



Healthcare  
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# Optimising medicines management with unit dose dispensing



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# Optimising Medicine Management with Unit dose dispensing

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# A state-of-the-art digitalised Unit Dose Closed Loop Medicines Management system: A NEW WORKFLOW MODEL FOR INPATIENT MEDICINES



## OFF-SITE PACK-SPLITTING & UD OVER-PACKING ACTIVITY

**All-in-1 Repackaging robots** in Deenova's Plant, automatically create unit doses retaining primary packaging, **over-pack and label all pharmaceutical forms** (oral solid, liquid, patches and suppositories)

Unit doses are then delivered to UHL.



## ON-SITE, LOCAL AUTOMATED STORAGE AND DISPENSING

Unit doses are loaded in **All-in-1 Stations at ward level**, which **automatically prepare and dispense Personalised medicines according to prescription requirements**



## WARD BSV & ADMINISTRATION ACTIVITY

The administration of all medication forms is supported by **All-in-1 Trolley** that guarantees the last step of the **closed loop medication management**: with the **bed side verification**, by scanning of patients' identification tag, **Nervecentre e-prescribing** assures a further check on changes or corrections of the prescription.

# What makes Unit dose unique

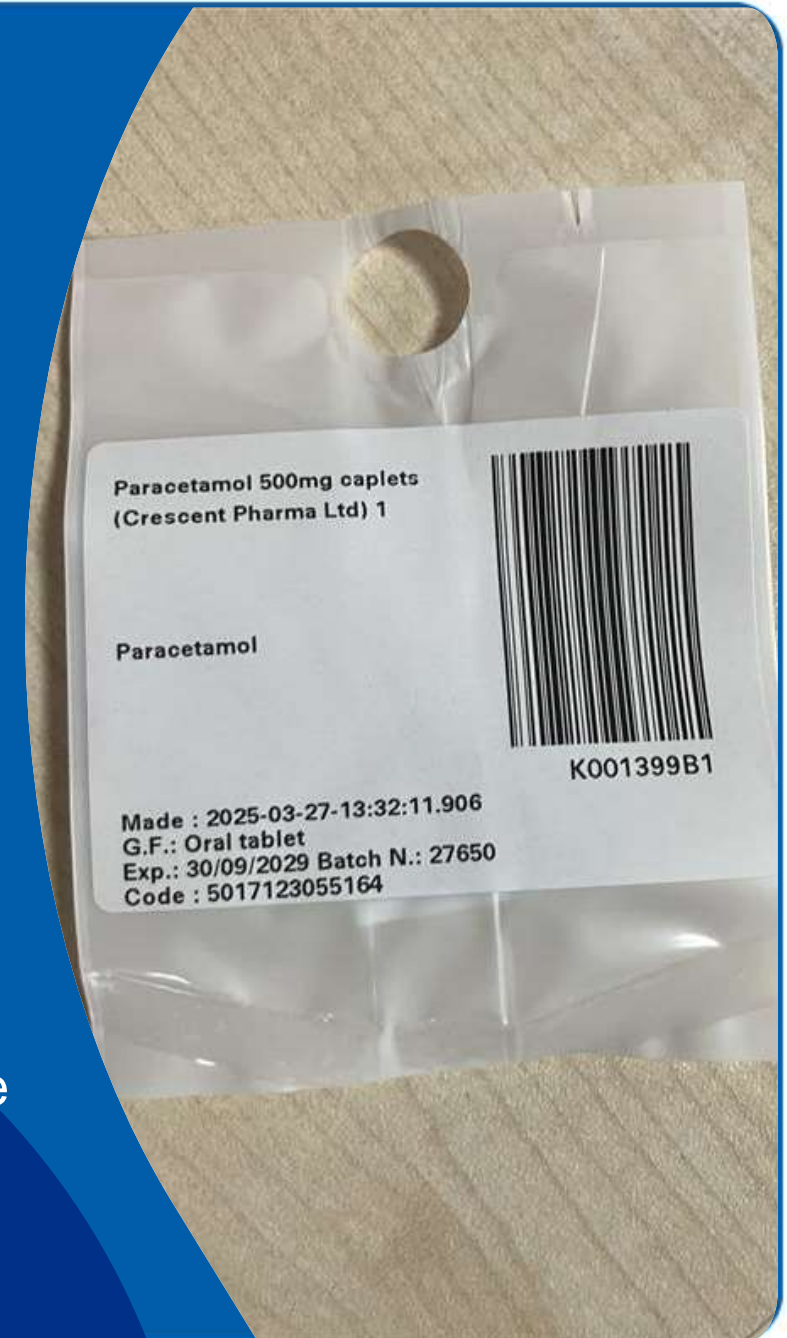
Unit doses are prepared from original packs, maintaining the integrity of the primary packaging, using automation and barcode technology throughout the process.

