Goals: At the conclusion of this presentation, participants will be able to describe:

1. Current state of healthcare simulation

2. Challenges to implementing healthcare simulation on a large scale

3. Potential opportunities to incentivize simulation implementation
Simulation in Practice

• Most industries that have the risk of losing lives or valuable assets have adopted simulation into their basic business practices
  – Military: training simulations
  – Airlines: flight simulators
  – Financial Planning: computer simulations
  – Nuclear Power: reactor simulators
• Our patients are more complex and more ill than in years past

• Healthcare providers have less experience
  – Work hour restrictions
  – New Graduates

• Limited time dedicated to hands on training
In practice....

- Daily work is not practice
- Can’t take same risks that occur with deliberate practice
- Feedback may be missing
Elimination of Preventable Harm

![Graph showing the percentage of harm eliminated over time.](image-url)
Current Status Quo in Healthcare

- Professional silos
- Weak or absent safety culture
- Poor concept of system
- Inefficiency in practice and design
THE SAME OLD THINKING

THE SAME OLD RESULTS
Think Differently

https://uk.pinterest.com/explore/zebra-face/
Healthcare is a Complex Adaptive System

Fluid, dynamic changes (similar to biologic systems)

Networks of many agents each of whom constantly act and react to each other

Non-Linear

Control is highly dispersed and decentralized

-Charles Vincent, Patient Safety, also referencing Holland, Mann, Plesk

http://3.bp.blogspot.com/-HIRIBNAIwq4/VHXhZKqaxVI/AAAAAAAAQ88/CeCNVYQpUQw/s1600/coral-reef.png
Risk is constant in our healthcare systems. Goal is to manage risk

- Work as imagined is different than work as done
  - Agency influences adaptive capacity

- Need to make constraints and affordances visible
  - Increasing policies, procedures, rules limits agency of Frontline Healthcare Workers

- The tools we use must be suited to our purpose
  - Standard tools need to be adapted to the context as well as the current state of a system
Simulations provide the opportunity for Deliberate Practice of:

• Asking clarifying questions, crosschecking

• Assertive statements, shared mental models, challenging authority gradients,

• High risk/infrequent scenarios

• Managing unexpected events
Simulation Helps us understand risk and how we manage disruptions

- Simulation allows us to see how different individuals, teams respond to and manage the same event
- Identifies system issues but also successful strategies for responding to unexpected demands

Can certain communication techniques, strategies or team behaviors be trained to develop, support and expand adaptive capacity
Simulation is a tool which can:

- Improve the adaptive capacity of
  - Individuals
  - Teams
  - Sociotechnical systems

- Support
  - Decreased cognitive load
  - Improved adaptive capacity
  - Increased margin for maneuver
Evidence

Interdisciplinary ICU Cardiac Arrest Debriefing Improves Survival Outcomes

Heather Wolfe, MD; Caroleen Zehnder, MD; Alexia A. Toyijan, MD, MSCE; Akira Nishizaki, MD, MSCE; Dana E. Nielsen, MS; Peter A. Meaney, MD, MPH; Lori Boyle, RN, BSN, CCRN; Rita T. Giordano, RRT-NPS; Daniela Davis, MD, MSCE; Margaret Priestley, MD; Michael Apkon, MD; Robert A. Berg, MD; Vinay M. Narts, MD; Robert M. Sutton, MD, MSCE

High-reliability emergency response teams in the hospital: improving quality and safety using in situ simulation training

Derek S Wheeler, MD; Gary Geis, MD; Elizabeth H Mack, MD; Tom LeMaster, MD; Mary D Patterson, MD

Simulation-based mock codes significantly correlate with improved pediatric patient cardiopulmonary arrest survival rates

Pamela Andretta, PhD; Ernest Saxon, BSN; Maureen Thompson, MSN; Gail Anich, MD

Teamwork and Communication

Didactic and Simulation Nontechnical Skills Team Training to Improve Perinatal Patient Outcomes in a Community Hospital

William Ridley, Ph.D.; Sandy Davis, M.D.; Ernie Miller, R.N., M.S.; Helen Hassen, Ph.D., R.N.; Francois Salfort, Ph.D.; Robert Swid, M.D.

