

## **Impact of Automation in Managements of Crash Cart Medications**

*Majid Mohammed Jaweed, Samar Adil Al-Turkistani, Saeed Mohammed Jaweed, Khadija Sekhairi*

*Security Force Hospital – Makkah - Saudi arabia - Pharmaceutical Care Department*

**Background:** Crash cart medications are one of the main components in any hospital. Properly stocking, locating, managing, and tracking crash cart medications require a significant amount of time and paperwork from pharmacists or nurses. With no standardization or automation, managing it consumes time and effort that could be utilized to focus on patient care.

In 2015 at Security Forces Hospital Makkah, we created the crash cart software to minimize the time needed to manage the crash cart. Also, we made a standard and organized crash medication cart tray that is prepared by the pharmacy and ready for dispensing immediately. So, no matter what time of day or night a code is called, the pharmacy will have the medications replaced within minutes.

**Objectives:** To assess the use of a ready crash cart tray and a software database and their benefit on reducing the time needed to prepare, check, monitor and use the crash cart medications.

**Methodology:** We utilized the concept of change approved by institute of health improvement to eliminate waste by using automation and match inventory to predicted demand, design system to prevent error by using standardization (create a formal process), and better managing time by optimizing maintenance. 5S concept implemented in all the crash cart tray. And this project being part of hospital kaizen project that won second place in Hamad medical city.

After reviewing the steps and process of managing crash cart medications, we created standardized form for the medications and workflow. Also, we provided suitable trays that could fit in the crash cart drawer to be used for the medications along with plastic numbered seal. Also, for each tray we gave it a serial number and arranged the medication in a standard way. Then, we placed the tray in all crash carts around the hospital and in-house software database was developed by Microsoft Access for complete crash cart medications management. A survey question has been distributed after 2 years from using the trays to the nurses involved in the practice of old and modern design of crash cart.

**Results:** Thirty-one nurses from different departments in SFHM have been surveyed. The results show a reduction in the time needed to check the crash cart by 30-40 minutes compared to without the medication tray. The time required for replacement of medication with the tray has also been reduced to 1-5 Minuets (61.2%) as compared 10-30 Minutes (80.6%) without it. Around 97% of the nurses agreed that the use of trays helped to better identify the medication than before. Identification of near expiry medications and their quantity became easier and quicker after using the system and the tray.

**Conclusion:** Implementations of new workflow, using medication tray and creating an electronic database has improved the quality of work and reduced the consumed time to manage the crash cart medications for nurses and pharmacist.

Additionally it has significant impact on the reduction of expired medication and monthly replacements by monitoring and placing longer expiry date in each medications tray.