



AMIA 2020 VIRTUAL
Clinical Informatics Conference
EVIDENCE • ANALYTICS • BEST PRACTICE
MAY 19-21
#CIC20

The banner features a circular inset image of a smiling man with a beard and glasses, wearing a light blue shirt, sitting at a desk with a laptop. The background is a dark purple gradient with white and yellow circular accents and connecting lines.

Presentation by Bimal Desai, MD, MBI, FAAP, Assistant Vice President and Chief Health Informatics Officer at Children's Hospital of Philadelphia

May 20, 2020 American Medical Informatics Association (AMIA) 2020 Virtual Conference

S36: At the Tip of Your Tongue

Voice-Guided Procedural Checklists for Healthcare



Kelsey Oh

Office of Entrepreneurship & Innovation
Children's Hospital of Philadelphia



Bimal Desai, MD, MBI

Chief Health Informatics Officer
Children's Hospital of Philadelphia



Natalie Rintoul, MD

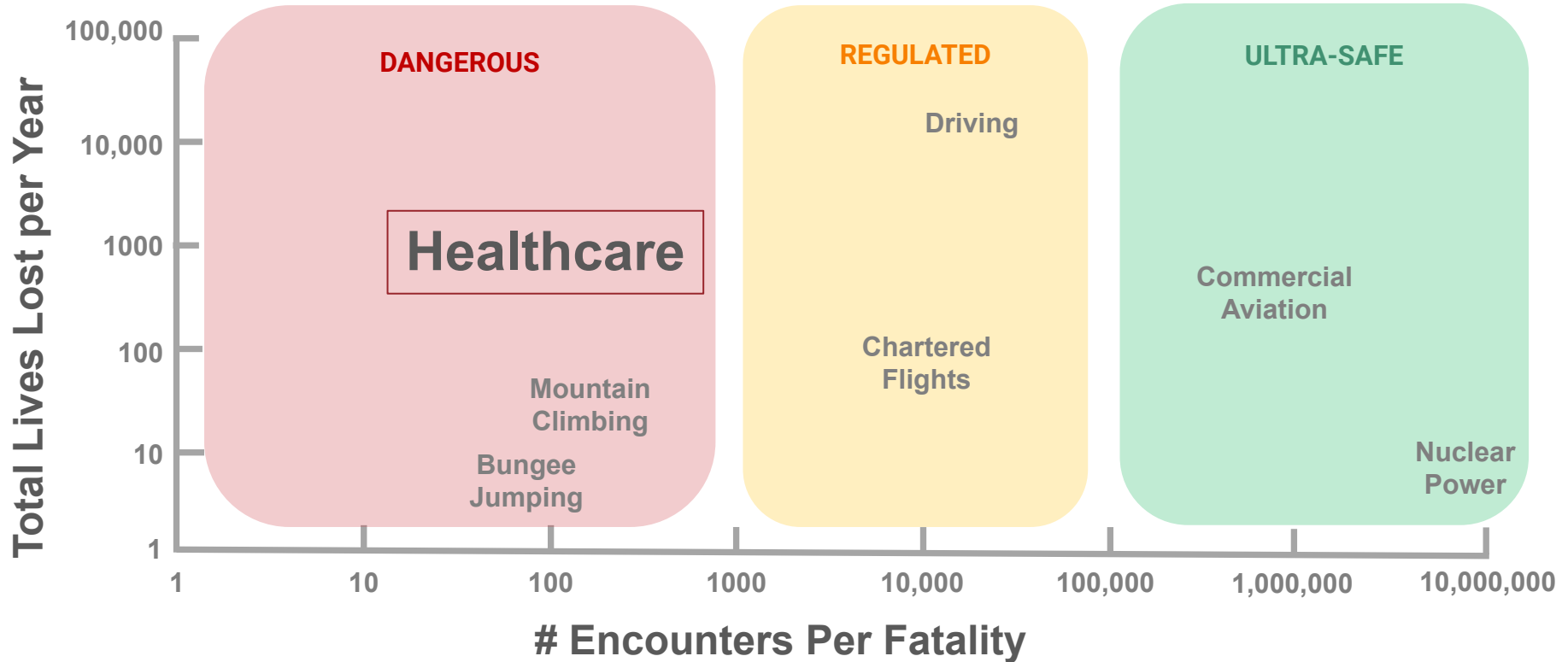
Medical Director, Neonatal ECMO
Co-Director, Neonatal Surgical Team

