary Edition).
3. Lathwal OP, Banerjee A. Availability and utilization of major Equipment at District Hospital Gurgaon, Haryana. J Acad Hosp Admn 2001;13(2).
4. Introduction to Management II: Practical Manual. New Delhi: IGNOU School of Health Sciences, 2010. p. 41-42.
5. Introduction to Management II: Essentials of Logistics and Equipment Management. New Delhi: IGNOU School of Health Sciences, 2010. p. 46-48.
6. Anand TR, Aggarwal AK. Guidelines for Equipments for Hospital of Different Sizes. New Delhi: National Institute of Health and Family Welfare, 1992. p. 9-13.

Planning and Designing of a Sleep Center

¹Saroj Kumar Patnaik, ²Shakti Kumar Gupta, ³Sunil Kant, ⁴R Chandrasekhar, ⁵Madhav Madhusudan Singh

ABSTRACT

Sleep disorders have become very common in today's world. The various sleep related disorders are increasing at an alarming proportion. The first sleep clinics in the United States were established in the 1970s by interested doctors and technicians; sleep centers are specialized centers where an individual is provided home like environment and surroundings and his sleep cycle is monitored. Active therapeutic and diagnostic interventions are also done here. This article discusses various planning and designing issues of sleep center.

Keywords: Sleep disorders, Obstructive sleep apnea, Sleep medicine, Room acoustics.

How to cite this article: Patnaik SK, Gupta SK, Kant S, Chandrasekhar R, Singh MM. Planning and Designing of a Sleep Center. *Int J Res Foundation Hosp Healthc Adm* 2014; 2(2):117-120.

Source of support: Nil

Conflict of interest: None

INTRODUCTION

Sleep disorders have become common phenomena in today's world. The advent in technology in modern medicine has brought to surface a number of sleep disorders which earlier were accepted as normal. Sleep is more than rest and it is a state of unresponsiveness brought about by nervous activities which ensures that the whole body including nervous system recuperates.¹ Improvement in modes of travel has shrunk the world, but has increased the number of patients who have sleep related ailments. In the present environment, Jet

Lag increases with age and number of time zones travelled through and is also affected by the direction in which you travel.²

The various sleep related disorders are increasing at an alarming proportion. Bixler, Kales and Healey in a study conducted in US found that the prevalence of sleep disorder is more than 50%.³ Thus, it is imperative that planning and designing of a sleep center be done very carefully.

Sleep medicine is a medical specialty or subspecialty devoted to the diagnosis and therapy of sleep disturbances and disorders. From the middle of the 20th century, research has provided increasing knowledge and answered many questions about sleep-wake functioning.⁴ The rapidly evolving field has become a recognized medical subspecialty in some countries. The first sleep clinics in the United States were established in the 1970s by interested doctors and technicians; the study, diagnosis and treatment of obstructive sleep apnea (OSA) were their first tasks. As late as 1999, virtually any American doctor, with no specific training in sleep medicine, could open a sleep laboratory.⁵

HISTORY

The evolution of sleep medicine is pretty interesting. The practice of sleep medicine evolved in many centers in the 1970s. Although, sleep clinics were established in USA and in some other countries in Europe in 1970, most of these were confined to diagnosis and management of OSA.⁶ The use of patients complaining of insomnia in hypnotic efficacy studies brought a group of researchers in Stanford closely into relation with many insomnia patients and demolished the notion that the majority of such patients were psychiatric subjects. One early question was, 'How reliable are the descriptions of their sleep by these patients?' The classic all-night sleep recording could yield a great deal of information. The diagnosis of OSA in patients who had profound excessive daytime sleepiness nearly always was completely unambiguous. During 1972, the search for sleep abnormalities in patients who had sleep-related complaints continued; the intent was to conceptualize the pathophysiologic process as an entity and as the cause of the presenting symptom. With this approach, several phenomena seen during sleep rapidly were linked to the fundamental sleep-related presenting complaints. Toward the end of 1972, the basic concepts and procedures of sleep disorders medicine were established.

^{1,5}Medical Officer (Hospital Services), ²Medical Superintendent
³DDG (OPP), ⁴Chief Architect (Retired)

¹Ministry of Defence, New Delhi, India

²Dr RP Centre for Ophthalmic Sciences, All India Institute of Medical Sciences, New Delhi, India

³O/O Director General Medical Services (Army), New Delhi India

⁴Ministry of Health and Family Welfare, New Delhi, India

⁵O/O Director General Medical Services (Army), Ministry of Defence, New Delhi India

Corresponding Author: Saroj Kumar Patnaik, Medical Officer (Hospital Services), Ministry of Defence, New Delhi, India
e-mail: patnaik.saroj@gmail.com

Types of Sleep Disorders

Breathing-related sleep disorders are syndromes in which the patient's sleep is interrupted by problems with his or her breathing. There are different types of breathing related sleep disorders:

- *Obstructive sleep apnea syndrome*: This is the most common form of breathing-related sleep disorder that has been reported to occur in 2 to 4% of middle aged adults, it is marked by episodes of blockage in the upper airway during sleep. It is found primarily in obese people. Patients with this disorder typically alternate between periods of snoring or gasping (when their airway is partly open) and periods of silence (when their airway is blocked). Very loud snoring is a clue to this disorder.
- *Central sleep apnea syndrome*: This disorder is primarily found in elderly patients with heart or neurological conditions that affect their ability to breathe properly. It is not associated with airway blockage and may be related to brain disease.
- *Central alveolar hypoventilation syndrome*: This disorder is found most often in extremely obese people. The patient's airway is not blocked, but his or her blood oxygen level is too low.
- *Mixed-type sleep apnea syndrome*: This disorder combines symptoms of both obstructive and central sleep apnea.
- *Insomnia*: Inability to fall or stay asleep.
- *Daytime sleepiness*.
- *Restless legs syndrome*: Feel tingling or 'crawling' sensations deep within your legs.
- *Narcolepsy*: Narcolepsy is a neurological disorder that affects the control of sleep and wakefulness. People with narcolepsy experience excessive daytime sleepiness and intermittent, uncontrollable episodes of falling asleep during the daytime. These sudden sleep attacks may occur during any type of activity at any time of the day.

Sleep Assessment

- The Epworth sleepiness scale (ESS), designed to give an indication of sleepiness and correlated with sleep apnea,⁸ or other questionnaires designed to measure excessive daytime sleepiness, are diagnostic tools that can be used repeatedly to measure results of treatment.
- A sleep diary, also called sleep log or sleep journal, kept by a patient at home for at least 2 weeks, while subjective, may help determine the extent and nature of sleep disturbance and the level of alertness in the normal environment. A parallel journal kept by a parent or bed partner, if any, can also be helpful. Sleep logs also

can be used for self-monitoring and in connection with behavioural and other treatment.

Planning and Designing of Sleep Center

Sleep centers are specialized centers where an individual is provided home like environment and surroundings and his sleep cycle is monitored. Active therapeutic and diagnostic interventions are also done here. Mechanical ventilators, administering aerosols, monitoring the sleep pattern, recording of any abnormality, maintenance of equipments, etc. is also undertaken here.

Facilities and Space Requirement



- Reception*: A well designated reception should be there in all sleep centers. Receptions can be planned to ensure privacy while discussing with the patient. Reception can be suitably planned in the entrance lobby of sleep center. Reception will require an area of 8 to 10 m² for smooth functioning. Sufficient number of drawers and shelves should be provided at reception.
- Patients' room*: The most important parts are the patient rooms, they are usually next to one another as they are quiet locations. Ideally, they are similar to the patients' room, so it should look a minimum comfortable. Bed should be larger than standard, as a lot of patients are wide and need space to kick. Night table, with small lamp for personal belongings. An approximate area of 15 m² per bed can be planned. Patient testing rooms must be of sufficient size, generally having a minimum of 140 square feet and no dimension less than 10 feet.⁹ Std 6a accreditation of sleep disorder center of American academy of sleep medicine (AASM). A two-way communication system between the patient bedroom and center personnel. A mechanism for visual monitoring and recording of patients during testing should be there. Polygraphic equipment capable of recording and storing

a minimum of 12 channels of data. Equipment for the delivery of continuous positive airway pressure (CPAP) and bilevel positive airway pressure, including remote control of pressure. Std 8- accreditation of sleep disorder center of AASM.

