

# The Science of Teamwork and Why It Matters In Healthcare...

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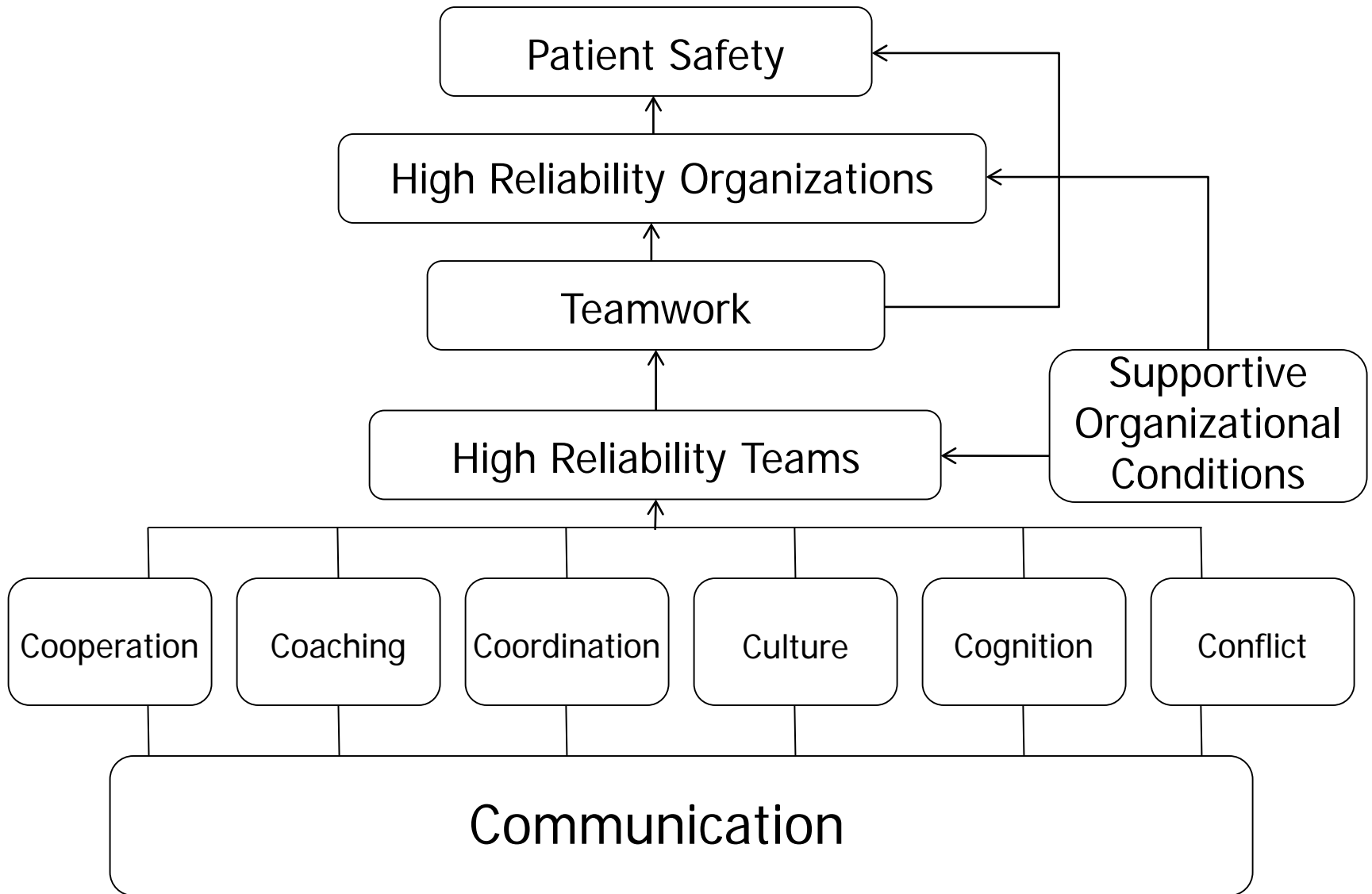
**INSTITUTE for  
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# Take Away Messages...

