Real-world experience with Thopaz+

The Oxford University Hospitals NHS Foundation Trust experience

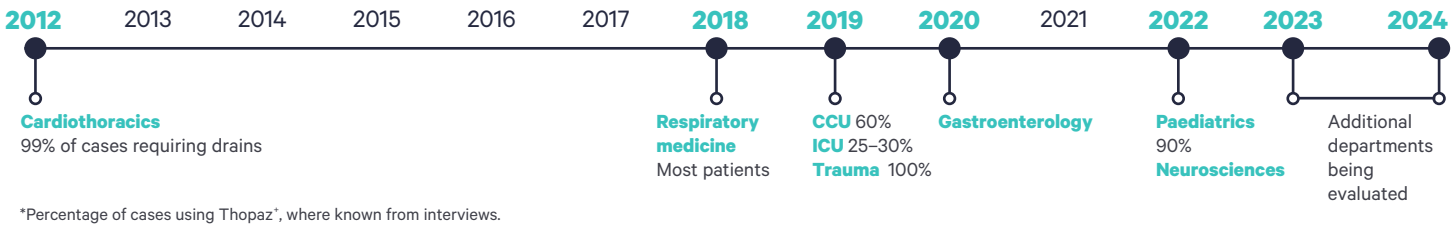
Thopaz+ is a portable digital chest drainage and monitoring system developed by Medela. It offers continuous objective monitoring of fluid loss and air leaks, which facilitates assessment of patients' progress, as well as standardisation of chest drainage management across different departments.[1] Clinical evidence has demonstrated that Thopaz+ is a useful tool in the management of patients that require chest drains, has clear clinical advantages compared with underwater seal drains, and can be used to assess air leaks as the sole criteria for drain removal after pulmonary resection.[1–3]

Thopaz+ and its predecessor, Thopaz, have been used within the Cardiothoracic Department at Oxford University Hospital NHS Trust since 2012. A report on this experience contributed to National Institute for Health and Care Excellence (NICE) Medical Technology Guidance 37.[1,4] Use of Thopaz+ in Oxford has since expanded to other departments within the trust. This document summarises the experience with Thopaz+ based on interviews with healthcare professionals (HCPs) at Oxford University Hospital NHS Trust in February/March 2024.

> *"Thopaz+ is easy to set up, easy to train and easy to use."*

> *"It's a very useful daily or 4-hourly clinical parameter for progression of the patient alongside other parameters such as the oxygen level and the chest X-ray and so on."*

Evolution of Thopaz+ use in Oxford: initial introduction by department and current usage*



*Percentage of cases using Thopaz+, where known from interviews.

Chest drainage protocols

- Each department has a chest drain protocol based on their use of Thopaz+ or underwater seal drains, and whether active suction or physio mode is needed.

> *"There are a number of ways to recoup the costs: efficiencies in the system, less litigation because things don't go wrong, staff sickness due to back injuries, and length of stay if you can get patients home quicker."*

Costs and efficiencies

- The Thopaz+ device generally requires an initial investment.
- Use of the device can lead to improved operational efficiencies and cost savings, which may justify the acquisition costs.
- From an evidence-based practice project in the USA, a digital air leak detection device after pulmonary lobectomy led to cost savings of $2,659 per hospital day.[5]

Objective and continuous monitoring leads to improved decision-making

- Continuous monitoring improves chest drain decision-making by providing objective estimates/measurement of leakage.
- It helps determine when air leaks are resolving (allowing for earlier drain removal and discharge planning) or when further intervention is needed (such as referral to a surgeon).

Improved patient safety

- Thopaz+ is a closed system, reducing incidents, errors, mishaps, and infections.
- As a dry system, Thopaz+ prevents issues with water and device positioning.
- Non-medical staff can manage Thopaz+ if it is knocked over, with no patient impact.
- Thopaz+ has its own suction source, preventing complications with wall suction becoming displaced or unclipped

> *"Measurement of air leak is very, very helpful for us in a very precise way."*

> *"We use digital suction...because it's much more reliable, it's much more consistent and it's much safer than wall suction."*

Length of stay

- Digital drainage facilitates day-case procedures by giving HCPs confidence that their patients have no persistent air leaks or fluid loss.

