

# Maximising space at Milton Keynes University Hospital with automated dispensing

## Case study

### Background

Milton Keynes University Hospital NHS Foundation Trust (MKUH) is a university teaching hospital. Opening in 1984 and later becoming a foundation trust in 2007, the trust operates out of one main base and a newly opened specialist cancer care centre.

Providing services to more than 400,000 patients a year, its pharmacy department is split into three areas: the main pharmacy, outpatient pharmacy and a cancer centre pharmacy.

MKUH had been using an automated dispensing robot from BD for over 12 years. It is from here that the main pharmacy dispenses medications to all wards and departments. Processing between 5,000 and 6,000 items every week; the vast majority of these being issued by the robot.

### The Challenge

MKUH needed to upgrade its existing robot, and approached BD as it was familiar with, and liked using, our robotic technologies. BD has supported the pharmacy department over the last 12 years.

Over time the needs of the Trust had surpassed the capacity of the pharmacy, which was simply too small. These were the main drivers for the project which would also deliver efficiencies and a review of internal processes.

#### Key focus point for improvement:

- Implementing the latest BD Rowa™ technologies to replace older equipment
- Delivery of a solution to meet the current and future needs of the Trust
- Outgrown pharmacy area
- Opportunity to review workflow processes
- A need to improve the working environment for pharmacy staff
- Enhanced stock management
- Diversion issues

Due to the age of the equipment, some parts of the robot were obsolete and the requirements to effectively operate a busy pharmacy had outgrown the robot's capabilities. It was also now too small and couldn't hold enough medications for the size of the trust. This led to some medications being moved to non-automated storage areas.

The other challenge was space. The room where MKUH housed the old robot was small and didn't provide any opportunity of improving workflows or expansion; some tasks were unnecessarily split between two rooms that were 20 metres apart which added additional pressures to the team.

Only having four dedicated conveyor outputs for dispensing, also caused a backlog with staff waiting to use a dispensing computer.

*"Our maintenance requirements had grown. While the service from BD was exceptional, the downtime led to our staff having less confidence in the machine. It also resulted in incorrect stock levels as manually removed items were not always correctly recorded during these periods,"* remarked, Alan Dutta-Plummer, Pharmacy Business Manager.

## Solution

As the cancer services team had moved to a newly built centre, it opened up more opportunities for the central pharmacy to expand and further improve on its operational workflows. The new BD Rowa™ Vmax solution was purchased as part of a major refurbishment of the pharmacy department funded by NHS Improvement.

As part of BD's specialised solutions team, the company invests in pharmacy professionals to better support its customers. Providing greater understanding and insight of pharmacy workflows and requirements. This ensures that solutions are fit for purpose and designed specifically to the exacting requirements to each pharmacy.

It was this detailed approach that found the trust looking at the project collectively, rather than space and machine as two separate issues. *“Working with BD we were able to combine both the new BD Rowa™ Vmax and a refurbishment of the pharmacy simultaneously. That meant we could fully understand the ideal workflows around our automation and what would work best for us, such as having additional dispensing terminals for busy periods,”* remarked Neil Trew-Smith, Dispensary Manager at MKUH.

*“The main issue we had after the funding had been secured was to identify where the robot would be positioned. We had a very large room that had been determined as the prime location for the robot, as it was central to the department, but it was quickly identified that the floor might not support the increased weight,”* explained Dutta-Plummer. *“We had an excellent team of builders, who supported us throughout the refurbishment, and were able to work closely with BD to work out how to strengthen the floor to fully support the laden robot weight. The team at BD was very helpful, even before the project began, in being able to supply us with suggested designs and workflows for our new robot and dispensing area.”*

BD fitted a 10-meter-long robot in the new dispensing area and added a speedy BD Rowa™ ProLog conveyor to cut time loading items each day. As part of the new layout, six dispensing terminals were added to support capacity today and in the future as well as three ward box outputs, with the room to expand if needed.

BD provided full training and support, enabling staff to trouble-shoot a lot more quickly and making them more efficient.



## Results

- 240sqft space saving
- 37% reduction on discharge prescription time
- Non-robot storage space reduced
- >Tripled robot capacity
- Increase medication accuracy – capacity of solution enables single method of storage
- Better stock control – part packs

*“The new robot has brought us the space to store most of our drugs, meaning that we have been able to reduce our storage for non-robot items, said Trew-Smith. “In the future we will be storing part boxes of drugs in the robot and this will encourage our staff to use up split packs, rather than those packs remaining unused on a shelf. Our new robot still has plenty of space available, giving us peace of mind to expand our services in the future.”*

- Increased pick speed (saving 75-83% on each ward box fill)
- Quicker load times

*Another major benefit is the speed of the BD Rowa™ Vmax system. It can deliver multiple packs at the same time. “We find that our ward top-up boxes are fully completed in less than five minutes compared with the 20 to 30 minutes it took before. Loading the new robot is also faster whether this is via the BD Rowa™ ProLog™ automatic loader or feeding items manually from the front,” Trew-Smith explained.*

- Fewer receipts required for medications owing
- Improved patient safety – Increased dispensing accuracy rates –
- Improved communication – Audio – system noise

The increased capacity and loading speed of the robot has enabled MKUH to expand its stockholding and par-levels. Leading to fewer medications being owed to patients, and there are fewer occasions where staff need to search for recently delivered drugs. *“The increased speed and extra time afforded by the robot, gives our staff more time to make the necessary checks needed before passing the prescriptions on for final checking, which has helped further to increase our accuracy rates,”* remarked Trew-Smith.

- Pharmacy time released for more value-added services
- Improved pharmacy reputation
- Increased staff satisfaction

Improved workflows and efficiency gains has also freed up resource at MKUH. Resulting in the pharmacy being able to provide more value-added tasks and consultancy at the ward level; giving the pharmacy team a better reputation with the rest of the Trust and resulting in better job satisfaction for staff. *“Our employee satisfaction has been positively impacted by the changes and they are looking forward to the upskilling projects we have planned,”* mentioned Dutta-Plummer.

- Less wastage on out-of-date medicines
- 37% reduction on discharge prescription time

In the past few months, we have seen a reduction in turnaround time for our discharge prescriptions from 70 minutes down to 44 minutes even though our workload has increased slightly, Trew-Smith said. *“We can directly attribute this to a combination of the refurbishments works within pharmacy and our new BD robot.”*

*“The overall benefits are fantastic, from the improved use of space and an automated machine which expertly suits our needs. Wards receive their stock items and discharge prescriptions a lot more quickly. Patients are more likely to receive their complete prescription on the first visit rather than having to return for something we owe them.*

*In addition, the new robot allows us to read the data Matrix (2D) barcodes that are present on almost all drugs, which allows the robot to know the exact expiry of the medication. “This allows us to do a regular expiry date check on the items in the robot, meaning that we limit the risk of an expired medicine being dispensed in error; further aiding our ongoing commitment to patient safety. We are looking forward to the future, and being able to expand what we do,”* concluded Dutta-Plummer.

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