



¹Hospital Alemão Oswaldo Cruz – Nurse, MSc, surgical center manager, central of material and sterilization, endoscopy center. São Paulo, Brasil. ²Hospital Alemão Oswaldo Cruz – Nurse, PhD, infection control service supervisor. São Paulo, Brasil. ³Hospital Alemão Oswaldo Cruz – Nurse, central of material and sterilization. São Paulo, Brasil. ⁴Hospital Alemão Oswaldo Cruz – Nurse, central of material and sterilization. ⁵Hospital Alemão Oswaldo Cruz – Nurse, surgical center. São Paulo, Brasil. ⁶Hospital Alemão Oswaldo Cruz – Quality nurse. São Paulo, Brasil. ⁷Escola de Administração de Empresas de São Paulo, Função Getulio Vargas-Physician, PhD, Advisor. São Paulo, Brasil.

INTRODUCTION

Healthcare organizations grow and expand, becoming larger and more complex. The challenges of this growing and expansion are not related only to infrastructure alone. Several processes are interconnected. Keeping patient safety goals, as well as high quality standards, represents relevant challenges. Continuous improvement and risk monitoring actions must be adopted in health services. In patient care chain we found the Central of Material and Sterilization (CME), which is responsible for the processing of health products. Such processes must follow high organized steps so that risks are minimized throughout the chain proceeding usage of those products

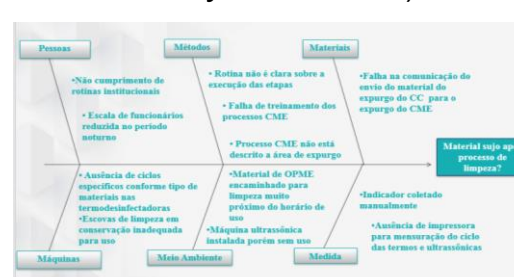
METHOD

A descriptive design study was used combined with a research action plan. A bibliographic survey was carried out and systematic meetings were held with (infection control, quality, nurses, surgical center and CME) for risk analysis, proposition and implementation of improvements in the area of cleaning. The research was divided into phases according to the research action methodology: elaboration and diagnosis, planning, action and final analysis. In the “preparation and diagnostic” phase we mapped the risks using the Healthcare Failure Mode and Effect Analysis (HFMEA) approach, in which fourteen failure risks were identified: three of critical level risk, five of high-level risk, two of moderate risk and four of low-level risk; additionally, twenty-two potential causes were identified. By means of the preliminary results found, the planning of the actions was carried out.

RESULTS AND DISCUSSION

Planning

- ✓ 5 meetings (2 nursing CME, 1 nursing coordinator of surgical center, 1 infection control service supervisor, 1 quality nurse).
- ✓ Brainstorming, Affinity Diagram, Ishikawa Diagram, Spaghetti Diagram, 5 PDSA (plan, do, study and action)