- *Room acoustics*: Patients' room have special acoustic design wherein decibel level can be around 15 to 20 decibels.¹⁰ (putsep 249). The most difficult aspect of space planning by clinicians for sound control is isolating operational noise sources. Operational noise is created by people and by machines brought into the building after it is constructed. Operational noise that can be isolated from business areas (desks, phones, printers), bulk storage, and pass-by foot traffic to other beds or common destinations (sinks, storage, entrances and exits). The best means of protecting from operational noise is a private cubicles. Room entrances should have solid doors with good seals. Light sleep, NREM which hospitalized patients spend most of their sleep time, showed the greatest vulnerability to acoustic disruption. It was less protected than either dream sleep, REM.¹¹ However, some openings, e.g. between two single-bed patient rooms, communication between quiet spaces that are used often but by few people. Such communicating rooms without a door can meet permissible noise criteria if other aspects of the design offer sufficient protection. Automatic sliding doors are expensive and generate a good deal of noise in operation.

If equipment, such as a refrigerator are to be put in the sleep lab, it should be placed far from the bed in a housing that absorbs the condenser noise or be built specifically to produce little noise and vibration.¹²

- *HVAC*: Sleep centers should be centrally air conditioned with total circulated air quantity should not be less than 12 airchanges/hour. Regulatory mechanism should exist with temperature monitoring panel in each room. Ambient temperature of 23 to 25°C be maintained at all times.
- *Lighting standards*: The surrounding should be pleasant and conducive to rest and relaxation. The light can be totally blocked out. Intensity of light should be controllable. Natural light is important to keep the patient in sync with the environment but adequate blinding facilities should be provided. Reading lights should be provided to each patient and 150 to 200 lux is recommended. There needs to be network so that a receiver and camera can be inside the room. Nearby plugs are also practical. Avoid white neon lights, and make sure the room can be made light free.
- *Walls*: Walls should be painted with light colors and should be decorated to get it close enough to the feel of

being at home. Corners of the wall should be protected against physical impact by stretchers.¹³

- *Doors*: Doors should have minimum 90 to 120 cm clear opening to allow easy passage to patients and a level space of 152 cm wide should extend about 45 cm on each side of doorway for facilitating opening closing by a wheel chaired person.

The facility must afford rapid access to the patient by emergency personnel. Std 19- accreditation of sleep disorder center of AASM.

- Prep area*: The other important room is where the computers are, patients are usually prepared in this room, so that a signal check can be carried out. Technical staff also spends the night there in case something happens. A room of area 12 m² can be planned for prep area. Prep area will be an integral part of sleep center.
- Control room*: Control room is the area where technologists will reside for data collection. Control room should be very close to sleep rooms for safety and timely care. It should have adequate area to accommodate equipments and other computer peripherals. An area of 8 m² will be adequate for this control room. This area can be seamlessly merged with a glass partition to separate them from sleep suites and offer the patients privacy. The control room must be adequate in size, design, location, and comfort to allow for effective function and comfort of technologists. Std 7- accreditation of sleep disorder center of AASM.
- Storage area*: Adequate storage areas for equipments and other accessories like patient luggage and wheel chair, etc. Storage area of 15 m² can be planned. This area should preferably be on the exit end and can have a door opening to outside from where day today needs of the center can be met and privacy of patients is not disturbed.
- Doctors' office*: Doctors' office should be planned closed off from the rest, so that scoring can be done without being disturbed. Patients also come in to hear the diagnosis. This room can be planned in an area of 12 m². There should be adequate privacy.



- g. *Toilets*: Toilets can be planned as per the local needs of populace. An area of 10 m² be earmarked. Toilets should have provision for wheel chaired patients also. At least one bedroom and bathroom must be handicap accessible. Toilets should be close to waiting areas. Clean bathrooms must be available and conveniently located within the center. 6B-Accreditation of sleep disorder center of AASM.
- h. *Waiting room*: There should be designated waiting area for patients relatives. This area can be planned in an area of 20 m². This place can have magazine stands, TV, information kiosks, etc.

The Challenge of the Future

The greatest challenge for the future is the cost-effective expansion of sleep medicine so that its benefits will be available readily throughout society. It will be very important to plan for customized sleep centers across the world as per the regional requirement. A major problem is the current failure of sleep research and sleep medicine to penetrate the mainstream educational system effectively at any level. As a consequence, the majority of human beings remain unaware of important facts of sleep and wakefulness, the fundamentals of biologic rhythms, and knowledge about sleep disorders, in particular the symptoms that suggest a serious pathologic process. The management of sleep deprivation and its serious consequences in the workplace, particularly in those industries that maintain sustained operations, is only beginning to be addressed comprehensively. Finally, the education and training of health professionals to be sleep specialists has far to go to reach adequate numbers. It has made a concern for the health of human beings a 24-hour

enterprise and has energized a new effort to reveal the secrets of the healthy and unhealthy sleeping brain.¹⁴

REFERENCES

1. Ervin putsep. Modern Hospitals. International planning, 1979-80. p. 80.
2. University of Glasgow sleep center: sleep matters, summer 2009;2(1).
3. EO Bixler, Kales A, Soldatos CR, Kales JD, Healey S. Prevalence of sleep disorders in the Los Angeles metropolitan area. Am J Psychiatry 1979 Oct;1257-1262.
4. Bingham, Roger, Sejnowski T, Siegel J, Dyken ME, Czeisler C, Shaw P, Greenspan R, Panda S, Low P, Stickgold R, Mednick S, Pack A, de Lecea L, Dinges D, Kripke D, Tononi G. (February 2007). 'Waking Up To Sleep' (Several conference videos). The Science Network. <http://thesciencenetwork.org/programs/waking-up-to-sleep>. Retrieved 2008-01-25.
5. Collop NA. Conundrums in sleep medicine. Chest 1999 March; 115(3):607-608.
6. Bajaj JS. Annals of National Academy of Medical Sciences; Sleep Medicine Perspective, Potential and Prospect: 2013 July-Dec;49(3-4):75.
7. Vijayan VK. Annals of National Academy of Medical Sciences; Sleep Disordered breathing: OSA, CSA, Pathophysiology and Diagnosis 49(3-4):92.
8. Johns MW. A new method for measuring daytime sleepiness: the Epworth sleepiness scale. Sleep 1991;14(6):540-545.
9. Standards for Accreditation of sleep disorder center of AASM, 2007.
10. Ervin Putsep. Modern Hospitals, International Planning, 1979-80. p. 249.
11. Evidence-based design meets evidence-based medicine: the sound sleep study, Wei Wang, PhD Harvard Medical School, Division of Sleep Medicine, Jo M Solet, PhD, Behavioral Medicine, Harvard Medical School, Division of Sleep Medicine Cambridge Health Alliance et al p. 17.
12. Planning and designing guideline, childcare center, Ontario; 2006; p. 39-40.
13. Gupta S, Kant S, et al. Modern trends in hospital planning designing, 2007. p. 90.
14. William C Dement. History of sleep medicine: Neurol Clin; 2005; p. 962.



The Consumer Protection Act: A Review of Legal Perspective

¹Madhav Madhusudan Singh, ²Saroj Patnaik, ³Pawan Kapoor, ⁴Manu Chaturvedi, ⁵Pradeep Srivastava

ABSTRACT

The fast pace of commercialization and globalization is affecting all spheres of life, the medical profession is also affected by this socioeconomic phenomena. The consumer protection act (CPA) enacted in 1986 intended to provide effective and efficient safeguards to the consumers against various types of exploitations and unfair practices. This review article aims to augment awareness of medical practitioners regarding CPA and how to prevent litigations.

Keywords: Consumer protection act (CPA), Professional negligence, Complainant, Complaint, Consumer, Service.

How to cite this article: Singh MM, Patnaik S, Kapoor P, Chaturvedi M, Srivastava P. The Consumer Protection Act: A Review of Legal Perspective. Int J Res Foundation Hosp Healthc Adm 2014;2(2):121-129.

Source of support: Nil

Conflict of interest: None

INTRODUCTION

The Supreme court awarded an enormous ₹ 5.96 crore as compensation to be paid by Kolkata based AMRI Hospital and three doctors to a US-based Indian-origin doctor for medical negligence which led to the death of his wife in 1998, following faulty treatment administered at the hospital. A bench of justices CK Prasad and V Gopala Gowda raised the compensation amount of ₹ 1.73 crore, awarded by the National Consumer Dispute Redressal Commission (NCDRC) in 2011, to ₹ 5.96 crore to Kunal Saha, an AIDS

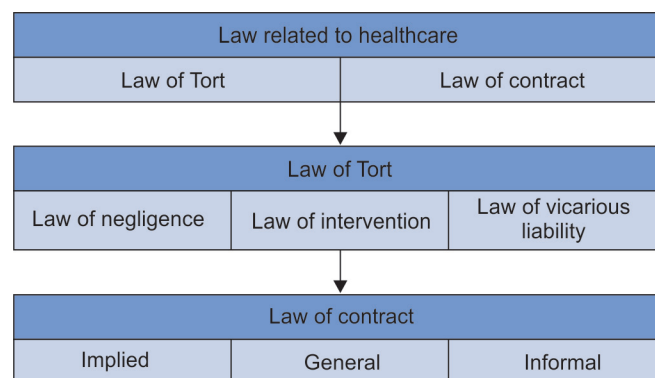
researcher in Ohio, and asked the Advanced Medicare and Research Institute (AMRI) and the doctors to pay the amount within 8 weeks along with interest at the rate of 6% from the date of filing of the case in 1999.