Impact of multidisciplinary simulation-based training on patient safety in a paediatric emergency department

Mary D Patterson, MD; Gary L Geis, MD; Thomas LeMaster, MD; Robert L Wears, MD
One size does not fit all: Tools need to be context specific

• The tools and strategies that we use, need to be adapted to our purpose and our work

• Standard tools (including standard safety tools) need to be adapted to the particular context in which they are used
In Situ Simulations: “Crash testing the dummy”

Identification of latent hazards/systems issues

New and existing environments

Equipment/Resources

Teams
WORK AS IMAGINED
How rules dictate work is done

GAP

WORK AS DONE
Everyday work: How work IS being done

Adapted from: Ivan Pupulidy
Work as imagined

Work as done

VS
Debriefing uncovers the knowledge and skills of team members

- May be previously unknown to other team members
  - Often segregated by role

- Surfaces during the simulation and debriefing

- Emergence of previously unknown information enhanced by psychological safety

- Understanding team members’ knowledge and skills provides insight into system capabilities and limitations
How do different teams handle the same event?

- Simulation allows us to see how different individuals, teams respond to and manage the same event.
- Identifies poor design, system issues.
- We need to understand why it made sense to them, because if it made sense to them it may well make sense to others.
Paradigm shift

- Easiest to react to bad outcomes
- How do we replace complacency with urgency?
  - Proactive Approach
- How can we integrate this approach into the fabric of hospital structure and system?
  - Not a one and done—but ongoing deliberate practice requirements

Opportunities

- Detect errors, reduce the negative consequences of errors and recover from errors,
- Systematically reproduce good performance under varying conditions
- Consider variations as a necessary part of any socio-technical system.
How and what we train, at least in part, (should be) determined by frontline experts. Examples:

• During simulation training for critical cases, the medical team leader was trained to explicitly share the mental model of the patient’s condition and next steps and to update the mental model every 3-5 minutes

• Nurses voiced that this was extremely helpful to them as it enabled them to anticipate what medications, resources, procedures were likely to be needed in the next few minutes

• Incorporated as common behavioral expectation
How do we normalize the use of simulation in Healthcare?
Simulation Training Provides a High Return on Investment

University of Pittsburgh noted a substantial decrease in claims for airway mishaps after instituting their simulation courses for all personnel who manage airways in their system.

Claims have decreased from approximately two dozen a year to less than ten claims since.

- Michael DeVita, University of Pittsburgh
Simulation Training Provides a High Return on Investment

Harvard noted a 50% decrease in malpractice claims for anesthesiologists that have attended a simulation-based risk reduction course.


Beth Israel in Boston decreased the number of adverse events in obstetrics by 50% since they instituted a simulation-based risk reduction program.

Despite increased and increasing evidence for the effectiveness of Simulation

• AHRQ eliminated funding for the program focused on Simulation and Safety in December 2018

• Termination of the only non-DoD source of federal multiyear funding for simulation research is a major blow to our community
Joint Commission requirement for Obstetric “drills”

Prepublication Requirements

• Issued August 21, 2019 •

New Standards for Perinatal Safety

The Joint Commission has approved the following revisions for prepublication. While revised requirements are published in the semiannual updates to the print manuals (as well as in the online E-dition®), accredited organizations and paid subscribers can also view them in the monthly periodical The Joint Commission Perspectives®. To begin your subscription, call 800-746-6578 or visit http://www.jcrinc.com.

Please note: Where applicable, this report shows current standards and EPs first, with deleted language struck-through. Then, the revised requirement follows in bold text, with new language underlined.

APPLICABLE TO THE HOSPITAL ACCREDITATION PROGRAM
Effective July 1, 2020

Provision of Care, Treatment, and Services (PC) Chapter
A Few Modest Proposals
Currently Medicare does not reimburse for Healthcare complications.

