Eindhoven model of incident causation nursing essay

Patient safety is the foundation stone and one of the central concerns in quality improvement for the health care institution. Keeping our patients safe is a challenging issue because errors and mistakes can and do occur any time. Human error is inevitable, reducing error and minimizing the consequences of error is best achieved by learning from mistake, rather than blaming attitude. Over the years, nurses have assumed roles in various quality improvement and health care risk management activities. Learning from errors and near misses helps to provide opportunities to overcome system gaps, design solutions and modify management systems can reduce the chances of future errors and prevent disaster.

According to U. S Agency report (2001) patient safety practice is a type of process or structure whose application reduces the probability of adverse events resulting from exposure to the health care system across a range of diseases and procedures. The Institute of Medicine (IOM) reported that between 44, 000 and 98, 000 patients die in hospitals setting in 1997 in the United State of America (USA) each year as a result of health care errors which includes, transfusion of incompatible blood products, medication errors, foreign objects left in bodies, equipment failures, mistaken identities of patients or body parts. These errors occurred at any phase of the health care delivery system, errors with serious consequences were observed in most vulnerable clinical settings. Department of health (2001) An Australian study reported adverse event rates of 16. 6% of which 13. 7% resulted in permanent disability (Wilson, 1995).

The Institute of Medicine (IOM) released (2001) a report on ' To Err Is Human: Building a Safer Health System" On the basis of two research studies: one

conducted in Colorado and Utah found that 6. 6 percent of adverse events led to death, as compared with another study conducted at New York, found that adverse events occurred in 13. 6 percent in New York hospitals. In both of these studies over half of these adverse events resulted from medical errors and could have been prevented. When extrapolated to the over 33. 6 million admissions to U. S. hospitals in 1997, the results of the study in Colorado and Utah imply that at least 44, 000 Americans die each year as a result of medical errors. The results of the New York Study concluded that deaths due to medical errors exceed the number attributable to the 8th leading cause of death.

Scenario

During my clinical experience, I encountered a situation where I received call from hospital incharge and reporting one sentinel event, series of e-mail exchanged and on call administrator requested me to terminate assigned staff who did an error. I have utilized my leadership knowledge and skills to the best of my understanding. The scenario was an 11 years old boy (Patient A) presented to hospital with the complaint of fever, headache and vomiting. 40 years obstetrics (Patient B) was admitted through emergency department for induction of labour. Both Patients' blood was arranged and both have different blood groups. At night physician order to transfused blood to Patient A. Assigned nursing staff went to the laboratory with correct transfusion request slip and blood releasing form but unfortunately Patient B blood pack was picked instead of Patient A from the blood refrigerator at laboratory. Blood checked by same nurse with on call assigned physician before transfusion but again failed to check for correct identification at the

bed side. Transfusion started to Patient A at 0700 hours. Shift changed at 0800 hours, over taken from night staff with blood transfusion but again verification was not done as a result unrecognized transfusion reaction occurred and ultimately Patient A expired at 13: 00 hrs.

I have investigated the case and requested respective assigned team and stake holders for root cause analysis. The situation was very painful and challenging as an eleven years old child died due to error but it gave me lots of opportunity to identify the system gaps in order to prevent from re-occurrence in future.

As a management position, I requested multidisciplinary team to do the root cause analysis. Root cause analysis is a process for identifying the factors that underlie variation in performance, including the occurrence or possible occurrence of a sentinel event. A root cause analysis focuses primarily on systems and processes, not on individual performance. The analysis progresses from special causes, clinical processes, organizational processes and systems, identify potential improvements in these processes or systems.

After did a root cause analysis the incidence was categorized as sentinel event. A sentinel event is an unexpected occurrence involving death or serious physical or psychological injury, or the risk thereof. Serious injury specifically includes loss of limb or function. Such events are called " sentinel" because they signal the need for immediate investigation and response. Sentinel events are identified under the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) and emphasized those

policies helps organization to develop preventative measures. (The Joint Commission, 2011).

The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) has placed considerable emphasis on promoting patient safety through a variety of mechanisms, including the reporting and analysis of sentinel events that can lead to modifications and improvements in policy and practice within health care settings. We must apply the same principles learnt from our experiences.

