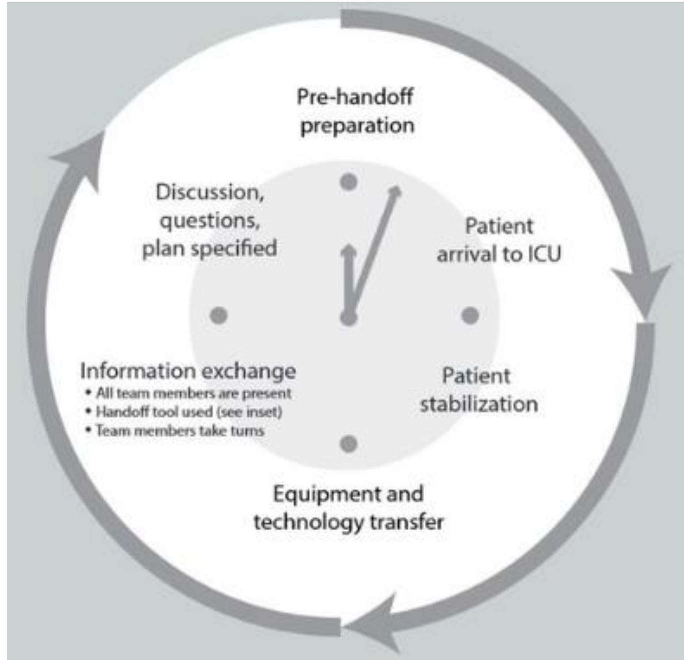
Handoffs and Transitions in Critical Care - Understanding Scalability

A research study by Dr. Meghan Lane-Fall

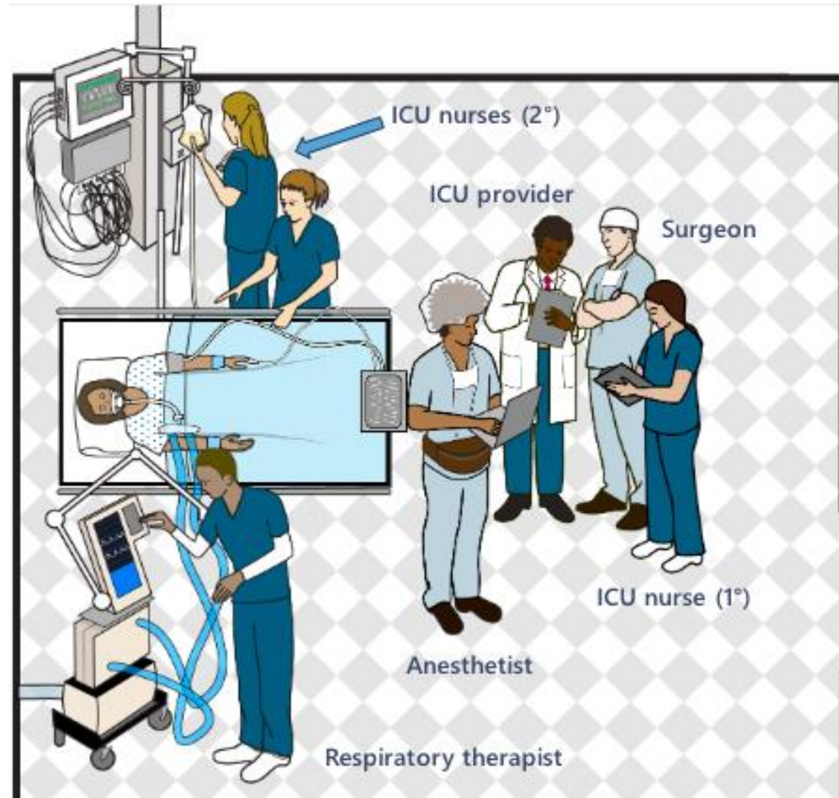
Background



- OR → ICU transfers = high risk situations for critically ill patients
- Poor execution may result in serious consequences
- Hybrid effectiveness-implementation trial

Handoffs and Transition in Critical Care - Understanding Scalability

- Builds on prior HATRICC study by scaling up to multiple academic health systems
  - Cooper
  - Johns Hopkins
  - Temple
  - UPenn
  - UT Southwestern