In May 2009, the apex court awarded a record compensation of ₹ 1 crore to wheelchair-bound. Infosys engineer Prashant S Dhananka for medical negligence in a surgery by Hyderabad's Nizam Institute of Medical Sciences (NIMS) which damaged his spinal cord.

Such news have become a common occurrence which remind us of the changing scenario in healthcare delivery. The medical profession is one of the noblest professions in the world. Charak's Oath (1000 BC) and Hippocratic Oath (460 BC) illustrates the duties and responsibilities of the person who adopts the noble profession of medicine. The patient's faith and trust in doctors led to the doctors being equated to an 'Angel or Semigod'. However, corporatization and commercialization of medical profession is being guided by the profit motive rather than that of service which gives rise to unethical practices and negligence.

With inclusion of healthcare services under consumer protection act (CPA), a spurt in litigations challenging the credibility of medical profession is seen. Negligence is the conduct that falls below the standard of care. The standard of care is established by the law for the protection of consumers against unreasonable practices which create risk or harm.

Law Related to Healthcare



IMPORTANT LANDMARK CASES OF CPA 1986

Indian medical association vs VP Shantha 1995 (3) CPR 412: AIR 1996 SC 550: 1995 (3) CPJI: 1995 (6) SCC 651: JT 1995 (8) SC (Supreme Court decided on 13.11.1995).

^{1,2}Medical Officer (Hospital Services), ³Major General
⁴Advocate, ⁵Brigadier

¹MO (HS), O/O DGMS (Army), Ministry of Defence, New Delhi, India

²MO (HS), O/O DGAFFMS, Ministry of Defence, New Delhi, India

³ADG (HR), O/O DGAFFMS, New Delhi, India

⁴Supreme Court, New Delhi, India

⁵DDG (PMO-HIS), O/O DGMS (Army), Ministry of Defence New Delhi, India

Corresponding Author: Madhav Madhusudan Singh
Medical Officer (Hospital Services), Room No 96, O/O DGMS (Army), Ministry of Defence, New Delhi-110001, India, e-mail: mmsingh2011@gmail.com

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

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

It exempts only those hospitals and the medical/dental practitioners of such hospitals which offer free service to all patients.

Poonam Verma vs Ashwin Patel and Ors., (1996) 4 SCC 332, a doctor registered as medical practitioner and entitled to practice in homeopathy only, prescribed an allopathic medicine to the patient. The patient died. The doctor was held to be negligent and liable to compensate the wife of the deceased for the death of her husband on the ground that the doctor who was entitled to practice in homeopathy only, was under a statutory duty not to enter the field of any other system of medicine and since he trespassed into a prohibited field and prescribed the allopathic medicine to the patient causing the death, his conduct amounted to negligence per se actionable in civil law.

Subh Lata vs Christian Medical College (Punjab SCDRC OC No. 14 of 1994 decided on 15.6.1994; 1994 (2) CPR 691; 1995 (1) CPJ 365; 1995 CCJ 512.

The complainant alleged that her husband died due to the complications arising after kidney biopsy. The State Commission held that the complainant had suppressed the crucial facts in her complaint. Besides serious life-threatening diseases, the deceased was already suffering from tuberculosis and *Staphylococcus aureus septicaemia* (a serious infection of the blood by bacteria). These are very serious diseases with a very high mortality rate especially when the heart, lung and brain get infected. Hence, the complainant had not come with clean hands and thus disentitled herself to relief under this jurisdiction of the CP Act. Complaint dismissed with ₹ 1,500/- as costs.

Supreme Court of India Jacob Mathew vs State of Punjab and Anr on 5 August, 2005

The gist of the information is that on 15.2.1995, the informant's father, late Jiwan Lal Sharma was admitted as a patient in a private ward of CMC Hospital, Ludhiana. On 22.2.1995 at about 11 pm, Jiwan Lal felt difficulty in breathing. The complainant's elder brother, Vijay Sharma

who was present in the room contacted the duty nurse, who in her turn called some doctor to attend to the patient. No doctor turned up for about minutes. Then, Dr Jacob Mathew, the appellant before us and Dr Allen Joseph came to the room of the patient. An oxygen cylinder was brought and connected to the mouth of the patient but the breathing problem increased further. The patient tried to get up but the medical staff asked him to remain in the bed. The oxygen cylinder was found to be empty. There was no other gas cylinder available in the room. Vijay Sharma went to the adjoining room and brought a gas cylinder therefrom. However, there was no arrangement to make the gas cylinder functional and in-between, 5 and 7 minutes were wasted. By this time, another doctor came who declared that the patient was dead. The Judicial Magistrate First Class, Ludhiana framed charges under section 304A, IPC against the two accused persons, both doctors. Both of them filed a revision in the Court of Sessions Judge submitting that there was no ground for framing charges against them. The revision was dismissed. The appellant filed a petition in the high court under section 482 of the code of criminal procedure praying for quashing of the FIR and all the subsequent proceedings. It was submitted before the high court that there was no specific allegation of any act of omission or commission against the accused persons in the entire plethora of documents comprising the challan papers filed by the police against them.

CIVIL APPEAL NO. 3541 OF 2002 (Martin F D'Souza Appellant vs Mohd Ishfaq Respondent)

On 17th February, 2009, a two Judges Bench in Martin F. D'Souza vs Mohd Ishfaq (Civil Appeal No. 3541 of 2002) held that 'the courts and consumer fora are not experts in medical science, and must not substitute their own views over that of specialists'. Observing that the 'medical profession has to an extent become commercialized and there are many doctors who depart from their Hippocratic Oath for their selfish ends of making money', the bench however held that 'the entire medical fraternity cannot be blamed or branded as lacking integrity or competence just because of some bad apples'.

'Sometimes despite their best efforts the treatment of a doctor fails. For instance, sometimes despite the best effort of a surgeon, the patient dies. This does not mean that the doctor or the surgeon must be held to be guilty of medical negligence, unless there is some strong evidence to suggest that he is', the bench said.

Guidelines Issued by Supreme Court

Whenever a complaint is received against a doctor or hospital by the Consumer Forum (whether District, State or National) or by the criminal court then before issuing notice to the

doctor or hospital the matter must be referred to a competent doctor or committee of doctors, and if prima facie a case of medical negligence is established, only then the notice be issued. The police officials were warned not to arrest or harass doctors except as per the criteria laid down in Jacob Mathew case, otherwise they will have to face legal action.

DISCUSSION

Rational and Legal Evidence Behind CPA

The CPA, 1986 (in short, 'the Act'), is a benevolent social legislation that lays down the rights of the consumers and provides their for promotion and protection of the rights of the consumers. The first and the only Act of its kind in India, it has enabled ordinary consumers to secure less expensive and often speedy redressal of their grievances. By spelling out the rights and remedies of the consumers in a market so far dominated by organized manufacturers and traders of goods and providers of various types of services, the act makes the dictum, *caveat emptor* ('buyer beware') a thing of the past. The 1986 was introduced to safeguard the interests of ordinary consumers in their daily transactions like the buying of goods or hiring of services.

It is a social welfare legislation which was enacted as a result of widespread consumer protection movement. The main object of the legislature in the enactment of this act is to provide for the better protection of the interests of the consumer and to make provisions for establishment of consumer councils and other authorities for settlement of consumer disputes and matter therewith connected.

WHAT A MEDICAL DOCTOR SHOULD KNOW ABOUT CPA?

Negligence is an act of commission (positive act) or an act of omission (failure to act) which a prudent man of average skill and objective standards should not perform. According to objective theory of negligence, there is carelessness in approach toward the patient and the act of commission results in injury whereas in subjective theory, the doctor is indifferent to the consequences of his act of omission and thus causing damage to the patient.

Medical negligence is defined as a tort which breaches of a legal duty to take care which results in damage undesired by the defendant to the plaintiff, it also include the injury or harm caused to the patient should be directly caused by act of negligence. It takes notice of:

- Existence of legal duty to treat patient even by implication.
- Breach of the legal duty, if any, as compared to expected performance of his peer group.

- Presence of damage caused by the breach which results in injury which needs to be compensated.¹

Failure of an operation and side effects are not negligence. The term negligence is defined as the absence or lack of care that a reasonable person should have taken in the circumstances of the case.

