Original Research Paper

Volume - 11 | Issue - 08 | August - 2021 | PRINT ISSN No. 2249 - 555X | DOI : 10.36106/ijar

Hospital Administration

QUALITY IMPROVEMENT INITIATIVE IN CSSD AT A MATERNITY CARE HOSPITAL USING THE PDCA CYCLE TO SUPPORT KAIZEN (CONTINUOUS IMPROVEMENT)

Dr. Mede Charan Raj*	Senior Resident, Department of Hospital administration, AIIMS, Mangalagiri. *Corresponding Author
Dr. Mohd Aamir Osmani	Chief executive officer, Muslim maternity & Children's Hospital.
Dr. T Kiran Kumar	IMO grade-1, ESIC

ABSTRACT **Background:** The Central Sterile Supply Department (CSSD) is a service unit of the hospital responsible for providing guaranteed sterile equipment/ instruments to all the departments of hospital for immediate use in patients care. **Method:** During a 4-month period, in CSSD which caters two number of operation theatres and a 6 bedded Intensive care unit, a central laboratory and a blood bank a study was done, we used PDCA approach to PLAN i.e., identify and analyze the problem, within CSSD and to "DO" i.e., implement changes in CSSD from the inputs given by all the stakeholders involved viz. CSSD technicians, staff, nursing officers and the consultants. Subsequently PDCA approach was used to identify and analyze the problem, viable solutions were incorporated. **Results :** To identify the problem process mapping and interactive sessions with the staff and it was identified that the main problem was inadequate quality in the CSSD services. Our analysis also extracted that the Standard operating procedures were documented related to CSDD were found to be inadequate with regard to the machine maintenance, staff training. The "Do" stage is where we checked for possible solutions or changes. By carrying out a detailed process mapping of the CSSD work flow, an action was taken based on what was learned in the study and to incorporate what we have learned from the test into wider changes, to plan new improvements and start the cycle. **Conclusions :** The interesting application of PDCA cycle to improve Kaizen and the results achieved reinforces the usefulness of the Kaizen tools to improve business excellence. Using the same facilities, it was possible for efficient space utilization, better improvement in Knowledge of the manpower, identified few gaps in the material procurement and developed standard operating procedures to be followed which are on par to the national and international infection control guidelines which resulted in better working conditions and efficient output from the central sterile supply department.

KEYWORDS : CSSD,PDCA cycle, Kaizen, Continuous quality improvement

INTRODUCTION

The Central Sterile Supply Department (CSSD) is a service unit of the hospital responsible for providing guaranteed sterile equipment/ instruments to all the departments of hospital for immediate use in patients care.[1]In the United States, approximately 46.5 million surgical procedures and even more invasive medical procedures—including approximately 5 million gastrointestinal endoscopies—are performed each year. Each procedure involves contact by a medical device or surgical instrument with a patient's sterile tissue or mucous membranes. A major risk of all such procedures is the introduction of pathogens that can lead to infection. Failure to properly disinfect or sterilize equipment carries not only risk associated with breach of host barriers but also risk for person-to-person transmission (e.g., hepatitis B virus) and transmission of environmental pathogens (e.g., Pseudomonas aeruginosa). Disinfection and sterilization are essential for ensuring that medical and surgical instruments do not transmit infectious pathogens to patients..[2]Quality Monitoring is one of the most important data required to ensure delivery of expectations are met. There are numerous data required that have historically posed a challenge to compliance requirements. The absence of these data will render validated processes unverified and not monitored on a regular basis hence the level of cleanliness, disinfection and sterility is in question. How important does staff culture play in this crucial part of the technician's role.

AIM OF THE STUDY

To perform a quality improvement method in Central sterile supply Department (CSSD), with a view to identify and analyze problems, using PDCA method to support in continuous improvement.

METHODOLOGY:

During a 4-month period, in CSSD which caters two number of operation theatres and a 6 bedded Intensive care unit, a central laboratory and a blood bank, a study was done, we used PDCA approach to PLAN and to "DO" i.e. identify and analyze the problem, within CSSD later CHECK and ACT i.e implement changes in CSSD from the inputs given by all the stakeholders involved viz. CSSD technicians, staff, nursing officers and the consultants. Subsequently PDCA approach was used to identify and analyze the problem, viable solutions were incorporated.

RESULTS

PLAN: In the PLAN process first step is the identification of the problem and the second step is an analysis of this problem. To identify the problem process mapping and interactive sessions with the staff and it was identified that the main problem was inadequate quality in the CSSD services which was confirmed through the infection control administrative rounds taken in CSSD that there are inadequate infection control practices in instrument processing i.e., wet packs, absence of quality control indicators such as usage of biological indicators. There were other complaints with in the CSSD staff about the inadequate ergonomics within the workplace i.e., separation of clean and sterile areas, poor ventilation. Our analysis also extracted that the Standard operating procedures were documented related to CSDD were found to be inadequate with regard to the machine maintenance, staff training. On reviewing the physical facilities sufficient space was available i.e., separate area for preparation and packaging which was separated by a door and passthrough window. Two single door autoclaves were available. Transportation of equipment was done using trolleys that were used for all purposes and was not cleaned adequately. It was also found that no dedicated pathways for soiled and cleaned items transportation was used. Hence the problems identified and analyzed were categorized accordingly