When a sentinel event occurs in a health care organization, it is necessary that appropriate individuals within the organization be aware of the event, investigate, understand the causes that underlie the event, and make changes in the organization's systems and processes to reduce the probability of such an event in the future. As a key management position it is my prime responsibility to work as a team with multidisciplinary approach, take as an opportunity to improve the system and ensure the compliances of the institution policies and procedure by nursing division. An organized approach for identification, analysis and evaluation of risks and the devising a plan to decrease the occurrence of accidents, incidents and injuries (Sullivan & Decker, 2000).

The Institute of Medicine has designed six aims for improving the delivery of care in the United States which includes; Safe, effective, efficient, timely provision, equitable and Patient centered approach in order to provide safe and quality health care services. (Institute of Medicine, 2001).

According to Pelletier and Beaudin (2004) The Institute of Medicine defines healthcare quality as the extent to which health services provided to individuals and patient populations improve desired health outcomes. The care should be based on the strongest clinical evidence and provided in a technically and culturally competent manner with good communication and shared decision making.

During root cause analysis I came across lots of areas which was identified for areas of improvement that, leadership needs to provide resources in order to provide quality services as evidence by provision of resources was absent in laboratory which resulted that in night shift staff went to receive blood by herself and no check and balance of patient identification was done. However, it is not clearly defined in the policy that what will be the mechanism of check and balance at laboratory end. At secondary hospital laboratory services timing is from 0800 hours to 2300 hours, but what if need arises after wards. It was taken as a granted that services will not require in night timings. In addition, it was not clearly defined in the blood transfusion policy which defines the first steps of checking blood for correct identification at laboratory level. According to Daniel (2004) Clinical Management refers to diagnosis, treatment planning and delivery and ensuring the correct identification of each patient and procedure. As a nursing departmental heads the need was identified to review the policies and procedure, structured quality assurance program and Total Quality Management system (TQM) is required in order to prevent from reoccurrence. TQM is a management philosophy that emphasizes a

commitment to excellence throughout the organization (Sullivan & Decker, 2000).

Total Quality Management (TQM) is a sub-discipline of management science which deals with the issue of standardization and enhancement of organizational performance.

According to Khan (personal communication November 20, 2012) research was carried out in 2006-2009 by for critical analysis of TQM implementation in Pakistani organizations located on geographical basis. This study explores the factors influencing the success and failure of the TQM program in the organizations. It particularly explores how these programs work within the context of various organizational profiles, dynamics and culture. The study found that TQM implementation is heavily dependent on various factors related to organizational context and culture. It also identified that the end results and changes expected by organizations from TQM implementation are not only dependent on its own framework but on many other cultural related ' intermediate impacts'. These intermediate impacts are mostly related to organizational dynamics and culture and are ignored in most of the firms, resulting in early failure of TQM. Based on the findings of this research and the practical experience of implementing TQM in different organizations, the author also proposes a new framework of TQM implementation named as MSAC cycle i. e. Mobilization (trial phase), Standardization (Short term phase), Acclimatization (mid-term phase) and Culturization (long term phase). This study and the proposed TQM implementation framework is quite valuable for the organization who are

presently implementing or desirous to implement TQM more effectively and successfully.

The Aga Khan University Hospital started its operation in 1985. Basic quality assurance methodologies were introduced and from 1994 onwards, the continuous quality improvement (CQI) model of AKUH fostered a positive culture of change by establishing lots of core quality activities across the clinical and managerial disciplines; which includes, quality circles, basic quality control tools, education and training in quality, monitoring of quality indicators, health care professionals credentialing, Patient complaints, Patient satisfaction, morbidity and mortality reviews, nursing quality assurance program and quality grand rounds. Finally in 2006, AKUH acquired the gold seal of international accreditation in health care by the Joint Commission International Accreditation (JCIA) with the unique distinction of being the first hospital in Pakistan and among few universities based hospitals in the world to get the quality recognition. AKUH is now on the expansion and integration phase of its quality journey, the central driving force towards its quality vision is improvement of processes and outcomes and achieving a strong " customer orientation" towards both external and internal customers. This will be achieved through concentrating on the goals and strategies of the hospital and all its departments to these three major themes that is improvement in quality of care, services and cost-effectiveness. It is widely recognized that quality indicators or performance indicators can give a valuable insight into the quality of care being provided to patients.

