

How to Improve Ineffective Communication among Care Providers Which Leads to Medication Errors in Hospital Settings, Using Lean Six Sigma (LSS) and Total Quality Management (TQM) – A Review

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Abstract

Introduction: Ineffective communication among health care provider affects the safety of clients in hospital settings and clinics. Many studies have been done since now to improve effective communication to save lives of patients and to minimize medication errors which leads to sentinel events. Although advance techniques and modern machines has been introducing in health care settings, but still effective communication is extremely essential to provide safety to the patient's and to overcome adverse outcome of the purposed treatment. A leading cause of medication errors in hospital setting is ineffective communication. There is need to pay attention on this very important issue, its causes and solutions. The aim of the study is to improve communication among health care providers to minimize medication errors which leads to sentinel events, loss of physical or psychological function, disability, loss of limbs and/or death in health care settings.

Methods: As the incidence happened that is mentioned in this article, force me to think about How to minimize these errors in hospital settings? This thought compel me to study material that is already available on internet, so many articles from Google scholar, Pub Med, and other search engine studied and concluded that there should need to improve communication among health care providers using management process that can be useful in hospital settings.

Conclusion: Drug inaccuracies, generally known as an error of medication that can be prescribing, administering, and dispensing, regardless of serious harm or less, is only harm that can be prevent through administration of management process and strict implementation. These errors are categorized as mild, moderate and sever, depend on the adverse outcomes. Medication Error (ME) rates are very high in developing countries due to low infra-structure and less effective polices/manuals. Most MEs are the result of ineffective communication or knowledge regarding medicine and its administration. This higher risk can be minimize using two Management process such as Lean Six Sigma (LSS) and Total Quality Management (TQM), through them MEs can be minimize via effective communication between health care providers. As the Existing methodologies to avoiding MEs are not satisfactory and need an importance of a scientific research towards unnecessary client maltreatment.

Keywords: Ineffective communication; Medication errors; Lean six sigma; Total quality management; Management process; Effective communication; Communication among health care providers; Medication errors in hospital settings; Variable Rate Intravenous Insulin Infusion (VRII); HBA1C; Case scenarios

Abbreviations: LSS: Lean Six Sigma; TQM: Total Quality Management; MP: Management Process; HBA1C: Glycated Hemoglobin; VRII: Variable Rate Intravenous Insulin Infusion; BSL: Blood Sugar Level; NPO: Nothing per Oral; LASA: Look Alike Sound Alike; TAH+BSO: Total Abdominal Hysterectomy and Bilateral Salpingo-Oophorectomy

Introduction

Case Scenario

An 80-years-old lady was admitted in hospital for elective surgery. She was a known case of cervix carcinoma with breast mets. She had co-morbid such as hypertension, type II diabetes and dyslipidemia. She was taking Tab: Metformin HCL 500 mg thrice a day and Tab: Glibenclamide 5 mg once daily from 15-years-and with these medicines she had excellent control over diabetes with HBA1C (Glycated hemoglobin) value within normal range 6.9%. She was admitted in hospital's surgical department 1 day before surgery. Variable Rate Intravenous Insulin Infusion (VRII) protocol was started by a female resident doctor to control patient's diabetes. She had no need to start it as she was not

meeting the criteria of VRII protocol as per hospital policy statement and American diabetes association, There should be HBA1C value more than 8.5% but patient's report value was 6.9% as mentioned above, she was neither dependent on insulin (Type II diabetes) nor had two consecutive Blood Sugar Level (BSL) value more than 200 mg/dl. The mentioned protocol was on flow continuously for more than 72 hrs. Moreover, consultant was ordered to stop the VRII protocol, but it was not seen by on duty staff nurse and resident doctor, so protocol was continued for about 16 hrs after the consultant's order. Incident was reported for inappropriate treatment and ineffective communication among health care providers and shared with the relevant department. Concerned staff apologized and promised to be more thorough before prescribing such high alert medicine [1,2].

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Literature Review

As the assigned nurse took patient's over on dated 16th March 2019 on evening shift, open lab reports to see HBA1C value and see consultants order, than come to know that the patient was prescribed wrong medicine and that can cause serious harm to her, because she is an old lady and fall in hospital's vulnerable list due to chronological age. Moreover, she was known case of cervix cancer with breast Mets; she had h/o previous surgery Total Abdominal Hysterectomy and Bilateral Salpingo-Oophorectomy (TAH+BSO) in 1990 and was liable to infection and other medical risks. She was on VRIII protocol, prescribed by female resident doctor without endocrinologist consultation and she also not considered lab values. Violation of hospital policy and American diabetes association guidelines occur. Although patient reached no harm, but it can be fatal. This was caused by failure of communication among care providers. Similarly, error was occurred at staff nurse side too because she didn't check the lab values and endocrinologist order and followed the doctors order blindly without using her own critical thinking and clinical knowledge. According to American diabetes association guidelines VRIII protocol is desired in patients who are Nil by Oral (NBO) for some medical reason; those with type-1 diabetes and admitted for surgery and has h/o insulin administration; those with uncontrolled diabetes (defined as an HbA1c > 69 mmol. mol⁻¹) (8.5%); furthermost patients with diabetes need emergency operation. VRIII must be administered and checked by appropriately skilled and trained staff [3]. Our patient was known case of type II diabetes was not on insulin previously and has excellent control over diabetes with HBA1C value of 6.9%. Diabetes should be controlled as early as possible before planned surgery and to avoid postponements of surgical procedure due to deprived control. The Working Party supports the agreement guidance published in the 2011 NHS Diabetes recommendation that the HbA1c value must be < 69 mmol. mol⁻¹ (8.5%) for planned surgeries [3]. Ineffective communication between health care professionals is one of the cheap sources of medical inaccuracies and patient maltreatment. Communication failures were associated at the root of over 70% of sentinel events [4]. One of the foremost roots of medication errors is communication barrier. It may be due to barrier in verbal communication of briefings, orders written in scribbled handwriting and/or Look-Alike Sound-Alike (LASA) medications. The resulting mistakes could formerly involve wrong patient, inappropriate dose, improper route, or incorrect prescribing medication itself [5].

