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CASE REPORT ARTICLE

PROCESS MAPPING: VIDEO-ASSISTED SURGERY INSTRUMENT FLOW

MAPEAMENTO DE PROCESSO: FLUXO DE INSTRUMENTAL DE CIRURGIAS VÍDEO ASSISTIDAS

MAPEO DE PROCESO: FLUJO DE INSTRUMENTAL DE CIRUGÍA ASISTIDA POR VIDEO

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ABSTRACT

Objective: to describe a process mapping of the instruments of video-assisted surgeries in an university hospital. ***Method:*** descriptive study, experience report type. The data were collected through observation and interview with six professionals involved in the flow. The map was submitted to the professionals, with the purpose to discuss improvements. ***Results*:** the flow involves the Operating Room and Material and Sterilization Center. Nursing performs the activities. The team's capacitation is a critical condition for the flow success, and its improvement is conditioned to the reduction of instrument loss and damage. The performance index must measure its improvement. ***Conclusion*:** mapping demands permanent discussions on improvement measures, contributing to organize the job. The use of quality tools can contribute to the safe assistance. ***Descriptors***: Nursing; Quality Management; General Surgery.

RESUMO

Objetivo*:** descrever o mapeamento de processo do fluxo de instrumental de cirurgias vídeo assistidas em um hospital universitário. ***Método*:** estudo descritivo, do tipo relato de experiência. Os dados foram coletados por meio de observação e entrevista com seis profissionais envolvidos no fluxo. O mapa foi apresentado aos profissionais, visando discutir melhorias. ***Resultados*:** o fluxo envolve Centro Cirúrgico e Central de Material e Esterilização. A Enfermagem executa as atividades. A capacitação da equipe é condição essencial para sucesso do fluxo estando sua melhoria condicionada à redução de perda e dano do instrumental. O indicador de desempenho deve mensurar sua melhoria. ***Conclusão*:** o mapeamento exige discussões permanentes sobre medidas de melhorias, colaborando para organizar o trabalho. A utilização das ferramentas da qualidade pode contribuir para a assistência segura. ***Descritores: Enfermagem; Gestão da Qualidade; Cirurgia Geral.

RESUMEN

Objetivo*:** describir el mapeo de flujo de instrumental de cirugía asistida por vídeo en un hospital universitario. ***Metodología*:** estudio descriptivo, del tipo relato de experiencia. Los datos fueron reunidos mediante observación y entrevista con seis profesionales participantes del flujo. El mapa fue presentado a los profesionales, con el objeto discutir mejoramientos. ***Resultados*:** el flujo implica Centro Quirúrgico y Central de Material e Esterilización. La Enfermería realiza las actividades. La capacitación del equipo es condición fundamental para el éxito del flujo y su mejoramiento está condicionado a la reducción a la perdida e daño del instrumental. El indicador de desempeño debe medir su mejoramiento. ***Conclusión*:** el mapeo exige discusiones permanentes sobre medidas de mejora, colaborando con la organización del trabajo. La utilización de las herramientas de calidad puede contribuir con la atención segura. ***Descriptores: Enfermería; Gestión da Calidad; Cirugía General.

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INTRODUCTION

The search for quality in healthcare facilities has intensified in the past decades, following the increase in market competition and clients demands. The need for sustainability has encouraged the development and improvement of the quality programs, in public and private organizations.

Before the current scenario, the planning, process review and follow-up of results, as well as constant improvements, are crucial for the survival of companies. These have been adopting quality programs to obtain better competitiveness, process efficiency and efficacy and improvement in performance rates.[1]

In healthcare services, the efforts to incorporate quality management strategies have become noticeable, especially in hospitals, in a continuous movement to reach excellence. The idea of measuring quality in these services was developed in the 1960s, when Avedis Donabedian created an assessment and classification methodology for the structure, processes and results in healthcare services.[2]

In the perspective of continuous improvement in quality, the healthcare organizations started to incorporate, in their daily activities, terms that were exclusive to the industry, such as “supplier”, “client”, “product”, and also to review the use of terms closer to the healthcare area, such as “resources”, “processes” and “results”.[3] From these advances, methods and techniques have arisen for hospital quality management, applicable in the identification of problems, as well as the measuring of the improvements achieved.

