RESEARCH ARTICLE

TRACEABILITY PROGRAM DIGITAL IN THE CENTRAL EQUIPMENT AND STERILIZATION, TO IMPROVE THE PRACTICES OF QUALITY IN A HOSPITAL OF THIRD LEVEL

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ARTICLE INFO

ABSTRACT

The following work generated a base of which is called "Digital traceability in CEyE", within the Access system in order to inventory the surgical instruments that counts the Hospital of third level in Mexico, to control the use and location of the surgical material to the different rooms and services of the hospital according to the use and each one of the instrument is scheduled preventive maintenance, as well as their average life. This system improved quality practices within the Central Equipment and sterilizations (CEyE) and allows that there is no loss of equipment since it is established that person and place where is located. The implementation of a pilot test showed that strength is the location, use and maintenance of equipment and the main weakness is the adaptation of the staff to the system, due to the change to the paradigm of the system.

INTRODUCTION

The Central Equipment and sterilization by definition is the service of the medical units whose function is to receive, prepare, sterilize, classify and distribute the material consumption, clothing surgical and medical instruments surgical care services, the objective of the CEyE is to ensure the appropriate distribution of equipment, materials and tools in a timely manner all this optimizing time and resources so that uninterrupted articles required by the medical-surgical services are provided for the fulfilment of its activities (USAID, 2008). The sterilization plant should be located in an area of easy communication with all clinical units mainly the surgery block since it is the main service that provides inputs and whose communication must be horizontally or vertically (INSALUD, 1997). To turn the Sterilization Plant and Equipment (CEyE) must be placed in a strategic manner to allow the access of personnel through a filter of isolation; communicates through a small window with the white corridor that connects to the operating room for the delivery of sterile material. Also, you must have at least with a window of communication to the movement black, for the delivery of sterile material to the other services and for the reception of material prewash (NOM 197, 2000).

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Within its physical structure the CEyE should be divided into three major areas, the first or the red area is where you performed the reception and washing of dirty material, the second, the blue area or clean where you performed the packaging and sterilization, finally a green area or sterile, where it is stored and distributes the sterile material, their space requirements are generally of a square meter for each bed of hospitalization (USAID, 2008). All of this in accordance with what is established in the Official Mexican Norm NOM-197-SSA1-2000, which sets the minimum requirements of infrastructure and equipment of hospitals and clinics of specialized medical care. There lies the importance of this service, since this is responsible for supplying the hospital services of material washed, sterilized and in proper functioning optimizing the resources of the hospital unit and in compliance with the quality controls established for the prevention of nosocomial infections. The traceability lies in Europe in the year 1996, due to the health crisis that occurred at that time and was able to determine the origin of the disease known as "mad cow disease", from this industrial markets started a movement systematized, which would enable them to ensure and protect the health of consumers as well as that of their products, from its origin to its end, and so that they may be marketed (Marvax, 2015). At present the so called systems RTLS (Real I Stole Location Systems), are acquiring increasingly relevancy in the hospitable sector, since they allow the identification, location and trazabilidad digitized of

the surgical material of continuous form, achieving this way better results and benefits towards the patients (Sánchez, 2016).

There are different definitions of traceability according to:

- Dictionary of the Spanish Royal Academy: is the possibility to identify the origin and the different stages of a process of production and distribution of consumer goods (Pérez, 2010).
- The International Organization for Standardization (ISO): Is the property of the result of a measure or the value of a standard where it can be related to references specified, usually national standards or international, through a continuous string of comparisons all with uncertainties specified (International Organization for Standardization, 2008).
- Secretary of Economy: A series of technical and administrative activities are systematized that allow you to follow the process of a product to the end consumer, identifying each stage to achieve traceability.

Types of traceability

- Traceability Ascending: (rearward) to know which products are received by the company and who are the suppliers of those products.
- Traceability Internal: gets the trace that is leaving the product within a company
- Traceability Descending: allows to know the products issued by the company.

Traceability in Health

- The need to reduce costs and operate more efficiently has become a major challenge for the health sector. However, improving the quality and reducing the cost requires efficiency in all processes focused on the treatment of the patients.
- But due to the large globalization of the organizations in the sector of health care, is the need for the use of international standards, through the use of bar code, the electronic exchange of documents among others based on standards adopted internationally.

Traceability in the Central Equipment and sterilization.