Performance indicators are best way to learn and improve, but to instill ownership in the heart of every individual is the key to having meaningful indicators. Thus making performance indicators a part of a physician's and nursing performance evaluation not only ensure that they actively participate in improving their own performance, but also ensure that, quality of care provided to the patients is always and continuously improving. In this clinical situation I also participated in developing the policies with multidisciplinary team and tool in order to control quality system and to evaluate the compliances of practice for sustainability. Fostering a culture of safety requires more than introducing new policies and procedures. Developing a culture of safety requires critical thinking, problem solving, risk identification & management and human factor training. The relevant literature and websites on patient safety program has suggested many safety related performance indicators and systems of check and balances which can ensure patient's safety during patient's stay at hospital. A systematic and multidisciplinary approach is, therefore, very imperative to pick-up medical errors and devise strategies to reduce them as it defiantly plays an important part in patient safety.

Literature Review

The literature review will address overall concept of patient safety and its related issues and concerns, international perspective of error occurrences, safety related performance indicators and measures to create positive safety culture. Several studies are carried out on measuring and evaluating patient safety and outcomes at several health care institutions (Baker 2003; Arah, 2004; Colla, 2005; & Karsh, 2006). According to Colla (2005) Achievement of

a culture conducive to patient safety may be an admirable goal in its own right, but more effort should be expended on understanding the relationship between measures of safety climate and patient outcomes.

The Luxembourg Declaration on Patient Safety (2005) has observed that the health sector is a high-risk area because adverse events, arising from treatment rather than disease, can lead to death, serious damage, complications and patient suffering. Although many hospitals and healthcare settings have procedures in place to ensure patient safety, the health care sector still lags behind other industries and services that have introduced systematic safety processes.

Almost fifty percent of joint commission standards are directly related to safety, addressing such issues as medication usage, infection control, surgery and anesthesia, blood transfusions reactions, staff credentialing, fire safety, medical equipment, disaster management, risk identification and management, sentinel event monitoring, safety and security structures. These standards address a number of significant patient safety issues, including the implementation of patient safety programs; the response to adverse events when they occur; the prevention of accidental harm through the prospective analysis and redesigning of vulnerable patient systems and it's the organization's responsibility to transparent and take ownership and accountability.

Agency for Health Research and Quality (AHRQ) reports (2001) has suggested the same that to review best practices from scientific literature, Redesign care based on best practices through collaboration of multiple

departments, Evaluate technology solutions, Implement performance measurements and Monitor selected measurements and present summary reports to senior leadership. Moreover, the Advisory Board Research document supports the type of error mentioned in the AHRQ 2000 reports that the most common errors per 1, 000 visits are: 65 incidents per due to adverse drug events, 60 incidents due to hospital acquired infections, 51 incidents related to procedural complications and 15 incidents related to falls.

Besides analyzing the common errors in terms of patient safety, Mrayyan and Huber (2003) discussed three aspects of patient safety issues. First is the fear that is whenever any unfortunate incident happens and it is publicized; it creates fear and apprehension among team members. Second issue is errors as a system problem, which involves repetition of same type of error that requires close and immediate interventions. Third is the link between errors and inadequate resources that means inadequate number of staffs or inadequate trained staff that can jeopardize patient safety.

The medical error and harm to patient safety does not only let the patient suffer but brings an impact on society at large. The Danish Society for Patient Safety (2005) discussed the effects that adverse events can have on patients; health care personnel and society at large are significant. Patients may suffer both physically and psychologically from sufferings created by the injury itself, but also by the way the incident is handled. Health care personnel on the other hand may experience shame, guilt and depression, with litigations and complaints imposing an additional burden. Society at large suffers from a lower quality of life of its members, with associated

extra health care costs but also costs caused by a lower productivity of the society.

After root cause analysis I also felt that it is necessary to have interaction one is to one basis to relevant health care personal who did an error in order to sensitized them and mentored through education path rather than terminating the employee, give them insight that the will be the future ambassador for patient safety because, I personally believe that quality reflect when person itself willing to do so, it should be our constant commitment towards organization that patient safety should be our top priority, which infuses the entire organization, for that it is mandatory that first we should acknowledge the error then promote blame-free environment where individuals are empowered to report errors without any fear and punishment so they can willingly address safety concerns.

Daniel (2004) explains that, what can be done today to improve patient safety while we are waiting for evidence on effective interventions. First, we need leaders those at the top of organizational charts as well as leaders at all level, second, we need to focus on comprehensive systems of safety rather than attempting to address safety one problem at a time. Three elements comprise comprehensive patient safety: active case finding, methodical analysis, and system redesign.