Men	Lack of training. Lack of coordination with infection control team.
Method	Inadequate SOPs No adherence to infection control practices. Inadequate documentation
Material	Inadequacies in the physical facilities. Lack of proper biological indicators.
Machine	No validation of autoclave performance

DO: The "Do" stage is where we checked for possible solutions or changes. By carrying out a detailed process mapping of the CSSD work flow

Workflow in CSSD

a.**Receiving of items**- Soiled items are received from user departments through receipt window and records are maintained by CSSD attendants. Staff wears gloves at the time of receipt of items but other personal protection equipment (PPEs) are not worn. b. **Cleaning**- Soiled instruments or infected instruments used are soaked in 1%

sodium hypochlorite. c. **Drying**- Items are either air dried d. **Packing**- Linen is folded and packed in CSSD. Instrument trays are prepared. e. **Sterilization**- Articles are sterilized either by steam sterilization (Autoclave) or gas sterilization (ETO machine). f. **Storage**- Sterilized articles are stored in racks located in sterile store. Records are not maintained properly. g. **Issue of sterile items**- It is done through issue window. Record is maintained regarding number of items issued and person receiving it. Sterilized items are transported back through transportation trolleys. Following the study of the workflow the following solutions were implemented

Men	Training programs for staff in SOPs, Infection control practices occupational safety were conducted to renew knowledge &skills of the staff to maintain competency Strict usage of PPE ensured
Method	Revised Standard operating procedures according to national and international guidelines. Documentation of all trainings, working status of all equipment, cycles of sterilization, details of operator and frequency of biological tests.
Machine	Regular preventive maintenance of Autoclaves Regular validation of autoclave performance by chemical and biological indicators
Material	Ensured unidirectional flow of material Sterile loads to deliver at the exit point. Ensured complete separation of sterile and clean areas. Availability of biological indicators

CHECK : In this stage, review of the experiment was done, the results were analyzed giving a questionnaire to a sample of 40 staff and answering the following questions:

- Did the implementation of the change achieve the desired results? 70% answered YES 30% answered NO
- What did not work? Strict usage of PPE-50%, Couldn't understand few aspects of training- 40%
- Do you need to run another experiment? 90% answered YES,10% answered NO
- Does this experiment measure up to the larger picture? 80% answered YES, 20% answered NO
- Is the solution still viable and practical? 60% answered YES 40% answered NO.

ACT : In this stage, an action was taken based on what was learned in the study and to incorporate what we have learned from the test into wider changes, to plan new improvements and start the cycle again. The following actions were initiated.

- To utilize nursing manpower resources to implement and adhere to the solution
- Monthly refresher training to all the stakeholders is needed for full implementation of the improvement
- standardize the process and implement it strictly across for maintenance and sustaining
- measure and monitor the impact of the solution
- Regularly identifying some other areas of improvement

DISCUSSION

The PDCA cycle is a continuous loop of planning, doing, checking, and acting. It provides a simple and effective approach for solving problems and managing change. The approach begins with a Planning phase in which problems are clearly identified and understood, and a theory for improvement is defined. Potential solutions are tested on a small scale in the Do phase, and the outcome is then studied and checked.Kaizen methodology is an approach that pushes forward the continuous improvement in an organization, based on the constant small positive changes that can result in major and more significant growth. Kaizen is considered a culture more than a methodology and is based on communication and cooperation among the organization members as part of the lean process improvements.

A quality system is developed by standardizing the process, it is important to develop policies and procedures that are specific to the individual process.It's not enough for CSSD Staff to know how to perform their jobs; they must also know and understand why they do what they do. As they perform their daily tasks, they must have the knowledge to support effective problem-solving and decision-making, and the understanding that every step in the CSSD has a direct impact on infection control – and, above all, patient care and safety.It is critical that CSSD personnel establish quality levels for the products and services they produce and then ensure that these levels are consistently attained.

Kaizen focuses on simplification by breaking down complex processes into their sub-processes and then improving them. Usually, Kaizen starts with how to produce efficiently with limited resources (man, material, machine). This means that it is not necessary to utilize all the available resources and manpower. On the contrary, it should be a focus on savings in manpower, space, equipment, material, and time and an elimination of unnecessary processes.[3]

CONCLUSIONS

The Kaizen target was set after analyzing the problems and identifying the gap between the existing vsnewly developed system. The interesting application of PDCA cycle to improve Kaizen and the results achieved reinforces the usefulness of the Kaizen tools to improve business excellence. Using the same facilities, it was possible for efficient space utilization, better improvement in Knowledge of the manpower, identified few gaps in the material procurement and developed standard operating procedures to be followed which are on par to the national and international infection control guidelines which resulted in better working conditions and efficient output from the central sterile supply department.

REFERENCES

1. https://rmlh.nic.in/ Write Read Data/ LINKS/ Structure % 20 of % 20 CSSD % 20 for % 20website1f75176e-a514-4f48-a988-d7525 d0390f1.pdf
2. https://www.cdc.gov/infectioncontrol/pdf/guidelines/disinfection-guidelines-H.pdf.
3. Abdulmouti, Hassan. (2018). Benefits of Kaizen to Business Excellence: Evidence from a Case Study. Industrial Engineering & Management. 07. 10.4172/2169-0316.1000251.