Project Title

Innovating Outpatient Pharmacy Automation System (OPAS) to suit the dynamic and unique needs of an Oncology Pharmacy

Project Lead and Members

Project lead:

Project members: CHIUM Feng Yong, Miko THUM, CHEW Zhi Sheng

Organisation(s) Involved

National Cancer Centre Singapore

Healthcare Family Group(s) Involved in this Project

Healthcare Administration, Pharmacy

Applicable Specialor Discipline

Healthcare Administrator, Pharmacology

Project Period

Start date: Not Indicated

Completed date: Not Indicated

Aims

Our project aims to transform OPAS into a system that can better cater to the unique needs of an Outpatient Oncology Pharmacy without incurring costly enhancements by refining and re-purposing the fields and functions of OPAS.

Background

Outpatient Pharmacy Automation System (OPAS) is a software system that orchestrates the entire prescription filling process in the pharmacy. It was first

introduced in 2004 and since then, numerous enhancements have been made to the system to cater to the constant changing needs of pharmacy.

Methods

See poster appended/below

Results

- 50% time saving on packing of loose tablets = faster packing time
- Number of near misses documented increased from average of 20 to 82 per month
- 50% time saved on collating, amending and processing delivery orders.
- Eliminated need to transcribe delivery addresses on excel cost savings at least $8000 per month (manpower avoidance)
- Cost savings of $1170 per month from relabeling as ROWA can now read the manufacturer's GS-1 barcodes
- Percent of patients with long script who waited >30mins decreased from 45% to 28% (Apr 23 to feb 24)

Conclusion

See poster appended/below

Project Category

Care & Process Redesign

Productivity, Cost Saving, Time Saving

Keywords

Outpatient Pharmacy Automation System, OPAS, Software System, Prescription Filling process, Reusable Tote, Medication Delivery, E-documentation

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Innovating Outpatient Pharmacy Automation System (OPAS) to suit the dynamic and unique needs of an Oncology Pharmacy

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Background

Outpatient Pharmacy Automation System (OPAS) is a software system that orchestrates the entire prescription filling process in the pharmacy. It was first introduced in 2004 and since then, numerous enhancements have been made to the system to cater to the constant changing needs of pharmacy. Our project aims to transform OPAS into a system that can better cater to the unique needs of an Outpatient Oncology Pharmacy without incurring costly enhancements by refining and re-purposing the fields and functions of OPAS.

Problem Statement

OPAS was not able to handle at least 20% of NCCS's pharmacy use-cases and work processes due to infrastructure set up and variables that are unique to the oncology practice setting.

Problem	Cause
OPAS is a box picking machine	NCCS is unable to round up and pre-pack all drugs into smaller boxes due to consumption patterns
Lack of a fixed barcode for most drug boxes that OPAS can recognise	No standardisation for barcoding among pharmaceutical companies
Inefficiency in maintaining paper records for medication delivery and pick-up	Both Pharmacy system and OPAS were designed to process prescriptions for onsite collection and not for medication delivery and pick-up processes
No prioritisation of prescriptions based on both length of prescription and patient's waiting time. Patients with longer prescriptions may wait unnecessarily long	Prioritisation of prescription processing was only based on the threshold set for length of prescription
Poor documentation of medication near misses as it is impractical for staff to document near misses in detail by writing on paper in a hectic pharmacy	Fields in systems were not intended to document medication near misses on a prescription level

Solutions

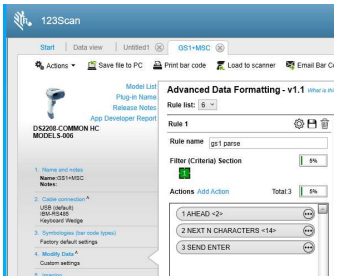
ESL & Reusable-Tote

Live-sync barcode (ESL tag)

Loose tablets and blister strips can be stored in reusable totes

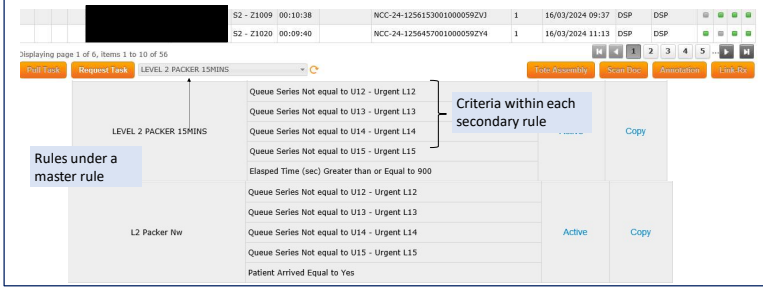
Magnets within covers to secure medications in box

