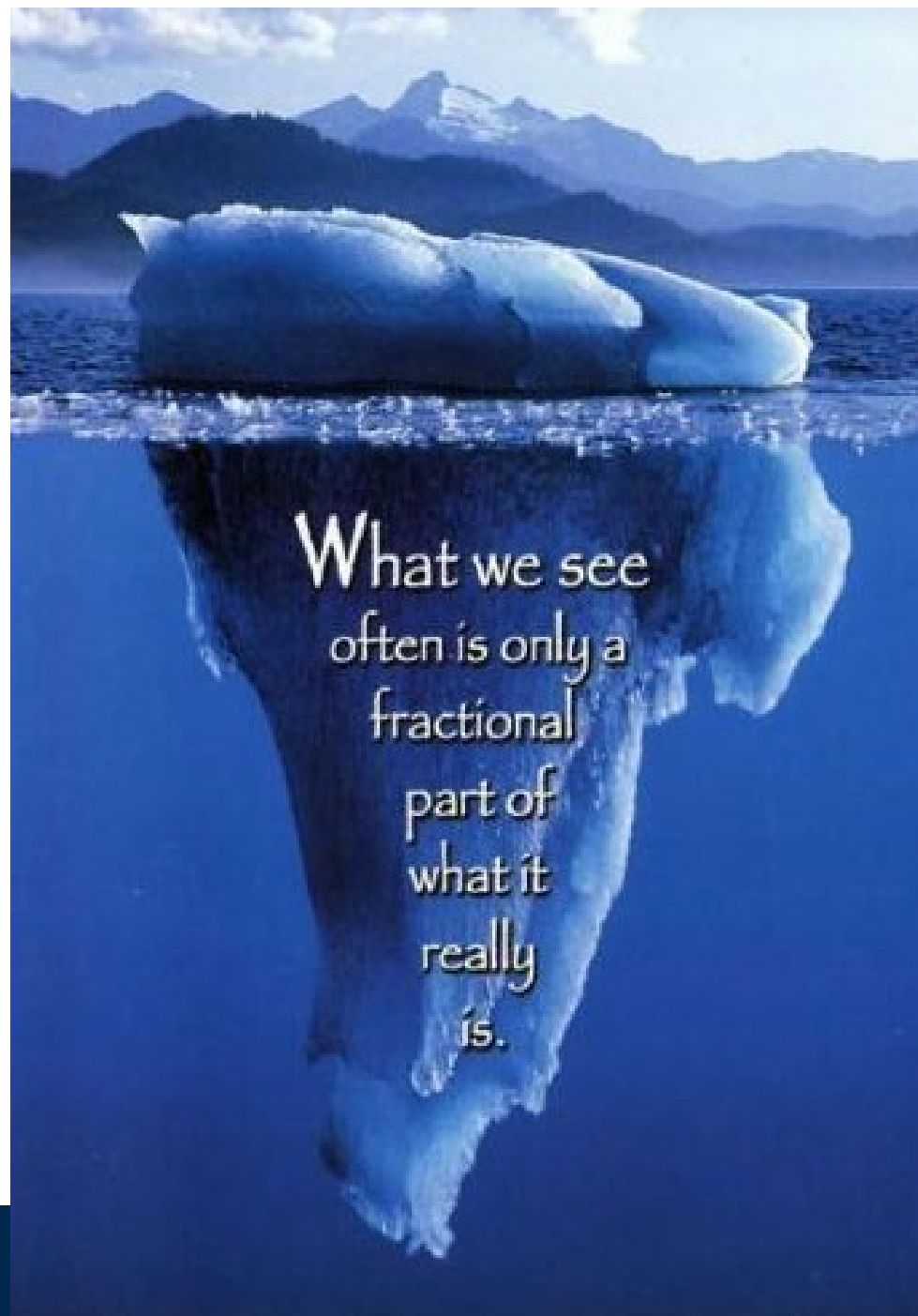# ICU and OR Handoffs

Anna Krzak PA-C, U of M

M·TQIP

Clinical Handoffs and Communication: It's All in the Details

Anna Krzak, PA-C

Trauma Burn ICU

Michigan Medicine

SBAR

- <u>SITUATION</u>
  - Michigan Medicine lacked a standardized tool for communication and handoff of ICU patients transferring to and from the OR.

- <u>BACKGROUND</u>
  - Poor handoff between medical teams during transfers of care has led to sentinel events.

- <u>ASSESSMENT</u>
  - Handoff programs improve communication and decrease preventable medical errors and adverse effects.

- <u>RECOMMENDATION</u>
  - Assemble a task force to develop and implement a standardized communication handoff tool to be utilized for transfers to and from the OR.

Why are handoffs important?