Among the tools recognized for the management of organizations is the process mapping, a basic instrument to know, assess, control, put into practice and continuously improve the work processes. Maranhão and Macieira define it as the recognition and analysis of processes and their relation with data, structured in a vision from the top of the organization to its basis, until a level that allows perfect understanding.[4]

Mapping allows the identification of the interfaces among the multiple sectors, internal and external clients, entries and products delivered. It also allows the identification of the vision of the processes that may compromise the performance of the whole organizational system. Thus, efforts can be directed to correct mistakes, avoiding unnecessary costs and delays in the services and products cycle time. Process mapping grants the ability to react faster to internal and external changes, because it provides the control and monitoring of actions developed.[5] Also, the process mapping allows the comprehension of the services flow and routine, aiding in the identification of failures in the processes developed.[6]

The need to improve the work processes is not only a demand from the client, who is becoming more demanding, or only a survival alternative for the hospitals in a, increasingly competitive market. The healthcare service has been receiving technological innovations in the past few decades, which demands that the work processes follow the increase of the complexity level and the technical and scientific knowledge in the healthcare area.

The advances in surgical practices are not left out of this revolution. Video-assisted surgeries have gained visibility in the past years, and their universal acceptance has been modifying the work processes in the exercise of contemporary surgery.

Video-assisted surgeries have unique characteristics that demand specific instruments that, like the ones used in conventional surgeries, must be processed after the contact with the patient. Processing comprises the full dismounting; cleaning and washing; drying; remounting; packaging; and sterilization activities. Considering the specificity of the instruments, their multiple construction details, their fragility and high cost, it is necessary that those in charge of processing have specific training and detailed knowledge of each instrument.[7]

As a key player in the forwarding, storage, processing and instrumentation activities, the Nursing team must control the flow of these instruments and ensure that it happens without problems that compromise the care. Thus, mapping arises as an important tool to aid in the improvement of this process, its design and re-design, implementation of improvements and assessment. It is expected that its use contributes with the organization of work in video-assisted surgeries, and, consequently, with the improvement of the quality of the care provided. It is believed that the use of quality tools as practice in Nursing represents an important step in to ensure of safe assistance, free of damages to the population.

Given this, this study has the purpose to describe the mapping process for the video-assisted surgeries instrument flow in an university hospital in Belo Horizonte.

MÉTHOD

Descriptive study of experience report type, considering that the Quality Improvement Plan in the study hospital adopts as one of its directives to map, review and monitor processes, searching for the continuous improvement and institutional safety.

The study was performed in 4 stages: 1) definition of the process to be mapped with the Nursing Vice-Director (VDTE) and the Healthcare Quality Management (GESQUALIS); 2) data collection; 3) mapping; and 4) submittal of the results to the service.

The process selection was made in an attempt to serve a demand from the hospital that faces problems as regards the loss and damage of instruments in video-assisted surgeries. Also, the hospital will receive a relevant amount of video-assisted surgery instruments, which reinforces the need for improvement of the processes that involve their flow in the service.

The data were collected during the month of September, 2014. The techniques used were observation and interview. Observations were in the Operating Room (OR) and Material and Sterilization Center (MSC) during the activities of forwarding, storage, use and processing of the instruments. The interviews were conducted in order to supplement and validate the information about instrument flow, thus considering the description of the professionals that perform the flow activities, know and understand the process in detail. Six key informers were interviewed, Nursing professionals intentionally chosen for showing knowledge and practice on the flow activities.

The interviews were based on the guiding question: "How is the instrument flow of video-assisted surgeries in your work experience conducted?". The reports were recorded in the presence of the individual interviewed. The participants were informed on the ethical aspects of the study and started their participation after signing the Informed Consent Form. The research was approved by the Ethics Committee of Federal University of Minas Gerais, CAAE – 26354313.7.0000.5149.

The process mapping was performed according to the steps proposed by Maranhão and Macieira: process identification; collection of the essential points of the current situation; construction of logic in diagrams and documents, which was done with the Nursing professional; and validation of the information.[4] As the final step, the map was submitted to the service's strategic and operational professionals, to discuss the process improvement proposals and their possible implementation.

RESULTS AND DISCUSSION

♦ The instrument flow of video-assisted surgery in the Operating Room and in the Material and Sterilization Center

The instrument flow in video-assisted surgeries basically involves two distinct locations in the hospital: the Operating Room (OR) and the Material and Sterilization Center (MSC). In the first, the material is stored in the storage room until it is requested for use in the operating rooms. After its use, the contaminated instruments are transported to the MSC, where they are processed and finally returned to the OR, thus, the process has two objectives: store, refer, prepare and process the materials to be available in quantity and quality, at the right place and time. The individuals responsible for performing the activities are the Nursing professionals.

