

Project Title

Creation of Inventory Management System using Excel Macros

Project Lead and Members

Project lead: Tan Jin Yang

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Organisation(s) Involved

National University Polyclinics

Healthcare Family Group(s) Involved in this Project

Allied Health, Nursing

Applicable Specialty or Discipline

General Medicine, Wound Care Medicine

Project Period

Start date: 1st Jun 2022

Completed date: 31st Dec 2023

Aims

The team aims to create an Excel file that adds critical features such as the automatic calculation of stock movement, record keeping, and tracking of users making the entries. By utilising the records kept, the file will be able to provide data-driven suggestions for staff to refer to when ordering stocks. This feature would reduce wastage from over-ordering or lack of supply due to under-ordering.

Background

There is a nursing consumable store located in every polyclinic under National University Polyclinics (NUP). The purpose of the consumable store is to allow each clinic to have a ready supply of stock to fulfil day-to-day tasks such as wound management, treatment, and dressing.

An Inventory Management System is key to ensuring that stock levels are healthy and accurate, and items in the store are not expired. Previously, Excel is used to track current stock levels in the consumable store. Staff would override the entries on each update, which loses the previous records. The lack of records prevents investigation from being carried out in the event of stock discrepancies. Additionally, it is impossible to tally the entries against hardcopy records to check if staff has received and distributed stocks accurately.

Methods

See poster appended/below

Results

Half yearly internal inventory audit was conducted starting from 1st Jan 2021 for the seven clinics at the before the rolling out of the file. Random sampling check of 5 items was conducted for the clinics. Average discrepancies were recorded at 3.2 out of 5 items.

The file was rolled out to all clinics on 1st Jun 2022. From 1st Jun 2022 to 31st Dec 2023, the average discrepancies dropped from 3.2 to 0.6. This indicates that the file was able to reduce the discrepancies of stock by 81%.

The features implemented has been well received by the clinics inventory team members. The management team in each clinic has feedback that the file is helpful in their investigation efforts and has strengthen up the inventory management in their clinic. The protection of key items in the file has met the objective of being tamper-proof. Records keeping has allow clinic to monitor their stock consumption and make better decision on the ordering of stocks.

Conclusion

- The team feels that Macro file should be tested more rigorously in different environment to source out bugs.
- Features should be mapped out better to create a more cohesive file instead of features being added in later.
- Alternatives to complicated codes should be explored first before implementation as replacement of codes might cause new bugs to surface.
- The team will be further exploring what is possible with Excel macros and will be looking into creating enhancements to improve the quality of life for the users.

Project Category

Technology

Digital Health, Data Management, Data Platform, Digitalisation, Automation,
Autonomous System

Care & Process Redesign

Operational Management, Inventory Management

Keywords

Nursing Consumable Store, Polyclinic, Supply of Stock, Wound Dressing, Tamper Proof,
Excel Macro

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Implementation of SmartPeep Falls prevention system in Parkway East Hospital



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Team Members:
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1. PROBLEM Statement

The hospital has experienced a significant increase in the number of falls since January 2022, raising concerns about patient safety, quality of care, and the overall well-being of our patients.