Checklists Work in Ultra-Safe Industries



- Cognitive aid to reduce “slips” or lapses in attention
- Supports situational awareness
- Enhances team communication
- Reduces reliance on human memory

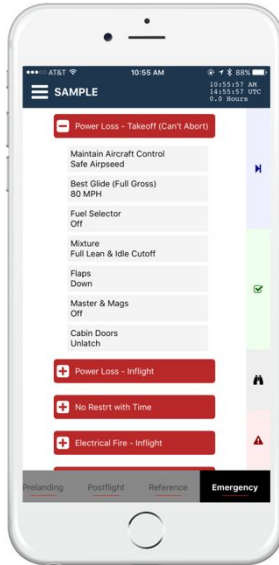
How Risky is Healthcare?



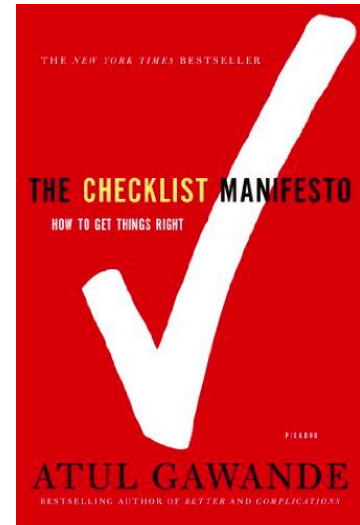
Graphic adapted from Leape, Amalberti, 2001