The degree of care is usually proportional to the duty undertaken. Negligence is many times difficult to prove. The burden of proof is on the patient or relatives except in cases where relatives have no access (e.g. operation theater, intensive care unit, nursery, etc. *res ipsa loquitur* is a situation of gross negligence where things speak for themselves and hence there is no need to prove. Contributory negligence, known complications, unexpected results, difference of opinion and emergency care are the usual defences in case of negligence.

The CPA 1986 as amended by the consumer protection (amendment) act 1993 and 1994 has currently been into action to provide for better protection of the interests of consumers with provisions for establishment of consumer councils and other authorities for the settlement of consumer disputes and other matters connected therewith, applicable to the whole of India minus Jammu and Kashmir. The act was amended in 2002 and the amendments came into force w.e.f. 15th March 2003. The provisions of the amendment were mainly aimed at facilitating quicker disposal of complaints, enhancing the capability of redressal agencies, strengthening them with more powers, streamlining the procedures and widening the scope of the act to make it more functional and effective and also to strengthen consumer movement at the grass root level. This act empowers the patient to file lawsuits (in case of perceived negligence) in consumer courts.²

There are 629 District Fora at district level, 35 state commissions at state level and one National Commission functioning in the country to render inexpensive and quick redressal to consumer grievances. Out of over 35 lakhs cases filed before the consumer disputes redressal agencies, 89.77% already stand disposed of. This act with 35 sections and 4 chapters is enacted for the promotion and protection of consumer right to safety, right to information, right to choose, right to be heard, right to redressal and right to consumer education.³

A study conducted by Dr Jagdish Singh showed that the maximum numbers of cases are from obstetrics and gynecology and surgery branches. The hospital covered under CPA include all private hospitals, ESIS, SAIL, corporate hospitals and even government hospitals where some facilities are on payment. Government and charitable hospitals where all the services are totally free, at present are not covered by CPA.

The outcome of about 202 cases was as follows: (i) negligence held 28.4%; (ii) negligence not held 62.3%; and (iii) no negligence compensation granted to doctors/hospitals 9.3%.⁴

In writ petition No. 3720/91 Mr R Raheja vs MMC the high court of Bombay has given a landmark decision that the patient or his legal heir has right to get copies of entire medical record on payment of reasonable charges.⁵

Earlier, the remedy for medical negligence was available only under the law of Tort. Now, it is possible to get speedy redressal under CPA for such negligence.^{6,7}

The main thrust of the act is on the legal right and locus standi of the consumer to initiate action under the act against deficiency in relation to any goods bought and/or any services hired against consideration (payment). Under this act, deficiency means any fault, imperfection, shortcoming, or inadequacy in quality, nature and manner of performance which is required to be maintained under the law or has been undertaken by the opposite party to be performed under the contract or otherwise. In relation to doctors, this concept of deficiency of services takes the place of professional or medical negligence.

National Consumer Helpline

NCH is a project of the Union Ministry of Consumer Affairs. The project recognizes the need of consumers for a telephone helpline to deal with multitude of problems arising in their day-to-day dealings with business and service providers.

NCH provides a national toll free no-1800-11-4000, other users can dial- 011-23708391. SMS can also be sent to +918130009809 mentioning the name and city.

Consumer Dispute Redressal Agencies

Consumer disputes redressal agencies (popularly known as Consumer Forums or Consumer Courts) are set-up under the act at district, state and national level (Table 1). In India, the CPA 1986 envisages three-tier grievance redressal mechanisms:

1. District Consumer Disputes Redressal Commission
2. State Consumers Dispute Redressal Commission
3. National Consumers Dispute Redressal Commission

Within 30 days from the date of decision, appeal can be filed in the higher commission. Appeal against the decision of the district forum can be filed before the state commission.

The state and national level bodies also function as appellate authorities. Any verdict given by the National Commission can be challenged in the supreme court.

The definition of the expression 'service' in the act in very wide and comprehensive. In fact, it will take in service

of any description rendered for consideration by any person or organization including public sector undertakings (PSUs) and government agencies. However, services rendered free of charge or under any contract of personal service, are excluded.

Thus, the following services do not fall within its ambit: (i) health services provided by government hospitals, (ii) Civic amenities provided by municipal authorities.

All suppliers of goods and services, both in the private and in the public sector and the cooperative sector, are covered by the act. The act allows filling of 'class action' complaints on behalf of groups of consumers having common interest. It is indeed a very unique and highly progressive piece of social welfare legislation and is acclaimed as the Magna Carta of Indian consumers. The act has made the consumer movement really going and more powerful, broad-based and effective and people oriented.⁸

TIME LIMIT

The permissible time limit to file a complaint is 2 years from the date of injury. The time starts from the date of injury and not from the date of disability certificate. However, if the injury is continuous then the time starts from the date of last treatment given.⁹

VICARIOUS LIABILITY

A hospital may be vicariously liable for the negligence of doctors who are independent contractors. To hold a hospital

Table 1: Different forum under CPA

	<i>District consumer forum</i>	<i>State consumer forum</i>	<i>National consumer forum</i>
President	District Judge	High Court Judge	Supreme Court Judge
Members	Two	Two	Five
Upper limit of compensation claimed	INR ≤ 20 lacs	INR ≥ 20 lacs to ≤ 1 crore	INR ≥ 1 crore
Appeal	State	National	Supreme court

Table 2: Total number of consumer complaints filed / disposed since inception under CPA

Sl. no.	Name of agency	Cases filed since inception	Cases disposed of since inception	% of total disposal
1	National commission	89495	77770	86.90
2	State commissions	645486	554341	85.88
3	District forums	3442730	3176518	92.27
	Total	4177711	3808629	91.17

Source: <http://ncdrc.nic.in/>

vicariously liable for the negligence or wrongful acts of an independent contractor physician, a plaintiff must show that

1. The hospital held itself out to the public as providing medical services.
2. The plaintiff looked to the hospital rather than to the individual physician to perform those services.
3. The patient accepted those services in the reasonable belief that the services were provided by the hospital or a hospital employee. Doctors are not liable for their services individually or vicariously if they do not charge fees. Thus, free treatment at a nongovernment hospital, governmental hospital, health center, dispensary or nursing home would not be considered a 'service' as defined in section 2 (1) (o) of the CPA, 1986.

It has been held by the National Consumer Disputes Redressal Commission (National Commission) on April 21, 1992 in the case of *Cosmopolitan Hospitals and Anr. v. Vasantha P Nair* [1 (1992) CPJ 302 (NC)] that the medical treatment rendered to a patient by a private doctor or clinic for consideration is clearly a service falling within the ambit of section 2 (1) (o) of the CPA. It is not a contract of personal service but a contract to render professional service. It is now well settled that hospital authorities rendering service for consideration are liable to the patient for injury caused by the negligence or other fault of the doctors, surgeons, nurses, anesthetists and other members of the hospital in the course of their work (Table 2).

Who Can File a Complaint?

A consumer or any recognized consumer association, i.e. voluntary consumer association registered under the Companies Act, 1956 or any other law for the time being in force, whether the consumer is a member of such association or not, or the central or state government.

Who is a Consumer?

A consumer is a person who hires or avails of any services for a consideration that has been paid or promised or partly paid and partly promised or under any system of deferred payment and includes any beneficiary of such services other than the person hires or avails of the services for consideration paid or promised, or under any system of deferred payment, when such services are availed of with the approval of the first mentioned person. This definition is wide enough to include a patient who merely promises to pay.

What is a Complaint?

A complaint is an allegation in writing made by a complainant, i.e. a consumer that he or she has suffered loss or damage as a result of any deficiency of service.

Who is Liable?

1. Doctors with independent practice.
2. Private hospitals.
3. All hospital having free as well as paying patients, they are liable to both.
4. Doctors/hospitals paid by an Insurance firm for treatment of a client or an employer for the treatment of an employee.

Who is not Liable?

1. Doctors in hospitals which do not charge their patients.
2. Hospitals offering free services to all patients. If any category is paying any fees for any service, that particular category will be liable under CPA.

How to File a Complaint?

Procedure for filing complaints and seeking redressal are simple. There is no prescribed performa for the submission of complaint. However, it must be written. It may be submitted directly or by post. A nominal amount of fees is also required to be deposited for making complaints before District Forum. A complaint should contain the following information:

1. Name and address of the complainant.
2. Name and address of the opposite party or parties.
3. Description of the fact of the complaint.
4. Documentary evidence regarding the complaint.
5. Relief expected as redressal of complaint.

The complaint can be filed within 2 years from the date on which cause of action has arisen. Complainant can plead his case/complaint on his own, this means that he is not under compulsion to hire the services of lawyer.

A complaint can be filed in (1) the District Forum if the value of services and compensation claimed is less than 20 lakh rupees, (2) before the State Commission, if the value of the goods or services and the compensation claimed does not exceed more than 1 crore rupees, or (3) in the National Commission, if the value of the goods or services and the compensation exceeds more than 1 crore rupees (Table 2).