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- There is a science of team performance, team leadership & team training...**LEARN ABOUT IT!**
- There are a set of tools, guidelines, and principles for enhancing teamwork in healthcare...**USE & APPLY THEM!**
- We know that teamwork promotes safety, excellence, and high performance...**WHEN MANAGED APPROPRIATELY!**





# Outline

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- I. What is the State of the Science?
- II. What Do Effective Teams Do, Think & Feel?
- III. How to Design & Deliver Team Training?
- IV. Does Team Training Work?
- V. What are the Success Factors?
- VI. Some Advice...
- VII. Final Thoughts...



**I. What is the State of the Science?**

# What is the State of the Science?

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*How Do We Turn a Team of Experts into an Expert Team?*



# What is the State of the Science?

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- Theoretically-driven
  - “Nothing more practical than a good theory.”
- Studying real teams; performing real tasks
  - “Teams in the Wild”
  - Simulations
- Experts as participants
- Hundreds of teams!
  - Aviation
  - Healthcare
  - Military





**II. What Do Effective teams  
Do, Think & Feel?**



# What is Teamwork?

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- It is the actions, events and behaviors taken to accomplish a team goal.
- It is about...
  - ...taskwork knowledge (i.e., own task).
  - ...teamwork knowledge (i.e., how to work together).
  - ...building and maintaining both.





# Teamwork

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- Teamwork skills distinct from task work skills
- Teamwork is a Set of Inter-Related Competencies
  - Cognitive & Behavioral processes
  - Cognitive & Affective States
- Teamwork is Dynamic Phenomena, Episodic, and Multi-Level



# What Matters...

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The 8 C's of Teamwork...

# TEAMWORK

**Culture**  
Norms,  
Beliefs

**Conditions**  
Organizational  
Influences

**Cooperation**  
Motivational  
Drivers

**Conflict**  
Conflict  
Resolution  
Procedures

**Coordination**  
Behavioral  
Mechanisms

**Communication**  
Information  
Protocols

**Cognition**  
Common  
Understanding

**Coaching**  
Leadership  
Activities

# Cooperation...

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- Attitudes & Beliefs:
  - Team Orientation
  - Collective Efficacy
  - Mutual Trust
  - Value of Teamwork
  - Openness to Experience



# Coordination...

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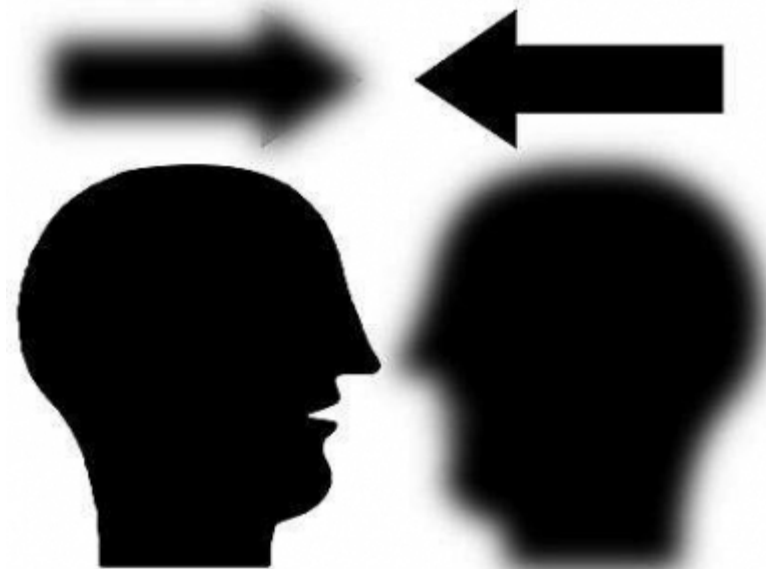
- Behavioral Mechanisms:
  - Mutual Performance Monitoring
  - Back-up Behavior/Supportive
  - Adaptability/ Flexibility
  - Task-related Assertiveness