- Patient safety
- Critical information can be lost in transfers of care
  - Poor communication leads to adverse events
- Provides structure and consistency
- Time savings
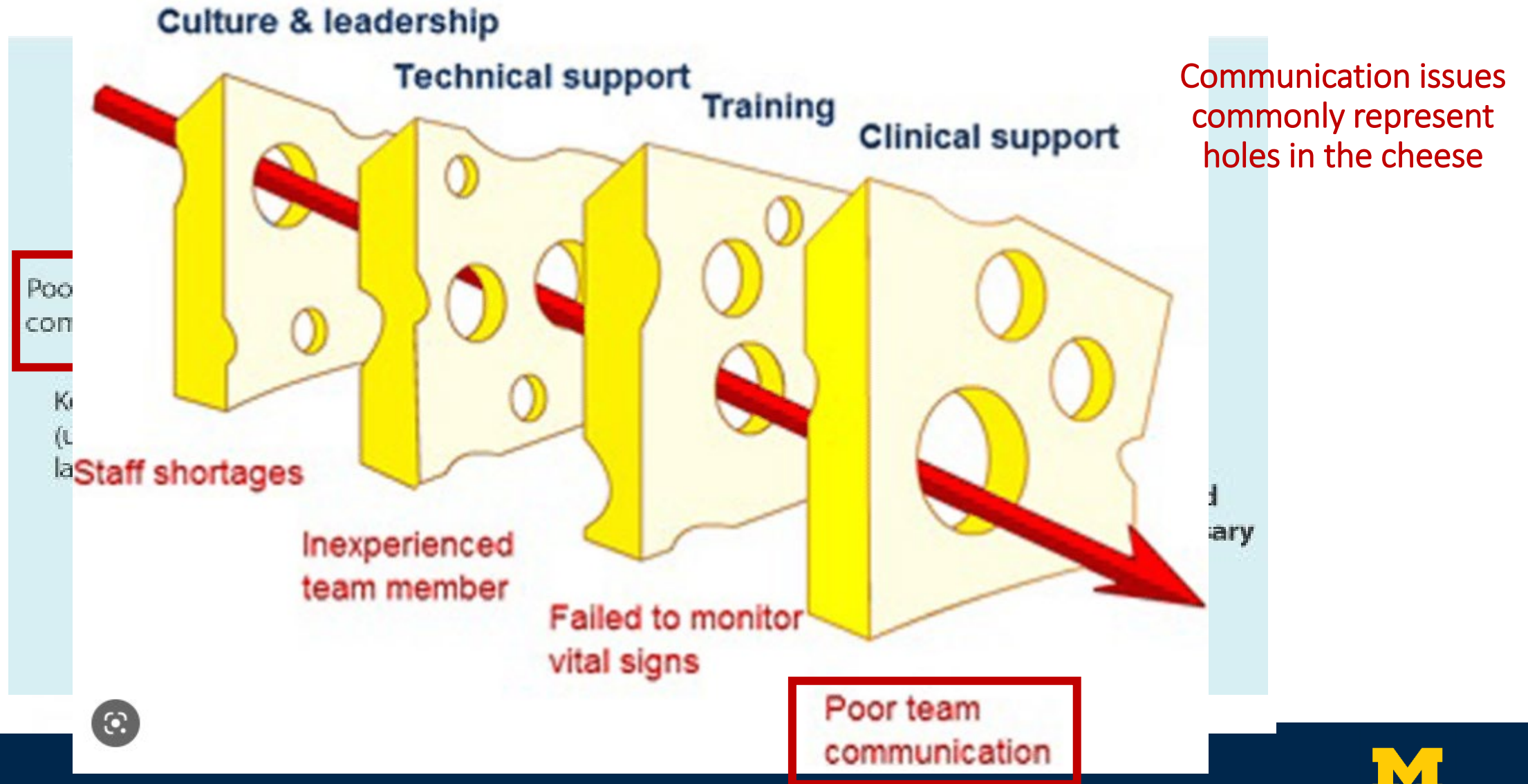 - 2 minute handoff can save 20 min in chart digging

Why handoffs fail?

- Human factors
  - fatigue, info overload

- Systemic factors
  - lack of standardization
  - lack of reinforcement

- Communication errors
  - Incorrect information
  - Varying clinical knowledge between providers

- Clinical factors
  - Complexity in care

Swiss Cheese Model of Adverse Events

Review of Evidence

- The Joint Commission reports:
  - Typical teaching hospital has 4,000 patient handoffs every day *(1.6 million per year)*
  - 70% of sentinel events were caused by communication breakdowns
  - Handoffs (incomplete or poor quality) play a role in 80% of preventable adverse events

  - TJC requires healthcare organizations to implement a standardized approach to handoff communications, including
    - face-to-face report with opportunity to ask and respond to questions
    - verification process

O'Reilly et al. *AMedNews* 2010

Review of Evidence

- Starmer et.al. (Boston Children's Hospital/Harvard) – New England Journal of Medicine 2014
  - I-PASS Handoff Bundle - 7 elements:
    - I-PASS mnemonic for oral and written handoffs
    - 2-hour workshop (TeamSTEPPS teamwork, communication skills, handoff techniques)
    - 1-hour role-playing and simulation session
    - Computer module
    - Faculty development program
    - Direct-observation tools to provide feedback
    - Process/culture-change campaign (logo, posters)

  - Reviewed 10,740 patient admissions (5516 preintervention and 5224 postintervention)
    - Medical-error rate decreased by 23% (P<0.001)
    - Rate of preventable adverse events decreased by 30% (P<0.001)
    - no significant changes in duration of oral handoffs or resident workflow

I	Illness Severity	• Stable, "watcher," unstable
P	Patient Summary	• Summary statement • Events leading up to admission • Hospital course • Ongoing assessment • Plan
A	Action List	• To do list • Time line and ownership
S	Situation Awareness and Contingency Planning	• Know what's going on • Plan for what might happen
S	Synthesis by Receiver	• Receiver summarizes what was heard • Asks questions • Restates key action/to do items