In the OR, the entries are of sterilized instruments, provided by the SMC, which must be packed with labels containing the identification, sterilization method and expiration date. These materials are transported in a proper case by the hospital's clean area elevator. In the OR, the instruments are received by the storage room employee, who checks and records the delivery. The material is stored in this location, in controlled temperature, until it is requested for use. The instruments are referred to the operating room by the circulating nurse, who signs for their receipt in a storage room record document. In the operating room, the scrub nurse is responsible for organizing the material and assisting the surgeon during the procedure.

The exits are comprised of contaminated instruments, provided by the OR to the SMC, observing the following requirements: they must be counted, mounted and packed in proper container for transportation. The OR nurse controls the flow of materials through record in book, specifying the quantity and the identification of the materials sent to the SMC. Also, he/she makes a report in two copies that accompany the instruments for checking. The figure below shows the process map.

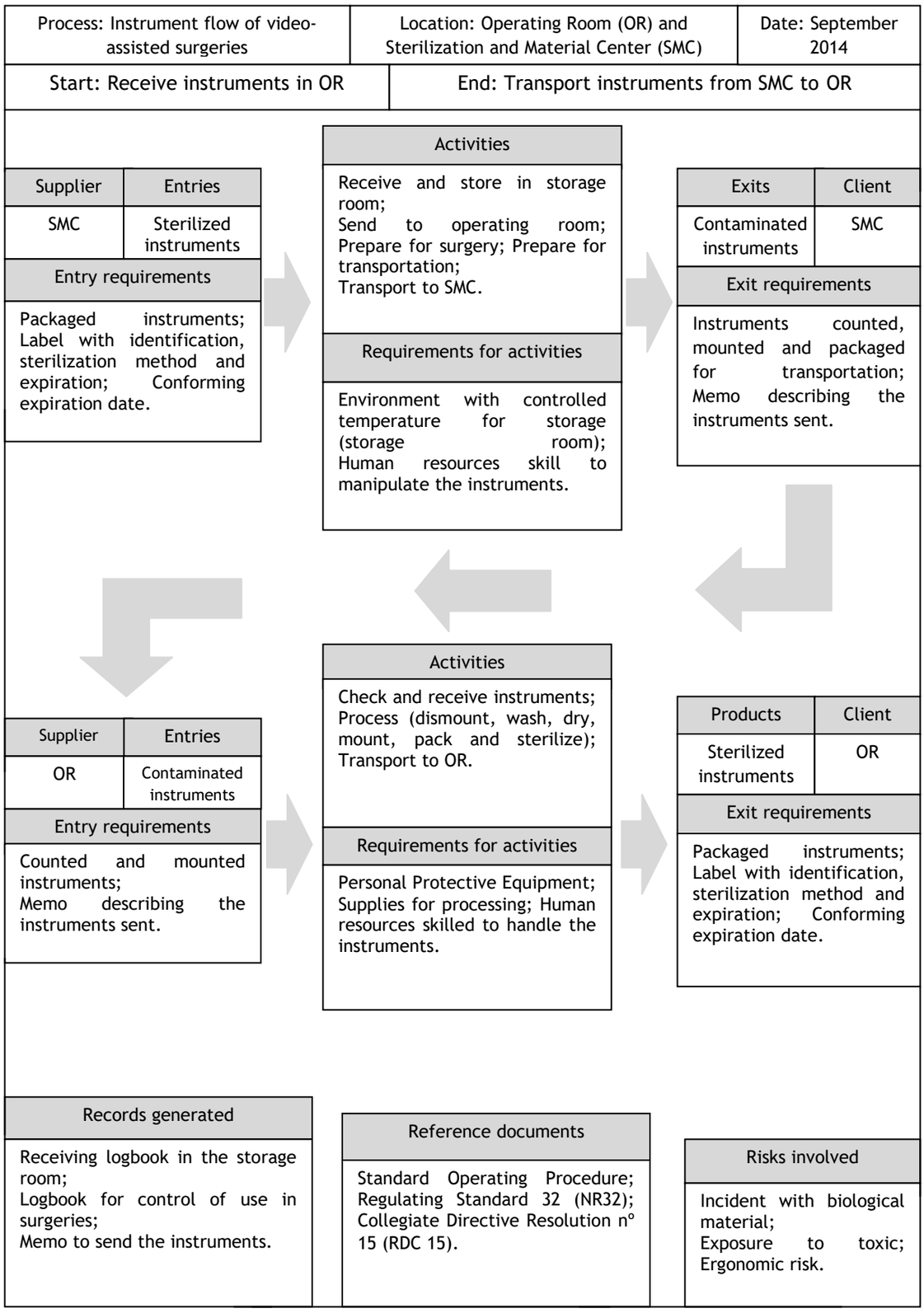

Figure 1. Process map of the instrument flow of video-assisted surgeries in a university hospital. Belo Horizonte, MG, 2014. Adapted model.[8]

