Teamwork and Communication:
Tools to Improve Pediatric Trauma Care

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Disclosure

- I have no conflict of interest or financial relationships to disclose related to this presentation

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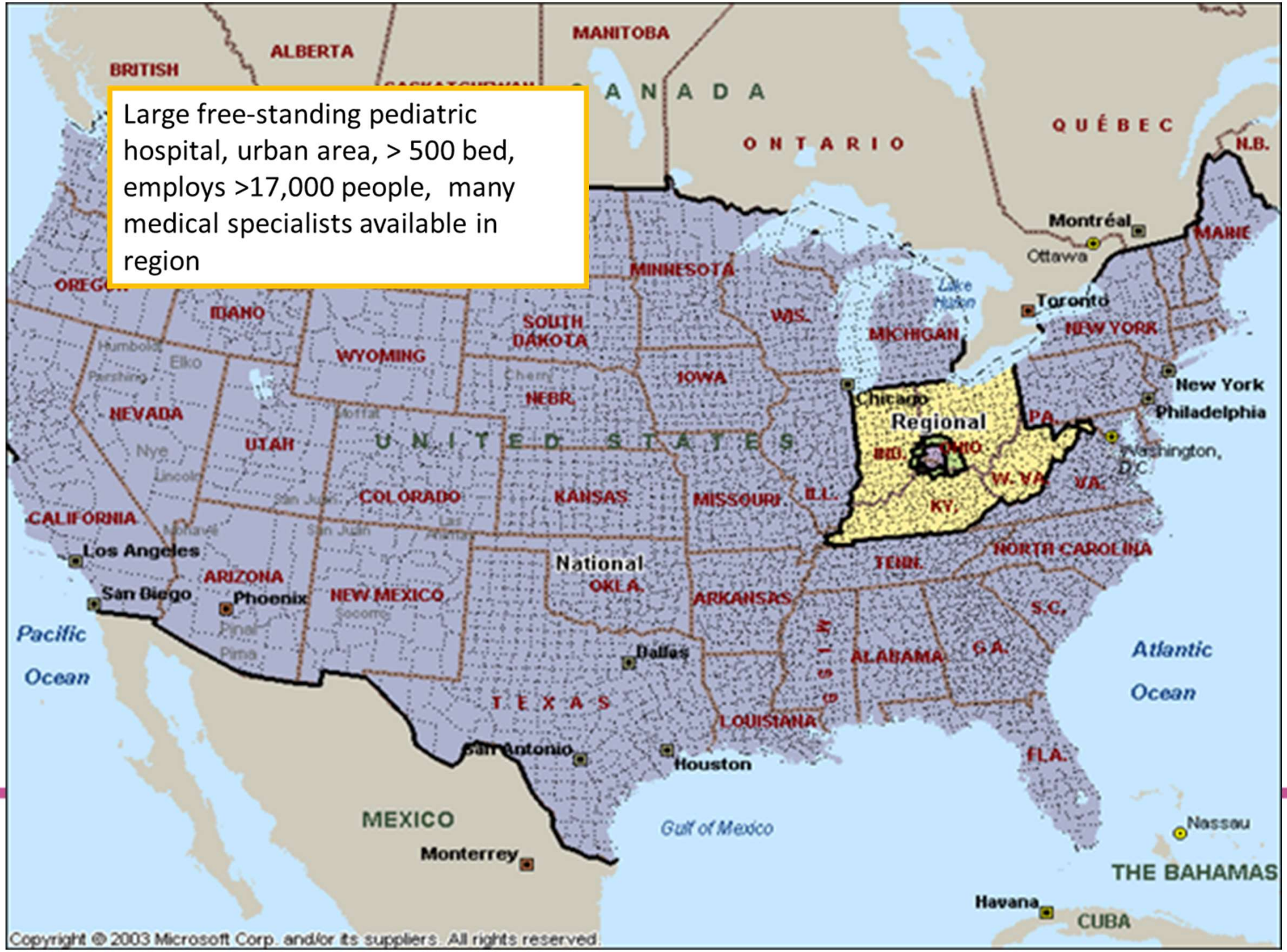
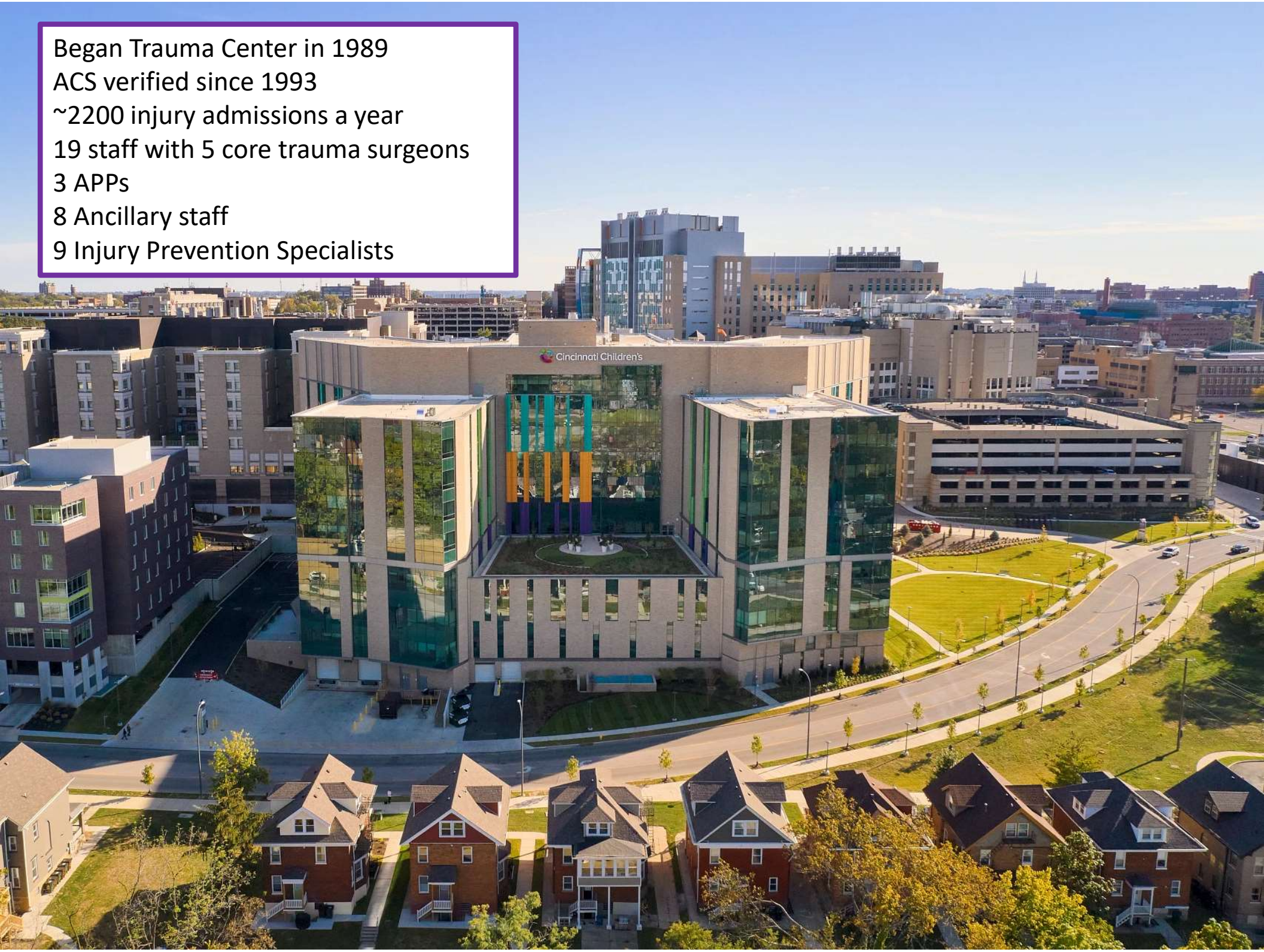
Objectives

