Chapter 12
Maintenance Policies Optimization of Medical Equipment in a Health Care Organization

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ABSTRACT

The aim of this chapter is to minimize the corrective breakdowns produced in the electromedical equipment of a healthcare organization. To this, an optimization plan of maintenance policies will be developed. This plan includes the creation of preventive maintenance datasheets. The data used in this research has been obtained from the computerized maintenance management system, which is owned by the healthcare organization. Different types of rankings have been made in the stocks to prioritize items by family of equipment and by average work orders by equipment generated. The maintenance tasks are optimized to preserve the satisfactory working conditions and the performance of equipment in the healthcare organization optimizing available resources. All of this is intended to anticipate the maintenance activity to breakdowns and to prevent the care quality from diminishing by increasing the patient waiting time by unavailability of medical equipment in the treatments and diagnostic tests.

DOI: 10.4018/978-1-5225-7489-7.ch012

INTRODUCTION

For a long period of time, maintenance has only focused on repairing breakdowns occurring in the machines as a result of its production. Maintenance policies has not been extensively analyzed and implemented in the actual companies; this aspect has been taken more into account in manufacturing companies than in service ones, where the maintenance was considered a department without influence on the service final quality (Gómez, Ruiz de la Hermosa, & Carnero, 2009). The concept of maintenance has evolved to be considered as a productive activity of the organization, since the correct operation of the equipment ensures the availability of production.

In a healthcare organization, the electromedical service is the department responsible for maintaining the entire healthcare equipment and specific facilities that cover the center, as well as its management through inventory control. It is essential that all medical equipment is properly maintained to ensure the highest level of availability and reliability. It is also important to have a maintenance strategy in which the maintenance policies are defined in order to keep track of medical equipment and to give priority to those required on critical operations (Jamshidi, Abbasgholizadeh Rahimi, Ait-kadi, & Ruiz, 2015).

The aim of this chapter is to minimize the corrective breakdowns produced in the electromedical equipment of a healthcare organization. To this, an optimization plan of maintenance policies will be developed in the equipment that needs it. The objective pursued is to increase scheduled preventive maintenance shutdowns carried out by Electromedical Department and to reduce the corrective maintenance. This plan includes the creation of preventive maintenance datasheets in which the activities undertaken, the periodicity, the estimated time to do the activity, etc. are identified.

The data used in this research has been obtained from the Computerized Maintenance Management System (CMMS) owned by the healthcare organization. Different types of rankings have been made in the stocks to prioritize items by family of equipment and by average work orders (WOs) by equipment generated. According to this analysis, the maintenance tasks are optimized to preserve the satisfactory working conditions and the performance of equipment in the healthcare organization optimizing available resources. All of this is intended to anticipate the maintenance activity to breakdowns and to prevent the care quality from diminishing by increasing the patient waiting time by unavailability of medical equipment in the treatments and diagnostic tests.

The structure of this chapter is as follows. Next section draws a literature review where the concept of overall maintenance and maintenance of electromedical equipment in particular is detailed. Also, the ABC analysis is defined. Then, a general description of the healthcare center in which the study is carried out, an example of instruction datasheet and the analysis undertaken is done. The results obtained are shown below. Later, the conclusion of the research is presented. Finally, the references, additional readings and key terms used are shown.

BACKGROUND

For a long time, maintenance has been understood as part of the work that encompassed only the repairing breakdowns occurring in the machines and therefore, the employer included it as an economic burden to bear. However, this concept has progressively evolved over time until nowadays that is considered as a productive activity of the organization. Therefore, the role of maintenance has gained great interest and importance. Improving maintenance in a company is seen as an investment that will have a positive