Implementation of management processes

Many studies have been conducting since now to minimize the medication errors in the hospital setting due to miscommunication of care takers both nurses and physicians. I suggested applying two Management Processes (MP) to reduce errors while caring patient's in hospital; these are Lean Six Sigma (LSS) and Total Quality Management (TQM). Previously mentioned both MPs are used to improve the quality of work in an organization, the purpose to apply them in hospital setting is to cover all aspects of management to eradicate medication errors, as LSS define the existing situation, explain the measures that investigate the problem which improves the production and give complete or partial control over the state of affairs and TQM is purely centered focused which involve the employees to work for client satisfaction, it is a strategic and systematic approach based on decision making and facts which is first step toward continues improvement through communication. Hence these MPs help to reduce medication errors as well as improve communication between health care providers.

Lean Six Sigma (LSS)

LSS was previously been used in different organizations to reduce medication errors and was prove effective. A literature review was done by Trakulsunti and its group in 2018 they choose top Health sectors (HS) to fulfill their study requirements. Their study proves that LSS is an excellent process/methodology to reduce medication errors in developed as well as developing countries [6]. Now the question arouses how LSS works? It defines the process or the trouble, measures the present performance, then analysis the root causes of the creating crisis, improves the potential actions through the implementation and determination and at last works for the maintenance of improved process (Figure 1).

Total Quality Management (TQM)

TQM works entirely for communication and quality perfection to enhance client satisfaction. It believes in to put client at priority, demands to work hard for the improvement of excellence of work with ongoing progress towards defining goals, with the aim of zero defect through trainings and development of processes. TQM is multidimensional process works with 6Cs (Commitment, Culture, continue improvement, Cooperation, Customer focused and Control). These 6Cs are Key Performance Indicators (KPIs) for the achievement of expecting outcomes. The purpose to apply this process is to improve communication between care providers and to minimize risk factors that cause serious harm to patients during hospitalization throughout the process of their treatment due to medication errors. The primary elements of TQM are shown in Figure 2.

Use of LSS and TQM as Combination

Hospital can't afford mistakes because it can cause fatal consequences such as sentinel event, loss of physical or psychological ability, permanent loss of limb or organ, shock and may death occur in sever causes. LSS alone cannot work properly and completely to eradicate errors, so in order to improve its ability TQM work hand in hand with it [7]. Because implementation of policies or manual and determinations

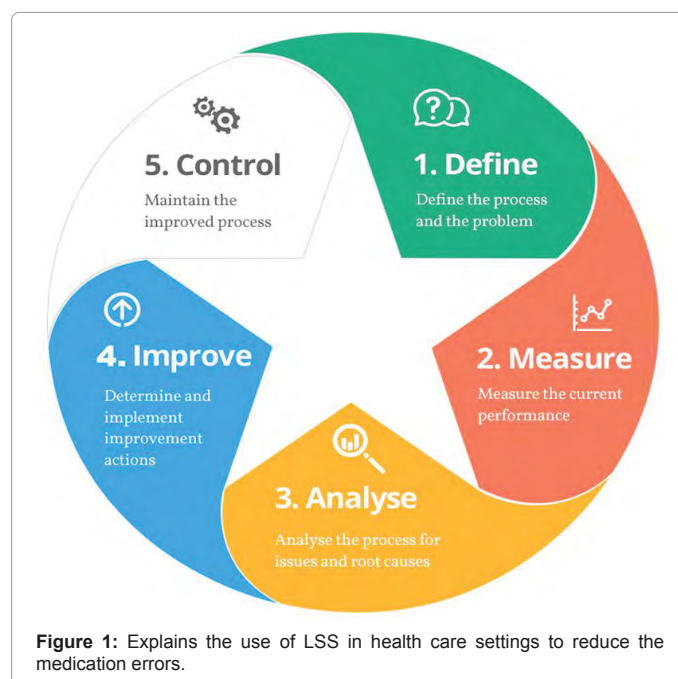
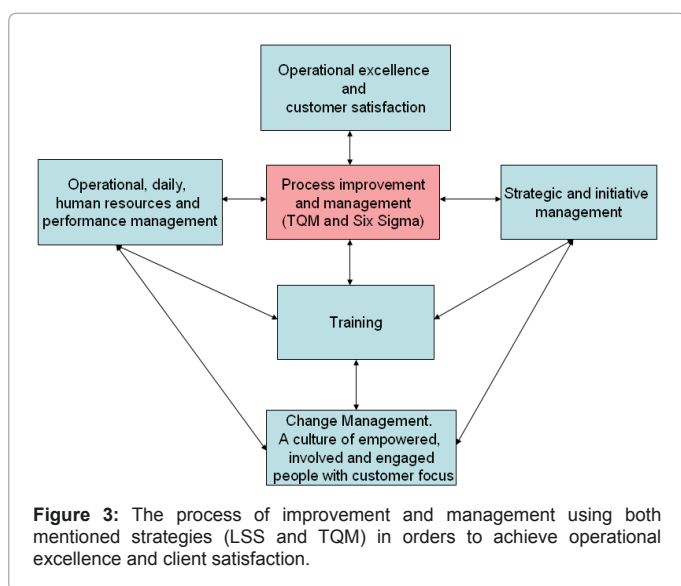