Source: Wolinska et al. JPedSurg 2022

Review of Evidence

- Starmer et.al. (Boston Children's Hospital/Harvard) - Journal of Hospital Medicine 2022
  - Prospective Type 2 Hybrid effectiveness implementation study
  - Participation:
    - 32 hospitals
    - 2735 resident physicians, 760 faculty champions
    - Multiple specialties (16 internal medicine, 13 pediatric, 3 other)
  - Results:
    - Collected 1942 error surveillance reports
    - Major and minor handoff-related reported adverse events decreased 47% following implementation
      - 1.7 to 0.9 major events/person-year ($p < .05$)
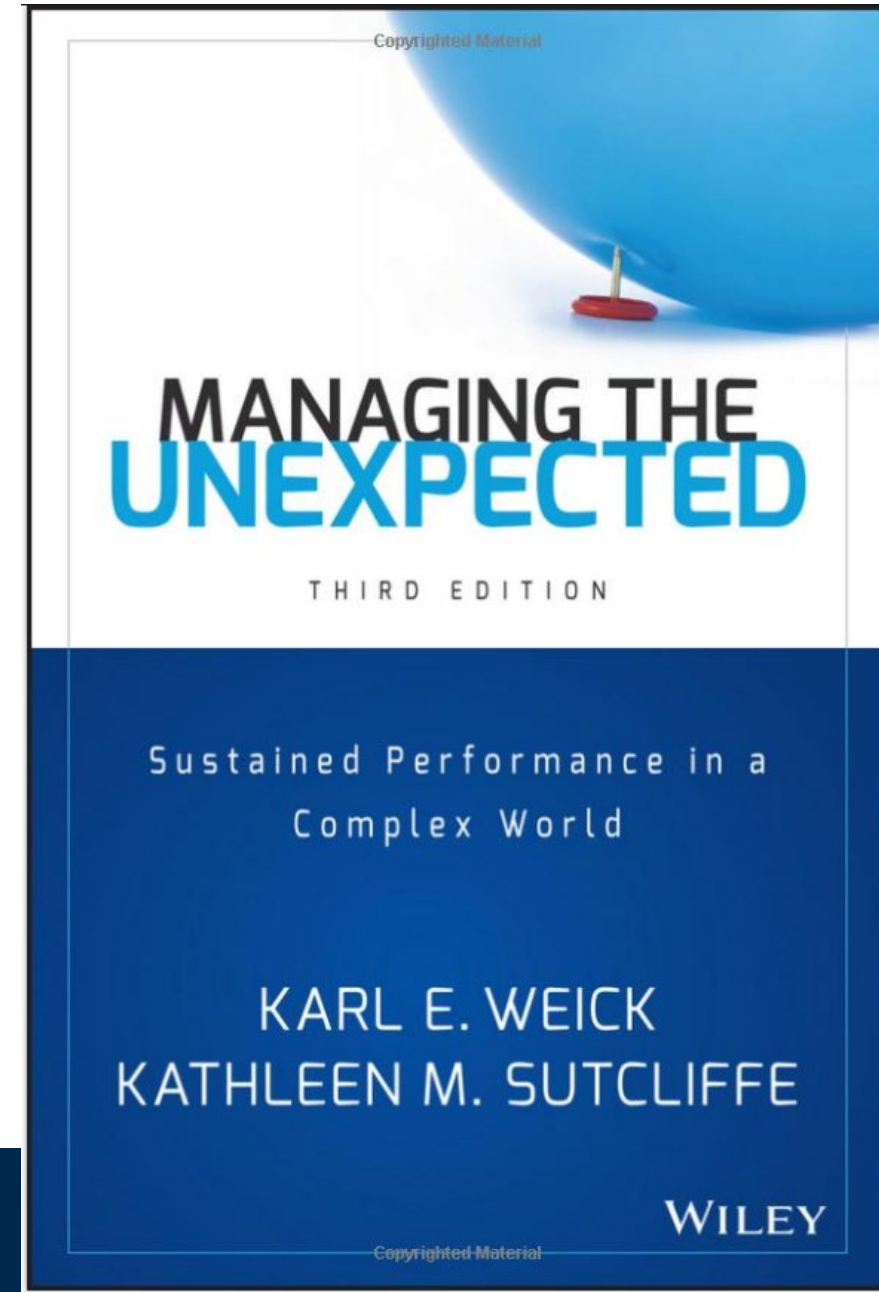   - 17.5 to 9.3 minor events/person-year ($p < .001$)

High Reliability Organizations (HROs)

"operate under very trying conditions all the time and yet manage to have fewer than their fair share of accidents."
Managing the unexpected (Weick & Sutcliffe)

HROs operate as to make systems ultra-safe despite massive complexity and high risk.
Examples: FAA Air Traffic Control system, nuclear power plants, aircraft carriers, NASA

MANAGING THE UNEXPECTED

THIRD EDITION

Sustained Performance in a Complex World

KARL E. WEICK
KATHLEEN M. SUTCLIFFE

WILEY
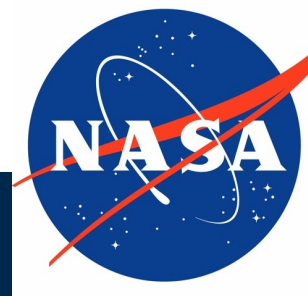
SAFE. RELIABLE. TOGETHER.
HIGH RELIABILITY

MICHIGAN MEDICINE SAFETY PROMISE

Our promise to patients, families, and employees: Your safety is our most important priority.

We are open and transparent about errors, and will stand up for those who speak up.
We are accountable for our actions.
We learn from our errors without blame.
We do not tolerate reckless or disrespectful behavior

Examples of Standardized Framework

- All handoffs must involve face to face communication (oral & written)
  - SBAR
  - I PASS the BATON
  - Talk back/Teach back method – closed loop communication
  - Electronic health record (EHR) technology
    - greater efficiency, accountability, data completeness
    - create a standardized report sheet from preselected, relevant data already in the record

- Formula 1 racing team approach - What can we learn from Formula 1 pit stops and aviation?
  - "The hand- off is like a pit stop: You have to do lots of different things under time pressure, and if you make a mistake, it can have consequences down the road."

