



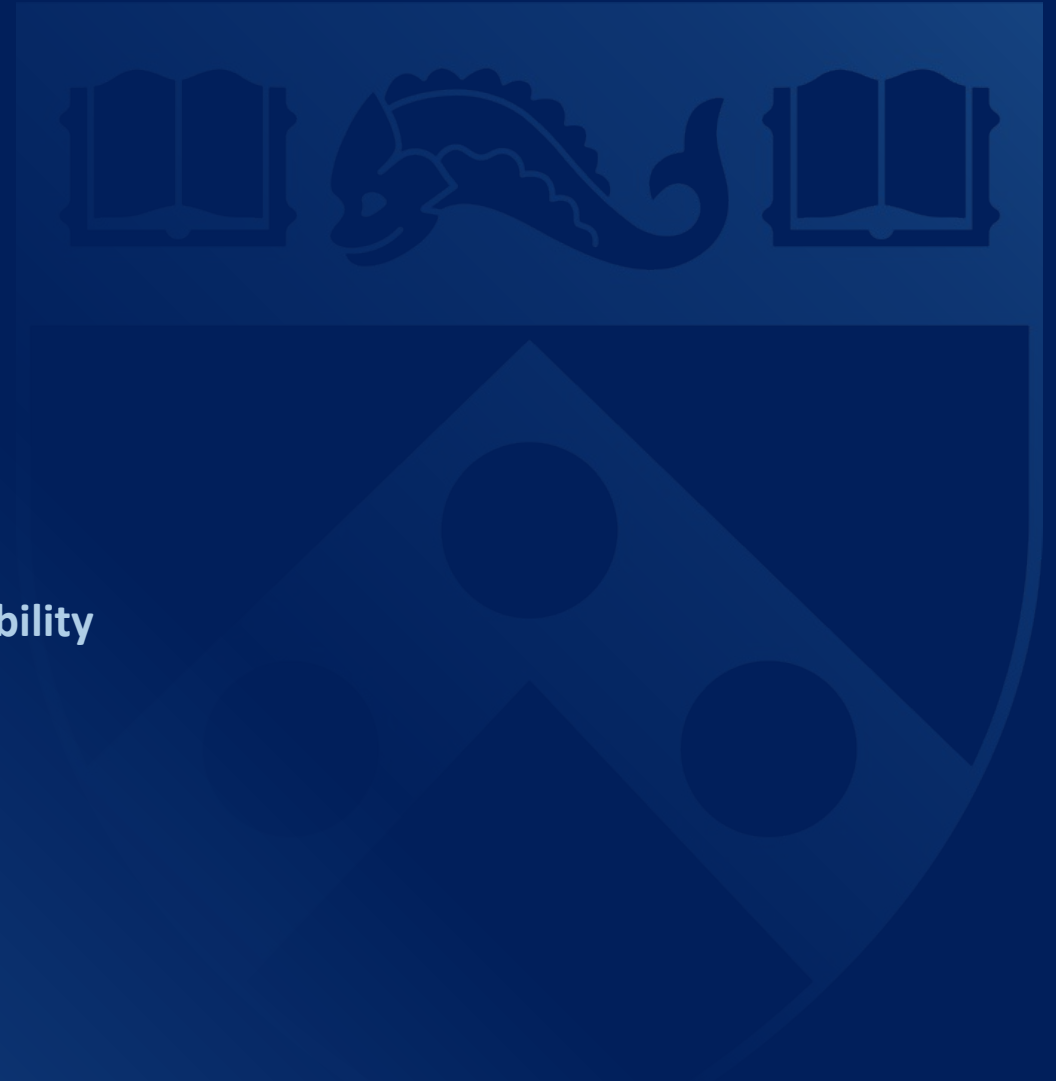
Penn Medicine

# HATRICC-US

Handoffs & Transitions in Critical Care – Understanding Scalability

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# SUMR Mentorship Team



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# Addressing Performance Gap in High-Acuity Settings

- **Need:** characterizing implementation strategies suitable for fast-paced, high states critical care environment
- **Why?:** to narrow evidence-to-practice performance gap for high-acuity patients
- An intervention deemed high priority by the American Heart Association (1)

## Circulation

Volume 128, Issue 10, 3 September 2013; Pages 1139-1169  
<https://doi.org/10.1161/CIR.0b013e3182a38efa>