Figure 1: Explains the use of LSS in health care settings to reduce the medication errors.



are not enough to overcome this situation until communication between care providers, employee involvement and client satisfaction is not achieved. According to Revere 2003, integrating LSS hooked on the accessible TQM agenda, which helps to improve quality of work and provision of required outcomes. An excellent approach to identify root cause examination of circumstances using LSS significantly enhances the presented TQM process [8]. The relationship between LSS and TQM will be clearer and more understandable in Figure 3. The Figure 3 shows that how operational excellence and customer satisfaction be won using LSS along TQM through a complete defining pathway and the factors that influence its success.

Discussion

In a nutshell the combination of prescribing, dispensing and taking medicines is the most commonly applied medical intervention.

Because there is significant human interaction involved, this process is known to be prone to errors. A wrong prescription of medicine can cause serious harm and sometimes became fatal. In this case the patient diagnosed with type II diabetes which is non-insulin dependent was administering wrong medicine; there was defined criteria prior to start any medication protocol for patient in the hospital, which was not followed properly. Although the patient remains harm free, but it should not be like that. Ineffective communication among primary care providers and professionals is an extensive problem and an injury to effective care coordination. Resolutions of challenges in primary specialty communication are required in order to diminish the problem of obstruction in health services produced by complications in communication and to support optimize patient care concerning primary and specialty care in hospital and other settings.

Conclusion

There is need to develop a system to minimize medication error. Error need to be detected, identified and reported as it was done in this case. If these kinds of problem arouse it need to be addressed properly to avoid any complication. Improve knowledge of health care professionals and communication between nurses and physicians through the effective use and applying of above-mentioned management process LSS and TQM, both processes are proven effective when combined in hospital settings. Reducing the chance for workarounds is a key step in ensuring appropriate use of systems to reduce errors. Measure comfort of communication and to illustrate communication challenges supposed by Primary health care providers and primary care personnel in the hospital settings. Proper education and training systems are necessary for excellence of work and reduction of mistakes as per TQM and an understanding of problem, its analysis, alternatives; solution of problem and entire control over problematic situation is key steps of LSS. With the application of both MPs the medicine errors will be limited to lowest occurrence, organization will be able to develop suitable policies and procedures, the provision of appropriate work environment for employees will be made possible, All medication errors will be reported responsibly, health care providers will feel more empowerment and less guilt, a transparent system will come into reality and mortality rate due to wrong prescription will be at minimum level.

References

1. Robinson FP, Gorman G, Slimmer LW, Yudkowsky R (2010) Perceptions of effective and ineffective nurse-physician communication in hospitals. *Nurs Forum* 45: 206-216.
2. Friesen MA, Hughes RG, Zorn M (2007) Communication: Patient safety and the nursing work environment. *Nebr Nurse* 40: 11-12.
3. Barker P, Creasey PE, Dhatariya K, Levy N (2015) Peri-operative management of the surgical patient with diabetes 2015: Association of anaesthetists of great Britain and Ireland. *Anaesthesia* 70: 1427-1440.
4. Verhaegh KJ, Selder-Boersma A, Simons R, Steenbruggen J, Geerlings SE, et al. (2017) An exploratory study of healthcare professionals perceptions of interprofessional communication and collaboration. *J Interprof Care* 31: 397-400.
5. Salhotra R, Tyagi A (2019) Medication errors: They continue. *J Anaesthesiol Clin Pharmacol* 35: 1-2.
6. Trakulsunti Y, Antony J, Ghadge A, Gupta S (2018) Reducing medication errors using LSS methodology: A systematic literature review and key findings. *Total Qual Manag Bus* 1-19.
7. Yousef N, Yousef F (2017) Using total quality management approach to improve patient safety by preventing medication error incidences. *BMC Health Serv Res* 17: 621.
8. Revere L, Black K (2003) Integrating six sigma with total quality management: A case example for measuring medication errors. *J Healthc Manag* 48: 377-391.