  - An effective handoff protocol includes:
    - Minimal variability
    - Identifying tasks and assigning responsibility
      - If it's not someone's responsibility, it's no one's responsibility
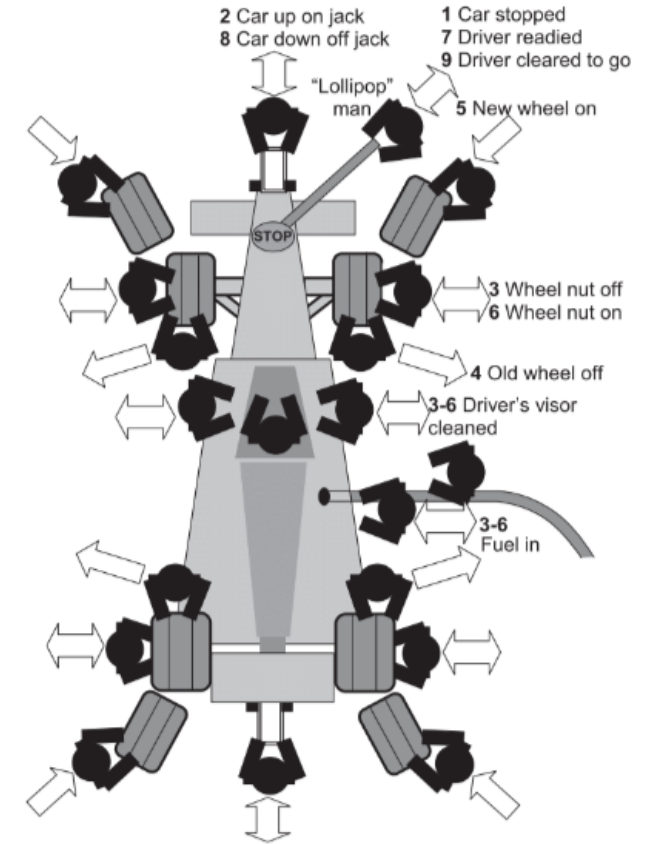   - Providing education and easy-to use resources
    - Measuring results

Figure 1
A Formula 1 pit-stop.

Catchpole et al. PedAnes 2007

S	**Situation:** – What is the situation you are writing about? – Identity self, health care site, area, title, date, etc. – Briefly state the problem/issue, what is it, when it happened or started, and how severe.
B	**Background:** Pertinent background information related to the situation: – History of problem/issue, include date/time. – List of current situations. – Most recent occurrences. – National standards, policy, regulations, standard requirements.
A	**Assessment:** – What is your assessment of the situation?
R	**Recommendation:** – What is your recommendation or what do you want (say what you want done)?

"I PASS the BATON" mnemonic for handoffs and healthcare transitions

I	Introduction	Introduce yourself and your role/job (include patient)
P	Patient	Name, identifiers, age, sex, and location
A	Assessment	Presenting chief complaint, vital signs, symptoms, and diagnosis
S	Situation	Current status, circumstances, including code status, level of (un)certainty, recent changes, response to treatment
S	Safety concerns	Critical lab values/reports, socioeconomic factors, allergies, alerts (falls, isolation)
THE		
B	Background	Comorbidities, previous episodes, current medications, family history
A	Actions	What actions were taken or are required, and provide brief rationale
T	Timing	Level of urgency and explicit timing, prioritization of actions
O	Ownership	Who is responsible (nurse/physician/team), including patient/family responsibilities?
N	Next	What will happen next? Anticipated changes? What's the plan? Contingency plans?

Source: U.S. Department of Defense. *Department of Defense Patient Safety Program: Healthcare Communications Toolkit to Improve Transitions in Care.* http://www.teamsteppsportal.org/component/phocadownload/category/39-essentials-course. Used with permission.

HATRICC-US study (Penn)
* Handoffs and transitions in critical care
– understanding scalability

- 4 year data collection

- Studying effectiveness of an
  intervention and how to get it into
  practice

OUTCOMES
- Implementation
    - Acceptability
    - Appropriateness
    - Sustainability
- Intervention
    - handoff and teamwork quality
    - information omissions
    - patient outcomes

STUDY PROTOCOL   **Open Access**

Handoffs and transitions in critical care—understanding scalability: study protocol for a multicenter stepped wedge type 2 hybrid effectiveness-implementation trial

Meghan B. Lane-Fall[1]*, Athena Christakos[2], Gina C. Russell[3], Bat-Zion Hose[4], Elizabeth D. Dauer[5], Philip E. Greilich[6], Bommy Hong Mershon[7], Christopher P. Potestio[8], Erin W. Pukenas[9], John R. Kimberly[10], Alisa J. Stephens-Shields[11], Rebecca L. Trotta[12], Rinad S. Beidas[13] and Ellen J. Bass[14]

Abstract

Background: The implementation of evidence-based practices in critical care faces specific challenges, including intense time pressure and patient acuity. These challenges result in evidence-to-practice gaps that diminish the impact of proven-effective interventions for patients requiring intensive care unit support. Research is needed to understand and address implementation determinants in critical care settings.

Methods: The Handoffs and Transitions in Critical Care—Understanding Scalability (HATRICC-US) study is a Type 2 hybrid effectiveness-implementation trial of standardized operating room (OR) to intensive care unit (ICU) handoffs. This mixed methods study will use a stepped wedge design with randomized roll out to test the effectiveness of a customized protocol for structuring communication between clinicians in the OR and the ICU. The study will be conducted in twelve ICUs (10 adult, 2 pediatric) based in five United States academic health systems. Contextual inquiry incorporating implementation science, systems engineering, and human factors engineering approaches will guide both protocol customization and identification of protocol implementation determinants. Implementation mapping will be used to select appropriate implementation strategies for each setting. Human-centered design will be used to create a digital toolkit for dissemination of study findings. The primary implementation outcome will be fidelity to the customized handoff protocol (unit of analysis: handoff). The primary effectiveness outcome will be a composite measure of new-onset organ failure cases (unit of analysis: ICU).

