BD Pyxis™: How Bolton NHS Foundation Trust utilised automation to transform their medication management process

Background

Bolton NHS Foundation Trust have ambitions to improve their medication management whilst increasing patient safety. BD's Connected Medication Management vision resonated with the Trust, where automation is utilised to increase productivity, improve traceability and reduce medication errors.

As the trust had already installed BD Rowa™ (Automated Dispensing Robot), the pharmacy team looked to continue their automation journey into Controlled Drugs management with BD Pyxis™ CII Safe and ward-based Automated Dispensing Cabinets (ADCs) BD Pyxis™ Medstation System. **The aim of the case study was to demonstrate the improvements that could be gained with BD Pyxis™ in the Acute Medical Unit (AMU).** The proof-of-concept ran for 12 months with both the data and feedback collected being fundamental in demonstrating the value of ward based automation, in AMU and beyond.

"In response to the growing demands for efficient medication management and improved patient safety, at Bolton Hospital NHS Foundation Trust we embarked on a transformative journey by implementing Automated Dispensing Cabinets. This case study sheds light on the successful trial conducted within our Medicines Admission Unit, highlighting significant advancements in time efficiency, staff capacity, safety enhancements, stock management, audit trail accuracy, and controlled drug management."

– Ana Freitas, Chief Pharmacist

Proof of concept study

The study was conducted independently by the hospital and several factors were assessed to determine the benefits of the BD Pyxis™ holistically, from **staff satisfaction, to patient safety and financial savings.** Each measurement was collected prior to the introduction of Pyxis and repeated 3 months after the installation of the devices [see Table 1].

Table 1: Benefit analysis of the BD Pyxis™ system

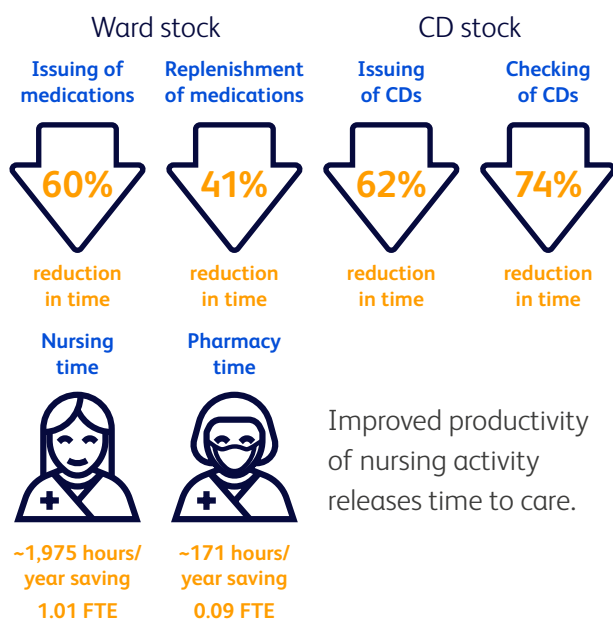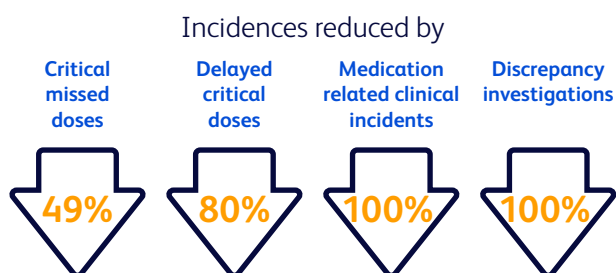| Benefit analysis measure	Measurement
Productivity improvements	The times for pharmacy and nursing workflows were recorded, per activity such as the time taken for issuing medication and replenishment.
Patient safety	Reports from the ePrescribing and the incident reporting system were collected over a 4-12 week period (these included missed doses, clinical incidences and CD errors).
Financial savings	Reports generated from the pharmacy system over a 3-12 month period to demonstrate the cost of expired stock and the value of consumption saving etc.

Before

After

Results

There were considerable improvements across the board, each supporting the value of automation within wards.

Productivity improvements

Ward stock

Issuing of medications	Replenishment of medications
60%	**41%**
reduction in time	reduction in time

CD stock

Issuing of CDs	Checking of CDs
62%	**74%**
reduction in time	reduction in time

Nursing time	Pharmacy time
~1,975 hours/ year saving	~171 hours/ year saving
1.01 FTE	0.09 FTE

Improved productivity of nursing activity releases time to care.

Patient safety

Incidences reduced by

Critical missed doses	Delayed critical doses	Medication related clinical incidents	Discrepancy investigations
49%	**80%**	**100%**	**100%**

Financial savings

Medication consumption

~£16,662/year saving opportunity
(measured Oct-Dec 2022 to Oct-Dec 2023)

A survey of staff showed that **100% of pharmacy staff and 85% of nursing staff questioned felt that the BD Pyxis™ system improved patient safety, and was felt to be the safest and preferred way to issue and store medicines.**

"In order to optimise the efficiency of medication management, the trust opted on implementation of automated dispensing cabinets. One key advantage to this which has been noted from a ward level perspective is that it reduces medication dispensing times and frees up staff to complete other tasks. With the automated drug cupboards, the process of locating and dispensing medications become faster and more efficient. This allows staff members to spend less time searching for medications and more time focusing on patient care. We have also seen a reduction on administration errors as part of the process. With the burden of manual medication management lifted, register staff can redirect their efforts towards other crucial responsibilities, ultimately enhancing the quality of our patients' care"

– **David Fletcher**,
Assistant Divisional Nurse Director

Summary

Bolton NHS Foundation Trust observed measurable improvements in workflow efficiency, patient safety and financial savings from the introduction of the BD Pyxis™ system in the Acute Medical Unit across four areas:

1. Staff satisfaction
2. Patient Safety
3. Workflow efficiencies
4. Financial savings

Abbreviations
AMU   Acute Medical Unit
CD   Controlled drugs
FTE   Full time equivalent

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