Deficiency of service means any fault, imperfection, shortcoming, or inadequacy in the quality, nature, or manner of performance that is required to be maintained by or under any law for the time being in force or has been undertaken to be performed by a person in pursuance of a contract or otherwise in relation to any service.

There is a minimal fee for filing a complaint before the district consumer redressal forums.

Frivolous Litigation

It is the practice of starting or carrying on lawsuits that, due to their lack of legal merit, have little to no chance of

being won. Frivolous litigation may be based on absurd legal theories, may involve a superabundance or repetition of motions or additional suits, may be uncivil or harassing to the court, or may claim extreme remedies. Frivolous lawsuits have been cited as major precipitants of increasing healthcare costs.

COMMON SOURCES OF NEGLIGENCE

In Nursing Care by Nursing and Paramedical Staffs

- Medication errors that result in injury to client.
- Intravenous therapy errors resulting in infiltration or phlebitis.
- Burn to clients caused by equipment, bathing, or spill of hot liquids and food.
- Falls resulting in injury to client.
- Failure to use aseptic technique where required.
- Errors in sponge, instruments, or needle count in surgical cases.
- Failure to give a report or giving an incomplete report, to an oncoming shift.
- Failure to adequately monitor a client's condition.
- Failure to notify a physician of a significant change in a client's status.

In Medical and Surgical Care by Doctors

- Intentional or unintentional instigation by other professional colleagues, occasionally rivals
- Communication failure with the patient like rudeness and nondisclosure of vital details of actions taken
- Poor and ineffective hospital facilities
- Substandard and defective equipment like nonworking oxygen, suction, etc.
- Absence of standard known and available treatment
- Poor medical record keeping and failure or refusal to hand over copies of the same to the consumer
- Indiscriminate use of high technology investigations without explanation leading to unexpected high costs to the consumer.

In Dental Care by Dentists and Staff:

- Poor fit of dentures^{10,11}
- Disturbance of function including temporomandibular joint pain
- Unexpected complications (e.g. irreversible pulpitis)
- Fractured or retained instruments
- Pain following endodontic treatment
- Recurrent pathology
- Damage to adjacent teeth structures
- Foreign body left after treatment

- Failure of multiple fillings
- Composite fillings, particularly posterior composites
- Unexpected sequel (e.g. involvement of the antrum)
- Removal of wrong teeth
- Retained roots
- Damage to adjacent structures
- Unexpected relapse
- Damage to teeth and adjacent structures (e.g. loss of vitality and resorption)
- Specialist versus nonspecialist treatments
- Inappropriate treatment plans.

IMPACT OF CPA

1. Negative
 - a. Defensive medicine
 - b. Erosion of patient doctor relationship
 - c. Increased cost of care
 - d. Unnecessary litigation.
2. Positive
 - a. Quick redressal of grievances
 - b. Better quality of care increases
 - c. Introspection by medical professional improved
 - d. Training of medical practice.

SWOT ANALYSIS OF CPA

SWOT analysis is the situational analysis in terms of strengths, weakness, opportunities and threats.¹²

Strengths

1. The complainants can argue their case themselves in the consumer courts.
2. Free legal aid
3. Consumer Advice Centres (CAC)
4. Mediation Advisory Centre (MAC)
5. Online Disputes Redressal forum (ODR).

Weaknesses

1. Highly technical orientation of the Medical field
2. Limited definition of a 'consumer'.
3. Inadequate administrative support, shortage of manpower and insufficient infrastructure.
4. Lack of objectivity and empirical nature of several regimens.

Opportunities

1. Growing patient consciousness for quality care.
2. Successful application of the CPA to other services/ goods.
3. Possibility of introducing medical audit.

4. Use of information technology tools for improved governance.
5. Streamlining the legal provisions through appropriate changes in the CP Act.

Threats

1. Low level of awareness among patients.
2. Illiteracy and low socioeconomic status of patients.
3. Exaggerated claims.
4. Tendency of insurance companies to opt for out of court settlements.

Prevention of Malpractice Litigations

Primary Prevention

Good communication and informed consent: The concept of informed consent has come to the fore in recent years and many actions have been brought by patients who alleged that they did not understand the nature of the medical procedure to which they have given consent. Communicate with the patient and take proper consent after explaining the condition. All information must be explained in comprehensible non-medical terms, preferable in local languages about the

- a. Diagnosis
- b. Nature of treatment
- c. Risks involved
- d. Prospects of success
- e. Prognosis if the procedure is not performed
- f. Alternative methods of treatment.

Other measures: 1. Using checklists protocols and computerised decision aids for prescription writing.

2. Documents related to a particular case should be maintained properly.
3. Error proofing-use of forcing function in computer programs so that a physician cannot enter an overdose or prescribe a medication to which the patient is allergic.
4. Finances and bills should be properly explained and informed at the time of admission or even before admission.
5. Always give guarded prognosis.
6. Standardization of drug doses and time of administration, of information displays, equipment and supplies location in hospital.
7. Avoid use of a drug for unproved unlabelled indications especially where risk of drug use is higher than expected benefits.¹³

Defensive medicine: An off-shoot of protection against CPA is defensive medicine. Medical professionals of late, started practicing defensive medicine in order to protect themselves against overzealous patients complaints. In USA there is a system in which there are periodic checks to see

if doctors are unnecessarily subjecting patients to a wide range of tests or keeping them in hospitals on flimsy minor grounds. In a country like India it becomes very difficult to go in for defensive medicine as the cost escalates.

The Doctrine of Estoppel, hitherto applicable to civil laws, turned out to be helpful to the medical sector. Estoppel means if an individual acts or deposes before an institution/judicial forum about a particular fact, he cannot go against the same in a later date. In short, by obtaining 'informed consent' from the patient properly, the hospitals/medical professionals set a proper ground for defence before a court or forum.

The British Court during 1954 by its order in 'Bolam vs Frien Hospital Management' has decided that a medical professional would be absolved of any allegation of any negligence, if he practiced a sufficient care to select a procedure which is normally followed in that course of time and in that place. It also set three criteria for the safety of the medical professional:

- i He must possess adequate skill in that area of medical practice.
- ii He exercises reasonable care while performing his skill.
- iii Mere negligence will not make out a case for compensation against doctor but that negligence should have a direct nexus with the injury caused to the complainant. The SC adopted the principles enunciated in the Bolam Test fully and followed in all their historical judgements in Dr Laxman Balakrishnan Joshi vs D Trimbak, Bopu Godbok and Anr (AIR 1969 SC 128), AS Mittal & Ors vs State of Uttar Pradesh and Ors. (AIR 1989 SC 550) Indian Medical Association of India vs VP Shantha & Ors (AIR 1996 SC 550, Spring Meadows Hospital vs Harijit Ahluwalia (AIR 1998 SC 1801).

Secondary Prevention

1. Accreditation of hospital
2. Quality assurance program
3. Proper medical records
4. Regular patient satisfaction surveys
5. Creation of medico legal cells and medical organizations.

Tertiary Prevention

The following innovative methods are being practiced in the Western world to counter the adverse outcome of the CPA, in India also these practices may be emulated.

Medical Indemnity Insurance

It covers in respect of errors and omission on the part of professional rendering their services.

RD Lele, 1992 opines that the doctors should be careful in not disclosing the medical indemnity insurance coverage

for the simple reason that, the patient may exploit it for litigation purposes.

Counter Suits

In order to prevent harassment from overzealous patients doctors initiate counter suits against patients for being sued without valued grounds. In a survey in USA counter suing of patients by doctors brought down the incidence of malpractice suits by almost 75%. This has encouraged many doctors to resort to a similar strategy and their lawyers who sue doctors without any rhyme or reason.¹⁴

Some Do's

- Mention your qualifications on the prescription¹⁵
- Always mention date and timing of the consultation
- Mention age, gender, weight (if child)
- In complicated cases record precisely history of illness and substantial physical findings
- If the patients/attendants are erring on any count (history not reliable, refusing investigations, refusing admission) make a note of it or seek written refusal preferably in local language with proper witness
- Mention the condition of patient in specific/objective terms
- Write name of drug clearly. Use correct dosages
- Mention additional precautions, e.g. food, rest, avoidance of certain drugs, allergens, alcohol and smoking, etc. if indicated
- Mention whether prognosis explained
- In case of any deviation from standard care, mention reasons
- Specifically, mention review, follow-up schedule
- Mention if patient/attendant is/are under the effect of alcohol/drugs
- In case a particular drug/equipment is not available, make a note
- Mention where the patient should contact in case of nonavailability/emergency of doctor.
- Establish standards of treatment of common pediatric disorders
- Train members in the art of simple yet transparent record keeping
- Train members in judicious use of high technology investigative procedure, laying reasonable protocols wherever possible.
- Establish grievance redressal cell or forum
- If there is a case in consumer court, take due cognizance of the case and attend personally with or without your lawyer.