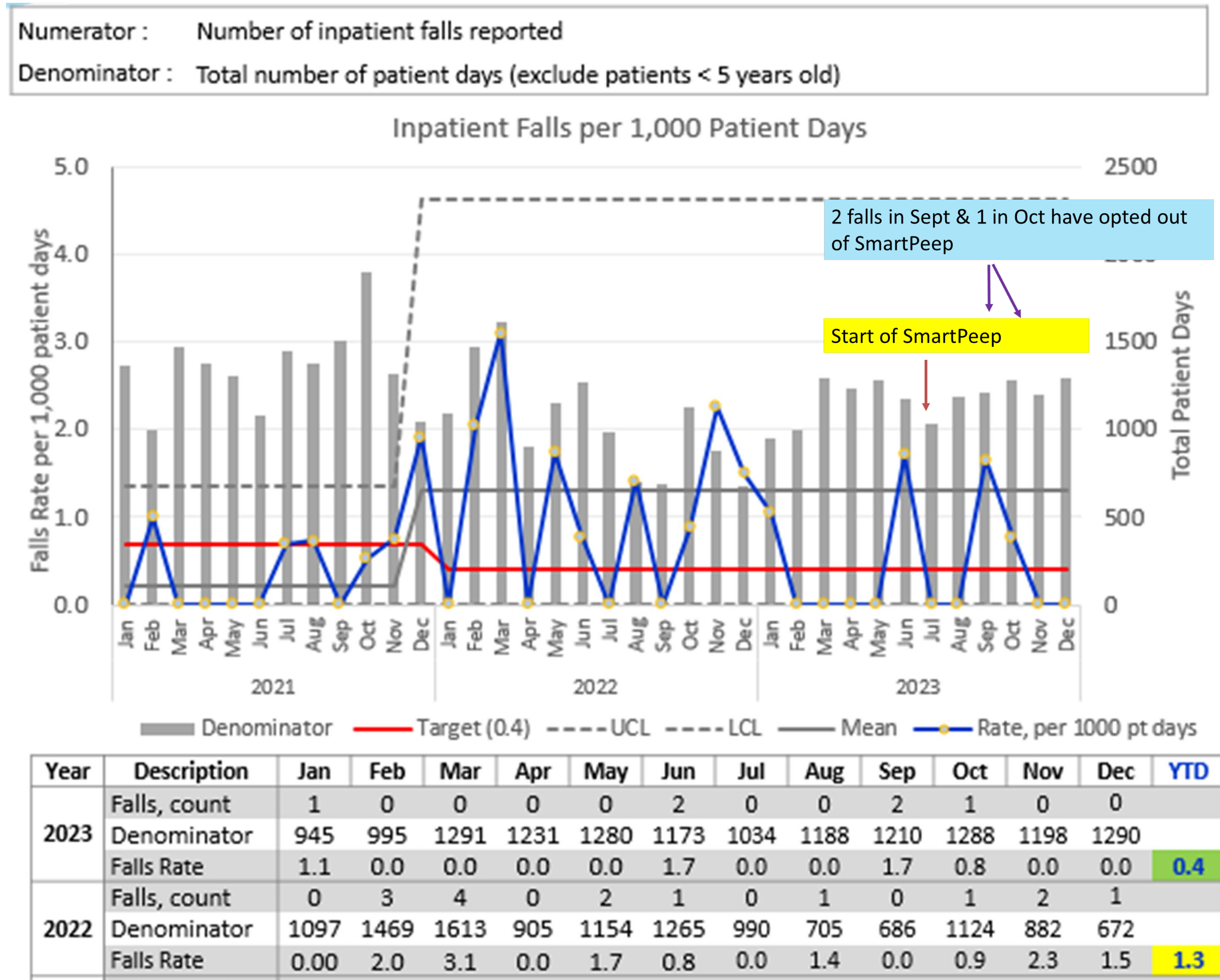
2. BACKGROUND Information

Singapore is grappling with an aging population, this plays out in our acute hospitals, where we see an increasing number of older patients. In Parkway East Hospital (PEH), we noticed an increase in the number of falls in 2022, mostly among the elderly, rising from 0.4 to 1.3 falls per 1000 patient days. Approximately 87% of the falls in 2022 were above 60 years old. Of these falls, we had 3 cases that resulted in significant harm to the patient, which resulted in additional length of stay and financial stress to the patient and family.

5. CHANGE STRATEGY

The falls prevention task force amalgamated multiple teams including nursing, operations, innovation teams that helped to explore solutions. This multidisciplinary combined the ground experience of nursing, the administrative experience of operations, as well as the industry knowledge from innovation team to help come up with the best solution for the problem. The consensus among the team was that the system that is to be developed would be able to provide advanced warning to the nursing staff, rather than alerting them only when a fall has occurred. Eventually, the organisation settled upon the innovative use of Artificial Intelligence (AI) analysing optical images captured by optical sensors placed inside the patients’ rooms. The current new falls prevention system, SmartPeep, uses optical sensors and AI technology to predict a patient’s intention to transit from bed. The system requires the nurses to register the patient in the system before utilisation. Staff is required to indicate the patient’s falls risk category into the system. The system monitors in accordance to the falls risk category of the patient. This system is designed and implemented solely as an additional safeguard for patients and to enable the nursing team to provide timely assistance to prevent falls incidences. The system will alarm whenever a patient tries to get out of bed, chair or even missing from the bed during the silent hours. When it alarms, it will show an imagery of the patient’s movements. The nurse has to acknowledge the alarm in the central monitoring system and at the same time attend to the alarm as shown on the screen. SmartPeep has significantly helped nurses to attend to patients in a timely manner when they attempt to get out of bed or mobilise on their own. The system also captures and prevents near-miss falls incidences.

6. RESULTS



7. LESSONS LEARNT

From January 2022 to June 2023, there were 18 falls. Since the start of SmartPeep in July 2023, it has dropped significantly. 2 counts of the falls in September 2023 and the 1 count of fall in October 2023, were excluded as they were not within the monitoring of the SmartPeep system.

Under the SmartPeep system monitoring, there were 0 falls in Jul to Dec 2023 period.

The impact of the new implementation is the drop in the number of actual falls, which has improved staff morale and patient outcomes. Staff are able to attend to patients’ attempt to get out of bed in a more predictable manner.

The lessons learnt from this project is the importance in providing proper communications to patients before getting their consent in using the SmartPeep system. For patients who refuse the use of SmartPeep but are of high falls risk, re-counselling will be done at ward level to get their consent to use the SmartPeep system.

