



Service Priorities and Programmes Electronic Presentations

Convention ID: 843

Submitting author: Dr Wai Man Kwan

Post title: Consultant, Tuen Mun Hospital, NTWC

Failure Modes and Effects Analysis (FMEA) for the Introduction of Smart Infusion Pumps in New Territories West Cluster (NTWC)

Dr. KWAN WM(1)(2), Dr Tang KS(1)(2), Queenie Leung(3), Derek Kwan(1), Chau LS(1), Lam MS(3), Rebecca Wong(1), Li MN(3)

(1)Quality and Safety Division, (2) Department of Anaesthesia and Intensive Care, (3) Nursing Services Division, NTWC

Keywords:

Smart infusion pumps

Failure Modes and Effects Analysis

FMEA

New Territories West Cluster

NTWC

Introduction

Smart infusion pump technology is a major advance in medication safety. It is equipped with the Dose Error Reduction Software (DERS), also known as the drug libraries that assist healthcare providers to programme the drug data precisely and to administer the intravenous medication safely. NTWC Smart Infusion Pump workgroup was established since June 2014 with an aim to oversee the implementation of this new technology in clinical areas. We adopted the Failure Modes and Effects Analysis (FMEA) to evaluate this process systematically and to ensure potential problems have been considered and addressed.

Objectives

(1)To identify the failure modes in operating the smart infusion pumps (2)To prioritize the failure modes according to the severity, occurrence, probability and detectability (3)To devise solutions to the prioritized failure modes (4)To propose training for error prevention

Methodology

The FMEA working group was conducted in December 2015. Representatives from various clinical departments were invited to attend. The critical steps of setting up the infusion using the smart infusion pump was defined. The process was then gone through systematically to identify the potential problems. Ideas and opinions were collected from the participants and a one-paged summary was constructed to summarize the discussion. The proposed solution was reported back to the NTWC Smart Infusion Pump workgroup which is under the Cluster Quality & Safety Committee.

Result

Results: Eight potential problems were identified when the smart infusion pump

was used to set up an intravenous infusion and subsequent remedial actions were devised. For example, the displayed unit was found to be inconsistent throughout the steps during the infusion rate setting. This product defect that may prone to patient harm was fed to the company for follow up. Both hardware and software need to be upgrade as a result. Conclusion: Smart infusion pump technology is an invaluable tool to improve the efficiency and quality of care while decreasing medication incidents. FMEA is essential to the success of its implementation by identifying potential failures and errors in the process of incorporating the smart infusion pumps into patient care.