Trial of an Electronic Asset Tracking System at Tallaght University Hospital

Tallaght University Hospital | Ospidéal Ollscoile Thamhlachta
An Academic Partner of Trinity College Dublin

Jason Connolly, Leighton Curry, Lukas Gokas, Shane Hudson

Introduction

- Medical Physics and Clinical Engineering (MPCE) manage over 8,000 assets of Medical Device Technology (MDT) at Tallaght University Hospital (TUH).
- MPCE are limited in their ability to accurately track all MDT as they are often small, light and mobile.
- Research into Radio Frequency Identification (RFID) technology showed that it can improve asset management in a healthcare setting.
- Uptake of this technology has been slow in healthcare due large capital costs, undesirable ROI, technical faults and staff training difficulties.

Can a simple, innovative and cost effective RFID system be designed to play a vital role in the management of MDT?

Aim & Objectives

Aim: Trial of an Electronic Asset Tracking System in a large acute Dublin Hospital.

Objectives:

1. Review, Explore and Select the appropriate technology by 31st October 2019 for implementation by 30th November 2019.
2. Acquire a system for the department and pilot test by 6th December 2019. Approximately three hundred devices will be tagged. A trial period of six months to show improvements in MDT management.
3. Review effect of system and assess for improvements in areas such as:

- *Capture undocumented loans and increase accuracy of database.*
- *Reduce time searching for equipment and minimise potentially dangerous, unsuitable or unmaintained equipment.*
- *Streamline loaning process and work towards a paperless system.*
- *Increase availability by improving overall governance.*

Change Process

The HSE Change Model 2018: *People's Needs Defining Change* was used to make this change.

Figure 1: HSE Change Model 2018 (1)

Define:

- The Hospital's Medical Equipment Library (MEL) provides loans of key MDT to all clinical areas. 24/7 service delivered by MPCE, Porters and Security.
- MEL loan records database found to be only 52% accurate due to uncontrolled and undocumented steps in loaning processes.
- A need was identified for improved accuracy and overall governance within the service.

Design:

- A simple, scalable, cost effective system as a proof of concept.
- The system consisted of a laptop, 4G smartphone, handheld scanner, tags, RFID printer and a cloud based software application.
- Design and manufacture of new asset tags in-house(Fig 3) .
- Over 300 MEL devices tagged with passive RFID to try and track all MEL loans.

Deliver:

- The system cost €3500 and went live on 22th January 2020. All device information uploaded on a cloud server and all clinic areas mapped.
- Daily audits performed by MEL staff which tracks the movement of equipment to all clinical areas.

Figure 3: RFID Tags (3)

Figure 2: Scanner & Smartphone (2)

Evaluation of Results

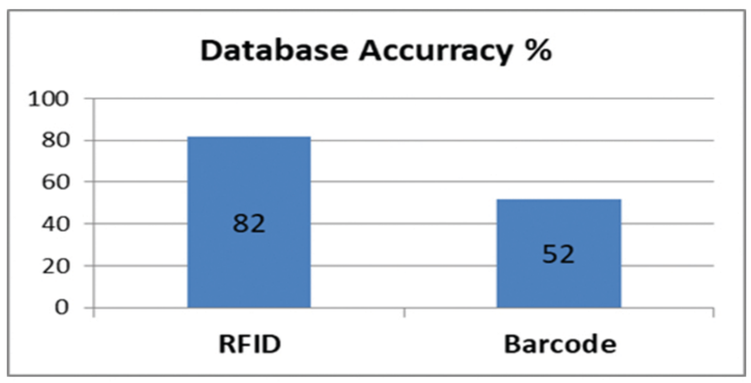

Figure 4: Database Accuracy comparison (4)

Results:

I. Fast auditing to capture all loans with improved database accuracy from 52% to 82%.

II. Introduced notification function to quickly identify and remove potentially dangerous, unsuitable or unmaintained equipment.

III. A reduced infection control risk for patients & staff by minimizing the level of contact required to perform tasks.

IV. Digital, automated and streamlined processes reduce manual input and reliance on paper.

V. Cloud based server allows for mobile access to latest MEL availability & device locations.

Discussion

- RFID can provide cost effective ways to improve MDT management in a healthcare environment.
- Clear objectives, Incremental steps and strategic investment can deliver many service improvements for both staff and patients.
- A combination of mobile and fixed readers could automate manual processes and further improve system efficiency.
- This project has created opportunity for future investment and expansion with confidence.

References

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