ONEBONSAI

CASE STUDY

TracheoCare: VR Tracheostomy Care Training

VR tracheostomy care training: nurses practise routine care and emergencies such as clearing obstructions, with real-time feedback.

Platform: VR / Training: Routine care and emergencies / Built with: Medical experts



Project overview

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About the project

OneBonsai built VR tracheostomy care training for nurses and healthcare staff. Trainees practise routine care and emergencies such as clearing obstructions and stabilising patients, including rare complications, with real-time feedback and performance tracking. It was developed with medical experts and runs in hospitals or training centres without heavy infrastructure.

Challenge

Training Medical Staff in Critical Tracheostomy Care

Tracheostomy care is one of the most sensitive and high-risk procedures performed in clinical environments. Nurses and healthcare staff must be able to respond quickly and effectively when complications occur, as delays or mistakes can put patients' lives at risk.

Traditional training methods, such as classroom lessons, written manuals, or mannequin-based practice, provided some exposure but often lacked the realism and stress needed to prepare staff for real emergencies. Mannequins could not simulate dynamic patient reactions, nor could they replicate the urgency and complexity of an actual clinical environment. As a result, many healthcare workers entered high-pressure situations without enough confidence or hands-on practice, creating a training gap and anxiety for the medical professionals while performing this activity.

> *"Mannequin training lacked the realism and stress needed to prepare staff for real tracheostomy care."*

Solution

Immersive VR TracheoCare Training

OneBonsai designed a VR training system that places healthcare staff in realistic scenarios where they must perform tracheostomy care and manage complications. The simulation allows trainees to practice routine care as well as emergency interventions, such as clearing obstructions or stabilizing patients under duress.

VR controllers are used to replicate medical tools and procedures, giving staff the opportunity to build muscle memory and familiarity with correct techniques. The immersive environment recreates the stress and unpredictability of real clinical situations, providing a safe yet impactful space for repeated practice.

Approach

Combining Medical Expertise with Simulation Technology

The VR training was developed in close collaboration with medical experts to ensure it adhered to best practices and clinical protocols. Scenarios were built to cover both common and rare complications, giving trainees exposure to situations they might not otherwise encounter during their education.

The system includes real-time feedback and performance tracking, allowing participants to learn from mistakes and continuously improve. Portable and easy to deploy, the training could be implemented directly in hospitals or training centers without requiring heavy infrastructure. This combination of clinical expertise, immersive technology, and accessibility created a tool that could enhance both individual skill-building and organizational training programs.

> *"I feel much more confident handling emergency tracheostomy care after practicing in VR."*

Outcome

Safer, More Confident Medical Professionals

The VR TracheoCare training significantly boosted staff confidence and preparedness for high-risk tracheostomy procedures. Nurses reported that the immersive experience helped them better handle the stress of real emergencies, while instructors observed improved performance and knowledge retention compared to traditional training methods.

By enabling safe, repeatable practice of critical procedures, the program reduced the training gap between classroom learning and real-world application. For healthcare institutions, this meant safer patient outcomes, a higher standard of care, and a scalable training solution that could be deployed across departments. The project demonstrated how VR can transform specialized medical training, turning high-risk procedures into safer, more controlled learning experiences.

> *"It's an invaluable tool to improve staff skills and allow them to retrain at their own pace."*

Discuss a similar project

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