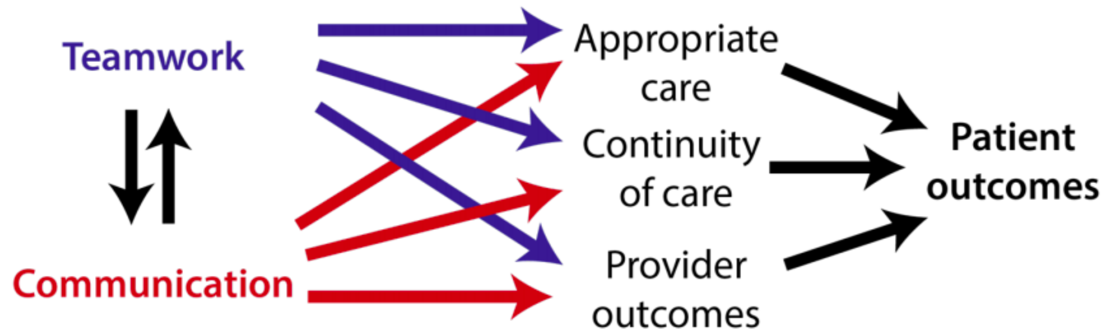


Research Question

- Research question 1: What are the barriers that will impede adoption of OR to ICU handoff protocol?
- Research question 2: How can mixing methods contribute to the design, implementation, and evaluation of a complex, cross-disciplinary intervention in medical practice in real-time?

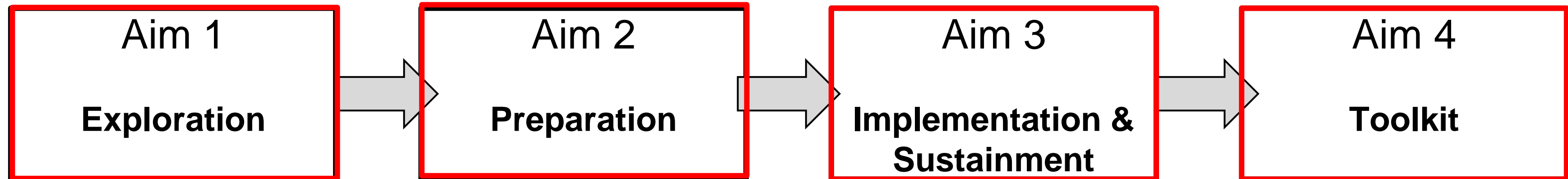
Significance of this research

- HATRICC-US is focused on understanding the OR to ICU handoff process to maximize the information transfer
- Clinician behavior is the study's focus



Aims

- Study examines effectiveness and implementation
- Determinants = barriers to implementation and facilitators
- Aim 3 is conducted via stepped-wedge design
  - Quasi-experimental in design



	ICU name	Start date: 7/6/21	*Step 1 start: 11/8/21*	*Step 2 start: 12/20/21*	*Step 3 start: 1/31/22*	*Step 4 start: 3/14/22*	*Step 5 start: 4/25/22*	*Step 6 start: 6/6/22*	*Step 7 start: 7/18/22*	*Step 8 start: 8/29/22*	*Step 9 start: 10/10/22*	*Step 10 start: 11/21/22*	*Step 11 start: 1/2/23*	*Step 12 start: 2/13/23*
ICU 1	PPMC TSICU	Baseline	*implement*	Post	post	Post	Post	Post	Post	Post	Post	Post	Post	Post
2	JHH BV	Baseline	Pre	*implement*	Post	Post	Post	Post	Post	Post	Post	Post	Post	Post
3	Cooper TICU	Baseline	Pre	Pre	*implement*	Post	Post	Post	Post	Post	Post	Post	Post	Post
4	Cooper Viner	Baseline	Pre	Pre	Pre	*implement*	Post	Post	Post	Post	Post	Post	Post	Post
5	Temple	Baseline	Pre	Pre	Pre	Pre	*implement*	Post	Post	Post	Post	Post	Post	Post
6	JHH Neuro	Baseline	Pre	Pre	Pre	Pre	Pre	*implement*	Post	Post	Post	Post	Post	Post
7	JHH CV	Baseline	Pre	Pre	Pre	Pre	Pre	Pre	*implement*	Post	Post	Post	Post	Post
8	JHH PICU	Baseline	Pre	Pre	Pre	Pre	Pre	Pre	Pre	*implement*	Post	Post	Post	Post
9	PMPH	Baseline	Pre	Pre	Pre	Pre	Pre	Pre	Pre	Pre	*implement*	Post	Post	Post
10	LGH	Baseline	Pre	Pre	Pre	Pre	Pre	Pre	Pre	Pre	Pre	*implement*	Post	Post
11	Children's Dallas	Baseline	Pre	Pre	Pre	Pre	Pre	Pre	Pre	Pre	Pre	Pre	*implement*	Post
12	UTSW	Baseline	Pre	Pre	Pre	Pre	Pre	Pre	Pre	Pre	Pre	Pre	Pre	*implement*

Methods

- HATRICC-US is focused on implementation science
- Mixed method → qualitative methodology and quantitative
  - Often used in implementation studies