# Communication...

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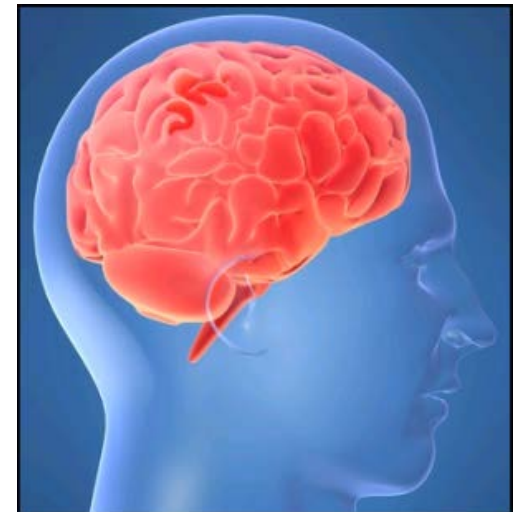
- Information exchange protocols:
  - Close-loop communication
  - Precise
  - Timely
  - Appropriate terminology
  - Clarity



# Cognition...

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- Shared understanding
- Knowledge requirements:
  - Roles & Responsibilities
  - Knowledge of team mission; Objectives, Norms, & Resources
  - Familiarity with Teammates
  - Cue-strategy Associations
  - Knowledge on how to get “K”

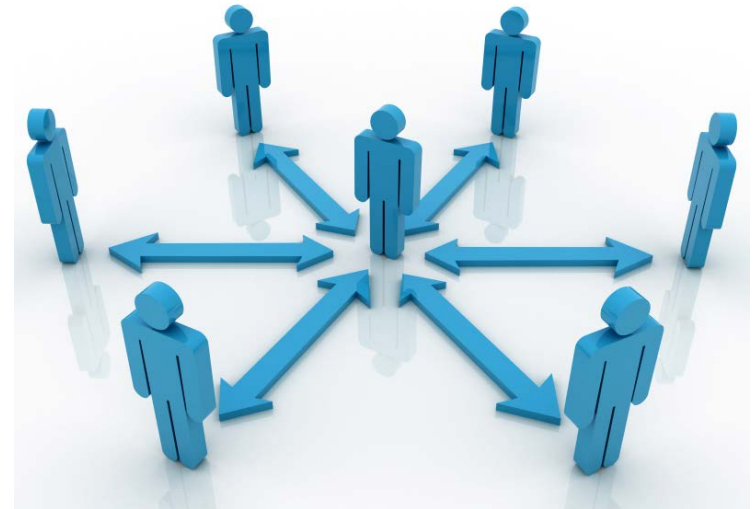




# Coaching...

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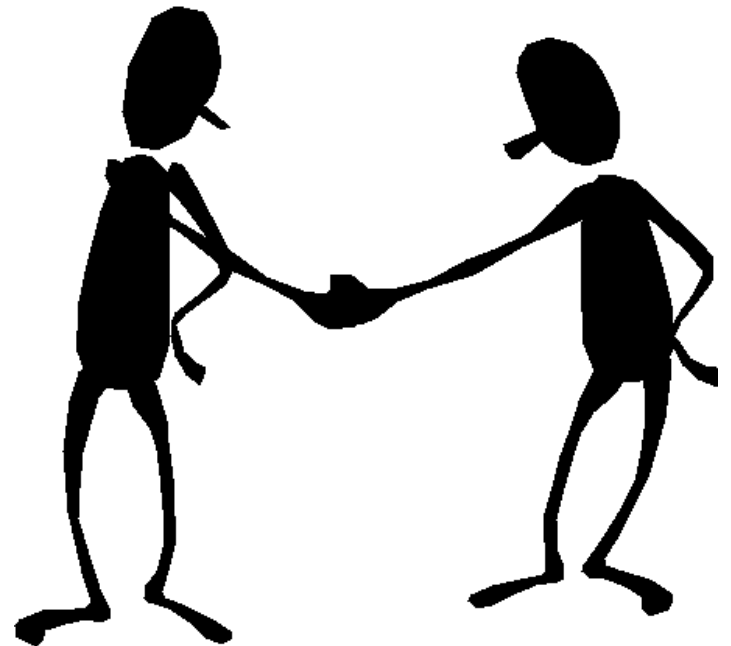
- Leadership:
  - Team Leadership
    - Promotes teamwork
    - Cares about team members
    - Sets ground rules
  - Shared Leadership