- The traceability in sterilisation seeks to reconstruct in reverse the history of an object from the moment in which it was used in a given patient until the time it was received dirty in the Central sterilization or other place.
- To achieve traceability must be carried out a monitoring documented manually or by computer throughout the circuit, from the reception of the material in the Central Sterilization or picked up at point of use, until its delivery at the service of origin or use of the product processed.
- To ensure the traceability is necessary for the identification of the sterile material used is registered in the clinical history of the patient.

The traceability system equipment consists of:

- Have an actual database of instrumental.

- Complete traceability, direct and inverse, with lots of reference and departure of the product.
- Have a security system, allowing assign separate profiles for each user.
- Learn about the history of each container, set or instrumental.
- Have a better control of the inputs and outputs of the computer or surgical material.
- Assess whether the process of sterilization was performed correctly or incorrectly.
- Check the evolution of the product.
- Remove selectively the instrumental with any incident.

METHODOLOGY

The type of study to be used in the project was qualitative together with an experimental design to be incorporation of a model thus within the nosocomios public in Mexico. Designated the system access by their kindness as software for the generation of different columns, filters, graphics, they chose the name "Traceability Digital in CEyE", as delimitation to the field of application of that database coupled with a restricted access window specifically to staff seconded to the service to which you are provided a user and password and within this are divided two windows, one of exclusive access to the generation of graphics, high and low of the staff as well as the instrumental, filters, etc.; in charge of the person responsible. As the last window is generated a paragraph of graphics so that both staff and the chief of the service to observe the productivity of surgical material and of seconded staff to the service without being able to manipulate it because the program throws the graphics in automatic to the torque of the recordings made.

RESULTS

The system has two profiles, the first gives nursing is account with eight windows which are responsible for each one of the processes and these are: general inventory, outputs, washing, sterilization of instrumental, warehouse, high, graphics; the second is exclusive of the engineer developer of the database, profile where you can discharge. The entry screen account with a photograph of the hospital (Figure 1) and three icons the user which is for the use of the nursing staff and the administrator, which is exclusive of the engineer developer and the output icon of the database. and low the instrumental as well as the registry to the base of the seconded staff to the service. The general inventory allows the staff to enter to the window to know the material surgical registered at hospital, its location within the area sterile or green, the status of the material (if is active, in vale of loss, in low for maintenance, etc), as well as comments extras in these records (Figure 2) (damage or loss of any clip inside the equipment or material). Paragraph of departures allows the staff to enter to the view window material records with their different observations such as: registry filters using a folio only in the form numerical ascending by record, date on which to perform the opening and closing of the record, the status of the delivery (open in case that even is not returned to the service or the delivery has not been complete, Closed in the event that the material has been returned in its entirety, canceled in the event that the material return without have been used to avoid charges not due to the patient, staff that gave him and that he received him (Figure 3).
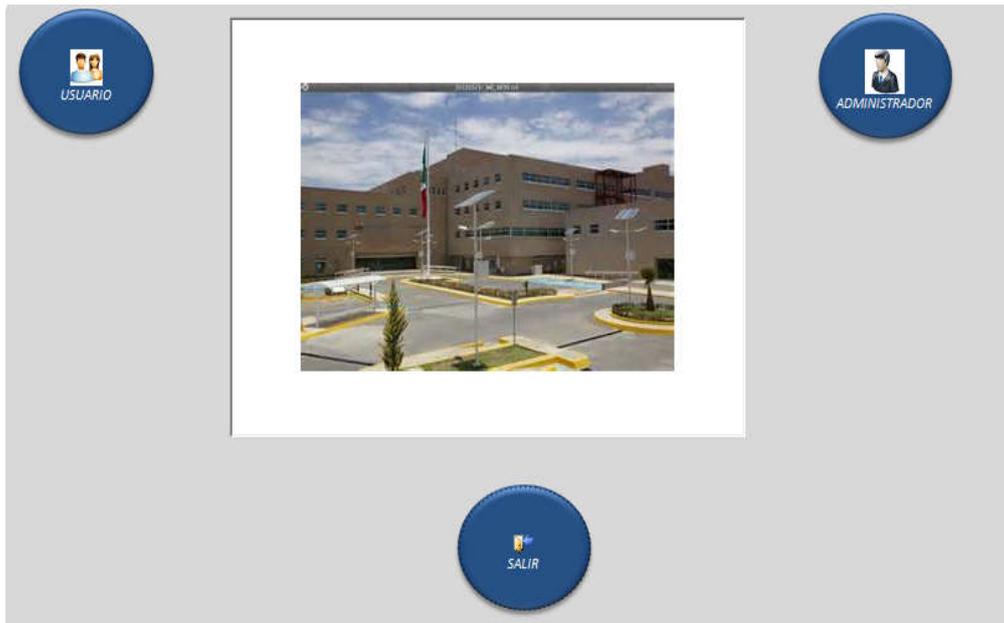
Figure1. Initial screen of the program traceability digital (own preparation, 2018)