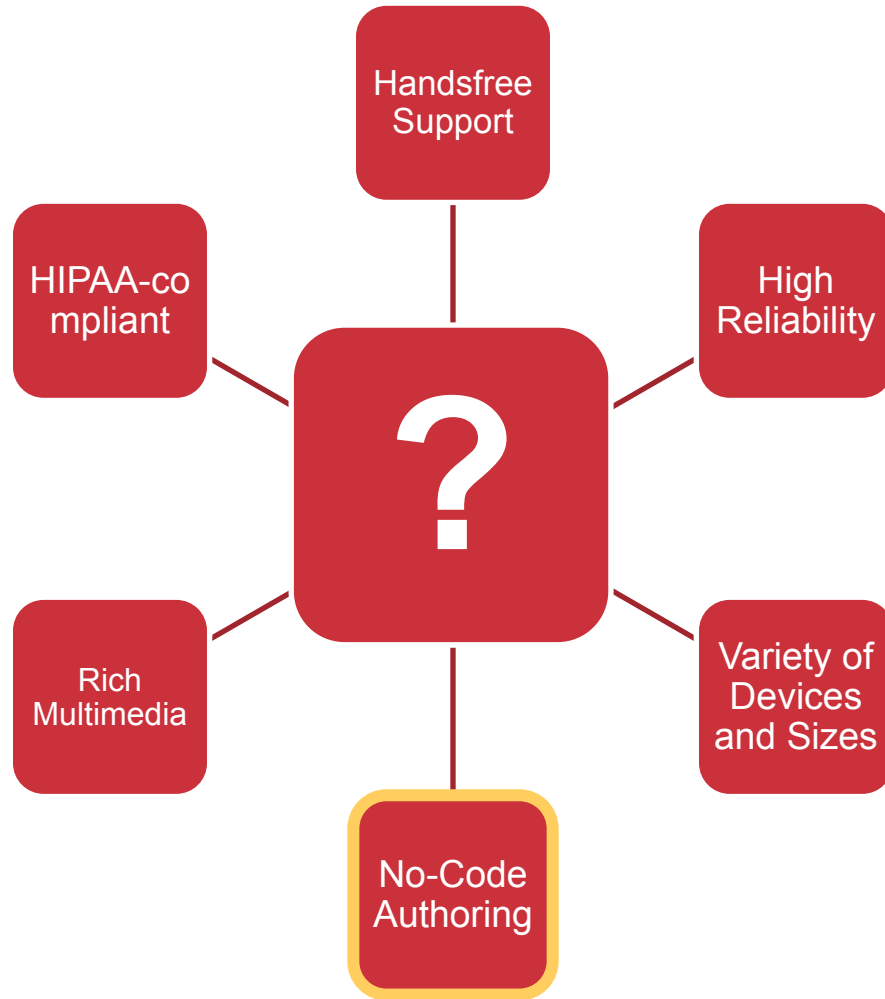
Meet Jeff Bonasso

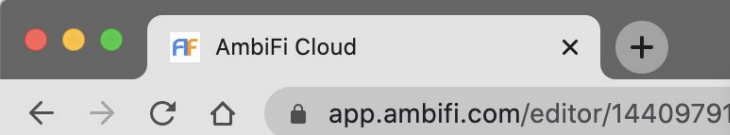
CEO, Founder of AmbiFi



AmbiFi®



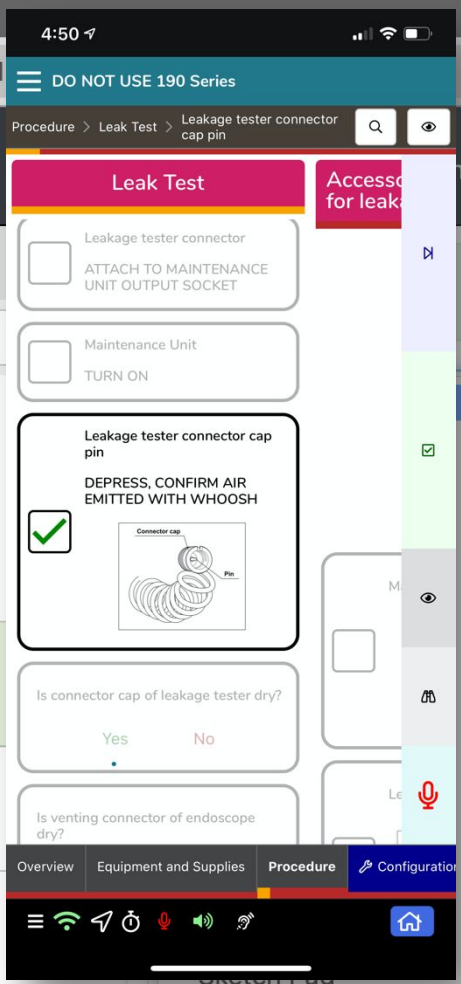




Navigate with touch or voice commands

- ? Demo for AMIA
- ✓ Check Item 1
- ✓ Check Item 2
- ✓ Check Item 3

Toggle voice controls



Voice processing on device

Does not require internet connection except to sync

Sections & Branching Logic



Sterile Processing is an
ECRI Institute Top Health Hazard for 2020

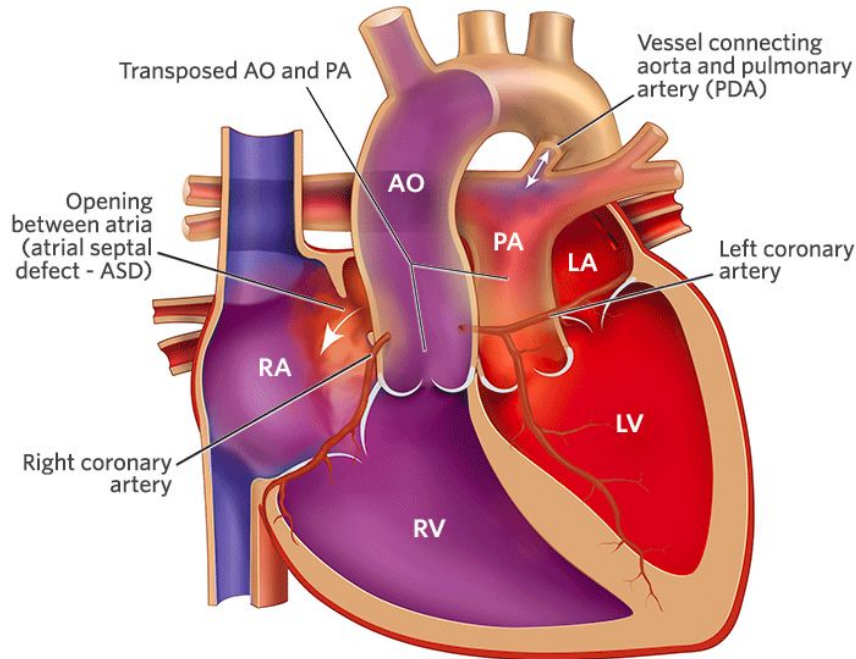


10 to 50 endoscopes processed per week
Hundreds of steps per instructions for use (IFU)
8-12 observed variations from IFU per scope