## AHA SCIENTIFIC STATEMENT

### Patient Safety in the Cardiac Operating Room: Human Factors and Teamwork

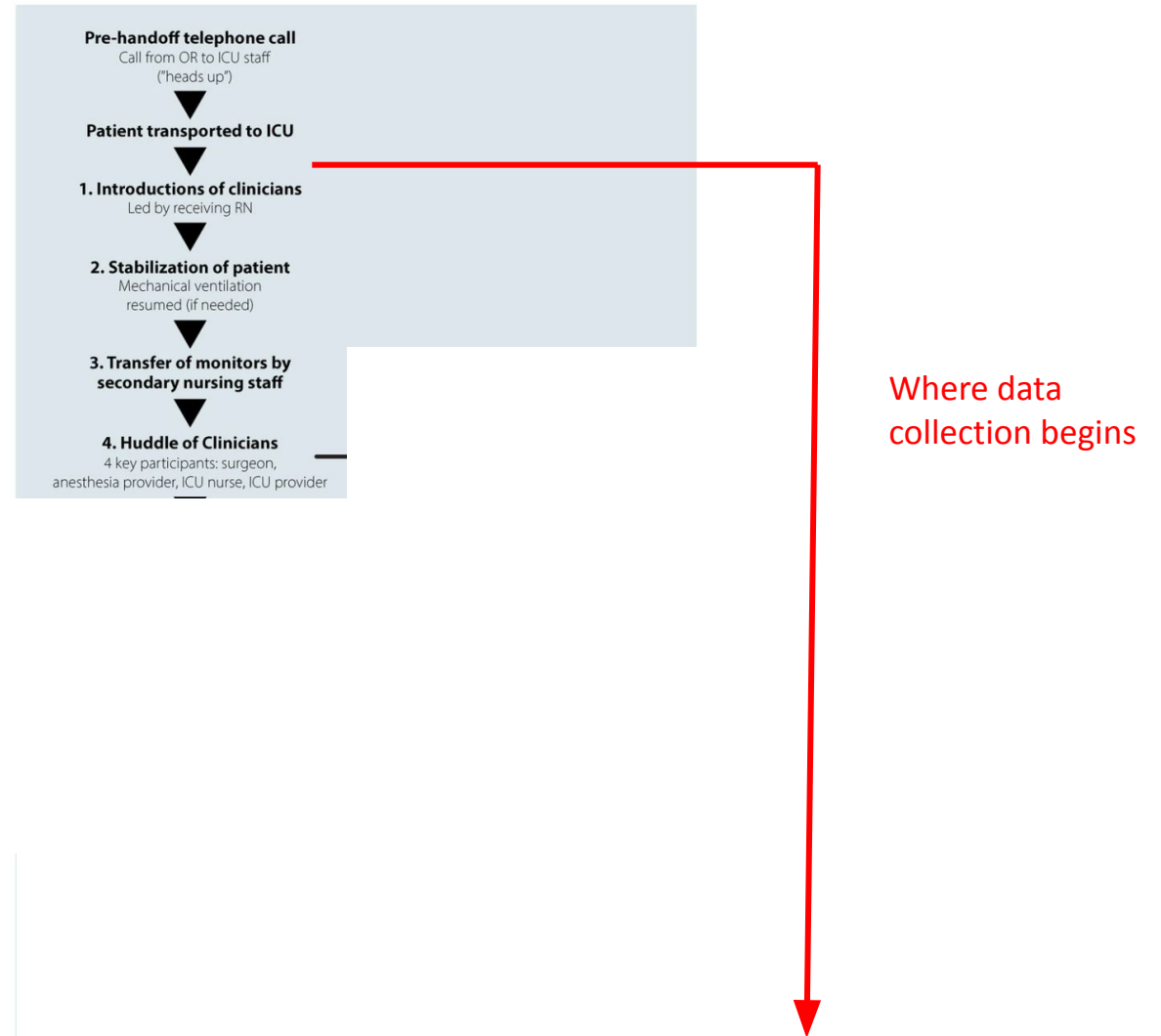
A Scientific Statement From the American Heart Association