Incentivize simulation training – Consider higher reimbursement for those Healthcare organizations that deliberately integrate simulation training as part of their ongoing work. (especially multi-disciplinary training)
Center for Medicare and Medicaid Services

- Resident Training subsidy
- Higher subsidies for programs that integrate simulation training
- Link to performance, process, outcomes
Already negotiate reimbursement rates with Healthcare organizations

Propose: More favorable reimbursement rates for Healthcare Organizations that integrate ongoing simulation training

Process, Behavior, Patient Outcomes
Simulation Community Responsibilities

• Excellence in Simulation training development and delivery

• Training that is valid, relevant and delivered in psychologically safe environment

• Robust evaluations of effectiveness
To Make Patient Care Safer

We need to move from the ‘whack-a-mole’, approach which reacts to each adverse event, to one built on an understanding of how care is delivered under difficult and varying conditions.

https://www.keystepmedia.com/inspirational-leadership-understanding-esi/
HEALTHCARE WORKERS ARE NOT THE PROBLEM

- People in Safety Critical Jobs are generally motivated to stay alive, to keep their passengers, patients and customers alive.
- They do not go out of their way to deliver overdoses or fly into mountainsides.
- In the end what they are doing makes sense to them at that time.

Dekker, Field Guide to Understanding Human Error, 2006
To Make Patient Care Safer

There is a need to move away from the healthcare worker as superhero and towards a perspective that supports the actual work we do everyday.

https://www.sbs.com.au/popasia/blog/2015/03/25/6-japanese-superheroes-you-should-know
Thank you for your attention

“In theory there's no difference between theory and practice. In practice there is.”

-Yogi Berra
To square training with the reality of war, it becomes a necessary part of training to install in him the full realization that many things will go wrong without it being anyone’s fault in particular.

It therefore follows that the far object of a training system is to prepare the officer mentally so that he can cope with the unusual and the unexpected as if it were altogether normal and give him poise in a situation where all else is in disequilibrium.

Debriefing uncovers the knowledge and skills of team members

- May be previously unknown to other team members
  - Often segregated by role

- Surfaces during the simulation and debriefing

- Emergence of previously unknown information enhanced by psychological safety

- Understanding team members’ knowledge and skills provides insight into system capabilities and limitations
Managing risk in hazardous conditions: improvisation is not enough

Rene Amalberti, Charles Vincent

The harms of promoting ‘Zero Harm’

Eric J Thomas
Safety I and Safety II

Safety I
What goes wrong
Defined by failure
Achieved by constraints
Critical inquiry

Safety II
What goes right
Defined by success
Achieved by adaptability
Appreciative inquiry

Hollnagel, Wears, Braithwaite, 2015
Graphic: ©2016 ECRI Institute
Examples

- What enhances team performance or enhanced your team’s performance?

- Have you seen examples of graceful degradation, graceful extensibility?

- Reflection on the particular factors, conditions, resources that enabled a good performance – composition of team, resources, skills

- Can these conditions be recreated reliably; how would you create these conditions reliably?
In Situ Simulations: “Crash testing the dummy”

- Identification of latent hazards/systems issues
- New and existing environments
- Systems
- Equipment/Resources
- Teams
• Acute Care Teams and systems constantly adapt to times of increased census and high acuity

• Adaptations vary widely depending on team leader and team present

• Emergency teams and systems may have well rehearsed and adaptable routines for “normal stressors”

How can risk be managed in essentially “risky” conditions?
Vigilance is not a reliable strategy

Local Rationality:
- People in Safety Critical Jobs are generally motivated to stay alive, to keep their passengers, patients and customers alive
- They do not go out of their way to deliver overdoses or fly into mountainsides
- In the end what they are doing makes sense to them at that time.

Dekker, Field Guide to Understanding Human Error, 2006
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http://www.resilienthealthcare.net