A Unit Dose dispensing system is an essential element of the closed loop medication management system. Each unit dose has a unique barcode allocated at the point of preparation. This barcode is allocated to the patient at the point of dispensation from the automated cabinet.

The eMeds system knows how many unit doses have been allocated for each dose and what barcodes to expect .

When the unique barcode is scanned it verifies the medication details. If more than one unit is expected the system will alert the user.

The same barcode cannot be scanned again. The quantity will be confirmed by scanning the correct amount of unit doses. Therefore, confirming the right dose without manual input.



# Ward implementation & Unit dose laboratory activity

- 8 - Optimed wards
- 3 Surgical wards & 5 Medical wards
- 202 beds-745 patients (Feb 2025)

Scanning of medications and patients' wristbands was implemented at the same time as the unit dose system.

Currently the only wards scanning medications on drug rounds are the Optimed wards

The project team works in collaboration with Deenova to support the implementation and staff training

**February 2025**

48,676 unit doses packed



43,688 administration events across 8 wards



41,237 prescriptions sent through the interface



72% of these prescriptions were available as UD

# Leicester's CLOUD project

Closed Loop Optimized Unit Dose project, Leicester, UK.

- Funded research project:
  - Innovate UK & Deenova UK Ltd
- Research led by Birmingham Business School, University of Birmingham, in collaboration with UHL NHS Trust clinicians
  - Professor William Green; Professor James Rockey; Dr Sarah Rockowitz
- Independent study with senior NHS Advisory Panel
- Pre and post study of adoption: medicines wastage; medicines related activity (administration, supply), drug administration errors & incidents
- Shadow Optimed project for 2 years to compare data pre and post implementation



# Scanning unique barcodes

Ward	Total count of all medication scanned	Total count of unit dose scanned
Feb-25		
17	16.6%	29.1%
18	16.80%	33.30%
32	24.80%	45.60%
23	31.30%	47.20%
25	9.00%	21.70%
26	15.00%	27.10%
31	29.50%	46.50%
Scan rate for all wards	21.6%	34.4%

