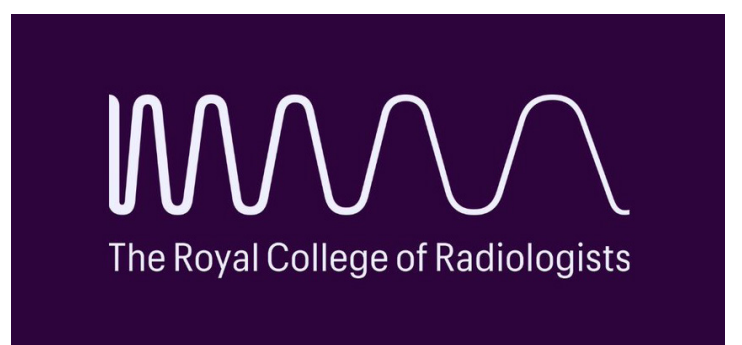


Closed vs. Open Drainage System: Assessing the impact on nephrostomy dislodgement rates at Leeds Teaching Hospitals Trust

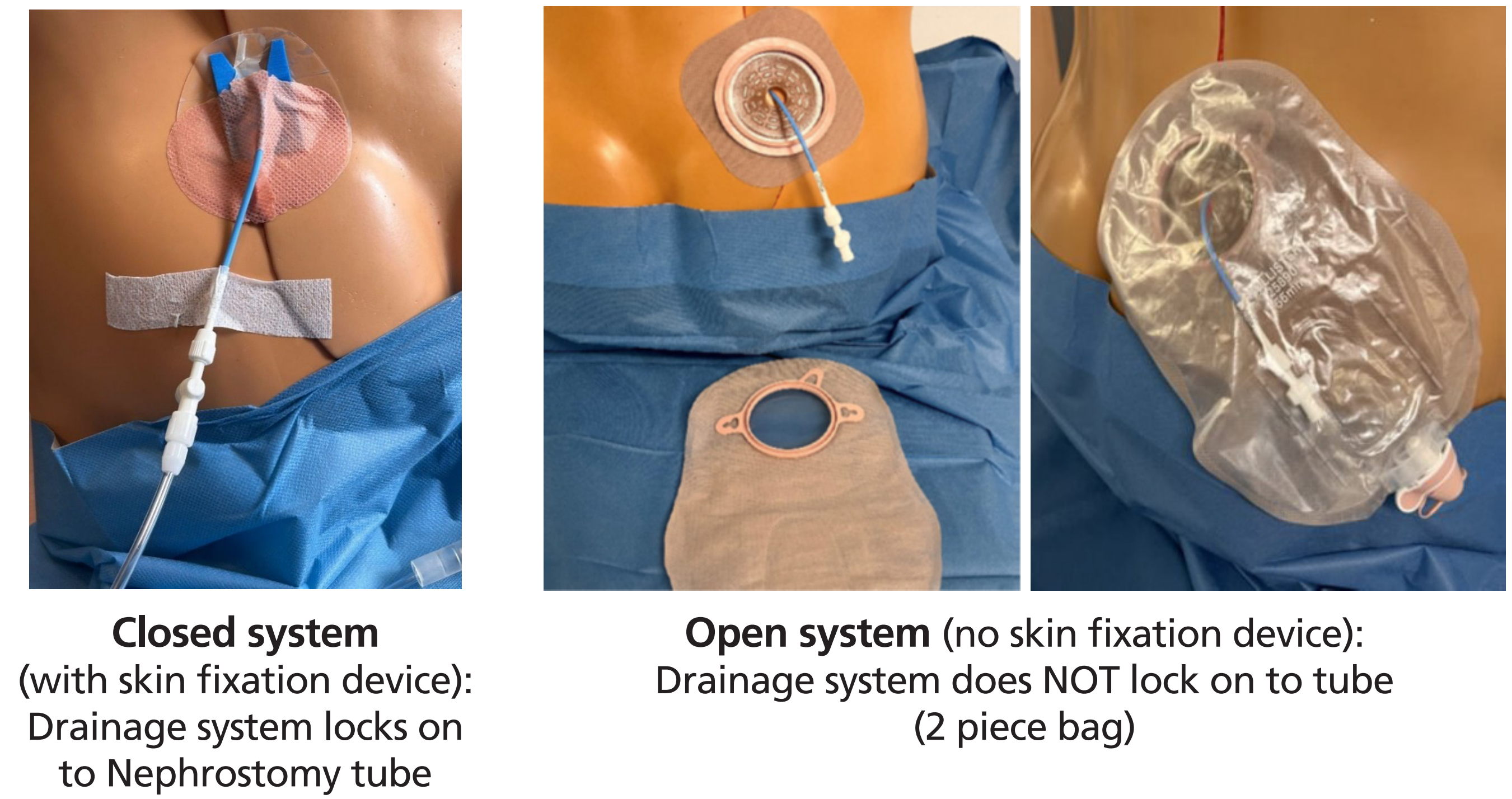
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Background