> *"From the NHS perspective, I think it probably allows us to make earlier decisions about withdrawing chest drains and getting people out of hospital earlier."*

Respiratory

- Length of stay reduced by 4 hours to a full day for day-case procedures.
- 70% of patients following pleural intervention and 60% undergoing thoracoscopy return home the same day.

CCU

- Length of stay of 7 days with Thopaz⁺ compared with 10 days with underwater seal drains.

Mobilisation

- Improved and earlier mobilisation is a major advantage of Thopaz⁺ in relation to complications associated with immobility.

> *"It makes patients mobile quicker, so their risk of developing other complications of being in bed is reduced."*

Throughout the patient journey

- Thopaz⁺ can be used throughout a patient's journey, which can reduce the possibility of issues and errors, because drains can become kinked or displaced whenever a device is changed.
- Suction can be added to a Thopaz⁺ device set up to provide straightforward drainage simply by pressing a button to initiate suction via the device itself.

Staff experience

- Precise fluid and air leak measurements including time trends, improve clinician confidence and decision-making and facilitate continuity of care.
- The user-friendly interface makes it easier to track air leaks and fluid output.
- Nursing time is saved with easy canister replacement, reduced manual monitoring, and visual and audible notifications alert HCPs of issues.

Patient experience

- Patients can move around freely without nursing or healthcare assistant support.
- Earlier discharge reduces hospital stay.
- Patients can monitor their progress in terms of reducing volumes of fluid and air leaks on the display.

> *"Once processes for using Thopaz+ are in place, it improves speed, dexterity, and workflow."*

> *"Medical teams…have more time to focus on other aspects of ward rounds, and nursing teams have more time to spend with patients."*

Summary

The experience of HCPs within Oxford University Hospitals NHS Foundation Trust over the past 12 years has shown that Thopaz⁺ has multiple benefits in the right circumstances and should be available for the vast majority of patients requiring a chest drain.

Benefits of Thopaz⁺ in clinical practice

- Ease of use and device handling
- Effective chest drainage
- Reliability of function, particularly suction
- Objective measurements
- Validation of patient status
- Improved decision-making
- Operational efficiency
- Earlier mobility
- Shorter length of stay
- Faster bed turnover
- Patient safety and reduced complications
- Staff confidence
- Staff satisfaction
- Patient comfort and satisfaction

Recommendations for implementing Thopaz⁺

- Thopaz⁺ should be available for the vast majority of patients requiring a chest drain.
- All staff involved in placement and monitoring of drains should undergo training on Thopaz⁺ using Medela's educational resources, with regular refreshers.
- Thopaz⁺ 'champions' to provide guidance and advice should be identified.
- Protocols should specify when Thopaz⁺ should or should not be used and if active suction is required.

> *"Used correctly, this is transformational technology."*

> *"Once you get to know the system, I would miss it. The drain is telling you what's happening with the patient and makes it, I think, so much safer to make clinical decisions."*

Read the full report:

References

1. NICE. *Thopaz+ portable digital system for managing chest drains.* Medical technologies guidance 37. London: NICE, 2018 (updated 2022).
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3. Frediani S, Romano G, Pardi V *et al. Front Pediatr* 2023;**11**:1280834.
4. Mitchell J. *Adopting Thopaz⁺ portable digital system for managing chest drains on the cardiothoracic ward at Oxford University Hospitals NHS Foundation Trust.*
5. Patel C *et al.* Use of a digital air leak detection device to decrease chest tube duration. *Critical Care Nurs* 2023;**43**:11–21.

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The summary report has been written by Wilmington Healthcare on behalf of Medela AG, reflecting the views expressed in interviews with healthcare professionals. Medela AG funded the project and had input into the development of this report.

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