

Adverse Event Management Tool for Hospitals: A Game-Changer for Patient Safety

Reyna Valle, Gabriela Cribas,
Ana Laura Ramírez

^{1,2,3} Facultad de Ingeniería, Universidad Tecnológica Centroamericana. San Pedro Sula, Honduras

Background

Medical devices are essential for assisting people in preventing, diagnosing, treating, and rehabilitating diseases. As technology in medical devices has advanced, greater risks have emerged, affecting the health and lives of both users and patients. Statistics indicate that one out of ten individuals in developed countries experiences health deterioration during their stay in hospital facilities, with such damages possibly caused by adverse events, of which 43.5% are preventable. On the other hand, in developing countries, approximately 134 million adverse events occur annually due to the insecurity in care, resulting in 2.6 million deaths per year.

Effective implementation of technovigilance programs is crucial for ensuring safety and quality healthcare. Notification systems for adverse events management have been established to enhance patient safety by learning from identified system deficiencies. These systems ensure adverse event reporting without repercussions for users, guaranteeing anonymity and fostering confidence in reporting. They provide feedback post-analysis, enriching the reporting process and enabling procedural changes based on acquired knowledge. Based on these findings, a customized reporting tool was developed to streamline equipment failure and adverse event documentation within hospitals, aiming to facilitate timely reporting of critical events, especially those impacting patient safety.

Methods

The study encompasses a descriptive approach combined with an exploratory one. The descriptive aspect aims to specify and describe the processes used by selected hospitals when reporting severe equipment failures affecting users or patients, with the goal of devising a tool to facilitate report collection.

To gather information on medical equipment failures and adverse events, a bot was developed on the amoCRM platform operating through WhatsApp and the Google Forms software [Fig. 1]. Only the head nurses of each hospital ward, two nurses per ward, and the biomedical engineers within each healthcare institution were included. The study consisted of two stages: the first involved data collection to understand the characteristics and requirements of each hospital, and the second involved designing a prototype tool to meet the specific needs of each healthcare institution.

Results

The findings reveal that, despite 84% of surveyed nursing personnel indicating no experience with adverse events caused by medical equipment, factors such as inadequate preventive maintenance, lack of training, budget constraints, and staff shortages support the need for the development of patient safety support tools, as all the aforementioned factors increase the likelihood of unintentional errors during patient care. Based on these findings, a tailored reporting tool was developed to streamline the documentation of equipment failures and adverse events within hospitals. Designed based on identified needs and characteristics, this tool aims to facilitate timely notification of critical events, especially those with the potential to impact patient safety.

Conclusions

Although hospitals in San Pedro Sula lack established procedures for collecting reports on adverse events related to medical technology, they do have processes for disclosing faults in them. A WhatsApp bot with artificial intelligence was proposed to collect these reports. With enhancements such as more detailed questions and automatic scheduling of reports, the aim is to make the tool more efficient and secure for users and provide valuable information for biomedical staff and hospitals.

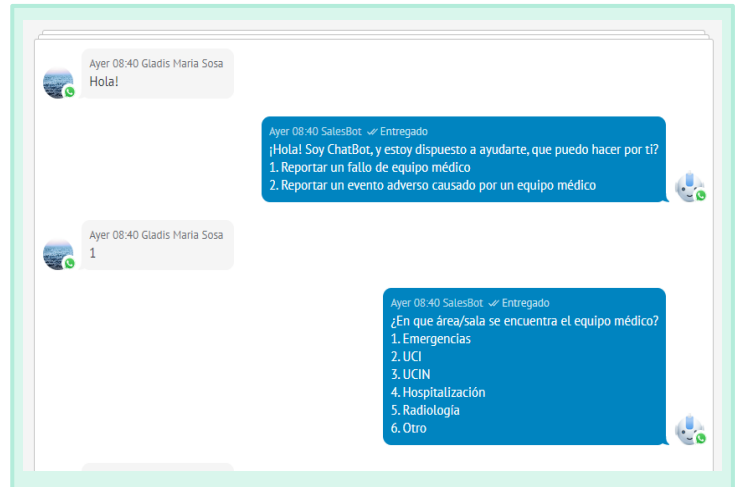


Fig. 1 Operation test from the biomedical engineer's perspective

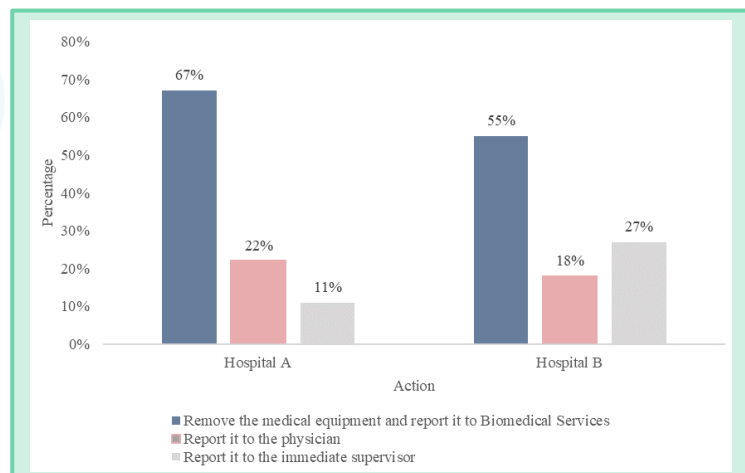


Fig. 2 Actions to be taken by nurses when an adverse event occurs.



Fig. 3 Graphical representation of proposed tool.

Contacto: elizabeth.valle@unitec.edu
Conflicto de interés: ninguno