

**PATHWAYS4KIDS**

Supporting Evidenced Based Practices

# Don't Leave the CUBS in the Den: Creating a Resident Usability Testing Group

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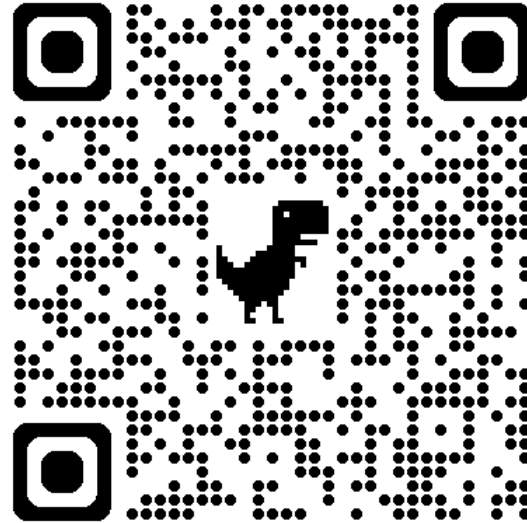
## Learning Objectives:

- I. Briefly review usability and clinical pathway literature and discussing importance of user-feedback and usability testing
- II. Explain the structured workflow of our novel resident usability testing group (CUBS)
- III. Evaluate the potential benefits of usability testing for pathway adoption, learner development, and improvement in roll outs for patient care
- IV. Discuss opportunities to further expand and refine usability testing groups and facilitate other discussion on usability testing





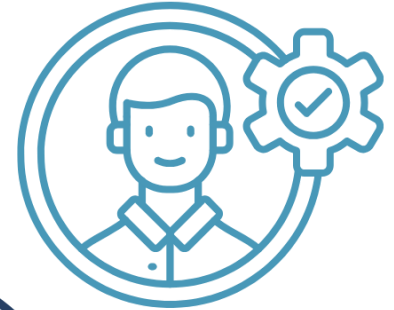
- Financial Disclosures:
  - I have no financial disclosures
  - Although, if anyone is offering any monetary conflict of interest...
- Non-financial disclosures:
  - Apologies in advanced, this presentation is dotted with terrible memes, gifs, and AI generated images





# What even is “Usability” anyway?

- Degree to which something is:
  - Effective to use
  - Efficient to use
  - Satisfying to use
- Aims to reduce friction between users and their ability to accomplish tasks
- Usability tests the **INTERFACE**, not the user, and is not the same as QA testing





- Usability directly impacts pathway adoption and sustained use
- End-user feedback improves clinical decision support tool effectiveness
- Iterative testing reduces workflow friction and increases adoption
- User involvement in-development enhances usability and quality at publication

**“48% of [pathway] issues were user-identified with only an 11% overlap with issues identified by clinical content experts”**  
*Surgery, 2022*

Toy, Drechsler, Waters, 2018  
Gutenstein, Pickering, Than, 2018  
Aziz, Bonsmith, et al., 2025  
Carayon, Hoonakker, Hundt, et al., 2020  
Jones, et al., 2022  
Hwang, Tchoe, Chung, Park, & Choi, 2023