Patient safety initiatives and programs vary from institution to institution but the aim remains the same that is reducing errors and promote safety. Klazinga and Arah (2004) said " it is evident that current efforts focus too narrowly on the patient with little explicit linkage to wider aspects of health

system safety. Risks management entails reducing harm not just to patients but also to staff, visitors and the environment including society".

Some of the patient safety alternatives and solutions proposed by Mrayyan and Hubber (2003) are emphasizing on strengthening system of error reporting and correction that is error detection and reporting system within organization to reduce medical error, patient education in all aspects of care and applying risk management skills by healthcare personnel. In addition, creating an information system and building evidence base for patient safety, analyzing the impact of various management practices like staffing, increasing of medical errors and high risk population and monitoring error rates with necessary actions can reduce medical errors and also use of information technology can work towards enhancing patient safety. Besides all this, commitment of the healthcare professional to reduce errors and promote safety in any organization enhances safety not only for patients but also for the healthcare staff and society in general.

This position paper related to sentinel event also gives me insight to do a self-reflection of my job related competencies as a key management representative. I personally believe that, Knowledge can be achieve by reading literature but the art of utilizing that knowledge and skills will give confidence to fulfill job in an effective way. According to (Barker, Sullivian & Emery 2006). describe three key roles organized in to three categories called interpersonal roles, informational roles and decisional roles. In interpersonal roles manager has lots of job responsibilities in order to full fill organizational goals, informational roles comprises of monitor and disseminator as that manager is the focal person and considered an as nerve center. Third

category is decisional roles which consist of entrepreneur, disturbance handler, resource allocator and negotiator. The first two categories are related to day to day operation However, the third category need that how manager use his/her competency in clear direction which meet the organization vision and mission.

Integration of Model

There are number of the clinical theories and models regarding the human error are discussed in management. Among which I have selected the Eindhoven model of incident causation.

Eindhoven Model of Incident Causation:

This model was originally developed to identify root causes of safety related incidents in the Netherlands and has since been tested in industrial and health care settings. The Eindhoven Model of incident causation identifies three main causes of error: human operator, organizational and technical failure. These failures, alone or in combination, are through responsible for reinitiating a chain of events that may ultimately lead to an adverse patient outcome. In performance improvement terminology, such a failure would be considered the root cause of an incident. According to this model, high risk situations will develop into incidents if inadequate system defenses are available to remediate the problem. The Eindhoven Model of Incident Causation served as the theoretical basis for developing the Eindhoven Classification Model, which has since been adapted for the health care domain (Jacob & Cherry 2011). This classification model claims that errors occur either because of active failures or latent conditions.

Human Operator Error: (Active failure):

Human operator errors are those made by individuals at the ' sharp end' by health care workers. They are also referred to as active failures or active errors. Active failures fall into three major categories; skill based, rule-based or knowledge-based. Skill based error occur when an individual makes an error during the performance of a routine task that requires little conscious effort as evidence by its routine practice of nurses to bring blood from laboratory or its routine to take daily over from upcoming shift but in different intervals but nurse fails to check for correct identification with patient name and medical record number. An example of a skill based error would be a nurse forgetting to push the ' start' button on an IV pump after priming the tubing. A rule based error occurs when an individual fails to perform a procedure or protocol correctly or chooses the wrong procedure as in this sentinel event nurse and physician fails to compliance with policies and procedure as a result wrong blood was transfused. An example of a fuel-based error is a phlebotomist failing to check the patient's identification before obtaining a blood specimen. A knowledge based error refers to the conscious but incorrect application of existing knowledge to a new situation. An example of a knowledge-based error would be when first patient develop fever or sign of reaction she took as an granted and stop blood for time being neither nurse or physician utilized their knowledge and integrated theory in to practice or critically analyze that what would be the possible reasons for fever. Human errors have typically been the focus of traditional incident report monitoring because they are more obvious that latent conditions. Although some of the factors leading to human error are amenable such as knowledge deficit, staffing shortages, work over load etc.

