

MAPPING THE PROCESS OF REPROCESSING COTTON DRAPES

Mapeamento do processo de reprocessamento de campos cirúrgicos de tecido de algodão
Mapeo del proceso de lo reprocesamiento de campos de tejido de algodón

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ABSTRACT: Objective: To map the process of reprocessing cotton drapes composing the surgical LAP packages. **Method:** Quantitative, exploratory, descriptive, single-case study conducted in the Clothing Service (SR) and Material and Sterilization Center (CME) at a teaching hospital. The whole process was followed up through non-participant observations at SR and CME and, later, meetings were held with representatives of the professional of SR (cleaners) and CME (nursing technicians and nursing assistants) aimed at detailing, completion and validation of the steps and activities observed. **Results:** Four stages regarding the reprocessing of cotton drapes were mapped and validated: processing of clothes by an outsourced laundry, entry of clothes in SR, putting together and sterilizing surgical LAP packages and storing them at CME. **Conclusion:** The mapping enabled the visualization of resources consumed in the process by providing information that will contribute to the rational allocation of resources.

Keywords: Protective clothing. Product packaging. Costs and cost analysis. Nursing.

RESUMO: Objetivo: Mapear o processo de reprocessamento de campos de tecido de algodão, duplos e simples, integrantes dos pacotes de LAP cirúrgico. **Método:** Estudo de caso exploratório, descritivo, conduzido no Serviço de Rouparia (SR) e no Centro de Material e Esterilização (CME) de um hospital de ensino. Acompanhou-se a condução de todo o processo por meio de observações não participantes no SR e no CME e, posteriormente, realizou-se reuniões com profissionais representantes do SR (camareiras) e do CME (auxiliares e técnicos de enfermagem), visando o detalhamento, complementação e validação das etapas e atividades observadas. **Resultados:** Foram mapeadas quatro etapas: processamento das roupas por lavanderia terceirizada, recepção das roupas no SR, montagem e esterilização dos pacotes de LAP e armazenamento dos pacotes de LAP no CME. **Conclusão:** O mapeamento possibilitou a visualização dos recursos consumidos nas etapas e atividades constituintes do processo, fornecendo informações que contribuirão para a alocação racional dos recursos envolvidos.

Palavras-chave: Roupa de proteção. Embalagem de produtos. Custos e análise de custo. Enfermagem.

RESUMEN: Objetivo: mapeo del proceso de reprocesamiento de campos de tejido de algodón componentes de paquetes de los LAP quirúrgicos. **Método:** Estudio de caso exploratorio y descriptivo realizado en el Servicio de ropa (SR) y en el Centro de Material y Esterilización (CME) en un hospital universitario. Fue observado todo el proceso en el SR y en el CME. Se celebraron reuniones con representantes de los profesionales de lo SR (camareras) y CME (técnicos y auxiliares de enfermería) destinadas a detallar, la conducción y validación de los pasos y las actividades observadas. **Resultados:** Se mapeó cuatro pasos: tratamiento de ropa para lavar la ropa subcontratada, la recepción de la ropa en SR, el montaje y esterilización de paquetes LAP y el almacenamiento de los paquetes de vuelta en la CME. **Conclusión:** El mapeo permite la visualización de los recursos que se consumen en el proceso al proporcionar informaciones que contribuyan a la asignación racional de los recursos implicados.

Palabras clave: Ropa de protección. Embalaje de productos. Costos y análisis de costo. Enfermería.

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INTRODUCTION

Due to the complexity of the reprocessing of dental-medical assets (DMA), recently named by the Board Resolution – RDC 15/2012 as health products¹, there is, in most institutions, a great difficulty in determining the main processes to be monitored and how to track results. From this perspective it is necessary to plan and adapt the work at the Material and Sterilization Center (CME) as to the use of indicators for quality assessment².

The nurses who work at CME must know the different methods of sterilization and disinfection in order to develop monitoring measures to ensure the processing of health products and decrease the possibility of hospital infection³. They must master all activities integrating the workflow in order to monitor them and facilitate the improvement of the ones that add value to the final product and eliminate the unnecessary ones, notwithstanding the quality of the results intended.

It is therefore up to them the leadership of the nursing team, as well as rethinking the use of cleaning, disinfection and sterilization, opting for technologies that save water and energy, and reprocessable or recyclable packaging, considering the impact of inputs on the environment⁴.