Percutaneous nephrostomy (PCN) is a commonly performed procedure for urinary obstruction¹. However, dislodgment of long-term nephrostomy catheters remains a frequent complication, increasing morbidity, healthcare costs, interventional radiology (IR) theatre time, procedural risks, and hospital admissions^{2,3}. Previous audits have reported dislodgement rates of 11.7-16.1% with the use of the closed nephrostomy drainage systems.

Closed verses open drainage system

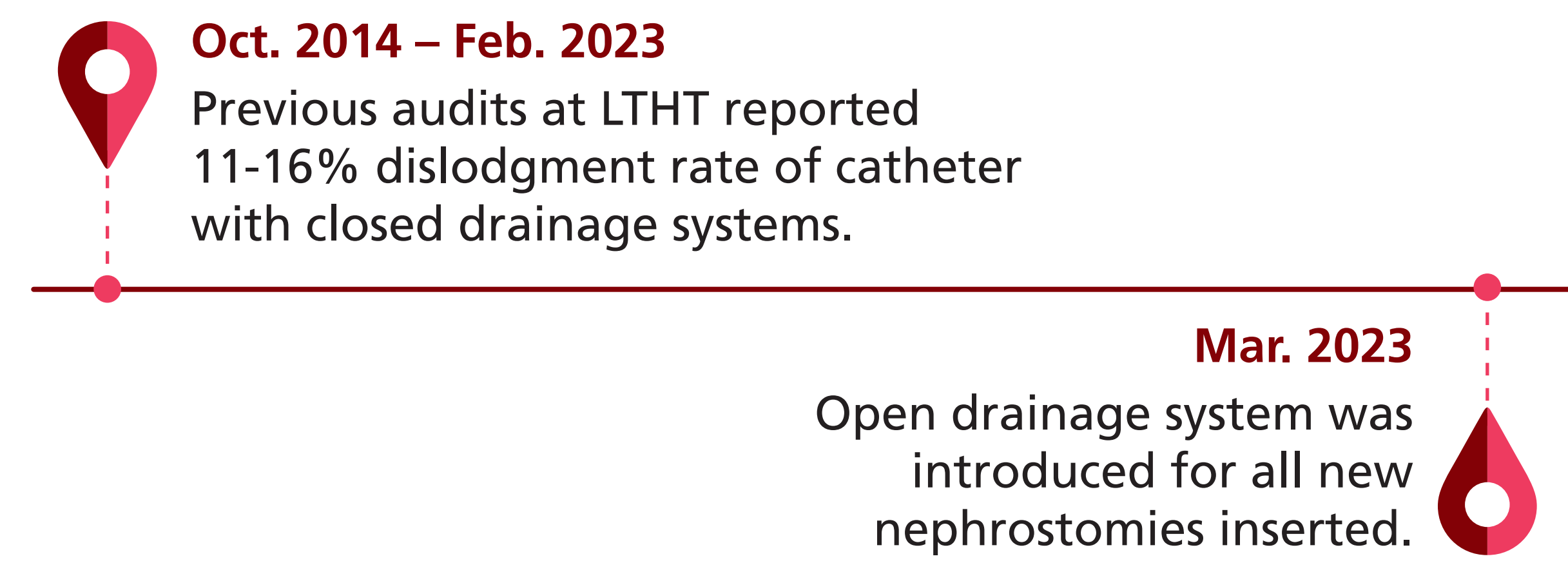


Methods

A retrospective analysis was conducted on nephrostomy catheter exchange procedures at LHTT between 22/08/2023 and 28/06/2024. Data were collected from CRIS requests and EI reports. Information included the reason for catheter exchange, whether it was scheduled, the date of previous insertion, the outcome (replaced, removed, or re-sited), and the age of the patient and operator at the time of the previous insertion.

Intervention

In March 2023, Leeds Teaching Hospitals Trust (LHTT) implemented a transition from a closed to an open nephrostomy drainage system for all newly inserted nephrostomies. This decision was based on previous audit data indicating high rates of catheter dislodgement associated with the closed system.