Joyce A. Wahr, MD, FAHA, Co-Chair, Richard L. Prager, MD, FAHA, J.H. Abernathy, III, MD, Elizabeth A. Martinez, MD, Eduardo Salas, PhD, Patricia C. Seifert, MSN, Robert C. Groom, CCP, Bruce D. Spiess, MD, FAHA, Bruce E. Searles, MS, CCP, Thoralf M. Sundt, III, MD, Juan A. Sanchez, MD, Scott A. Shappell, PhD, Michael H. Culig, MD, Elizabeth H. Lazzara, PhD, David C. Fitzgerald, CCP, FAHA, Vinod H. Thourani, MD, Pirooz Eghtesady, MD, PhD, FAHA, John S. Ikonomidis, MD, PhD, FAHA, Michael R. England, MD, Frank W. Sellke, MD, FAHA, Nancy A. Nussmeier, MD, FAHA, Co-Chair, and on behalf of the American Heart Association Council on Cardiovascular Surgery and Anesthesia, Council on Cardiovascular and Stroke Nursing, and Council on Quality of Care and Outcomes Research

*“Handoff failures have been identified as a significant source of medical errors, both between and within teams” (2)*

*“Standardization of critical interactions by use of protocols (eg, handoffs) improves the content and structure of information and increases participation but is often met with ambivalence at best and hostility at worst” (2)*

# Handoff Structure



a) OR to ICU handoff participants

a Clinician participants and roles in the OR-to-ICU handoff. b OR-to-ICU handoff protocol

# The Project: HATRICC-US

- HATRICC (pilot study) to HATRICC-US (current project)
- Using **evidence-based standardized protocol** for patient care handoffs from the operating room (OR) to the intensive care unit (ICU)
  - 12 adult and pediatric ICUs, 9 hospitals, 5 health systems
- **Purpose:** study the uptake and use of complex socio-technical interventions in acute care.

Study protocol | [Open Access](#) | [Published: 19 November 2014](#)

## Handoffs and transitions in critical care (HATRICC): protocol for a mixed methods study of operating room to intensive care unit handoffs

[Meghan B Lane-Fall](#) , [Rinad S Beidas](#), [Jose L Pascual](#), [Meredith L Collard](#), [Hannah G Peifer](#), [Tyler J Chavez](#), [Mark E Barry](#), [Jacob T Gutsche](#), [Scott D Halpern](#), [Lee A Fleisher](#) & [Frances K Barg](#)

*BMC Surgery* **14**, Article number: 96 (2014) | [Cite this article](#)

**8832** Accesses | **35** Citations | **2** Altmetric | [Metrics](#)



Study protocol | [Open Access](#) | [Published: 15 June 2021](#)

## 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](#) , [Athena Christakos](#), [Gina C. Russell](#), [Bat-Zion Hose](#), [Elizabeth D. Dauer](#), [Philip E. Greilich](#), [Bommy Hong Mershon](#), [Christopher P. Potestio](#), [Erin W. Pukenas](#), [John R. Kimberly](#), [Alisa J. Stephens-Shields](#), [Rebecca L. Trotta](#), [Rinad S. Beidas](#) & [Ellen J. Bass](#)

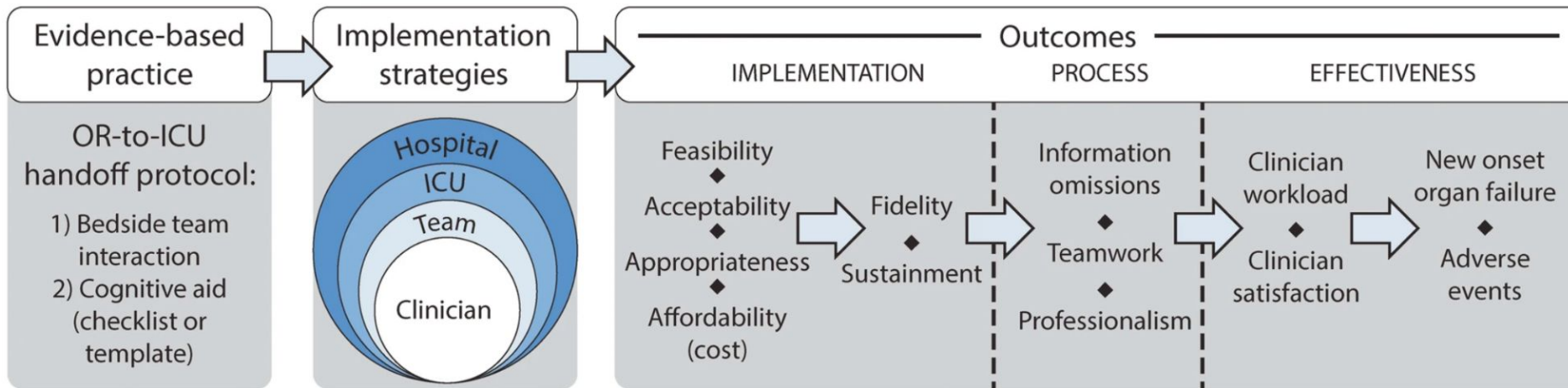
*Implementation Science* **16**, Article number: 63 (2021) | [Cite this article](#)

