# Optimization of Perioperative Communication and Turnover Within the Operating Room

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**Introduction:** Effectively reducing the turn-over-time (TOT) between operating room (OR) cases requires the development of software to address potential miscommunication between surgical staff and ancillary services. Furthermore, the accessibility of this software should include modalities beyond traditional access which could extract attention away from the patient care (eg. computers, tablets, and phones). Therefore, a voice activated dictation system offers a solution which allows surgical staff to offer verbal requests that can be fulfilled through an automated system.

**Methods:** A software application modeling a digital rendition of a magnetic whiteboard was developed using the Angular frontend software framework. The *Anesthesia Management Tool* displays employee status in the OR, lunch and break notifiers, the daily board runners, and call order for attendings and residents. Data management was handled using Google's HIPAA compliant real-time database, Firestore, for response times of mere milliseconds. Furthermore, the voice activated module was developed using Google's Machine Learning model, DialogueFlow, and integrated with the software using Google Assistant for dictation through the Google Home Mini. The voice activated system offers full system database calls such as pager requests to attendings, staff updates, janitorial queue updates, and turn over delays.

**Results:** The voice activated system can address requests for turnover by notifying anesthesia technician and environmental teams of near case completion. All database responses and updates can be accessed verbally and visually through the *Anesthesia Management Tool*. An example request such as *"Ok, Google: 10 minutes to close,"* triggers a database response which updates the teams of the OR's surgical status and their subsequent cleanup and turnover queue for effective priority of TOT when addressing multiple operating rooms. Other requests such as *"Ok, Google: page Dr. Doe to OR 1"* serves as a seamless method of informing the paged attending of the status of the operation while maintaining focus, directed towards the patient. A reduction in auxiliary distractions for anesthesia providers should optimize perioperative care. Furthermore, a formalized queue with software push notifications and reminders for the anesthesia technicians and environmental services will maximize efficiency, significantly reducing TOT by estimates of 10 - 15 minutes.

**Conclusions:** Current modalities of communication suffer due to a lack of organization while a software platform tailored to the needs of the OR stratify an ecosystem where patient care, TOT, and efficiency are optimized. The *Anesthesia Management Tool* paired with the Google Home Mini offers communication between operating rooms without the need for direct communication between staff. Automation of repetitive commands serve as checkpoints that can be handled by machine learning algorithms. Ultimately, more development is required to connect voice activated responses to an electronic medical record (EMR) system for complete end-to-end data efficiency and distraction-free patient care. Finally, further audits of the TOT analysis will be needed to examine the overall value of our novel system.