Discussion: The HATRICC-US study will customize, implement, and evaluate standardized procedures for OR to ICU handoffs in a heterogenous group of United States academic medical center intensive care units. Findings from this study have the potential to improve postsurgical communication, decrease adverse clinical outcomes, and inform the implementation of other evidence-based practices in critical care settings.

* Correspondence: LaneMe@pennmedicine.upenn.edu
[1]423 Guardian Drive, 309 Blockley Hall, Philadelphia, PA 19104, USA
Full list of author information is available at the end of the article

Michigan Medicine QI Project
Transitions of Care – ICU to OR & OR to ICU

- Anesthesia led initiative with multidisciplinary involvement
  - ICU providers (intensivists, surgeons)
  - Nurse leadership
  - OR leadership
- PHASE 1 – Report Build – 12/2015 through 8/2016
  - Initially paper document → EMR document → currently paper document
- PHASE 2 – Pilot Site Implementation in TBICU – 8/2016
- PHASE 3 – Pilot roll-out to remaining ICUs – 9/2016
- PHASE 4 – Monitoring and process review – ongoing
- 2020-2021????
- 2022 – Breathe, Reboot, Revise, Reteach

CLINICAL INFORMATION UPDATE

MICHIGAN MEDICINE ANESTHESIOLOGY

Launch of TBICU & SICU Structured Handoff Process

Key Information

SUBJECT: Launch of TBICU & SICU Structured Handoff Process

APPLIES TO: All Clinical Anesthesia Providers

LOCATION: UH & CVC

LAUNCH DATE: Monday, May 30

ACTION NEEDED: Be aware that all patients in the TBICU & SICU going directly to/from the OR will require a structured bedside handoff utilizing the attached SBAR tool. Please review the attached workflow and communication plan for full details.

On Monday, May 30 the TB ICU and SICU, in conjunction with anesthesia and the nursing teams, will begin a structured handoff process for all patients going directly to/from the OR.

The transfer of patients directly to the TBICU or SICU will be **followed by a robust, structured bedside handoff** involving the anesthesia provider, the bedside ICU RN, an ICU team member (intensivist, APP, etc), a member of the surgical team, and RT (when necessary). The attached SBAR will be completed in the OR prior to transfer to ensure that all relevant information is shared. The ICU should be informed of
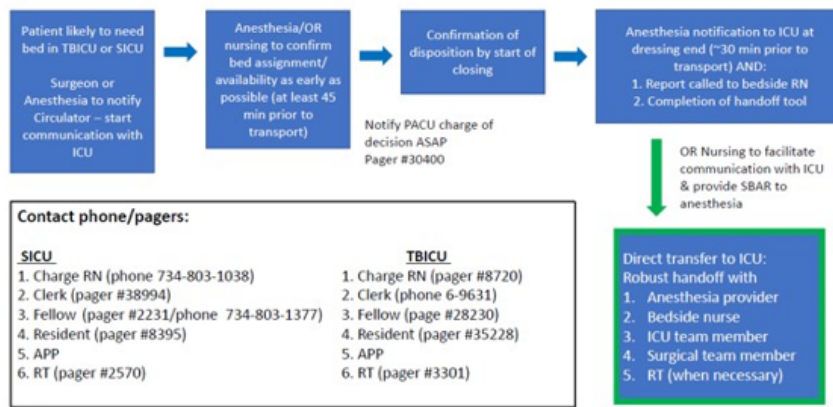
COMMUNICATION
- Global clinical email alerts
- Posters
- Orientation of nursing and providers on each unit

pending transfer approximately 30 min prior to leaving the OR. A copy of the expected bedside workflow upon arrival to the ICU is also attached.
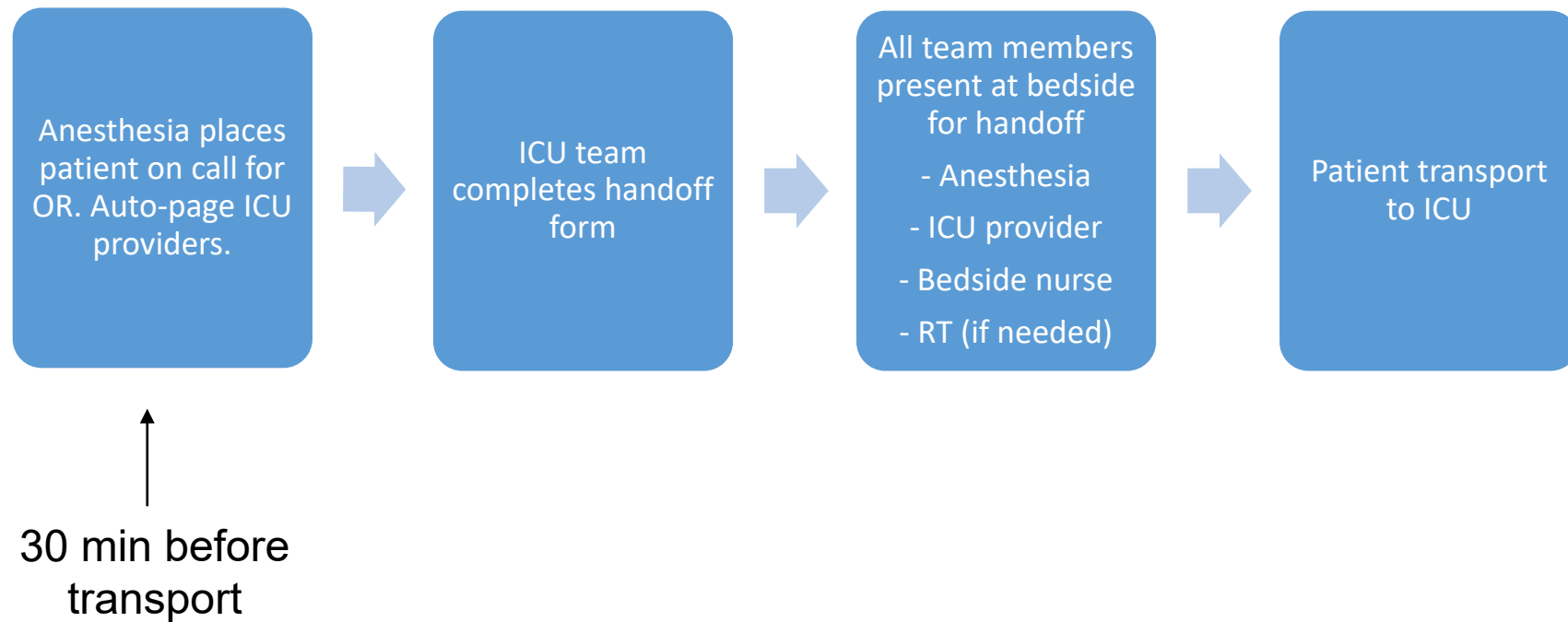
Communication will be crucially important to ensure the process runs smoothly and all team members are aware of the patient disposition post procedure. **Please discuss the intended destination as early as possible with the surgical team.** OR nursing will have copies of the SBAR and facilitate communication between the operating room, ICU, and PACU. The contact information and communication plan will be posted in all of the ORs for reference.