# Conflict...

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- Conflict resolution strategies:
  - Interpersonal skills
  - Mutual trust
  - Psychological safety
  - Assertiveness





# Conditions...

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- Team norms - clear, appropriate & known
- Supportive context
  - Good performance recognized & reinforced
  - Access to resources
  - Information needed available



# Culture...

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- Ability to:
  - Reduce ethnocentrism
  - Create hybrid culture
- Perspective Taking
- Behavior Flexibility

# What Effective Teams Do, Feel, & Think

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- **They hold shared mental models.**
  - ...have members who anticipate each other.
  - ...can coordinate without overt communication.
- **They optimize resources.**
  - ...are self correcting.
  - ...compensate for each other.
  - ...reallocate functions.
  - ...adapt performance strategies.



# What Effective Teams Do, Feel, & Think

- **They have clear roles and responsibilities.**
  - ...manage expectations.
  - ...have members who understand each others' roles and how they fit together.
  - ...ensure member roles are clear but not overly rigid.



# What Effective Teams Do, Feel, & Think

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- **They have a clear, engaging, valued, & shared vision.**
  - ...have a clear common purpose.
  - ...energized by their shared mission.
  - ...can evaluate current status in terms of a destination.



# What Effective Teams Do, Feel, & Think

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- **They have strong team leadership.**
  - ...are led by someone with good leadership skills and not just technical competence.
  - ...leaders that institute and maintain the conditions for teamwork.
  - ...leaders that directly intervene to enact teamwork processes.
  - ...have team members who believe the leaders care about them.
  - ...provide situation updates.





# What Effective Teams Do, Feel & Think

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## □ They have strong team leadership. (cont.)

- ...set expectations.
- ...self-correct first.
- ...clarify roles.
- ...solicit ideas and observations from team members.
- ...seek out opportunities to reinforce effective teamwork.



# What Effective Teams Do, Feel, & Think

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- **They have strong team leadership. (cont.)**
  - ...request/accept feedback on own performance.
  - ...provide behavior-oriented rather than person-oriented feedback.
  - ...provide specific solution-oriented feedback.
  - ...re-state others' feedback to make it constructive.
  - ...voice satisfaction when improvements are noted.

# What Effective Teams Do, Feel, & Think

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- **They engage in a cycle (a discipline) of pre-brief → performance → debrief.**
  - ...regularly provide feedback to each other, both individually and as a team ("de-brief").
  - ...establish and revise team goals and plans.
  - ...differentiate between higher and lower priorities.
  - ...have mechanisms for anticipating and reviewing issues/problems of members.
  - ...periodically diagnose team "effectiveness", including its results, its processes, and its vitality (morale, retention, energy).

# What Effective Teams Do, Feel, & Think

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- **They develop a strong sense of the “collective” - trust, teamness, confidence.**
  - ...manage conflict well—team members confront each other effectively.
  - ...have a strong sense of team orientation.
  - ...trust other team members’ “intentions”.
  - ...strongly believe in the team’s collective capability to succeed.
  - ...develop collective efficacy.



# What Effective Teams Do, Feel & Think

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- They are “workload sponges”.
  - ...tolerate stress better.
  - ...provide backup behavior to compensate for spikes in workload intensity.
  - ...can shift to implicit coordination when communication is inhibited.



# What Effective Teams Do, Feel, & Think

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- **They set expectations well (and are managed).**
  - ...provides foundation and markers for individual/team self-correction.
  - ...increases shared understanding and awareness.
  - ...increases satisfaction.



# What Effective Teams Do, Feel & Think

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- They engage in “rhythms” of performance.
  - ...manage time.
  - ...entrained to temporal events (fiscal quarters).
  - ...change at the “midpoint”.



# What Effective Teams Do, Feel, & Think

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- **They manage & optimize performance outcomes.**
  - ...less errors.
  - ...communicate often "enough". Ensure that fellow team members have the information they need to be able to contribute.
  - ...better decisions.
  - ...greater chance of mission success.