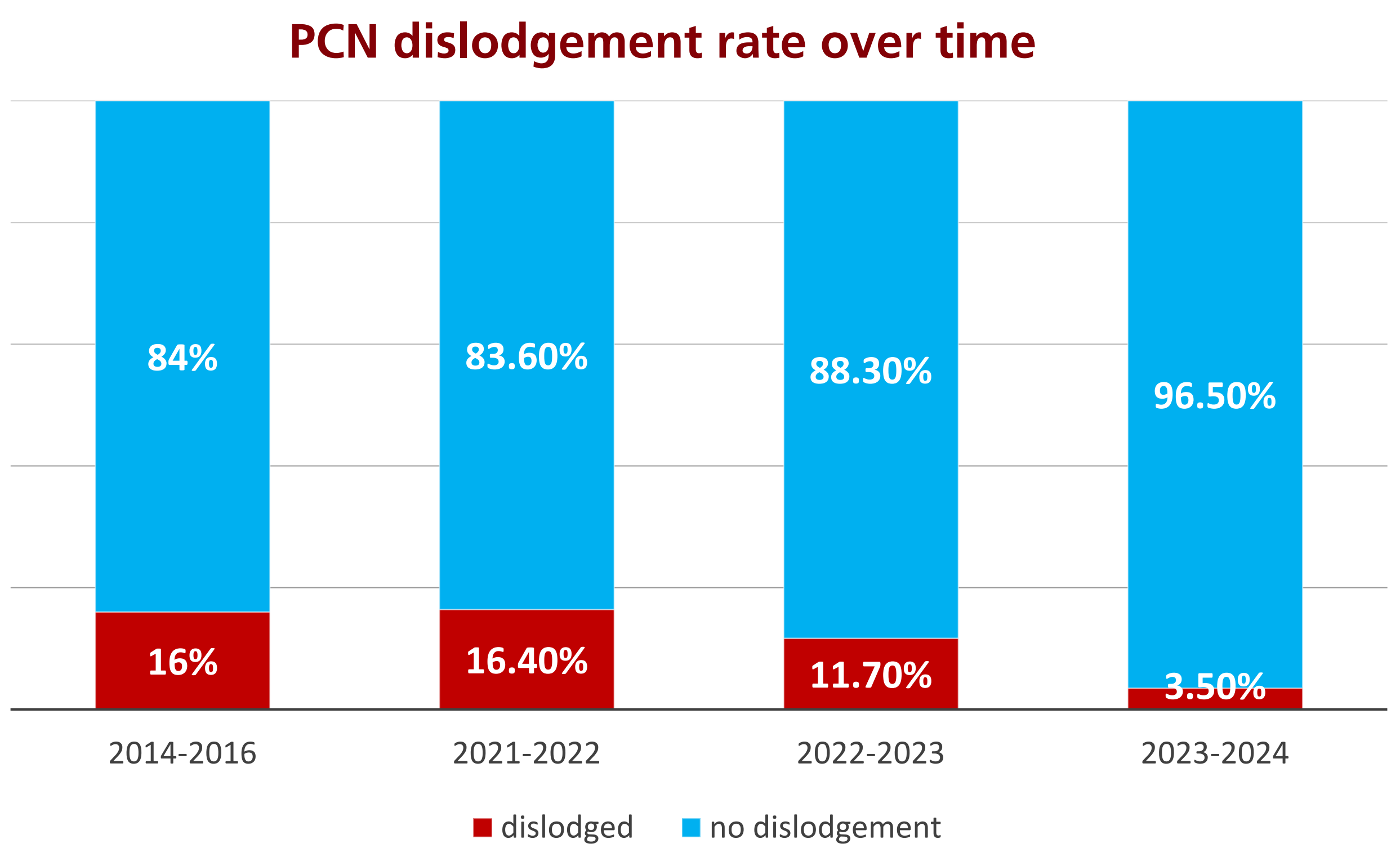
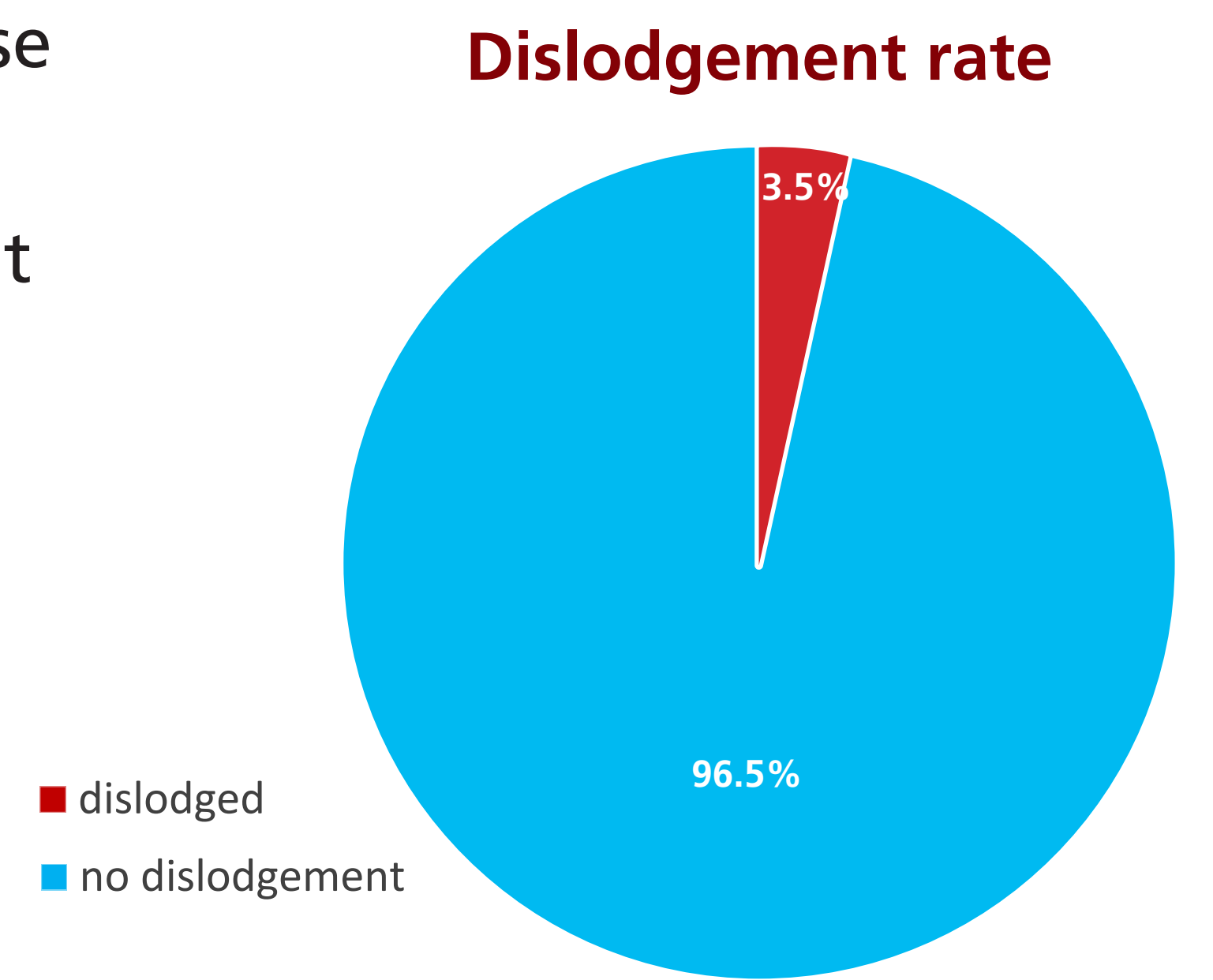


Results

Of the 371 nephrostomy catheters, 3.5% were dislodged; 46% of these used the old drainage system. Among 139 patients who underwent nephrostomy exchange, 9 had at least one episode of catheter dislodgement. Of these, three patients experienced multiple dislodgements - two were using the old system, and one had their first nephrostomy inserted at a different hospital.

Our results show:

- Significant improvement in the rate of nephrostomy dislodgement since the introduction of the open drainage system.
- Improved patient outcomes with fewer hospital presentations, saved IR theatre time and admissions.
- Economically viable.
- Positive staff and patient engagement.
- Some patients with long-term nephrostomies prefer to remain on the closed system.
- Not suitable for all patients – difficulties adhering to skin around the nephrostomy site.



Conclusions

The introduction of the open drainage system has significantly reduced nephrostomy catheter dislodgement rates. This has led to improved patient outcomes, including fewer hospital presentations and admissions, as well as reductions in healthcare costs and IR theatre usage.

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