Some Don'ts

- Whenever there is a case in CPA, do not ignore or disrespect court.
- Do not give unnecessary details and do not volunteer to hand over documents unless specifically asked for.
- Never get panicky or frightened of CPA.
- Do not hesitate to discuss the case with your colleagues
- Do not hesitate to discuss the case with patients/attendants
- Do not write ayurvedic/Homeopathic/Unani formulations
- Do not allow substitutions
- Do not examine the patient if you are sick, exhausted, under effect of alcohol
- Never talk loose of your colleagues, despite intense professional rivalry
- Do not adopt experimental method in treatment.

CONCLUSION

The CPA is a consumer specific legislation designed to provide for speedy and inexpensive remedy to the consumers. The Act for the first time gives statutory recognition to the rights of the consumers. Three-tier redressal machinery at the District, State and the National level has been constituted. Patient's rights have always been a subject of debate around the world. Countries worldwide are legalising patient's rights. However, awareness among health professional about such laws is observed to be varied. There is a need to raise the awareness of health professional about such laws so that their increased professional concern and practice conforms to welfare of patients.

REFERENCES

1. Potdar RD. Consumer protection law and pediatrician. Indian Pediatr 1997;34:283-286.
2. Mehta PS. Academic foundation, consumer unity and trust society and CUTS centre for competition, investment and economic regulation. A functional competition policy for india. New Delhi, India: Consumer Unity and Trust Society; 2006. p. 39-55.
3. Rao GS. Consumer Protection Act vs medical profession. J Hospital Administration 1994 Sep;31(3 and 4):183.
4. Tiwari S. Legal aspects in medical practice, Indian pediatrics 2000;37:961-966.
5. Kaushal AK. Medical negligence and legal remedies with special reference to the consumer protection law. New Delhi Universal Book Traders, 1995. p. 23-24.
6. Mrityunjay K, Prashant K. Medical negligence: Criminal liability of the doctor and establishment. Cri L J 2003;11:39-55.
7. Paul G. Medical law for the dental surgeon. 1st ed. Jaypee Brothers Medical Publishers Pvt Ltd, New Delhi, India; 2004. p. 75-76.

8. IGNOU PGDHHM Précis unit 18, consumer protection act 2010 ed, p. 14-22.
9. Kumar P, Dupare R, Gupta V, Khattar A. Significance and prospective of 'Consumer Protection Act' deliberations for the dentist. *Muller J Med Sci Res* 2013;4:18-22.
10. Pollack BR. *Law and Risk Management in Dental Practice*. 1st ed. Quintessence Publishing Co, Carol Stream; 2002. p. 33-39.
11. Kukreja P, Godhi SS, Basavaraj P. Consumer protection act and medical negligence. *J Ind Assoc Public Health Dent* 2011;17: 22-27.
12. Kaushal A. *Universal medical negligence and legal remedies*. 3rd ed. Universal Law Publishing Co, Delhi; 2004. p. 216.
13. Satvinder K. Professional adjustment ward management and Trends in Nursing, 'Legalisation in Nursing'. 1st edn. Lotus Publishers, Jalandhar City; 2005. p. 24-30.
14. Lele RD. The Medical profession and the law: an overview. In: *The medical profession and the law*. 1st ed. Mumbai, Sajjan and Sons; 1992. p. 7-38.
15. Rattan R, Tiernan J. *Risk management in general dental practice*. 1st ed. London: Quintessence Publishing; 2004. p.107-119.

CASE STUDY

A Study of Hospital Infection Control Program against Normative Weighted Criteria at a Large Public Hospital

¹Jitender Mehta, ²Sanjay Arya, ³Sunil Kant, ⁴Shakti Kumar Gupta

ABSTRACT

Hospital infection control programs are important for prevention and control of hospital acquired infection in a healthcare facility. An evaluatory study was done to measure the quality dimensions of hospital infection control program in a public hospital to compare the program implementation in different speciality centers against the normative weighted criteria developed by Gupta and Kant (2002). Result showed variations in infection control program activities in various speciality centers. A centralized administration of infection control program and emphasis on more training and education is recommended.

Keywords: Hospital infection control program, Normative weighted criteria, Healthcare associated (nosocomial) infections.

How to cite this article: Mehta J, Arya S, Kant S, Gupta SK. A Study of Hospital Infection Control Program against Normative Weighted Criteria at a Large Public Hospital. *Int J Res Foundation Hosp Healthc Adm* 2014;2(2):130-132.

Source of support: Nil

Conflict of interest: None

INTRODUCTION

Hospital Infection Control Program

Infection control programs in healthcare settings are important component of overall healthcare system, because the healthcare associated (nosocomial) infections (HAI) represent one of the most common complications of healthcare and are widely recognized as a major public health problem. Hospital infection control programs are, primarily, dedicated to assisting the public health services-state and local health authorities, hospitals and other professional

organizations in the prevention and control of nosocomial infections in the hospitals.

To be effective the infection control program should include the following components:

- Organized surveillance and control activities.
- One infection control practitioner for every major health facility.
- A trained hospital epidemiologist.
- A system for reporting surgical wound infection rates and other infections back to the practicing surgeons and physicians.
- Continuing education of medical staff.
- Control of infectious disease outbreaks.
- Protection of employees from infection.
- Advice on new products, devices and procedures pertinent to infection control.
- Instructions on all necessary control measures in the event of an outbreak or other infection control emergency.

QUALITY DIMENSIONS IN HOSPITAL INFECTION CONTROL

The quality of a hospital's (or healthcare centre's) infection control program is a reflection of the overall standard of care provided by that institution. Good infection control programs reduce nosocomial infections, length of stay in the hospital, and costs associated with hospitalization. Hospital infection control activities need to have well defined policy and guidelines for quality control and needs to be monitored against standard guidelines with defined criteria. Various National and International agencies has prescribed guidelines for infection control quality parameters. Some of the popular guidelines followed in India are guidelines by various accreditation agencies like national accreditation board for hospitals and healthcare providers (NABH), India (as per NABH accreditation standards manual, 2nd edition 2007) [Chapter 5: hospital infection control (HIC)]¹ and joint commission international (JCI, 4th edition, health care facility management standards: prevention and control of standards).² A popular questionnaire was developed and published by Gupta and Kant in 2002 to assess the quality parameters for infection control (Shakti K Gupta, Sunil Kant in journal of the academy of hospital administration vol. 14, no. 1 (2002-01-2002-06) (Article: 'Quality Dimensions in HIC').³ The questionnaire suggested certain normative

¹Resident Administrator, ²Additional Professor, ³DDG (OPP)

⁴Medical Superintendent

^{1,2}Department of Hospital Administration, All India Institute of Medical Sciences, New Delhi, India

³IHQ of Ministry of Defence, New Delhi, India

⁴Dr RP Centre for Ophthalmic Sciences, All India Institute of Medical Sciences, New Delhi, India

Corresponding Author: Shakti Kumar Gupta, Medical Superintendent and Faculty, Department of Hospital Administration and Dr RP Centre for Ophthalmic Sciences, All India Institute of Medical Sciences, New Delhi, India, e-mail: shakti810505@gmail.com

weighted criteria. A patient or his relatives, wishing to utilize a healthcare institutions should have a known predetermined quality standard available for guidance.

The questionnaire defines the parameters as following:

<i>Structure criteria</i>	
Has a well enunciated hospital infection control committee incorporating a hospital administrator, microbiologist, clinician and a nursing administrator?	5
Has a functional hospital infection team incorporating microbiologist, nursing staff, housekeeping staff and an epidemiologist?	5
There exists specific job description for each personnel of above committee/team.	5
Physical facilities are conducive for prevention of hospital infection such as ward design bed spacing, flooring, isolation rooms, drainage, etc.	5
House keeping services and biomedical waste management are appropriately incorporated in the hospital infection control program.	5
<i>Procedures and policies</i>	
Has well enunciated principles of hospital infection control such as to eliminate sources of infection, and routes of spread, surveillance for infection, investigations during outbreaks, etc.	5
Existence of comprehensive standing operative procedures (SOPs) for hospital infection control program including disinfection and sterilization of equipment, universal precautions, protective vaccinations vis hepatitis, tetanus and gas gangrene, use of disposables, housekeeping disinfectants, handing of specimen's barrier and reverse barrier nursing.	5
Has a functional antibiotic policy?	5
Has an interactive interdepartmental coordination in reference to hospital infection control program including services, such as housekeeping, laundry, central sterile supply department (CSSD) and dietary?	5
<i>Process criteria</i>	
Scientific data collection and analysis related to hospital infection control program during surveillance and investigation for HAI. Comprehensive documentation exists.	5
Scientific sample collection and laboratory investigation molecular methods are being utilized in laboratory investigations for HAI.	5
Internal and external audit for laboratory investigations.	5
Awareness levels among various staff personnel regarding HAI.	5
Training and reorientation programs being conducted related to HAI.	5
Cost evaluation analysis for antibiotic usage, HAI, etc.	5
Activities aimed for achievement of continuous quality improvement (CQI).	5
<i>Outcome</i>	
Hospital infection rate viz-a-viz incidence at local/national/ international levels.	10
Satisfactory internal and external laboratory audit.	5
Staff and patient satisfaction.	5
Total credit points	100

The parameters given in the questionnaire have been weighted as their related importance. The parameters have been clubbed as per their structure, process or outcome

affiliation. The mentioned weighted credits are the maximum that may be granted to a particular parameter.