Wish List:

Less reliance on IFU memory • Visible Timer • Visual References

Special Delivery Unit (SDU)



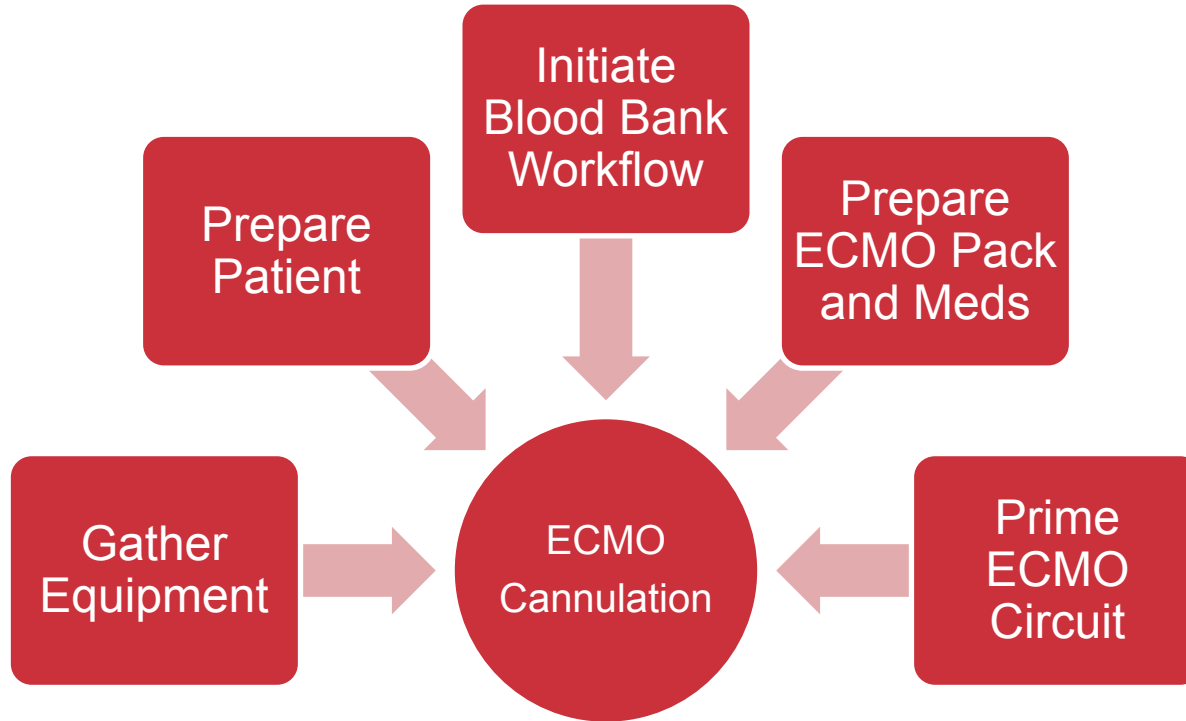
During Resuscitation:

- Need shared mental model
- Establish goals of therapy
- Keep track of time
- Know when to escalate



ECMO = Extra-Corporeal Membrane Oxygenation
Aka "Heart / Lung Bypass Machine"

Everything Happens at Once





Patient Care!

Pumps!

Procedures!