**III. How to Design & Deliver Team Training?**

# What do we know about team training?

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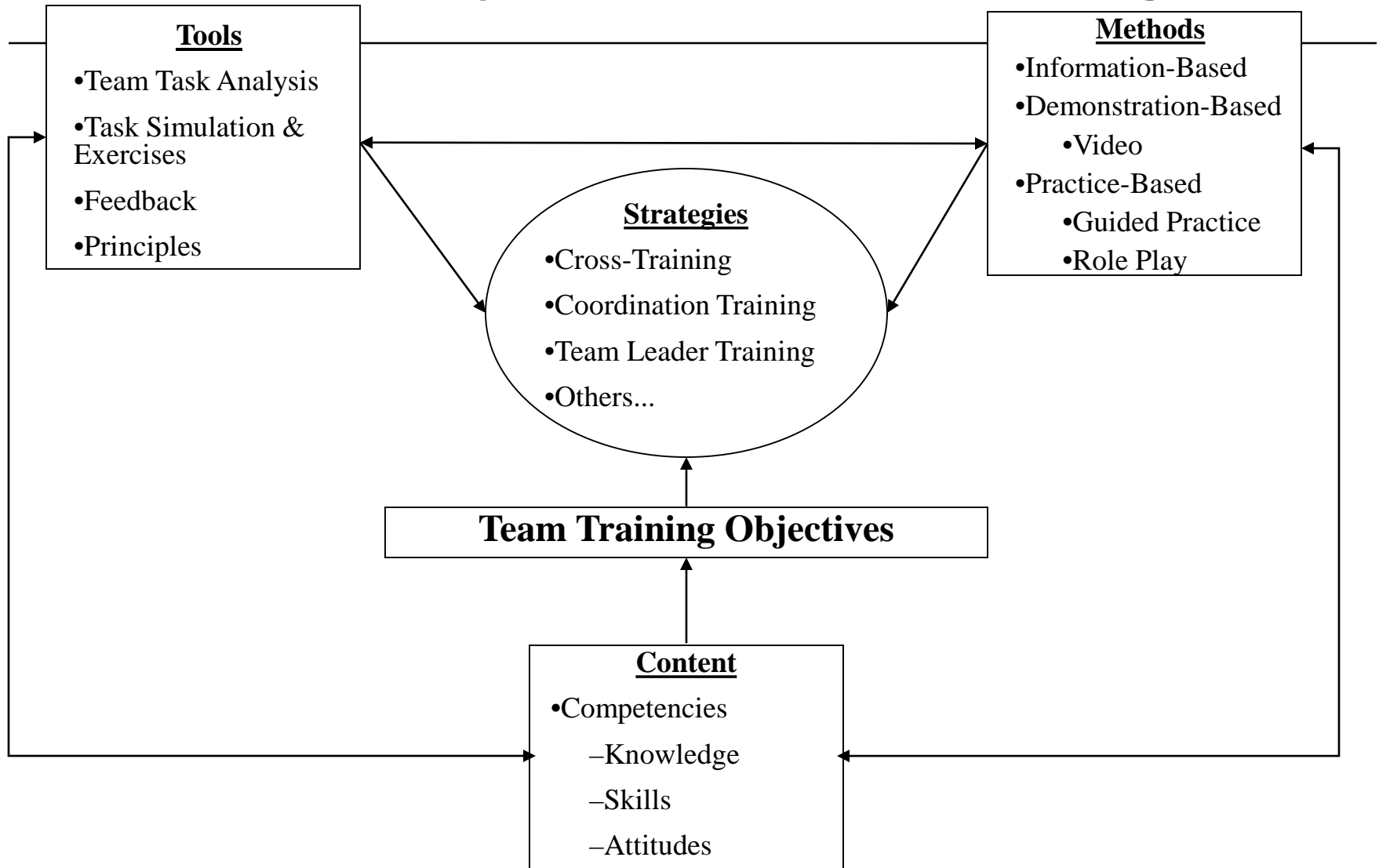
## □ Team Training *IS*...

