

INTRODUCTION

Safe provision of hyperbaric oxygen therapy (HBOT) is a primary objective for any facility seeking excellence in care.⁽¹⁾ A comprehensive preventative maintenance program is critical to HBOT safety.

The Undersea and Hyperbaric Medical Society (UHMS) recommends maintaining inspection logs for all hyperbaric equipment.⁽²⁾

In practice, these logs are often paper-based and inconsistent, leading to challenges such as:

- Limited storage
- Time-consuming reviews
- Lack of real-time insights, particularly for multi-site organizations.

To address these obstacles, we developed a centralized digital safety solution to standardize, track, and document routine safety protocols across multicentric HBOT programs.



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HBOT SAFETY**

METHOD

Applying design thinking methodology⁽³⁾, we developed the solution within a clinical decision support web application* and implemented it across a multicentric HBOT program.



Paper-based routine safety protocols - including HBOT chamber and unit inspection templates, annual chamber maintenance logs, adverse event forms, and training modules - were converted into digital checklists, interactive clinical pathways, and digital forms. These were assigned as recurring tasks to each site's safety coordinator.



User feedback was continuously incorporated to optimize functionality and adoption.

RESULTS

The digital solution, including routine safety checklists, annual maintenance documents, monthly training modules, and adverse event reporting, was successfully implemented. Key outcomes included:

- Seamless, fully integrated, and audit-ready digital workflows
- Real-time dashboards for monitoring task completion, resulting in a 100% completion rate of safety checklists and training modules
- Instant access to actionable insights through embedded AI-driven analytics of adverse event data
- Significant time savings for hyperbaric technologists and managers during daily inspections and reviews

CONCLUSIONS

Evaluations show that compared to paper-based documentation, **digital checklists:**

- **Cut time spent on daily maintenance checks and record reviews by 50%**
- **Strengthen the culture of safety⁽⁴⁾**

Integrating digital routine safety protocols into a user-friendly, centralized platform further **enhances compliance, safety, and preventative maintenance** across multicentric HBOT programs.

This robust approach ensures the highest levels of patient and staff safety while reducing the risk of preventable accidents.



REFERENCES

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