Figure. 2 window of the general inventory of the database (elaboration of its own, 2018)

Figure 3. Window of outputs (elaboration of its own, 2018)

Figure 4. Window washing (elaboration of its own, 2018)

Figure 5. Window of sterilization of intrumental (elaboration of its own, 2018)
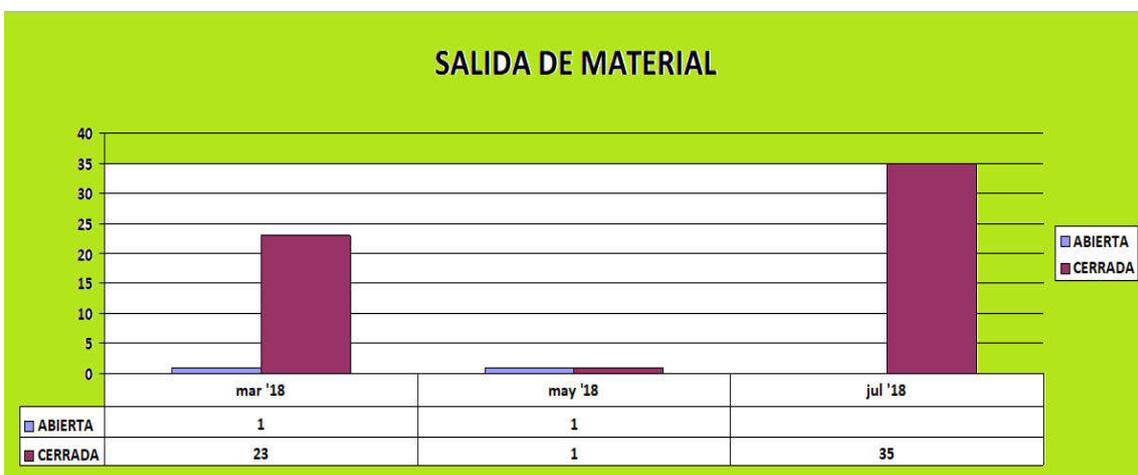
Figure 6. Window graphics (elaboration of its own, 2018)

Figure 7. Window Store (own preparation, 2018)

Figure 8. High window of computers (elaboration own 2018)

Paragraph of washing allows staff to check the records in the use of the different washing machines with which account the service (Figure 4), This in turn allows staff to a record in the event that the washing has been manual or on that program sometio washing of material, as well as the previous paragraph their records are made in ascending order with a folio unique. Paragraph of sterilization allows the staff to enter the records of material that he was subjected to a process of sterilization, if esterilizo adequately, staff who metio the process of

sterilization and who the withdrawal of the autoclave, all this with registry filters according to date and time and a folio unico of record (Figure 5). In paragraph graphics allows you to display the graphics required to facilitate the registration in the productivity of both staff and the Intrumental Figure 6. Paragraph of warehouse allows to visualize the location by shelves of material registered within the hospital (Figure 7). Paragraph of high allows you to view the amount of equipment or material with which it is counted within the service as well as the amount of instruments with which have each (Figure 8).

DISCUSSION

Although the database "traceability digital in CEyE" is inclusion new to the public health systems, the use of ICT's in the area of health supports the importance of its implementation every time that today is defendant of its use by the society who today has managed to facilitate their life more with the incursion of the technology to it and the area of health could not be the exception, By which seek hard to implement the use of technology in the nosocomios of different levels of care, all this facing certain problems with the constant changes in the society and the different care they require, even so the deploy a database in the central equipment and sterilizations although it seems somewhat irrelevant, Expensive and unnecessary this responds to problems that have all nosocomios as is the lost of instrumental and excessive spending on maintenance to material that does not require it.