Conor's  
favorite  
quote

**“Only 17% of clinicians reported using pathways — but 75% were interested if usability improved”**  
*AMIA, 2018*

Sophie's  
favorite  
quote





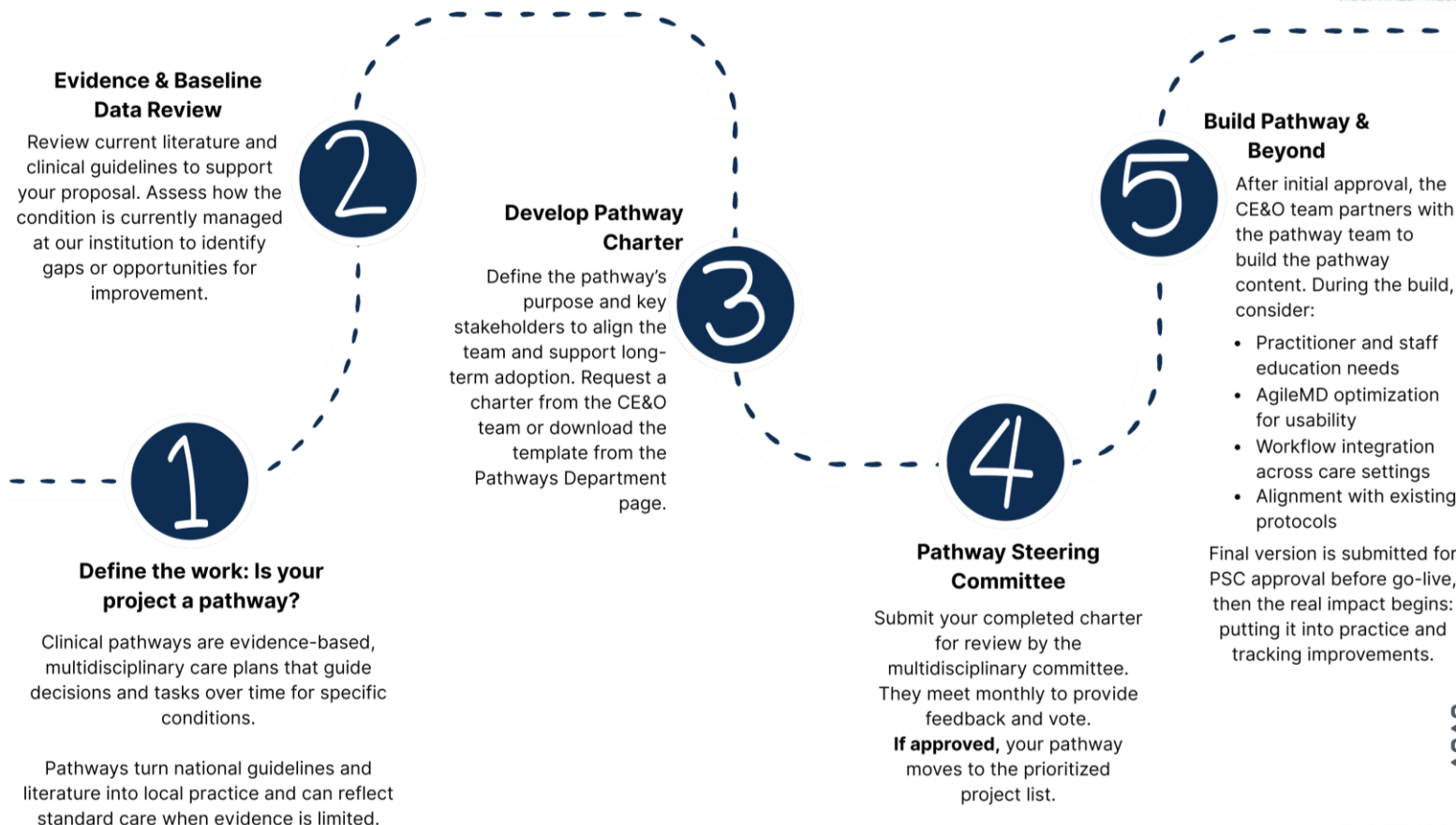
## Themes

- Adoption & Engagement
- Workflow Integration
- Feedback & Integration
- Education & Training

## Evidence

- Higher adoption when tools align with clinician workflow
- Poor usability linked to CDS abandonment
- User feedback improves safety and efficiency
- Trainee physicians had lower utilization of new pathways







- Usability concerns often theoretical in nature
  - Experts trying to “imagine” being an intern
  - Reviewers more familiar than base-user with pathway housing program
- Front-line users minimally involved in the draft/review processes
- Critical feedback would majorly change pathways AFTER publication
  - Despite 2 - 3 groups of faculty reviewers already providing edits
- Resident physician use of pathways less than hoped for, at roll-out





# Our Solution: Clinicians Using Better Systems (CUBS!)



- A resident physician focused feedback group
- When it comes to usability, front-line users *should* be the primary sources of feedback
- Goals
  - Collect feedback/concerns
  - Rate ease of use
  - Identify issues the experts and authors are less likely to identify





# Who's Involved in All This?



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1. Three primary faculty members
  - Review pathways in development
  - Identify testing needs
2. Trainees recruited from all our current peds and med/peds residents.
  1. 10 residents volunteered
  2. Representation from all PGY levels
  3. Fellows reserved as facilitators
3. Testing facilitator roster is dynamic and includes faculty/fellows from various departments
  3. IT/IS/Informatics
  4. Quality/Safety
  5. Pediatric Hospital Medicine



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# How are Testing Sessions Prepared?