OR to TBICU/SICU Communication for Structured Handoff

Patient likely to need bed in TBICU or SICU

Surgeon or Anesthesia to notify Circulator – start communication with ICU

→ Anesthesia/OR nursing to confirm bed assignment/availability as early as possible (at least 45 min prior to transport)

→ Confirmation of disposition by start of closing

Notify PACU charge of decision ASAP Pager #30400

→ Anesthesia notification to ICU at dressing end (~30 min prior to transport) AND:
1. Report called to bedside RN
2. Completion of handoff tool

OR Nursing to facilitate communication with ICU & provide SBAR to anesthesia

Contact phone/pagers:

SICU	TBICU
1. Charge RN (phone 734-803-1038)	1. Charge RN (pager #8720)
2. Clerk (pager #38994)	2. Clerk (phone 6-9631)
3. Fellow (pager #2231/phone 734-803-1377)	3. Fellow (page #28230)
4. Resident (pager #8395)	4. Resident (pager #35228)
5. APP	5. APP
6. RT (pager #2570)	6. RT (pager #3301)

Direct transfer to ICU: Robust handoff with
1. Anesthesia provider
2. Bedside nurse
3. ICU team member
4. Surgical team member
5. RT (when necessary)

When the patient is going from the ICU to the OR, anesthesia should notify the unit when the patient is placed on call (approximately 30-45 min prior to pick up the patient). A member of the ICU team will complete the SBAR, and a bedside handoff will be performed before anesthesia transports to the OR.

ICU to OR Workflow

Anesthesia places patient on call for OR. Auto-page ICU providers.

→ ICU team completes handoff form

→ All team members present at bedside for handoff
- Anesthesia
- ICU provider
- Bedside nurse
- RT (if needed)

→ Patient transport to ICU

30 min before transport

Detailed, systems-based checklist to support the needs of different ICUs

ICU to OR
Handoff Communication Tool

University of Michigan

Name:
DOB: (PATIENT LABEL HERE)
REG:

Date: _____ Procedure: _____

ID band on	YES / NO	Chart w/ patient	YES / NO
Surgical consent	YES / NO	Blood consent	YES / NO
Site marked	YES / NO	Metal implants	YES / NO
Belongings off	YES / NO	Family updated	YES / NO
NPO	YES / NO	Since _____	

Isolation precautions   YES / NO _____

Latex allergy   YES / NO _____

Allergies: _____

AIRWAY

Difficult airway/Airway Concerns   YES / NO / Unknown

_____
_____

NEUROLOGIC

Preop neuro status: _____
_____

C-spine cleared   YES / NO _____

Current sedation   Propofol / Fentanyl / Midazolam / Dexmedetomidine
        Other: _____

ICP monitor   YES / NO   ICP/CPP Goal _____

Other NEURO concerns: _____
_____
_____

RESPIRATORY

Supplemental O_2 YES / NO _____

BiPAP   YES / NO _____

Intubated   YES / NO   ETT secured at _____

FiO_2 _____ PEEP _____ mPaw _____

Mode/Settings _____

Transport Vent?   YES / NO _____

Nitric Oxide   YES / NO _____

Chest Tubes   YES / NO   Require suction? _____

Other RESPIRATORY concerns: _____
_____
_____

CARDIOVASCULAR
Vascular Access

Central   YES / NO _____

Arterial   YES / NO _____

PA catheter   YES / NO _____

Sheath   YES / NO _____

Other: _____

Infusions Norepinephrine / Vasopressin / Epinephrine / Phenylephrine
Milrinone / Dopamine / Dobutamine / Isoproterenol
Esmolol / Fenoldopam / Nitroglycerin / Nicardipine
$NaHCO_3$ / Hydrocortisone / Furosemide
Other: _____