Technical or organizational error (Latent Condition/ Latent error):

Technical and organizational errors are referred to as latent condition or latent errors. Latent conditions result from sanctions or decisions made by administrators or others in leadership positions that affect technical issues, organizational policy or the allocation of resources. These errors are called latent because of the delayed and unintended consequences that may affect patient safety at a later point. Technical error occurs when there are problems with equipment, forms, labels, etc. (e. g. a computer does not print out patient identification labels in a timely manner). Organizational error can be related to various, often complex issues involving management priorities and organizational culture. An Example of a latent error would be an organizational decision not to use a computerized provider order entry system which results in a high number of medication errors related to illegible handwriting.

Other Error (Unclassified):

A third category in the Einhoven Classification Model accounts for errors that cannot be classified as active or latent. In health care, such errors are generally due to patient-related factors that contribute to error, for instance, if patient gave the history of allergy and this can lead to potential medication error. An error whose cause cannot be placed in any category (i. e. latent, active, or patient-related) is termed unclassifiable.

In order to continuous quality improvement and promote patient safety culture it is necessary to promote culture of reporting of errors is the first step along with a constructive process towards understanding that what

factors within a system enable an error to take place. This systems approach is gaining ground and many hospital administrators are becoming well versed in its theory and practice. To promote a ' culture of safety' the leadership of an organization promulgates an atmosphere in which the reporting of errors is welcomed, so that others may benefit from knowledge of the situation and can develop strategies based on the data. A major element of this framework is a non-punitive stance towards the individual who reports or who has involved in an incident. In a just culture an organization lets its employee know that they will not be disciplined for making mistakes and that the leaders value the importance of learning from mishaps and seek to improve the system that allowed them to occur.

Recommendation

Based on sentinel event which I address in my position paper and in light of literature, I would like to recommend few suggestions/ recommendations to strengthen our quality system. First in order to promote in healthcare organization, major emphasis required in order to create non-punitive environment where health care workers can report events, errors and near misses without fear of reprisal or disciplinary action. Next, the risk management forum should be structured at organizational level where relevant multidisciplinary key stake holders should identified in order to take ownership and facilitate clinicians and organizational managers at all levels, the in order to create such an atmosphere which promotes patient safety culture in an organizations. Needs to develop and implement a reporting system that encourages and enhances reporting by all department and staff. Educate all clinicians, staff, and management personnel on the nature and

importance of the event reporting process, including disclosure and discovery issue. Needs to do timely and accurate documentation of sentinel events help organizations improve their safety and quality of care and learn from other organization's unexpected outcomes, which allow other health care organizations to be aware of the possibility of certain sentinel events, thus giving staff the time and knowledge to develop strategies to avoid these events before they actually occur. Utilization of event report data to trend and analyzes organizational risks and distributes this information to appropriate staff of the organization so that risk-prevention measures can be developed and implemented. Last but not least provide clinicians and staff ongoing feedback on their risk-reduction efforts, results of event reporting should be discussed at the departmental level, and input on corrective actions/process improvements should be solicited.

Conclusion:

In conclusion, I must say that errors can occur at any point in the health care delivery system. Acknowledging that errors, learning from those errors, and working to prevent future errors represents a major change in the culture of health care, a paradigm shift from blame and punishment to analysis of the root causes of errors and strategies to improve systems and processes by implementing patient safety measures which provide an objective, validated measure for identifying Potential Safety Issues.

Management should make an effort to break down barriers by adopting non-punitive cultures based on industry best practices. This will sheds new light on traditional methods for removing reporting barriers, develop employee commitment to recognize and report errors or incident occurrences. When

the staff proactively participates in reporting, the reporting process becomes a vehicle for making practices improvements in the delivery of patient health care and management receives information that otherwise would not be available. As one manager said, if nobody reports it, you don't know. When some occurrences are not reported, management receives limited information on which to base their decision. It goes without saying that better data mean better decisions.

According to Daniel (2004) " the goal should be not only to increase the number and quality of reports but also to increase their usefulness as rich sources of information for the generation of strategies tactics aimed toward medical-error reduction" (p. 27). According to Minesota Alliance for Patient Safety (2005) safety culture is not blame-free approach; it is an approach that balances the need to promote open reporting and the need to hold practitioners accountable for their behavioral choices. Hospitals should identify potential safety issues, having proactive approach, measure baseline performance, and set priorities for process improvement efforts. Using this methodology, hospitals can implement patient safety program with minimal investment on their part. Informational reports can be generated and disseminated to proactively identify safety issues and drive improvements for the better health care outcomes.