- Weekly meetings of core CUBS faculty
  - Currently review 1 pathway per month
  - Work to identify potential areas of concern
- Testing scripts and tasks created and filtered in/out for final selection
  - Have to filter out tasks testing clinical content vs testing usability
- Test patients created in non-prod Epic
  - Utilizing Epic functionality allows us to assess real-time use
- Residents offered sign-up for sessions given their schedule is so variable
  - Food provided as encouragement 😊





## Three Required Components of Every Task

- **Character:** Assign a clear clinical role
- **Situation:** Place the user in a realistic clinical context
- **Command:** Provide a clear, concise instruction

## Best Practices for Writing Tasks

- Address a specific question or decision
- Reflect a realistic clinical workflow
- Avoid leading the user toward a “correct” answer

## Formatting & Scope Guidelines

- One task per page (include facilitator notes)
- Limit to 5 - 7 tasks total
- Target 30 - 40 minutes for testing
- Pair tasks with structured debrief questions

### Task Sheet 2

**Role:** You are a pediatric resident evaluating a patient in the Emergency Department.

**Situation:** A 2-year-old child presents with mild abdominal distension and bruising near the umbilicus. The caregiver reports the child fell onto a toy box earlier in the day. The child is verbal and interactive. Vitals are stable. There is no vomiting, and the rest of the physical exam is unremarkable. AST, ALT, lipase are pending.

**Command:** Determine what diagnostic orders you would place for this patient, talk to the facilitator about your process.

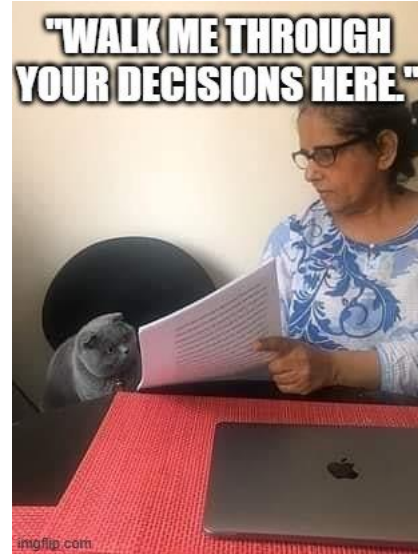
### Facilitator Guide

- **Pathway Starting Step:** Resident is reviewing transfer criteria after resuscitation.
- **Things to Pay Attention To:**
  - Do they verbalize rationale for transfer?
  - Do they express confusion about who makes the decision?
  - Do they reference specific criteria or thresholds?
- **Post-Task Questions:**
  - What made you decide to transfer or not transfer?
  - Was it clear which unit to transfer to?
  - Did the pathway clarify who initiates transfer?



# How do Testing Sessions Work?

- Resident testing sessions held on one Friday per month during noon protected-time
- 1:1 facilitator with each resident
- Tasks given to residents and facilitators observe completion and collect commentary
- Standardized questions asked after each task
  - Modified System Usability Scale or “SUS” score
  - cut from 10 to 3 questions with 1-5 scoring
- Comments, scores, question responses entered by facilitators digitally





# What Happens After a Testing Session?



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- Task SUS scores and comments on pathways reviewed
- Comments are collated by common themes into feedback report
- Feedback summary report provided to pathway authors
- Pathway determined to be “CUBS approved” or not based on feedback and scores



**Objective:** Assess usability of the *Child Abuse Clinical Pathway* through task-based testing and Likert-scale ratings.

**Highlights:**

- **Overall clarity:** Avg = 4.1 | Median = 5
- **Ease & speed:** Avg = 4.0 | Median = 5
- **Decision guidance:** Avg = 4.0 | Median = 5
- **Top Issues:** Tabs often unnoticed; confusion on TCAR/Trauma/Ophthalmology consult timing; unclear documentation/reporting roles.