Hemodynamic Goals

MAP/SBP: _____

Fluid Balance: _____

Other: _____

Devices

Pacemaker   YES / NO   Setting _____

ICD   YES / NO   On / Off, Need to reprogram? _____

IABP   YES / NO _____

VAD   YES / NO _____

ECMO   YES / NO _____

Other CV concerns: _____
_____

HEMATOLOGIC

Active T&S   YES / NO   Ab Screen _____

Products ordered   YES / NO _____

Transf. trigger   YES / NO _____

Coagulopathy   YES / NO _____

Heparin infusion   YES / NO   On / Off, Since _____

Other infusion   YES / NO   On / Off, Since _____

Other HEMATOLOGIC concerns: _____
_____

OTHER

Preop Antibiotics   YES / NO _____

Important scheduled meds: _____

TF/TPN   YES / NO _____

Insulin infusion   YES / NO _____

CRRT   YES / NO   Need in OR? _____

iHD/PD   YES / NO   Last run _____

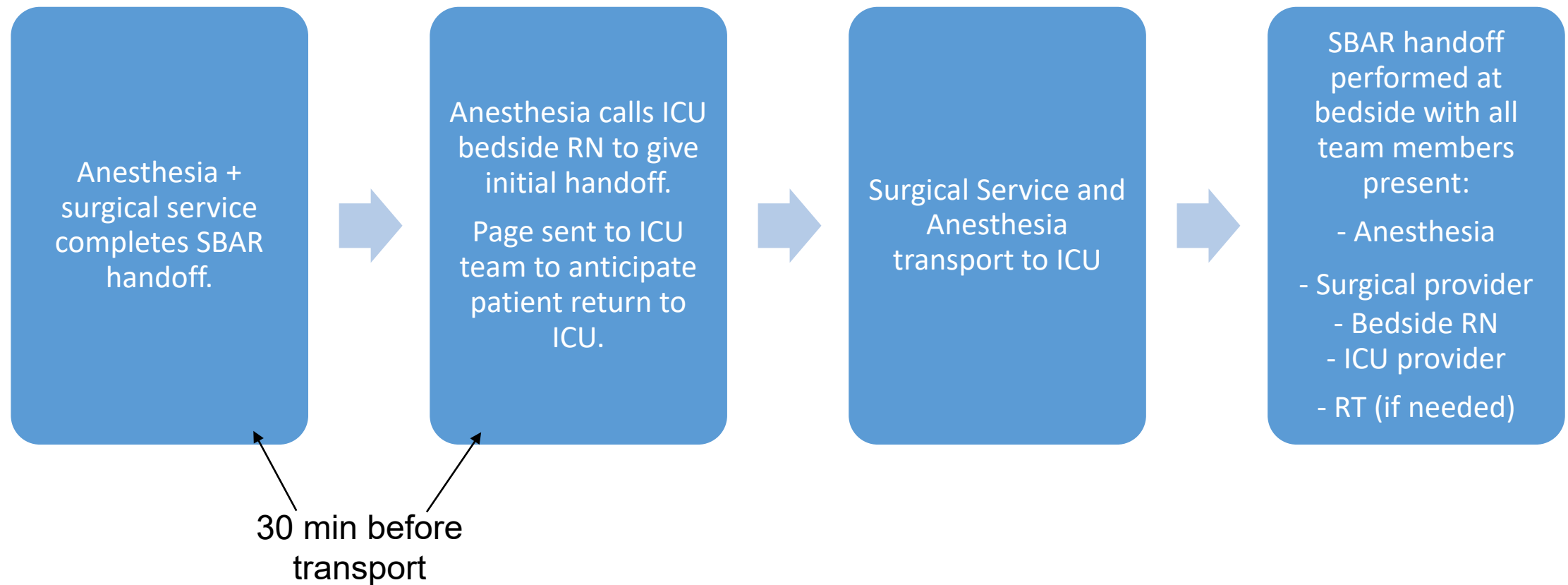Skin issues   YES / NO _____

Recent events/other concerns: _____
_____

Code Status: _____

ICU Contact: _____   Pager/Phone: _____

Attach last ABG Here:

OR to ICU Workflow

Anesthesia + surgical service completes SBAR handoff.

Anesthesia calls ICU bedside RN to give initial handoff.

Page sent to ICU team to anticipate patient return to ICU.

Surgical Service and Anesthesia transport to ICU

SBAR handoff performed at bedside with all team members present:
- Anesthesia
- Surgical provider
- Bedside RN
- ICU provider
- RT (if needed)

30 min before transport

OR to ICU Handoff Communication Tool

University of Michigan

Patient Label Here

Completed by:
Nursing
Anesthesia
Surgeon

Report given by: _____ Report received by: _____

S — Situation

Surgical procedure: _____

Surgeon: _____ Allergies: _____

B — Background

Pre-OP
History of present illness:

PMHx:

Intra-OP

Specimens: □ None □ Frozen _____ □ Permanent _____ □ Cultures _____

Airway: Difficult Airway? Yes No   Aspiration risk? Yes No   Intubated? Yes No
  Mask: _____ Technique/Grade View: _____ Vent settings: _____
  ETT Size/Secured at: _____ Trach Size/Type: _____

Fluids: Crystalloid: _____ Colloid: _____   Output: EBL: _____ UO: _____

Blood Products: RBC: _____ FFP: _____ Platelets: _____ Cryo: _____ Cell Saver: _____
    Other hemostatic agents: _____
Intra-op Concerns: _____
_____

Medications:
Muscle relaxant: _____ Last dose: _____ Last TOF: _____ Reversed? Y/N
Antibiotic: _____ Last dose: _____ Next dose due: _____
Antibiotic: _____ Last dose: _____ Next dose due: _____

Drips: _____ _____ _____ _____

Attach last ABG Here:

A — Assessment

Line Locations:
□ Peripheral: _____
□ Central Line: _____
□ Arterial Lines: _____

Analgesia:
□ PCA _____
□ Epidural _____

Drain Locations/character:
□ Chest Tubes: _____
□ NG/OG/DHT: _____
□ J-Tube: _____
□ Penrose: _____
□ Other: _____
□ Foley present (KEEP/REMOVE)

Precautions:
□ Contact (MRSA / VRE)
□ C-Diff
□ Respiratory (TB, COVID)

R — Recommendation

Post op CXR □ Yes □ No
Airway plan: _____

Post op labs □ ABG q __ hr □ CBC q __ hr □ BMP q __ hr □ CMP q __ hr □ Coag q __ hr □ ROTEM q __ hr