The grading may be done as follows:

<i>Credit point</i>	<i>Gradings</i>		
80-100	A++	Outstanding	These are suggested credit parameters and gradings.
70-80	A+	Very Good	
60-70	A	Good	
50-60	B	Average	These may be modified appropriately for various healthcare institutions
Below	C	Below average	

The Present Study

An evaluatory study was done to assess the quality parameters of hospital infection control program in superspeciality centers of All India Institute of Medical Sciences, New Delhi. A comparative study against the back drop of the Gupta and Kant questionnaire was done.

Based on the normative weighted criteria, the observations were made as shown in Table 1 (normative weighted credit criteria and credit points assigned).

RESULTS AND CONCLUSION

The study brings out the following results:

	<i>Main AIIMS</i>	<i>CN center (Neuro.)</i>	<i>CN center (Cardio.)</i>	<i>IRCH</i>	<i>RPCOS</i>
Credit points obtained (Out of maximum score of 100)	90	50	20	40	75
Grading given	A++ Out- standing	B Average	C Below average	C Below average	A+ Very good

From the study, it is observed that there is variable conformance toward infection control practices and official regulatory compliance from center to center in AIIMS. While AIIMS main hospital stands outstanding in terms of compliance, some of the centers have still to come to the level of average.

RECOMMENDATIONS

To bring best infection control practices in place and strengthen the infection control program, following are recommended:

1. *Establishment of a centralized hospital infection control committee:* In the absence of a central hospital infection control committee, the prescripts are laid down most of the time by the local committee in the speciality center. Institute needs to have a centralized infection control committee for centralized administration of hospital infection control program.
2. *Education and training:* All the centers of AIIMS need to devise education and training program for infection control practices on a continuous basis. Practical

Table 1: Normative weighted criteria and credit points assigned

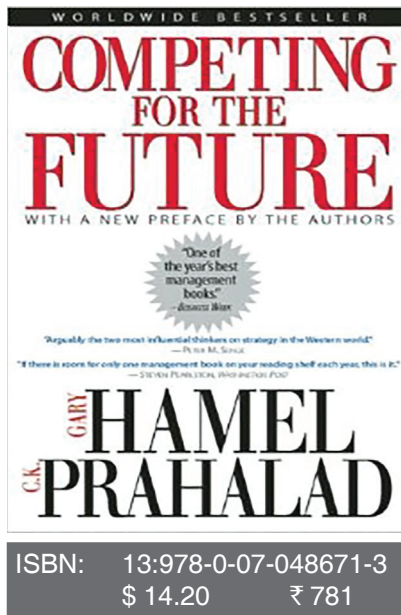
Sl. no.	Criteria	Max. score	Main AIIMS	CN center (Neuro)	CN center (Cardio)	IRCH	RPCOS
1.	Has a well-enunciated hospital infection control committee incorporating a hospital administrator, microbiologist, clinician and a nursing administrator?	5	5	–	–	–	5
2.	Has a functional hospital infection team incorporating microbiologist, nursing staff, housekeeping staff and an epidemiologist?	5	5	–	–	–	5
3.	There exists specific job description for each personnel of above committee/team.	5	5	–	–	–	5
4.	Physical facilities are conducive for prevention of hospital infection, such as ward design bed spacing, flooring, isolation rooms, drainage, etc.	5	5	5	5	5	5
5.	Housekeeping services and biomedical waste management are appropriately incorporated in the hospital infection control program.	5	5	5	–	5	5
<i>Procedure and policies</i>							
1.	Has well enunciated principles of hospital infection control, such as to eliminate sources of infection, and routes of spread, surveillance for infection, investigations during outbreaks, etc?	5	5	5	5	5	5
2.	Existence of comprehensive SOPs for program including disinfection and sterilization of equipment, universal precautions, protective vaccinations vis hepatitis, tetanus and gas gangrene, use of disposables, housekeeping disinfectants, handing of specimens barrier and reverse barrier nursing.	5	5	5	5	5	5
3.	Has a functional antibiotic policy?	5	–	–	–	–	–
4.	Has an interactive interdepartmental coordination in reference to hospital infection control program including services, such as house-keeping, laundry, CSSD and dietary?	5	5	5	–	–	5
<i>Process criteria</i>							
1.	Scientific data collection and analysis related to hospital infection control program during surveillance and investigation for HAI. Comprehensive documentation exists.	5	5	5	–	5	5
2.	Scientific sample collection and laboratory investigation molecular methods are being utilized in laboratory investigations for HAI.	5	5	5	5	5	5
3.	Internal and external audit for laboratory investigations.	5	–	–	–	–	–
4.	Awareness levels among various staff personnel regarding HAI.	5	5	–	–	5	5
5.	Training and reorientation programs being conducted related to HAI.	5	5	–	–	–	5
6.	Cost evaluation analysis for antibiotic usage, HAI, etc.	5	–	–	–	–	–
7.	Activities aimed for achievement of CQI.	5	5	5	–	–	5
<i>Outcome</i>							
1.	Hospital infection rate viz-a-viz incidence at local/national/international levels.	10	10	10	–	–	–
2.	Satisfactory internal and external laboratory audit.	5	5	–	–	–	–
3.	Staff and patient satisfaction.	5	5	5	–	5	5
Total credit points		100	90	50	20	40	75
Grading			A++ Outstanding	B Average	C Below average	C Below average	A+ Very good

training of every member of the hospital related to care is important and it needs to be incorporated early at the time of member joining the institute. It is generally observed that there is less compliance toward infection control practices among doctors (residents as well as faculty) in comparison to other workers of hospital, e.g. nurses, paramedical and other staff.

REFERENCES

1. NABH Accreditation Standards Manual 2007. Quality Council of India, New Delhi, India.
2. JCI Accreditation Standards for Hospitals. 4th ed. July 2010, JCI, Oak Brook, Illinois 60523, USA.
3. Gupta SK, Kant S. Quality dimensions in hospital infection control. J Acad Hosp Adminis. AHA, Noida, India, (2002-01-2002-06);14(1).

Book Review



CK Prahalad

Harvard University Professor

Coimbatore Krishnarao Prahalad was the Paul and Ruth McCracken Distinguished University Professor of Corporate Strategy at the Stephen M. Ross School of Business in the University of Michigan, Wikipedia

Born: August 8, 1941, Coimbatore

Died: April 16, 2010, San Diego, California, United States

Education: Harvard University (1975), Harvard

Business School,

more Awards: Padma Bhushan

Gary P Hamel

An American Management Expert. He is Founder of

Strategos, An International Management Consulting firm

Based in Chicago, Professor University of Michigan

Born: January 1, 1954

Publication of Year: 1994, Thirteenth Reprint 2008

Publisher: Harvard Business School Press, Boston, Massachusetts and Tata McGraw-Hill

COMPETING FOR THE FUTURE

Introduction

‘Competing for the Future’, by Gary Hamel and CK Prahalad, focuses on new issues and techniques of strategic planning as discovered, articulated and reported by the authors, both Professors of Business at the University of Michigan. The main message of the book reads as follows: in order for a company to be a success, the company must create its future instead of following other companies into the future. To help managers imagine a future and having imagined it, create it. As future holds good for those who get there first.

Theoretical Framework

By ‘creating the future’, the authors understand defining and exploiting yet unknown future market opportunities. The opportunities do not have to be confined to the company’s core competencies (although the book places significant emphasis on utilizing those). Instead, the company can choose to find alternate distribution channels, beneficial alliances and other creative means of reinventing itself. The authors offer a wide array of management tools to successfully perform the corporate definition of future consumer needs.

According to the book, many once-successful companies have failed because of their lack of regeneration and erroneous belief in persistence of yesterday’s business practices. Among the ways to successful corporate regeneration, the authors credit corporate diversity on the thinking level as successful means for breaking established corporate ‘myths’ of the right way of doing business. The authors note that hiring personnel from outside industries can bring fresh and vital perspective on the present state of an enterprise.