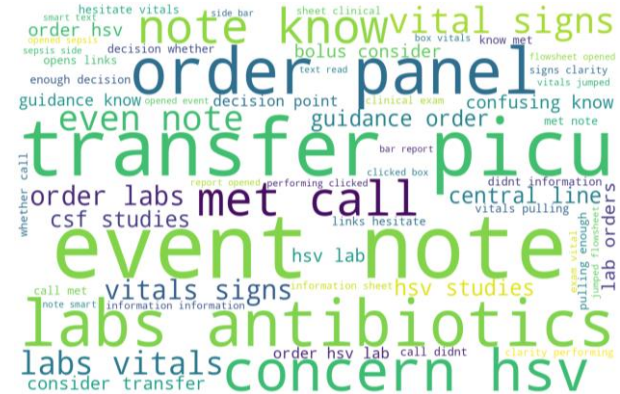
**Section 5: Actionable Recommendations**

1. **Improve navigation:** Highlight tabs; add “Quick Links” panel.
2. **Clarify consult timing:** Add explicit guidance for TCAR, Trauma, Ophthalmology in main flow.
3. **Documentation clarity:** Define who writes maltreatment notes and reporting responsibilities.
4. **Decision-support list:** Include a checklist of key decisions the pathway addresses.
5. **Resource separation:** Move financial/resource info to a distinct tab for clarity.



# Glimpse of our Data

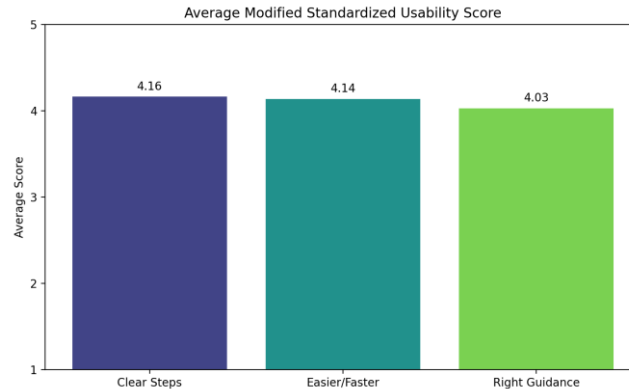
- Frequent user-identified themes reported to pathway authors
  - Most important indicators of actionable changes to make
- Modified SUS scores require fine tuning
  - Anecdotally the more complex the task, the lower the scores



↑ Neonatal Sepsis Pathway



↑ Child Abuse Pathway



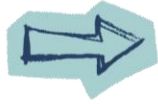
# Some Speedbumps We've Hit on this Road

- Resident availability is variable; attendance inconsistent
- SUS scores show limited spread (most ratings  $\geq 3$ )
- Facilitator experience and guidance vary session to session
- Feedback is not always incorporated into final pathways
- Feedback reports need clearer synthesis:
  - Training-level themes
  - Actionable recommendations
  - Task-based organization



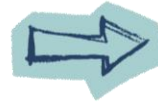


## Now



- Standardizing CUBS sessions
- Developing a “common pitfalls” CP-authorship guide
- Defining what “good usability feedback” looks like / CUBS impact

## Next



- Standardize pathway authoring
- Train and engage future physicians
- Ensure usability testing before publication

## Future

- Usability testing for every pathway
- Expanded CUBS capacity
- Measure the downstream impact of usability on pathways





# Future Work to Carry Beyond CUBS

- Trial subsequent Clinical Pathway Authorship Rubric with other institutions
- Usability testing groups for users beyond physician trainees
  - Nurses (in progress)
  - RRTs
  - Social Workers
- Usability testing beyond clinical pathways
  - Testing of New/Edited Protocols
  - Testing of Updated Procedures





# Questions? Comments? Concerns? Favorite recipes?

- I have some questions for the audience if you don't have your own:
  - Does your institution utilize front-line user feedback?
  - Prior to implementation?
  - In developing other things beyond pathways?
  - Do these efforts include trainees?





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## Extra Thanks:

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2. Special thanks to Tenor.com for gifs
3. Thanks to Img-flip.com for allowing me to pollute the world with memes