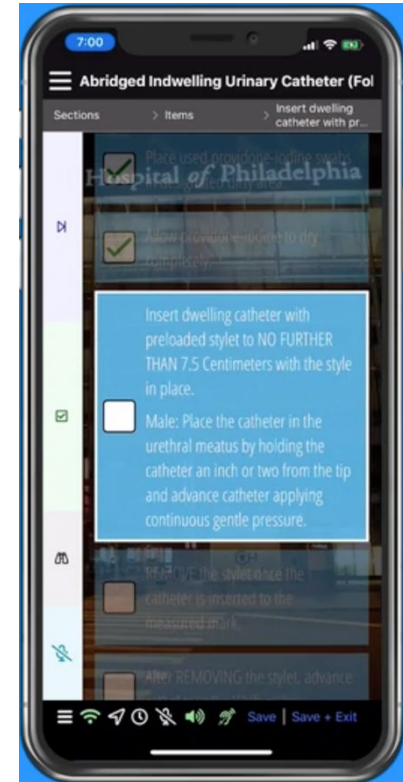
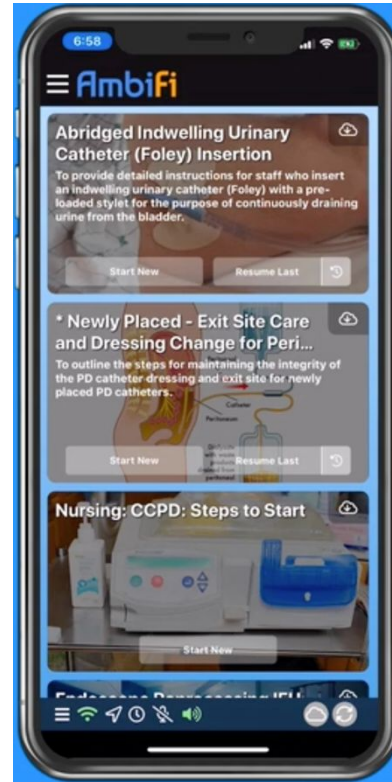
Meds!

Devices!

Bundles!

...and EHR documentation!

Challenges Faced by Nurses



Healthcare-Specific Learnings

Authoring

- Version control
- Cloud syncing
- User roles / permissions
- Metadata
- “WYSIWYG” editor – no HTML or Markdown

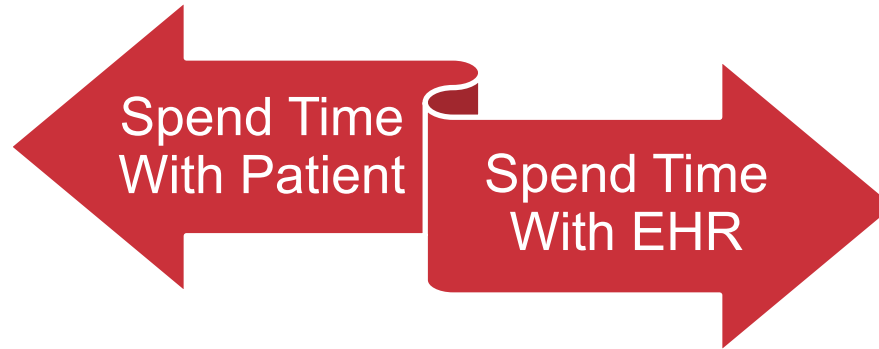
User Interface

- Theme and visual design
- Timers
- Support Situational Awareness
- Parallel Workflows
- Support all modes of interaction: voice, touch, foot pedals, gestures?
- Support all screen types: tablet, phone, computer

Instructional Design

- **Written procedures needed extensive redesign**
- Takes time to design useful/usable checklists
- Takes time to create assets (images / videos) that make procedures more usable

Can Checklists Reduce Documentation Burden?



If you follow a procedure, but don't document it, did it happen?

What if the app could write your EHR procedure note?



“[T]he volume and complexity of what we know has exceeded our individual ability to deliver its benefits correctly, safely, or reliably.

[U]nder conditions of complexity, not only are checklists a help, they are required for success.”

- Atul Gawande

Acknowledgements

- Digital Health
 - Sarah Hadley
- Emerging Technology & Transformation
 - Patrick Stewart
 - Nadya Aboras
 - Manoj Ramachandran
 - Kanchana Hegde
 - Dennis Driscoll
 - Tracey Haines
 - Vijay Verma
- ECMO Team
 - Michael Pizzi
 - Susan Williams
- Special Delivery Unit
 - Jacqueline Zedalis
- Nursing Education
 - Tracy Campbell
 - Melissa McLoone
 - Elena Becker
 - Karen King
- Sterile Processing
 - Robert Silverstein
 - Jill Manuola
 - Grayson Privette
 - Dean Karavite
- Simulation Center
 - Anne Ades
- Human Factors
 - Erin Pohl
- Project Management
 - Pete Gambol
- Entrepreneurship & Innovation
 - Tom Privette
- AmbiFi - www.ambifi.com
 - Jeff Bonasso
 - Harald Scheckenbacher
 - Jamie Dick



desai@email.chop.edu



www.linkedin.com/in/bimaldesai



[@origamidoc](https://twitter.com/origamidoc)

AmbiFi[®]