Data-Parsing Software installed on barcode scanners



Rule to:
1. Skip first 2 characters on barcodes
2. Reads the next 14 characters and sends data to OPAS machine upon scanning

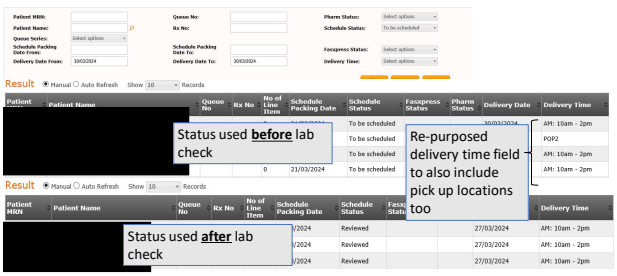
Enhanced prescription prioritization logic



Criteria within each secondary rule

Rules under a master rule

E-scheduler for medication delivery and pick-up orders

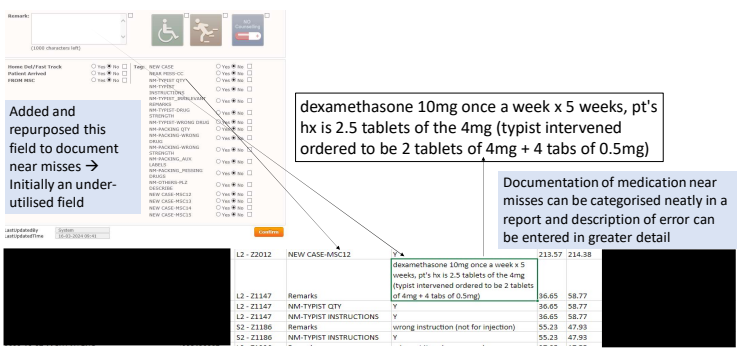


Status used **before** lab check

Re-purposed delivery time field to also include pick up locations too

Status used **after** lab check

E-documentation of medication near misses

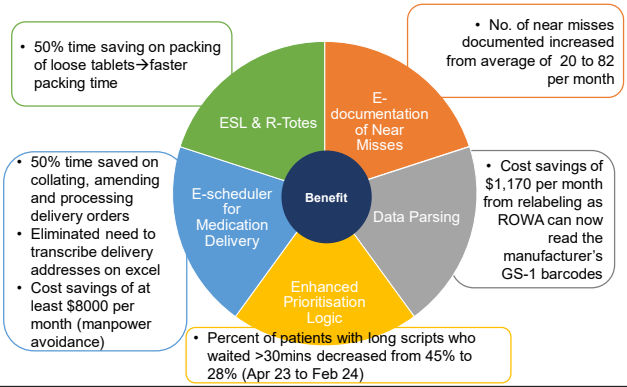


Added and repurposed this field to document near misses → Initially an under-utilised field

dexamethasone 10mg once a week x 5 weeks, pt's hx is 2.5 tablets of the 4mg (typist intervened ordered to be 2 tablets of 4mg + 4 tabs of 0.5mg)

Documentation of medication near misses can be categorised neatly in a report and description of error can be entered in greater detail

What We Achieved



- 50% time saving on packing of loose tablets→faster packing time
- No. of near misses documented increased from average of 20 to 82 per month
- 50% time saved on collating, amending and processing delivery orders
- Eliminated need to transcribe delivery addresses on excel
- Cost savings of at least $8000 per month (manpower avoidance)
- Cost savings of $1,170 per month from relabeling as ROWA can now read the manufacturer's GS-1 barcodes
- Percent of patients with long scripts who waited >30mins decreased from 45% to 28% (Apr 23 to Feb 24)

Lessons Learnt

1. The success or failure of a new system/product is highly dependent on how well ground staff adapt to new systems and workflows.
2. Important to create an environment where staff are open and enthusiastic towards innovation efforts through effective training, leadership support and collaboration.
3. Having and embracing a resilient mindset to continuously improve can help staff adapt to ever-changing scenarios. One should not be limited by the functions of old systems.