In order to develop the future, a company must first define it. In defining the future today, Hamel and Prahalad suggest building—‘the best possible assumption base about the future.’ The ‘assumption base’ is to indicate to management what changes in the company’s products, competencies, and consumer interface are necessary in order to address future customer needs. The collective information about the changes of tomorrow comprises company’s vision.

In order to create a successful vision of the future, a company needs dedicated senior management that ‘can escape the orthodoxies of the corporation’s current ‘concept of self’ and can enlarge the window of today’s possibilities as projected into the future. The authors stress that a corporation should stretch the boundaries surrounding its competitive position of today in order to include tomorrow’s competition and changes in customer needs. The book defines a successful corporate vision as the one that demands more of the corporation than the corporation is capable of providing today. Such a ‘stretch’ between today’s capacities and tomorrow’s vision ensures that the company innovates in order to achieve the set goals, whereas ‘perfect fit (would guarantee corporate) atrophy and stagnation’.

The book underscores the importance of basing tomorrow’s market vision on core competencies of the corporation rather than on acquisition of other businesses or ‘grass roots’ ‘entrepreneurship’. According to Hamel and Prahalad, core competencies represent ‘competitive strength’ of an enterprise, defined and agreed upon by the company’s general management. Building on the core competencies gives the company an immediate advantage over competition that needs to assemble similar competencies prior to entering the competitive race.

The authors note that corporate vision by itself ‘does not guarantee competitive success’. In order for a company to be profitable, the company’s foresight should be accompanied by a sufficient executional capacity. Executional capacity refers to continuous leverage of core competencies accompanied by healthy risk mitigation practices. The authors list several tools that can be used to leverage corporate core competencies in order to take hold of future market opportunities. One of the aforementioned tools is the process of aligning corporate operations based on core competencies rather than products and/or business functions. Operations focused on products and services fragment core competencies, and can subsequently truncate corporate opportunities for growth by disallowing deployment of core competencies when the need arises. Another crucial tool in successful execution of corporate vision is a regular review of core competencies together with competencies benchmarking against existing and potential competition in order to assure the company’s market position.

In addition to the ideas cited in this paper, the authors describe myriad of ways to enhance tomorrow’s competitiveness of an enterprise. Overall, the book is written in a motivational and comprehensive style. Peppered with real-life examples, the book offers thorough guidance to advance in the future marketplace.

Best Target Audience

Professionals who work in the areas of strategic leadership are going to gain the most from reading this book. The book offers coping mechanisms to the changing dynamics of anticipated future needs. The authors are able to provide deep insight into entrepreneurs aspiring to be successful leaders. This book is a must read for anyone thinking to be successful in the competing market of future.

Use of the Book in Practice

Winning in business today is not about being number one—it is about who ‘gets to the future first,’ write management consultants Gary Hamel and CK Prahalad. In *Competing for the Future*, they urge companies to create their own future, envision new markets and reinvent themselves. Hamel and Prahalad caution that complacent managers who get too comfortable in doing things the way they have always done will see their companies fall behind. The authors write, ‘At worst, laggards follow the path of greatest familiarity. Challengers, on the other hand, follow the path of greatest opportunity, wherever it leads.’ They argue that business leaders need to be more than ‘maintenance engineers,’ worrying only about budget cutting, streamlining, re-engineering and other old tactics. Definitely not for dilettantes, *Competing for the Future* is for managers who are serious getting their companies in front.

Strengths

Following are the strengths and lessons that can be drawn to be implemented in an organization to be successful:

- a. A company that succeeds at restructuring and reengineering, but fails to create the markets of the future, will find itself on a treadmill, trying to keep one step ahead of the steadily declining margins and profits of yesterday’s business.
- b. It is not enough for a company to get smaller, better and faster, as important as these tasks may be, a company must also be capable of fundamentally forming itself, of regenerating its core strategies, and of reinventing its industry.
- c. To compete successfully for the future, senior or top managers must first understand just how competition for the future is different from competition for the present. Competing for the future requires not only a redefinition of strategy but also a redefinition of top management’s role in creating strategy.

- d. The deeply encoded lessons of the past that are passed from one generation of managers to another pose, two dangers for any organization. First, individuals may, overtime, forget why they believe what they believe. Second, managers may come to believe that what they do not know is not worth knowing.
- e. Intellectual capital steadily depreciates. Customer needs have changed, technological progress has been made, and competitors have advanced their plans.
- f. To create the future, a company must unlearn at least some of its past. The more successful a company has been, the flatter it is forgetting curve.
- g. The basic rules of corporate vitality: To be a challenger once, it is enough to challenge the orthodoxies of the incumbents; to be a challenger twice, a firm must be capable of challenging its own orthodoxies.
- h. Any vision that is simply an extension of the CEO's ego is dangerous. On the contrary, it is equally simplistic and dangerous to reject the very notion of foresight simply because some corporate leaders cannot distinguish between vanity and vision.
- i. To get to the future first, top management must either see opportunities not seen by other top teams or must be able to exploit opportunities, by virtue of pre-emptive and consistent capability-building, that other companies cannot.
- j. Foresight and strategic architecture provides the map and stretch, and leverage provides the fuel.
To be competitive in today's world, you must focus not only on the now but also focus on creating the future because 'Nothing is more liberating than becoming the author of one's own destiny'.

Reviewed by

Lt Col Sameer Mehrotra
AFMC, Pune, Maharashtra, India

Upcoming Events

'RFHHA MDP on 'Best Practices in Hospital Logistics, Inventory and Stores Management'

Date: 21st and 22nd February, 2015

Place: Army College of Medical Sciences, Base Hospital, Delhi Cantt, Ring Road, New Delhi, India

The program offers an opportunity to sensitize leaders, administrators, managers, decision makers and students of hospital management about the latest trends in purchase and stores management, and offers interesting insights into the intricacies of procurement and the interpretation of guidelines through a case based, problem-solving approach, supplemented with dedicated sessions for discussion.

Healthcare Systems Process Improvement Conference

Date: 18th to 20th February, 2015

Place: Orlando

The Healthcare Systems Process Improvement Conference 2015 will showcase the latest in operational and quality improvement tools, methods and concepts, such as lean, 6 sigma, productivity, benchmarking, simulation and project management.

The conference program will include pre-conference workshops; educational sessions; ample networking events and opportunities; exhibitors with products and services to help you meet your quality, process and project goals; poster sessions; and presentations by student paper competition winners.

10th World Conference on Bioethics, Medical Ethics and Health Law

Date: 6th to 8th January, 2015

Place: Crowne Plaza, Jerusalem

This event will provide participants with various issues related to medical ethics and health law. The program weaves the topics to sensitize the environment on this much needed contemporary issue.

International Conference on Legal Medicine, Medical Negligence and Litigation in Medical Practice and 6th International Conference on Current Trends in Forensic Sciences, Forensic Medicine and Toxicology (IAMLE 2015)

Date: 26th to 28th February, 2015

Place: Hotel Clarks, Khajuraho, Madhya Pradesh, India

This conference will provide an insight into the latest developments in the field of legal medicine and will enable the healthcare providers with issues pertaining to medical negligence and litigations.

Sustainable Healthcare Transformation

Date: 18th to 20th March, 2015

Place: Hobart, Tasmania, Australia

Website: <http://www.healthcaretransformation.com.au/>

The conference will feature a range of leading international and Australasian speakers, peer-reviewed presentations and showcases of innovative strategies and successful programs that have delivered real benefits for healthcare organizations

Organized by: Health Services Innovation, Tasmania

Deadline for abstracts/proposals: 14th November, 2014

Australian Healthcare Week

Date: 24th to 26th March, 2015

Place: Australian Technology Park, Sydney, Australia

As one of the largest and most diverse healthcare events in Australia, Australian Healthcare Week 2015, will bring together the entire value chain involved in managing patient quality, safety and experience; improving operational efficiency through state-of-the-art technology; and best practice design and construction for hospitals of the future.

Healthcare Project Management: The Intersection of Strategy, People, and Process Continuing Professional Development Event

Date: 30th March to 2nd April, 2015

Place: Boston, Massachusetts, USA

Website: <https://ecpe.sph.harvard.edu/Project-Management>

This event will focus on the project management skills you need to improve healthcare project delivery performance and the people management skills necessary to create an effective project management environment.

Organized by: Harvard School of Public Health

Bristol Patient Safety Conference

Date: 15th, May 2015

Place: Engineers House, Bristol, UK

This program will focus on understanding of what patient safety means in different settings and being part of a developing local patient safety community. New implementable patient safety ideas and feedback on improvement ideas you can share. Experts will discuss the latest processes and guidelines in this event.