**6051** Accesses | **8** Citations | **16** Altmetric | [Metrics](#)



# Aims:

1. Ascertain determinants of OR to ICU protocol adoption and use through **contextual inquiry**
2. Adapt handoff protocols using **human factors engineering** and **implementation mapping**
3. Test the **effectiveness** of such strategies throughout 4-5 years of study
4. Design and create a **digital toolkit** for other ICUs for future interventions



Hybrid of Proctor's implementation model and the social ecological model

# Study Instruments

## ICU HANDOFF

Check box to confirm

Observation ID: \_\_\_\_\_

ID Format: First letter of in:

### In what clinical locati

- Cooper TICU
- Cooper Viner ICU
- Hopkins Bayview Bt
- Hopkins Bayview SI

Assessment Start Tim

### PATIENT DEMOGRAPH

Mechanically ventilate

Surgical Service: \_\_\_\_\_

ICU Admission Status:

### HANDOFF CONTENT: I

Past Medical History

Intraoperative events

Airway concerns (or la

Lines, drains, access (L

Circulation concerns

Postoperative plan of

Family mentioned

### HANDOFF PROCESS: R

Clinician introductions

Patient stabilization

Monitor transfer by nc

Clinician huddle

Surgery report

Anesthesia report

ICU provider synopsis

Focused exam by all gr

Question period (or of

Exchange of contact in

**Revised version 2021.1**

Completed By (initials):  
Use the blank space on

## NASA TAS

Date of Hand

### In what clinic:

- Cooper TICU
- Cooper Viner
- Hopkins Ba
- Hopkins Ba

Please select

- Anesthesia

### Instructions: t

The following  
that matches

### Mental dema

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remembering,

### Physical dema

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OR-to-ICU har  
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ICU team is pr  
patient based

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prepared to ta  
the handoff fr

### Please determin

Second letter of

Second letter of

Day of birth (tw

# of street addr

e.g. Jane Doe bc

The participant

### Have you provi

If "No" or "Unsu

Completed By (ir

Revised Version .

## PERSPECTIVE SURVEY

We are conducting a study of handoff protocol implementation. We are interested in your perspectives on the OR-to-ICU handoff process. Please complete the questions below. Your participation is voluntary, and you do not have to answer any of these questions. Your answers are anonymous, and survey results will only be reported in aggregate. Thank you!

### In which clinical location/unit do you work? Select all that apply.

- Cooper TICU
- Cooper Viner ICU
- Hopkins Bayview Burn ICU
- Hopkins Bayview SICU
- Hopkins NCCU
- Hopkins PICU
- Hopkins CVSICU
- Other \_\_\_\_\_
- Penn Lancaster ICU
- Penn Princeton CCU
- Penn Presbyterian TSICU
- Temple SICU
- UTSW Clements SICU
- UTSW Children's CVICU

In your current role, do you care for patients in the operating room who are later transferred to the ICU?  Yes  No

In your current role, do you care for patients in the ICU who have been transferred to you from the OR?  Yes  No

### How familiar are you with the way OR-to-ICU handoffs are conducted on this unit?

- Extremely familiar
- Very familiar
- Moderately familiar
- Slightly familiar
- Not at all familiar

**IF YOU CARE FOR PATIENTS IN THE OR TRANSFERRED TO THE ICU:**  
Please answer the following questions from the perspective of a clinician caring for a patient in the operating room who requires transfer to the ICU.

### From the intraoperative (OR) perspective, how often are the following statements true?

	Never	Rarely	Sometimes	Usually	Always
1. <b>From the OR perspective:</b> During handoff, I ask the ICU team if they have questions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. <b>From the OR perspective:</b> During handoff, I forget to mention something important.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. <b>From the OR perspective:</b> There is a person on the ICU team that I do not know.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### From the OR perspective, please specify your level of agreement with the following statements.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
4. <b>From the OR perspective:</b> I understand what is expected of me in handoffs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. <b>From the OR perspective:</b> I know what information I need to transmit to the ICU team for them to care for the patient after the handoff.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. <b>From the OR perspective:</b> I am satisfied with the current way that OR-to-ICU handoffs are conducted.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**IF YOU CARE FOR PATIENTS IN THE ICU TRANSFERRED FROM THE OR:**  
Please answer the following questions from the perspective of a clinician caring for a patient in the ICU who was transferred to you from the operating room.