Among the health products processed by CME, we mention the woven cotton fabrics that usually make up a standard package with six double courses, a simple one and another for packaging, called surgical lap.

Most organizations use reprocessed surgical LAP packages as one of the important items of surgical apparel, whose amount varies according to profile, specificity and demand procedures. Reprocessing of tissue for the preparation of LAP packages is one of the duties of the CME, and it is shared with internal or outsourced laundry service, whose process must be well known to support efficient allocation of human, material and structural resources involved.

OBJECTIVE

To map steps and activities related to the reprocessing of double woven cotton fields and simple supplies of the surgical lap package.

METHODS

Single case, exploratory, descriptive study⁵ conducted in a teaching hospital of Pontifícia Universidade de São Paulo

(PUC-SP), in Sorocaba (SP), approved by the Research Ethics Committee (CAAE: 23028113.0.0000.5392, protocol 464023).

Case study is an empirical research that seeks to understand a contemporary phenomenon within its real context. It intends to grasp the totality of a situation, to describe, understand and interpret the complexity of a certain case from a closer and comprehensive perspective. Its planning logic incorporates specific approaches regarding data collection and analysis⁵.

According to Yin⁵, case study is a strategy that can be applied in evaluation research to explore situations in which the intervention being evaluated does not present well-defined results.

The Santa Lucinda Hospital (HSL) has a surgical profile and assists about 50 municipalities in the region, a total of 2.2 million inhabitants. Of the 146 beds available, 93 (63.7%) are intended for users of the National Health System (SUS), with an average of 700 surgeries performed per month in various specialties (orthopedics, general surgery, cardiology, esthetics, otolaryngology, ophthalmology, urology, etc.). Its structure comprises Ambulatory Medical Specialties, CME, Cardiology and Interventional Radiology Center, Adult Intensive Care Unit (ICU), Neonatal ICU, Surgical Center (SC), Obstetrics Center (OC), Maternity, Pediatrics, Dialysis and Renal Transplantation Center, Coronary Care Unit, Lithotripsy, Medical and Surgical Clinic.

The CME, continuously operating, performs cleaning processes, disinfection and sterilization of health products, targeting the supply of Units/Services of the HSL. Its area consists of a dressing room, office, staging area, purge, sterilization room and sterile equipment area. It has two ultrasonic washers, one washer-disinfector, three pre-vacuum autoclaves and a low-temperature hydrogen peroxide plasma sterilizer. The professional staff comprises a Nurse Coordinator (from 7 a.m. to 4 p.m.), a nurse (from 3 p.m. to 9 p.m.), 18 nursing technicians and 3 nursing assistants distributed to ensure proper operation across all periods (morning, afternoon and night).

The flow of products is continuous: they are received in the receiving and cleaning area (purge), then go to the preparation and sterilization area (clean area), and finally to the storage area (sterile area). Areas are bounded by physical barriers in order to prevent the clean pieces from being in contact with contaminated pieces.

The Clothing Service controls incoming and outgoing clothes, collection of dirty laundry, receipt of clothing

processed in outsourced laundry and supply of all units and services. The service is composed of a Supervisor and eight chambermaids.

To map the process of reprocessing double and simple cotton fields from the surgical lap, steps adopted in previous studies were taken^{6,7}.

Data collection began when the hospital maids, nursing auxiliary and technicians agreed to participate in the study by signing the Informed Consent and Informed.

RESULTS

To map the steps of surgical fields reprocessing, non-participative observations of all professionals working in the SR and CME were made, and then meetings were held with professionals of the different scenario — morning, afternoon and night periods (odd and even) —, for detailing, completion and validation of the steps and activities observed.

Four maids who had been working for a longer period (one year and six months) in the Clothing Service participated in the meetings, as well as seven nursing assistants and technicians with long experience in CME — two professionals with more than 18 years of experience, one with more than seven years, two with more than five years, and two with more than two years of experience.

After the double and single Cotton Fields are used, they are discarded in collectors and store bags in the purge of Unit/ Center to be collected by a CS employee. An outsourced laundry is responsible for the removal, processing and return of the clothes to SR.

In the end of the procedure, in the surgery center or other unit/service of the hospital, all components of the open surgical LAP package are discarded in collector bags placed in the purge room, to be collected by an SR employee.