At the SMC, after receiving, checking and signing the memo that returns to the OR, the instrument processing is started. It follows these steps: complete dismount; cleaning and washing; drying; remounting; packaging; and sterilization. The Nursing team is responsible for carrying out all the processing activities according to the Standard Operating Procedure (SOP). This is based on the ANVISA Resolution RDC Nº15, which recommends that each surgical instrument processing step follows the SOP, which must be developed based on the updated scientific reference and the applicable standard.[9]

During processing, the use of Personal Protective Equipment (PPE) is mandatory, according to NR 32 of the Ministry of Labor. The PPEs, single-use or not, must be available in sufficient number at the work stations, so that its immediate supply or replacement is ensured.[10]

After dismounted, the instruments are cleaned, immersed in solution containing enzymatic detergent, and, then, the parts

surfaces are brushed and the solution is injected with syringe in the instruments lumen. After cleaning, the instruments are inspected with magnifying glass and verified for soil, and the material is sent to the drying room.

Drying is performed with a clean wad followed with a bath in 70% ethyl alcohol. In the following step, the instrument is subject to drying with compressed air jet, and, after dry, follows to the packaging area. In this step, the heat-sensitive material is segregated from the heat-resistant material for use in proper packaging, according to the sterilization method.

For the heat-sensitive materials, sterilization with hydrogen peroxide plasma at low temperature is used, and heat-resistant materials are sterilized in autoclave with vapor pressure. After sterilized, the materials are re-sent to the OR. The instrument flow is represented in the figure below.