As specified in the PAHO and WHO in the book "The establishment of information systems for health care services"; "The establishment of information systems for health care includes some tasks preparatory technical keys: the analysis of requirements; The determination of the technical specifications of the computer applications; the preparation of requests for proposals for systems, technology and information services; the evaluation and selection of suppliers and the contractual aspects of the acquisition of SyTI for health care" (OPS.WHO,1999). Which highlights the importance of this database to resolve an internal requirement of the different nosocomios of the country which is to decrease the lost of instrumental as well as economic waste to provide maintenance to instrumental that does not require it or not provide it to him that if required. In the book of the same way mentions "the heart of what each time is more commonly known as the "information society", the common people, politicians and health professionals expect that the information is readily available to improve services and therefore to improve the health and health care. However, the information and the Organization, the resources and the technology to make this possible are not cheap: are commodity products expensive that have quickly become obsolete. The information in itself is a resource perishable and potentially dangerous if it is misused. The collection of data and the generation, storage and retrieval of information costs money and time to collect and process it in a uniform manner. The information also is perishable and therefore must be maintained and regularly updated" (PAHO, WHO.1999). Where the database developed raises her hand to minimize these barriers, every time that this database fits only the instruments with which they count on the different nosocomios and seconded staff to the central equipment and sterilizations so that changes in this database are minimal and the information they have few times becomes obsolete due to which are minimal changes of surgeries to which they are subjected to the hospitals in Mexico. While the insertion of *TIC* in the health area is not something new or unknown; "In Brazil, some experiences with the development of electronic records of nursing can be highlighted, for example, the PROCEnf - USP (Electronic Documentation System of the Process of Nursing of the University of Sao Paulo - USP), That uses the NANDA International and the insertion of the Process of Nursing in Personal Digital Assistant (PDA), for the assistance of patients in the Intensive Care Unit in the Hospital of the Federal University of Santa Catarina, using the CIPE; and access, on a PDA as well" Within the Central Equipment and sterilizations in nosocomios if it is something new for the costs that this would entail but even so this is useful to include this system to that service could be to facilitate the distribution of instrumental to the hospital, this could accelerate attention to users and above all to ensure security in the sterility of the material with which it is given attention in addition to reduce expenses in hospitals.

REFERENCES

Albarracín, J. 2010. Trazabilidad en los procesos de esterilización de equipos médicos. Virtual Liaoning Center, JAM Sterilization. Citado el 10-Diciembre-2017. Consultado en https://issuu.com/juancholab/docs/jam_sterilization_trazabilidad.

Andrade, V. 2008. Manual de esterilización para centros de salud. Consultado en http://www1.paho.org/PAHO-USAID/dmdocuments/AMR-Manual_Esterilizacion_Centros_Salud_2008.pdf

De Aguiar, M. 2016. Partes del proyecto de investigación. Saber metodología de la investigación. https://sabermetodologia.wordpress.com/2016/03/06/partes-que-integran-un-proyecto-de-investigacion/

Distrauma Medical. Sofware Trazabilidad Instrumental. Citado 11-Diciembre-2017. Consultado en http://www.distraumamedical.com/software-trazabilidad-instrumental-p-44-6-es.html

Estéril control. Sistema de Trazabilidad Digital en el Material Quirúrgico. 2010. INDEX. Citado 11-Diciembre-2017. Consultado en http://www.esterilcontrol.com/index.php?option=com_content&view=article&id=137&Itemid=550.

Hernández, M. 2009. NORMA Oficial Mexicana NOM-045-SSA2-2005, Para la vigilancia epidemiológica, prevención y control de las infecciones nosocomiales. Consultado en http://www.ssm.gob.mx/portal/page/vig_epid/1/normas/NOM-045-SSA22005,%20Para%20la%20vigilancia%20epidemiologica,%20prevencion%20y%20control%20de%20las%20infecciones%20nosocomiales.pdf

MARVAX, 2015. Informática y Gestión de la esterilización, más allá de la trazabilidad. Citado 15-Diciembre-2017.

Pinzón, R. Trazabilidad. Recitel A. 2010. Citado 10-Diciembre-2017. Consultado en https://books.google.com.mx/books.

Sánchez, J. 2016. Sistemas de localización en tiempo real en el entorno hospitalario. A un clic de las tic. https://aunclicdelastic.blogthinkbig.com/sistemas-de-localizacion-en-tiempo-real-en-el-entorno-hospitalario/

Secretaria de Salud, 2001. NORMA Oficial Mexicana NOM-197-SSA1-2000, Que establece los requisitos mínimos de infraestructura y equipamiento de hospitales y consultorios de atención médica especializada. Consultado en http://www.salud.gob.mx/unidades/cdi/nom/197ssa10.html

Vásquez, I. 2005. Tipos de estudio, métodos de investigación. Universidad Federico Villarreal. Gestiopolis. https://www.gestiopolis.com/tipos-estudio-metodos-investigacion/

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