The collector bags are taken from the purge room to an area for storing dirty clothes until they are removed by an outsourced laundry. The outsourced laundry is responsible for removing daily the dirty clothes, weighing, washing, ironing, folding and returning them to SR. The hospital pays the service according to the weight of clothes processed.

Upon delivery to the SR, the clothes are barcode controlled, separated by type (private clothes, aprons, fields, sheets, blankets, jumpers, towels), counted and stored in cabinets with dividers. The SR staff assembles the clothing

cars based on the established quota for each unit/service, and proceeds to supply.

In CME, the clothing car is received in the clean area. To begin the assemblage process of surgical LAP packages, nurses separate the recommended amount of surgical drapes (six double fields, a single field and a double for packing), revise the folds, remaking them when not properly made. They put a chemical integrator between the third and the fourth field, finish the package with masking and autoclave tapes.

Then the LAP packages are labeled with a permanent marker (name of who performed the procedure, date and remarks) and the label of traceability, then arranged in the autoclave carts; after that, they are discriminated in the printed sterilization control and processed in the pre-vacuum autoclave. Each autoclave sterilization cycle holds a surgical-grade packaging containing a chemical integrator used as a parameter for load release.

Routinely, the Bowie Dick test is conducted in all three autoclaves. Biological indicators are placed in the second load of the day and all loads with implantable materials sterilized within 24 hours. After sterilization, a nursing professional wearing a cap and protective thermal insulation gloves unloads the autoclave and stores the LAP packages on specific shelves.

The CME assembles and performs the sterilization of 40–60 LAP packages a day, targeting the supply of units/sectors according to their surgical demands.

To better understand the steps of surgical fields reprocessing, the flow chart shown in Figure 1 was assembled.

DISCUSSION

The processes of health organizations require evaluation and control as to effectiveness, efficacy, production, productivity and quality, as issues related to costs have important implications in service delivery. Restraints are made necessary so that there is compliance with a larger number of customers using the non-abundant resources available⁸.

Studies performed in Brazil to map different processes (admission process of nursing technicians, training programs in CPR and process of disinfection and sterilization of hospital-medical assets) have showed that mapping makes it possible to better visualize resources consumed and hence lead to optimization^{6,7,9}.