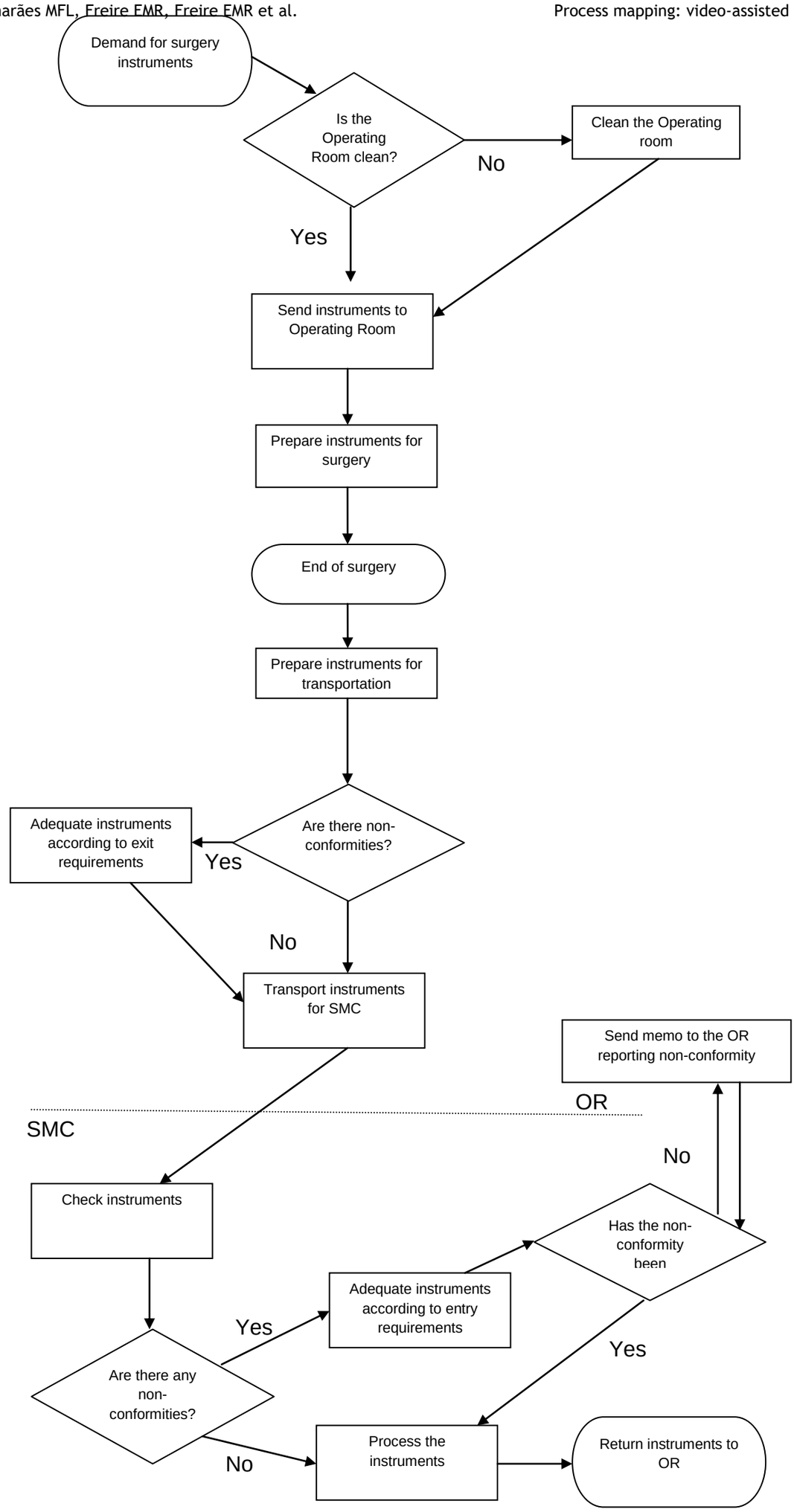

Figure 2. Video-assisted surgeries instruments flowchart in a university hospital. Belo Horizonte, MG, 2014.

♦ Identifying the critical success factors

After visualizing the current process situation, we proceeded to identifying the critical success factors, which are comprised of the essential conditions for a work process to be carried out successfully. The critical aspects to be accounted for and monitored are marked to increase the chances of a process to be carried out without obstacles to its desired flow.[4]

From the observation of the work routines and the flow description by the interviewed individuals, the nursing team capacitation to handle the instruments was identified as a critical factor for the success of the process. The material specificity is one of the aspects that require this condition, due to the richness of details.

The knowledge related to the mounting, dismounting and maintenance of the materials is critical for the flow to be developed without obstacles. When the handling of this highly sophisticated material is performed without the proper training, the patient can suffer damages. Thus, without a skilled team, the results of the processes that involve the use of instruments will be poor.[11]

The particular aspects of the video-assisted surgery instruments are characteristics that also demand special maintenance and care from all individuals that handle them. From the surgeon, until, and especially, the nursing professional responsible for their processing and safekeeping. Delicateness is recommended in its handling, protection of the sensitive parts, periodical operating tests and specialized assistance.[7]

The lack of preparation of the team that handles these instruments can represents an increase in the facility's costs, especially because of the high rate of instrument loss and damage.

From the identification of a critical factor for the success of the process, improvements proposals were discussed. A meeting was held with the OR and SMC professional and the coordinators of these areas to submit the process map and discuss the improvement proposals. The following measures were indicated as efficient to improve the process: in-service training and knowledge exchange on the handling of the materials among the team members. The importance of caution shared by all the individuals that handle the instruments, including the surgeons was also indicated. As a process improvement measure, the OR and SMC coordination formed a specific team to operate the flow of these instruments, called "Video Team". In addition to the capacitation of the team, the implementation of a performance indicator capable of measuring the process results was also proposed.

The performance indicators are objective data that describe a situation, on the quantitative perspective, that must constitute a relationship among the measurable variables and associate their result to a pre-established performance goal.[4] The process control and continuous improvement already modelled and implemented must be based on the performance indicators, which shall show the necessary measures to achieve new improvements.

Thus, an implementation of two indicators was suggested: "damage index" and "instrument loss index". The constant monitoring of the process results and the efforts to motivate the team regarding the reduction of material loss and damage are crucial to the efficacy of the improvement measures.

FINAL REMARKS

The process mapping as quality management tool in the Nursing work process was used to aid in the design, re-design, improvement implementation and validation of the video-assisted surgeries instrument flow.

The participation of the professional directly involved in the operation of the flow was crucial to describe the closest actual process situation. Thus, it was possible to identify the aspects to be improved and propose the implementation of the performance indicator.

The continuous improvement and control of the processes already modelled and implemented must be based on the performance indicators, which shall show the necessary measures to achieve new improvements. Thus, when submitting the mapping of the video-assisted surgery instrument flow to the service professionals, we expect to create co-liability by the individuals involved as regards the efforts to continuously improve.

The use of this tool can contribute with the video-assisted surgery work organization, and, thus, with the quality of the service provided. It is also believed that the use of quality management tools as Nursing practice represents an important step in the assurance of a safe assistance.

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