Blood Management Plan: _____

Activity Restrictions (e.g. lay flat time): _____

Anticoagulation/DVT Prophylaxis: _____

Feeding Recommendations: Start with _____ diet on _____ (date)

Drain Management: _____

SURGERY CONTACT: _____

Avoiding Pitfalls and Major Barriers

- FOSTER LEADERSHIP SUPPORT
  - Leaders must hold people accountable or non-adherence becomes major issue
- RESPECT THE STAKEHOLDERS AND THE TEAM
  - Consider viewpoints of everyone who is involved
- ENCOURAGE A FEELING OF "ENTITLEMENT"
  - We have a right to good handoff during transitions of care
  - Recognize it's a two-way street – quarterback and the receiver must both take responsibility
- CHAMPION STANDARDIZATION
- ADAPT FROM OTHER INSTITUTIONS
- START SMALL
  - Look for innovators and early adopters
- RE-EVALUTE AND MEASURE OUTCOMES FREQUENTLY (Quarterly)

Diffusion of Innovation
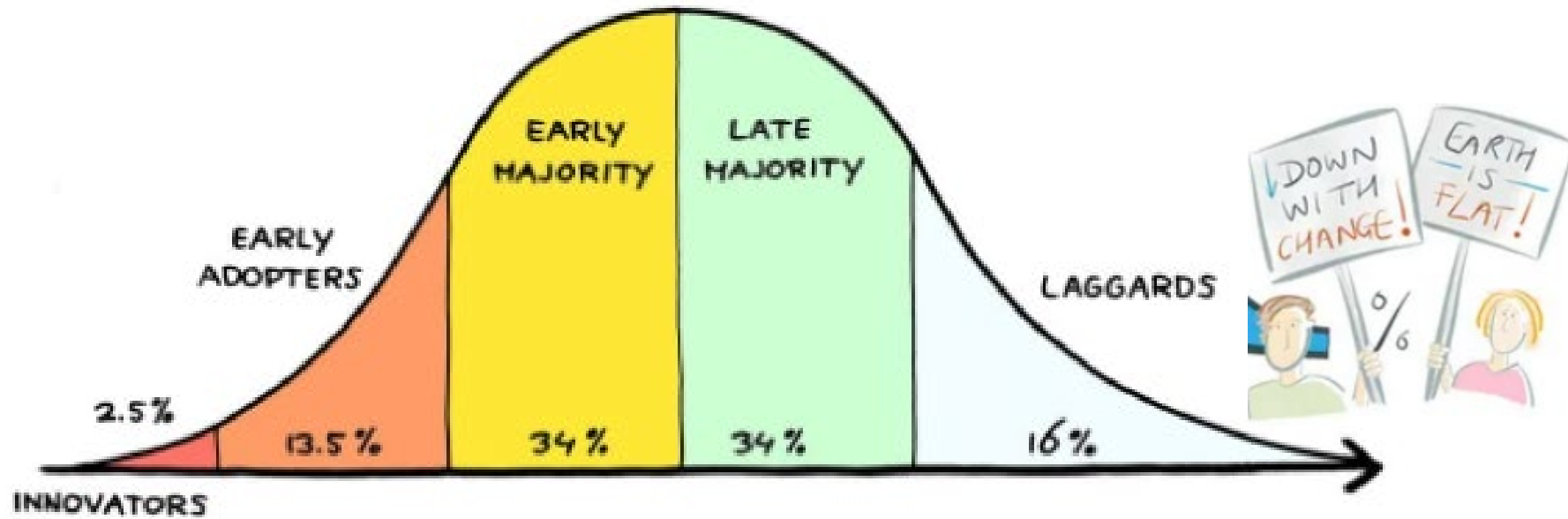
Need some inspiration?

Dr. Megan Lane-Fall - Anesthesiology and Critical Care at U Penn

"Handoffs from operating room to intensive care unit: figuring out how to spread and scale an intervention"

*HATRICC-US study

https://www.youtube.com/watch?v=2hYI9M70gN0

References

- Starmer, A.J. Changes in Medical Errors after Implementation of a Handoff Program. N Engl J Med 2014;371:1803-12.

- Jackson, P.D. Evidence Summary and Recommendations for Improved Communication During Care Transitions. Rehabilitation Nursing 2016, 41, 135–148

- Wheeler KK. Effective Handoff Communication. Nursing Critical Care 2015, 10, 13-16.

- O'Reilly KB. Joint Commission quality initiative reduces poor patient handoffs. www.ama-assn.org/amednews/2010/11/01/prsd1104.htm.

- Catchpole, KR. Patient handover from surgery to intensive care: using Formula 1 pit-stop and aviation models to improve safety and quality. Pediatric Anesthesia 2007, 17,470–478.

- Abraham, J. A systematic review of the literature on the evaluation of handoff tools: implications for research and practice. J Am Med Inform Assoc 2014;21:154–162

- Lane-Fall et al. Handoffs and transitions in critical care—understanding scalability: study protocol for a multicenter stepped wedge type 2 hybrid effectiveness-implementation trial. Implementation Science, 2021, 16:63.

- Starmer et al. Implementation of the I-PASS handoff program in diverse clinical environments: A multicenter prospective effectiveness implementation study. Journal of Hospital Medicine, 2022.

- Wolinska JM. I-PASS enhances effectiveness and accuracy of hand-off for pediatric general surgery patients. Journal of Pediatric Surgery 2022, 57, 4: 598-603.

- Anders, M. Avoiding Pitfalls in Patient Safety: Starting with Quality Assessment and Improvement. http://maryland.ccproject.com/2015/12/30/anders-avoiding-pitfalls-in-patient-safety-starting-with-quality-assessment-and-improvement/