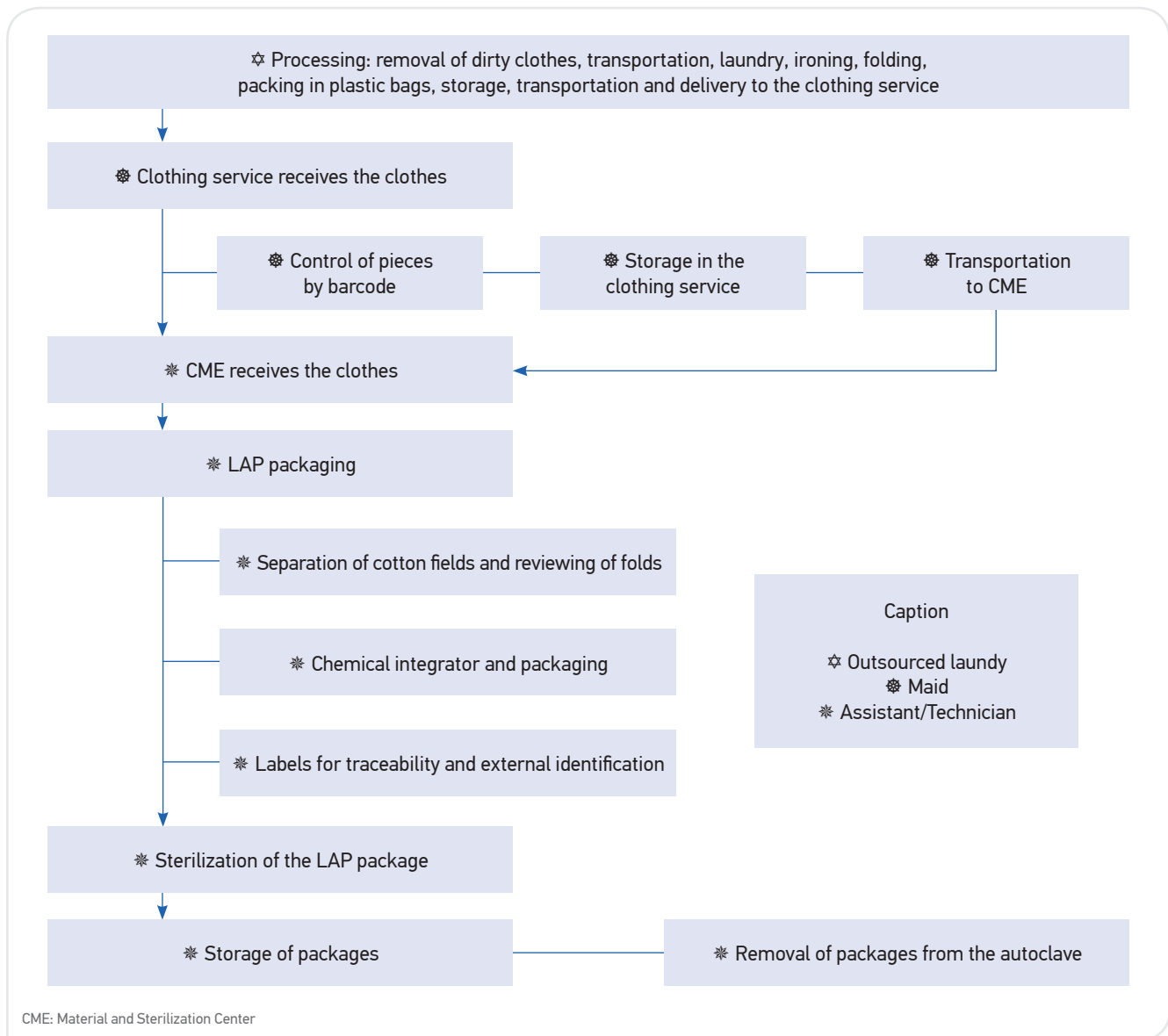


Figure 1. Flowchart of activities involved in cotton fields reprocessing. São Paulo, 2014.

In the context of CME, analyzing the cause-effect relationship in activities of the implementation process and resource consumption, and identifying how these activities influence costs will monitor the process and allow improvement of the management practice⁹.

Knowing the steps of cotton fields reprocessing in the HSL by mapping made it possible to propose some improvements for the preparation of LAP packages. For example, their assemblage should be assigned to the clothing service staff, which already happens in other institutions.

Considering that quality should always be linked to low costs and high productivity⁸, such a change would allow

nursing Technicians/ Assistants to perform more specific and complex activities at the CME, reducing personnel costs in the assemblage of LAP packages.

Direct observation, non participative, allowed us to recognize some of the difficulties of the clothing service maids in activities involved in surgical fields reprocessing.

Upon removal of pieces from the sealed plastic bags and input control through the bar code reader, some assets lost their barcode label. As all pieces had also its barcode number manually transcribed on the fabric, the maids would control it by entering that number in the collector, increasing the time taken for this activity.

It is suggested that the Coordination of HSL monitor this activity for a longer period and inquire the maids of management propositions for this occurrence in order to draw alternative solutions that reduce the time spent improperly and costs associated.

In private entities, unnecessary expenses for the preparation of a good or service refer to the increase of resources for business survival. Due to fierce competition, they need to do more with fewer resources in order to attract and retain customers who end up becoming more demanding, requiring high-quality products at a lower price¹⁰.

Whatever the nature of the health organization is, public or private, the waste represented by unnecessary resources spent on production processes, products and services for customer support aggravates the difficulties arising from limited resources, thus requiring the adoption of mitigating measures¹¹.

Both administrators and users of the public health services have been more and more concerned with the high

costs of health, with the difficulty of funding it, and with the impact of costs on the service quality¹². Thus, hospitals need to take on the challenge of maintaining high levels of quality, requiring effectiveness and efficacy in costs related to the quality of service and customer satisfaction¹².

CONCLUSION

Achieving this single-case study enabled the mapping of the steps and activities related to the reprocessing of double and single Cotton fields composing surgical LAP packages used in a teaching hospital. It allowed a better view of resources consumed in the process by providing information that will contribute to a rational allocation of resources involved.

The methodology adopted allows the in-depth identification of a process and can be reproduced in other public and private hospitals to map different processes, aiming at improvement and better performance of resources consumed.

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