✓ Brainstorming and Affinity Diagram

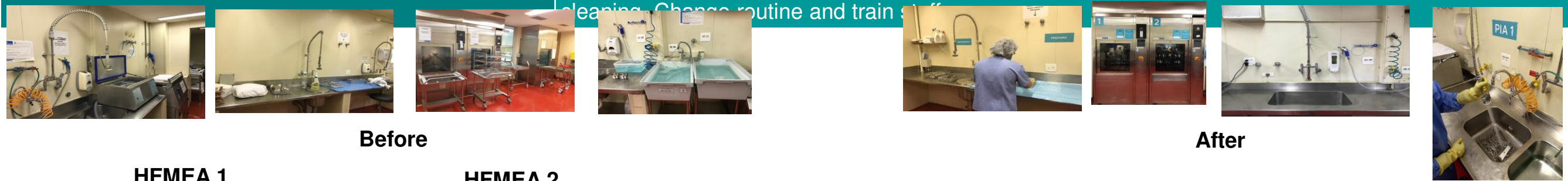
✓ Spaghetti Diagram

✓ Ishikawa Diagram

✓ 5 PDSA

Action

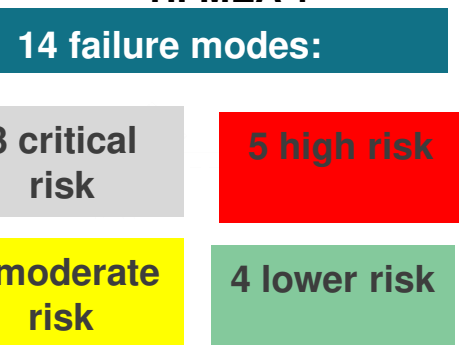
5 PDSA	Actions
Improve the working process in the surgical center cleaning area	Splitting the flow: specific place for receiving and counting materials (unique flow). Set document to register materials and its possible defects. Create a contingency routine for cargo lift in case of breakdown or maintenance procedures. Review routine and training to the team.
Forward materials at shortest time in the evening to the material center cleaning and sterilization area	Make regular meetings with nursing team of Surgical Center (SC) and CME to make them aware of new procedures. New time work shifts of CME employees. Each 2 hours, a nurse from SC should remove mucky materials of purge area and throw them out. Create standard procedures of work shifts exchanges among nurses of CME. Use of multienzimatic soap when allowed by material composition. Train the team.
Improve processes related to thermo-disinfector machines	Install a new thermo disinfector machine and print cycles registration. Check and validate all thermo disinfector to do cycles: instrumental, cannulated and ventilatory. Create a visual communication to help people using equipment. Guide people about re-potting supplies act. Change and set new routine with trainments to the team.
Improve the flow of consigned materials received and returned by CME	Checking and counting all parts of materials received and returned in consignment. Input all consigned materials over institutional baskets. Orientate suppliers regarding delivery schedules times. Create new routine and train people.
Standardize cleaning process by material type	Revise literature. Make a benchmark with some hospitals of National Association of Private Hospitals. Draw new flow for thermosensitive, cannulated, instrumental and inhaled material. Remove enzyme solution used after pre-cleaning process. Disable manual ultrasonic machine and install new one. Set accessories for cleaning. Change routine and train staff.



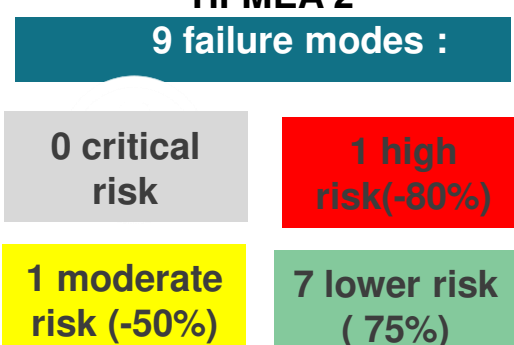
Before

After

HFMEA 1



HFMEA 2



New Risks found on HFMEA 2

- ✓ Air conditioner system failure risk.
- ✓ No troubleshooting by maintenance staff.
- ✓ Dirty material forwarding from SC to CME in open containers, countertop materials without adequate protection, two types of soaps in thermo disinfector, incomplete suction of inputs, ultrasonic machine without printed records.

When comparing the total risks found in the first application of the tool with the second approach by the same instrument, a 36% reduction in risks was identified.

The choice of CME for this study was based on the following criteria: the existence of critical results found in the first evaluation of the HFMEA made by the quality sector and the importance and criticality of the area in case of failures in the process of performing cleaning activities of materials. The sponsorship of the top leadership, as well as the acceptance of quality sector, infection control, area assistance team were crucial for the execution of the actions. The action research methodology used provided learning and get the management and the team involved matured. As the research was led by the area manager, despite the existing hierarchical relationship, the implementation of those changes were easier to make. Leadership plays a key role in spreading and sustaining a change process in a corporate organization. The leader helps the group to overcome barriers, he or she is responsible for making connections with other cross-functional areas, and, at same time, promoting changes together with the team.

CONCLUSION

- ✓ The research shows how improvement measures taken according to critical ranking of mapped risks can increase the safety levels at a material and sterilization center.
- ✓ Use of HFMEA allowed to know the existing risks in the area
- ✓ The first HFMEA pointed out that safety barriers failed to get the material dirty in the operating room
- ✓ Team involvement during the process of implementing improvements
- ✓ Risk reduction by 36% when new HFMEA is performed