Methods of Data Collection

ICU HANDOFF ASSESSMENT TOOL – guidance text CONTENT

HANDOFF CONTENT: Record whether the following elements were discussed.		
Past medical history (E.g., hypertension, coronary artery disease/myocardial infarction, diabetes mellitus)	❑ Yes	No
Intraoperative events (or lack thereof) *("Procedure was uneventful…there was injury to X…we had to call in.")*	❑ Yes	No
Airway concerns (or lack thereof) (Anything to do with the trachea: intubation, extubation, *"airway… difficult OR fiberoptic OR easy")*	❑ Yes discussed	❑ No not discussed
Lines, drains, access (LDAs) (Reference or mention location of lines/drains, e.g. "JP tube/drain," "central line," or "IV lines.")	❑ Yes	❑ No
Circulation concerns (Changes in blood pressure "*blood pressure dropped…*" & Vasoactives: phenylephrine "Neo", Norepi "Levophed," epinephrine "Epi," Vasopressin "Vaso," Nicardipine "Cardene," Nitroglycerin "Nitro")	❑ Yes	❑ No
Postoperative plan of care (Any mention of future course of action or anticipatory guidance *"S/he'll have an x-ray tomorrow," "extubate at noon," "We'll check back," "Watch for excessive bleeding")*	❑ Yes	❑ No
Family mentioned (E.g., *"We spoke with the family already.")*	❑ Yes	❑ No

ICU HANDOFF ASSESSMENT TOOL – guidance text PROCESS

HANDOFF PROCESS: Record which events occurred (order not important)				
Clinician introductions (or recognition) *("I'm Dr. ABC, and I'm the surgeon" and "I'm XYZ, and I'm the ICU NP.")*	❑ Yes	❑ No	❑ Concern	❑ Partial
Patient stabilization (Pt. is brought into room & any medical interventions that need to be done are completed, e.g., giving a drug or settling/positioning in bed)	❑ Yes	❑ No	❑ Concern	
Monitor transfer by non-handoff staff (Mobile tech used to monitor pt. during transport from OR is transferred to tech in ICU room, e.g., monitors and ventilators)	❑ Yes	❑ No	❑ Concern	
Clinician huddle ("Big four" (ICU primary RN, ICU provider, surgical rep., and anesthesia rep.) get together to start handoff)	❑ Yes	❑ No	❑ Concern	❑ Partial
Surgery report (Surgical rep. gives a report about pt. identifiers, past medical history, procedure, intraoperative events, and lines/tubes/drains)	❑ Yes	❑ No	❑ Concern	
Anesthesia report (Anesthesia rep. gives report about anesthetic, airway issues, hemodynamics, and I/Os)	❑ Yes	❑ No	❑ Concern	
ICU provider synopsis (ICU provider leads a system-based discussion, e.g., what is going on with the pt.)	❑ Yes	❑ No	❑ Concern	
Focused exam by all group members (Performed by one of the "Big four")	❑ Yes	❑ No	❑ Concern	❑ Partial
Question period (or offer) (Confirm that all questions have been answered)	❑ Yes	❑ No	❑ Concern	
Exchange of contact information (or offered)	❑ Yes	❑ No	❑ Concern	

Qualitative Data Analysis

From Original HATRICC Study

HATRICC Codebook Dictionary

1. **Familiarity** – QUESTION 1: descriptions of whether or not participants seemed to know each other (i.e. use of names and/or provider introductions)
   a. **High**
   b. **Low**
2. **Level of Attention** - QUESTION 1: descriptions of providers paying attention during the handoff indicated by *direct eye contact, note taking, and no distractions or use of phones*
   a. **High**
   b. **Low**
3. **Level of Engagement** – QUESTION 2: descriptions of the participants level of interest and engagement indicated by *mentions of HATRICC, using HATRICC tool, asking questions*
4. **Actors in Handoff** – QUESTION 3: descriptions of who was present during the handoff and what their roles were (i.e. what were the actors wearing and how did you know their role?)
   a. **All present**
   b. **Not all Present**
5. **Information Relay** – QUESTION 4: descriptions of communication style and level of organization. Was information mostly offered or prompted? Was there any note taking?
   a. **Good**
   b. **Poor**
6. **Teamwork** – QUESTION 5: observed teamwork as superior, satisfactory, or unsatisfactory and why? (do not code parent node)
   a. **Superior**
   b. **Satisfactory**
   c. **Unsatisfactory**
7. **Suggestions for Improving Teamwork** - comments or mentions of how teamwork could have been improved during handoff

Conclusion

- In the previous HATRICC study, OR and ICU teams agreed on the importance of handoffs
- The current HATRICC-US study is aiming to use implementation science and engineering approaches like participatory design to customize and implement an evidence-based practice in any fast-paced critical care environment
    - Characterize implementation determinants in different health centers and test the relationships between the intervention and patient outcomes.

Limitations

- This study takes place in academic medical centers
- Data has the potential to be impacted by the Hawthorne effect
    - Ratings by observers may be artificially high
- Potential bias in the interviews, focus groups, and surveys

Future Directions

- Study handoffs in other fields outside of OR to ICU
- Possible focus: Is there a racial or discriminatory presence that is prevalent in poor patient handoffs?

Personal Lessons Learned

HOLD YOURSELF ACCOUNTABLE!!!!!

> Build a supportive community
> because you don't do this alone.
> You can't do this alone.