- A family of learning strategies
- The systematic acquisition of teamwork KSAs
- Focus on cognitive, behavior, and/or affective team-based change
- Planned activity
- Based on pedagogical principles

## □ Team Training is *NOT*...

- A group of people in front of a mannequin
- A place, program or workbook
- Not just saying “do better” at M&M conferences

# The Anatomy of Team Training



# What training strategies are available for patient safety?

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- Cross Training
  - Walking in each other's shoes...
- Team Coordination Training (CRM)
  - He ain't heavy...
- Team Leader Training
  - The blind pass...
- Team Self-Correction
  - Replay in the bar...



## **IV. Does Team Training Work?**



# Team Training Works!

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- Compared with current training, enhanced training resulted in (see Cannon-Bowers & Salas, 1998):
  - 45% improvement in Mission Performance.
  - 33% improvement in Tactical Decision Making Performance.
  - 25% improvement in Communication Efficiency.
  - 10-34% improvement in Team Coordination.
- In the aviation environment (Salas et al., 1999):
  - 6-20% improvement in Teamwork Behaviors.

# Does Team Training Work?

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- **Team training** is a **strategy** for **systematically improving teamwork competencies**: the knowledge, skill, and attitudes (KSAs) underlying effective teamwork.
  
- Team training **significantly improves team**<sup>1</sup>:
  - **Cognition** ( $\rho = .42$ )
    - Shared mental models
  - **Behavioral process** ( $\rho = .44$ )
    - Communication, coordination, collaboration
  - **Affect** ( $\rho = .35$ )
    - Mutual trust, collective efficacy
  - **Performance outcomes** ( $\rho = .37$ )
    - Task outcomes, satisfaction, viability

<sup>1</sup>Salas et al., 2008

# But, Does it Work in Healthcare?

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- Learner **reactions are positive** <sup>1,2</sup>
  - Utility judgments: will this help you do your job?
  - Intent to transfer: will you use what you learned?
  - Affective reactions: are you confident in your ability to perform?
  
- **Learning occurs** <sup>1,2</sup>
  - Acquisition: do people learn the targeted competencies?
  - Retention: is that learning stable over time?
  
- **Behavior change** in transfer environment **occurs**.<sup>1,2</sup>
  - Frequency and quality of teamwork behaviors in clinical practice improves.



# But, What About the Things We Actually Care About?: RESULTS

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## □ Improved efficiency in clinical processes

- *Labor & Delivery*: **Improved management of chord prolapse**, from 25 to 14.5 minutes diagnosis to treatment (pre/post-training)<sup>1</sup>
- *Trauma*: **faster arrival to surgery** (130.1 down to 94.5 minutes), **CT scanning** (26.4 down to 22.1 minutes), and **endotracheal intubation** (10.1 down to 6.6 minutes)<sup>2</sup>
- *Surgery*: **decreases in preoperative delays** (from 16% to 7% of cases), **equipment defects** (from 24% to 7% of cases), and **handoff defects** (from 5.4% to 0.3% of cases), as well as **increased antibiotic prophylaxis compliance** (from 85% to 97%)<sup>3</sup>

## □ Reduction in patient safety events

- 83% reduction in medication and transfusion errors<sup>4</sup>

<sup>1</sup>Sissakos et al., 2009

<sup>2</sup>Wolf et al., 2010

<sup>3</sup>Capella et al., 2010

<sup>4</sup>Deering et al., in press

# But, What About the Things We Actually Care About?: RESULTS


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## Improved clinical outcomes

- Labor & Delivery
  - **47% decrease in Adverse Outcomes Index (AOI)** for gestations under 37 weeks (16% decrease population wide)<sup>1</sup>
  
- Surgery
  - **18% reduction in annual mortality rates** in trained sites (7% reduction in untrained), with a **dose-response relationship of a .5 deaths per 1000 procedures per quarter**<sup>2</sup>

<sup>1</sup>Mann et al., 2006

<sup>2</sup>Neily et al., 2010



**V. What are the Success Factors?**



# Success Factors...

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1. ...An **organizational commitment** to do things differently...**A mandate**...
  - Long-term culture change effort...
2. ...A cadre of **organizational mechanisms** to **promote & reinforce** teamwork...
  - Send signals!
3. ...A number of **resources** (e.g., staff, \$\$, simulators)...

