Remote Anesthesia Monitoring: A Mobile App for Communicating Real-Time Surgical and Patient Status

Shivesh Ummat[1], Jordan Vogel[1], Ethan Mizuno[1], Dr. Chris Eixenberger[2]

1. UW Department of Bioengineering 2. UW Department of Anesthesiology and Pain Medicine

DEPARTMENT OF BIOENGINEERING
UNIVERSITY of WASHINGTON

Problem & Motivation

- **Coordination** amongst multiple clinical teams is **crucial** for ensuring high-quality patient care
- **Real-time communication** about surgery and patient status enables coordination
- However, there is a **significant gap** in communication software used in hospitals
- Impacts are **inefficiencies** and **delayed responses** to complications, leading to adverse outcomes

Current Approach

204842	In PreOp	7:30 AM
208560	In PreOp	7:30 AM
211673	OK Transport	7:30 AM
217031	In PreOp	7:30 AM
221730	In OR	7:26 AM
222067	OK Transport	7:30 AM
224683	In PreOp	9:00 AM
225153	PACU I	6:00 AM

Figure 1. Current Standard for Communication and Surgical Status Technologies

Clinicians need a better form of real-time communication to enhance efficiency and improve perioperative outcomes.

Our Solution

We present the **Remote Anesthesia Monitoring App**:

- Developed with **React Native** and **Expo**
- **Real-time surgery status and vitals tracking**
- **Push notifications** and **emergency features** to enhance coordination and response times
- **Advanced analytics** of patient vitals to drive deeper insights for clinicians
- **Scalability** for large hospitals like UW Medicine

INVENTING *the* FUTURE OF MEDICINE

Summary View

At-a-glance view of multiple operating rooms with concise information regarding the surgery.

Simple display of **surgery stage** and **progression** to inform other clinical teams

OR 1: Open Appendectomy
Surgeon: Dr. Smith
Anesthesiologist: Dr. Johnson
Stage: Intubation
Surgery Progression: 13% Complete (Stage 1/8)

Figure 2. OR Summary View

Detailed OR View

Extended info on current patient status including vitals.

Type of Anesthesia: **General**
Current Heart Rate: **77**
Current Blood Pressure: **162/90**

Messaging

Remote monitoring of **real-time vitals**

Messaging button that navigates to **notification page**

Figure 3. Detailed OR View

Messaging View

Real-time hub for status updates and notifications.

Ease of communication using **push notifications** triggered by **toggles**

Completed stages turn grey, future steps are green

Emergency button to inform attending anesthesiologist who may be in a different room

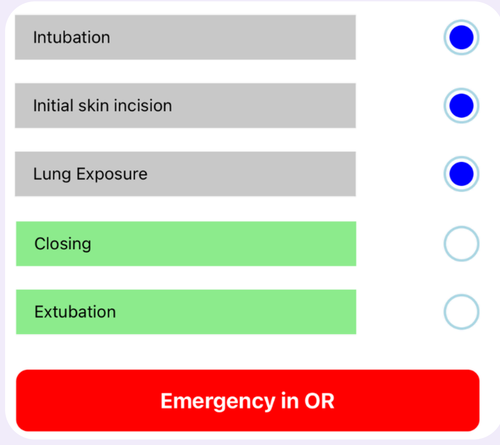

Figure 4. Messaging Page

Physician Feedback

UW Medicine physicians provided feedback on our proof-of-concept via an online survey.

of physicians surveyed stated the app would be **useful** and **easy to adopt** in their daily workflow.

"Incredibly useful for enhancing operational efficiency and team coordination."
- UW Anesthesiologist

Future Directions

Integration with Hospital Systems: Connect to Epic and other platforms

Machine Learning Analysis: Implement AI/ML to predict patient outcomes & enhance decision-making

Enhanced User Profiles: Tailor experience to each clinician and strengthen security measures

Conclusions

- The **Remote Anesthesia Monitoring** app has been developed to enhance intraoperative communication
- It can serve as a crucial tool for **improving surgical outcomes** and **team efficiency**
- Positive feedback from UW Medicine physicians highlights our **immediate impact as a transformative healthcare technology**

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