Understanding and Mitigating Operating Room (OR) Distractions

Preliminary Findings on Door Activity

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Objectives

- Understanding distraction-surgical error relation through naturalistic study of OR
- Identifying appropriate mitigation strategies for negative distractions

Introduction

- Distractions are **frequent** in the OR[1]
  - Every 10 min[2] to every 1.8 min[3]
- **Distraction**: Activities that may divert attention from critical surgical tasks
  - **Interruption:** Special case with a **clear break** in the primary task[4]
- **Are distractions in the OR related with surgical errors?**
  - Direct observational study of cardiovascular surgeries[5]
    - Surgical flow disruption↑→ Surgical error↑
    - Surgical flow disruption: Deviations from natural surgical progression, including distractions
  - Surgical simulation study with 18 surgical residents[6]
    - Distractions↑→ Surgical error↑
    - Distractions: Blocking laparoscopic image screen, phone call, patient-related and case-irrelevant conversation, noise

Research Gaps

- Limited evidence on **distraction-surgical error relation**
- **No naturalistic study** to date
- Systematic evaluation of **mitigation strategies**

References
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2. Sevdalis, N., Undre, S., & Mcdermott, J. (2014). *World Journal of Surgery* 38:751-758.
3. Persoon, M. C., Broos, H. J. H. P., Witjes, J. A., Hendrikx, A. J. M., & Scherpbier, A. J. J. M. (2011). *Surgical Endoscopy* 25:437-443.
4. Healey, A. N., Primus, C. P., & Koutantji, M. (2007). *Quality and Safety in Health Care* 16: 135-139.
5. D. A. Wiegmann, A. W. Elbardissi, J. A. Dearani, R. C. Daly, and T. M. Sundt, *Surgery* 142:658-665.
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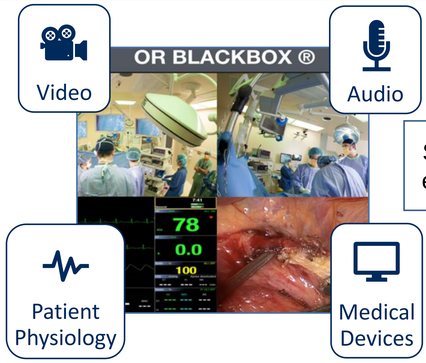
Investigating Distractions in ORs:

Operating Room Black Box (ORBB) Data

- Naturalistic data from St. Michael's Hospital, Toronto, ON
- Raw, unbiased recordings of ORs
- First of its kind
- Potential for unique OR insights



Subject matter experts coding

Distractions/interruptions

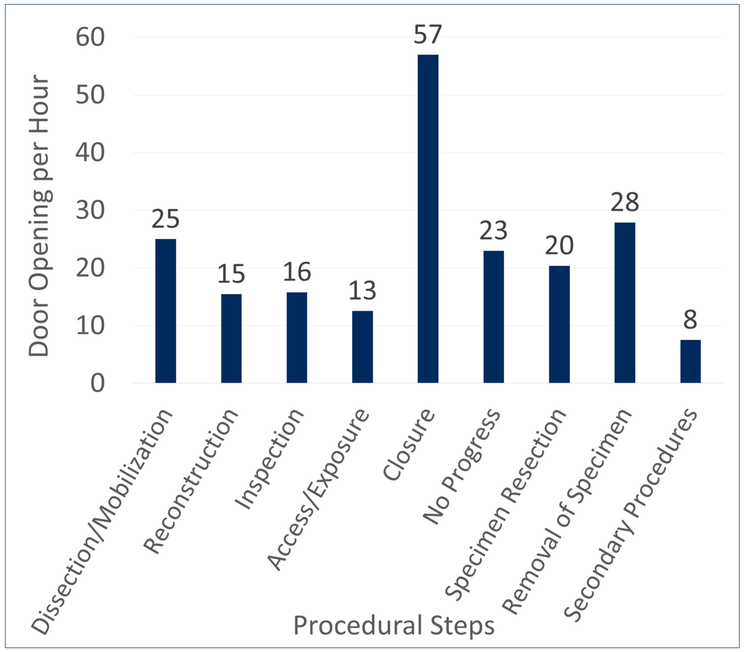
Technical & nontechnical skills of the OR team members

Errors, events & rectification processes

Preliminary Results on OR Door Activity

N=62 Roux-en-Y gastric bypass operations

- Mean surgery duration: 92 mins (SD=36; Min=29, Max=283)
- **24 door openings** per surgery (SD=14; Min=2, Max=96)
- Door opens **every 4 mins** (16 door openings/h) and closes in **7 sec** (SD=7; Min=1, Max=263)
- Total door open time: **3 mins** per surgery (SD=2; Min=0, Max=13)
- Highest rate of door opening during **Dissection/ Mobilization** and **Closure**



Conclusions

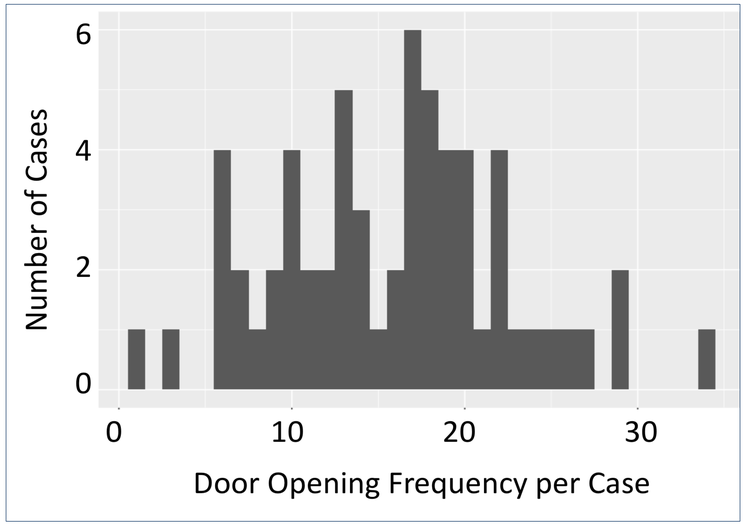
- Door activity is frequent; may be distracting
- Certain procedural steps receive more distractions

Possible Mitigation Strategies

- **Interruption blocks**: Limited access to OR during critical tasks
- **External displays**: Informing external staff about the surgery
- **Safety warnings**: Signs near ORs to increase distraction awareness

Future Work

- Investigating
  - other distractions (e.g., alarm, phone calls)
  - distractions at the procedural step level
  - distraction-surgical error relationship
- Finding appropriate mitigation strategies for distractions related with surgical errors



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