# Success Factors...

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4. ...A **robust** set of **metrics**—MEASURE!...
  - Track progress
  - What is working (not)
  - ROI
5. ...A team training system that provides **information, demonstrates** behavior and creates opportunities to **practice** and get **diagnostic** feedback...



# Success Factors...

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6. ...**Coaching, Mentoring**...tools for **Sustainability**...
7. ...**Champions**...**Physician Engagement**...
8. ...**Data!**
  - “show me, don’t tell me”
9. ...**Science**...
10. ...**Patient** as a **team member**...

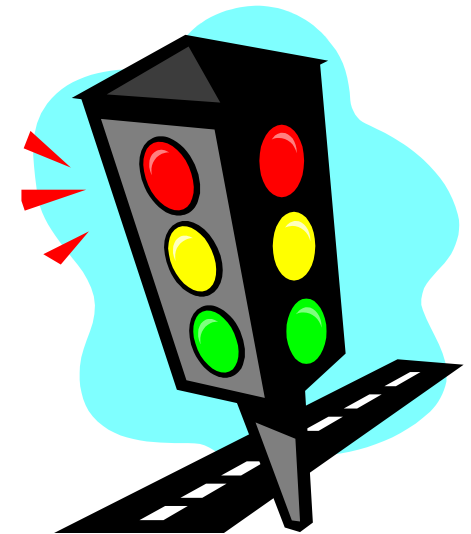


## **VI. Some Advice**

# Some Advice...

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- Go back to your teams and ask:
  - What we need to STOP?
  - What we need to START?
  - What we need to IMPROVE?
  - What we need to CONTINUE?





# Some Advice...

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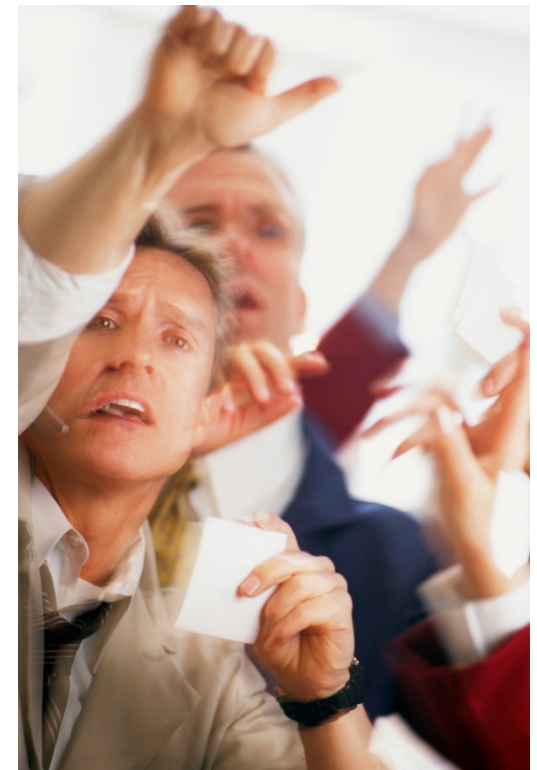
- See if you can use this statement:
  - “Am Dr. \_\_\_\_\_, I am a good surgeon but I am vulnerable to error so you are here to help me take care of this patient– we are a team.”



# Some Advice...

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- Debrief!- Simple, Powerful, & Underutilized
  - What worked?
  - What can be improved?
  - Focus on as many C's as possible.
- Create opportunities to speak-up:
  - "I need clarity"- Yellow
  - "I have a concern- stop"- Red



# Some Advice...

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- Measure and reinforce!
- Ensure all are team trained!
  - Needed competencies
- Use simulation to practice!
- Engage!
  - ...Leadership
  - ...Colleagues
  - ...Teammates





## **VII. Final Thoughts...**



# Final Thoughts...

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- Effective teamwork is the foundation of patient safety.
- Teams *can* learn to be more effective.
  - The science of psychology
- Remember the 8 C's of teamwork and the patterns of effective teams.