**The unit dose rate is higher than the total count, but I would have expected it to be higher, why is this?**

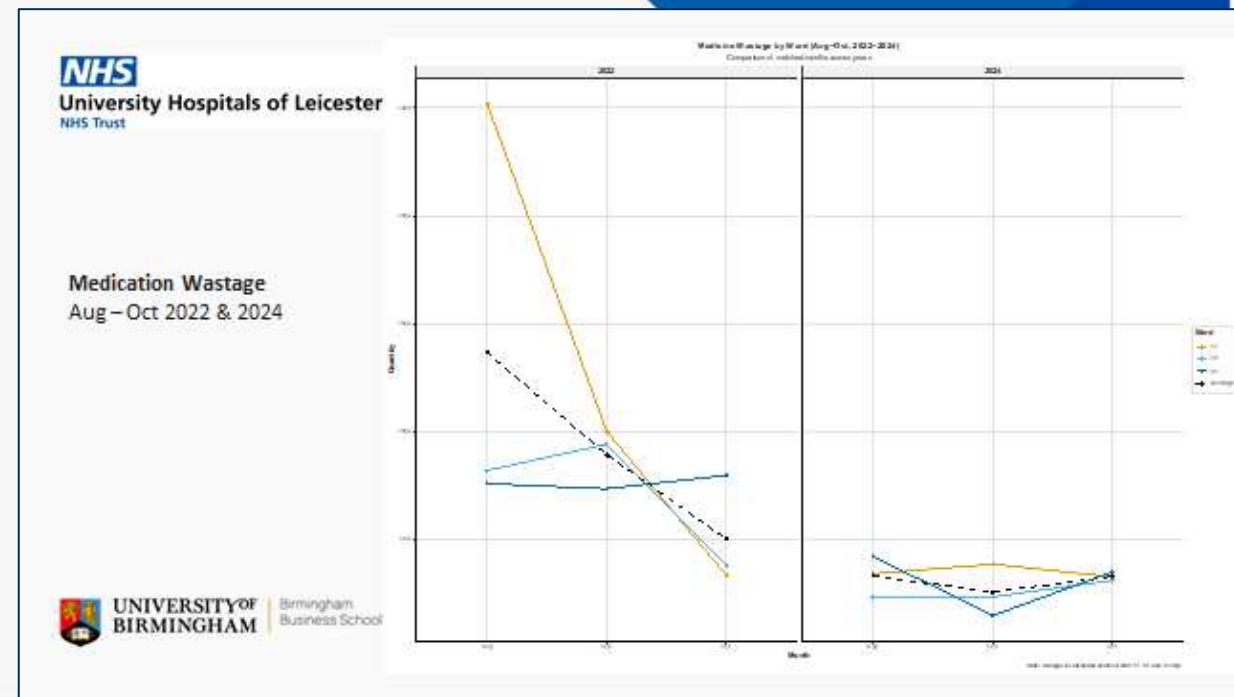
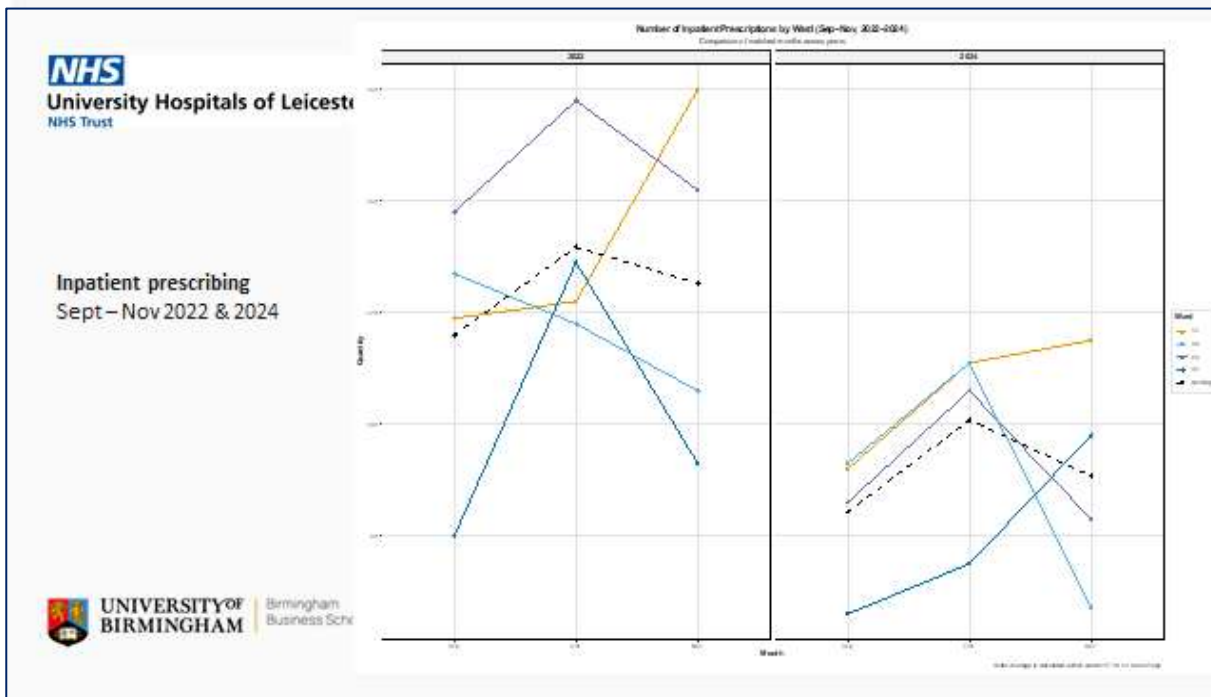
- The same reference database is used. If the manufacture is not in the DM+D the unique barcode will not scan.
- User experience and staff engagement
- IV medication and PRN medication scanning has been difficult to embed as they are given outside of the drug round

# Operational efficiencies of unit dose stock management



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- The scanning of the unique barcodes when issued allows for tracking of quantity's available at ward level. Therefore, allowing an automated close loop stock management system with full tractability of supply and administration
- The cabinet inventory allows for real time stock management data.
- Reduction in time spent on replenishment at ward level allows time to be spent of other tasks.
- The medication round is more efficient, with less time spent sourcing medications.



Unit dose dispensing has allowed for a wider range of medicines to be kept as stock at ward level where an automated cabinet is implemented. This allows for more medicines to be available when required to reduce the number of missed doses and delays to administration.

<b>Missed dose data February 2025- Drugs unavailable that are/ can be unit dose</b>										
Medical					Surgical					
	Ward 23 Optimed	Ward 29		Ward 26 Optimed	Ward 24	Ward 17 Optimed	Ward 21		Ward 32	Ward 9
Unit Dose	11	41		8	34	13	18		26	34
Reduction of missed doses of medicine available as unit dose on a Optimed ward										
	73%			76%		27%			23%	
Non Unit Dose	212	222		175	206	160	175		207	215
Average of 50% reduction in missed doses on a Optimed ward										

# Impact on Patient safety



- 90% of nurses asked feel that scanning of medicines supports patient safety
- 50% of nurses asked disagreed that scanning patients' wristbands is easy and always successful
- Staff agreed that scanning of unit doses is more successful than original containers



## Key messages:

- Significant investment in time and set up cost
- Unit dose management to be the added on to barcode administration
- Trust wide strategy and engagement needed
- Limitations of implementing- Space
- Benefits and efficiencies are complex and take time to achieve

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