### From the postoperative (ICU) perspective, how often are the following statements true?

	Never	Rarely	Sometimes	Usually	Always
7. <b>From the ICU perspective:</b> During handoff, I ask clarifying questions of the OR team when necessary.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. <b>From the ICU perspective:</b> There is a person on the OR team that I do not know.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Revised Version 2021.1025



# Case Summary for Cooper Viner ICU

- Based on ICU Handoff Case Report Form (David) and Perspectives Survey (Anthony)
- Summarized collected data from Cooper Viner ICU
- Played a role in initiating intervention for this ICU





# *Systematic review of OR to ICU handoff standardization interventions highlights need for focus on sustainability and patient outcomes*

- Purpose: To synthesize findings about OR to ICU handoff **intervention sustainability** and their **impact on patient outcomes** (not described well in the literature)
- Original Methodology: 10 databases (studies published between 1995 and October 2021)
  - Modified to studies published up to the present
- Screening articles with Covidence (shown on left)
- Preliminary Deadline: December 2023

The screenshot shows the Covidence 'Review Summary' page. At the top, it says 'covidence Systematic Review of OR to ICU' and has a search bar. Below that, there are buttons for 'Settings', 'PRISMA', and 'Export'. The main section is titled 'Review Summary' and includes an 'Import references' section with a note '2311 total duplicates removed' and an 'Import' button. The 'Title and abstract screening' section shows a progress bar and a table of counts: 451 DONE, 12 CONFLICTS, 1572 ONE VOTE, and 3733 NO VOTES. To the right, it says '425 irrelevant' and '3846 studies to screen' with buttons for 'Resolve conflicts' and 'Continue'. At the bottom, it says 'You've screened 1922 studies so far'.



# Timeline

## What we've done:

- Data collection
- Shadowing
- Summer School/learning about HATRICC-US
- Began systematic review

## What's next?

- Continuing beyond SUMR program in the efforts to:
  - collect data
  - stepped wedge implementation of interventions at more sites
  - conduct focus groups and interviews
- (Hopefully) continue shadowing and shadowing other clinicians
- TBD

# Lessons Learned

## David

- Exposure to research process
- Attitude towards a particular intervention is crucial in the successful implementation of said intervention
- Nurses are awesome!!
- Shadowing
- Equity in research and in medicine
- Systematic Review
- Critical care, maybe 😊

## Anthony

- The vital role each clinician plays
  - Shadowing
  - Data Collection
  - HATRICC meetings and career panel
- Methods to a systematic review
- Engineering is not limited to inanimate objects (humans, too!)
- Implementation science
- Dynamic critical care environment

# Acknowledgements



**LANE-FALL LAB**  
ADVANCING PATIENT-CENTERED QUALITY CARE



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**HATRICC-US Team**

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**2023 SUMR Cohort**

**Dr. Stacey Kastner from  
Writing Center**



# REFERENCES

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2. Patient Safety in the Cardiac Operating Room: Human Factors and Teamwork A Scientific Statement From the American Heart Association: Wahr, J. A., Prager, R. L., Abernathy, J. H., Martinez, E. A., Salas, E., Seifert, P. C., Groom, R. C., Spiess, B. D., Searles, B. E., Sundt, T. M., Sanchez, J. A., Shappell, S. A., Culig, M. H., Lazzara, E. H., Fitzgerald, D. C., Thourani, V. H., Eghtesady, P., Ikonomidis, J. S., England, M. R., ... Nussmeier, N. A. (2013). Patient Safety in the Cardiac Operating Room: Human Factors and Teamwork. *Circulation*, 128(10), 1139–1169. <https://doi.org/10.1161/CIR.0b013e3182a38efa> or <https://www.ahajournals.org/doi/epub/10.1161/CIR.0b013e3182a3>
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4. Handoffs and transitions in critical care—understanding scalability: study protocol for a multicenter stepped wedge type 2 hybrid effectiveness-implementation trial: Lane-Fall, M.B., Christakos, A., Russell, G.C. et al. Handoffs and transitions in critical care—understanding scalability: study protocol for a multicenter stepped wedge type 2 hybrid effectiveness-implementation trial. *Implementation Sci* 16, 63 (2021). <https://doi.org/10.1186/s13012-021-01131-1>

# QUESTIONS?

Thanks for listening!