- Discuss communication tools and teamwork and the influence on team dynamics
- Describe the impact of simulation training on identification of latent safety threats
- Describe the impact of digital recording as an opportunity to improve care





Began Trauma Center in 1989
ACS verified since 1993
~2200 injury admissions a year
19 staff with 5 core trauma surgeons
3 APPs
8 Ancillary staff
9 Injury Prevention Specialists

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Communication

- Have you ever had any formal training in teamwork and communication?

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Opportunities for Improvement

- No pre-brief or listening to EMS
- Orders not directed at individuals/no close looped communication
- No listening/respecting team members
- Team not on the same page

Risk Factors in the Bay

- High stress
- Multidisciplinary members
- Clarity of responsibility
- Inconsistent leadership
- Limited information
- Unwillingness to speak up
- Multiple distractions
- Variability in experience level
- Time constraints

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Goal

Improve teamwork and communication to achieve safer patient care.

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Essential Elements of the Team

- Common purpose
- Shared goals
- Interdependent actions
- Accountability
- Collective Effort

Communication

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Crew Resource Management

- Individuals are valued
- Individuals have a responsibility to act
- Action requires clear communication
- Team strength equals the sum of the creative ability, knowledge, and experience of each team member

Are we all on the same page?

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Situational Awareness

What do you see?

Man playing a horn?

Woman's silhouette?

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Situational Awareness

Get Some.

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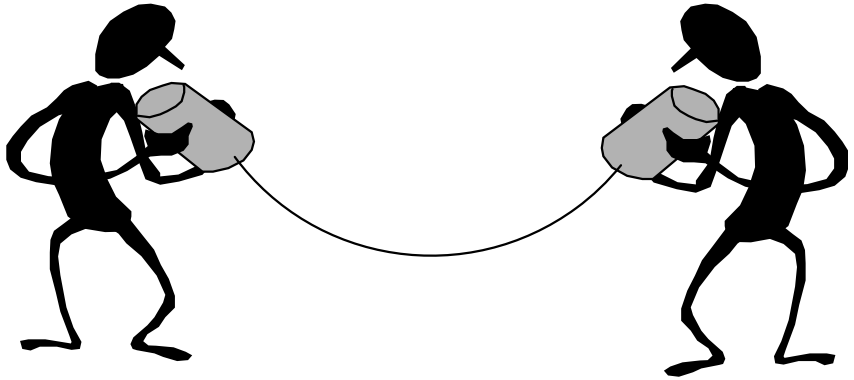
Communication

- Most important aspect of teamwork
- Must be effective
- Free flow of information



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Communication

- Elements of effective team communication
  - Willingness of everyone to express concern
  - Responsiveness
  - Availability of senior staff
  - Leadership support

Communication

- Obstacles
  - Professional relationships
  - Inadequate information
  - Workload, stress, fatigue
  - Perceptions
    - Attitudes
    - Beliefs
    - Teamwork

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Communication

- Success is dependent upon communication among *all* team members

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Communication Tools

- Pinch
- Brief/debrief
- Read-back
  - Verbal checklists
- Callout
- Sterile team environment
- Dynamic skepticism
- Assertive statements
- Step-back

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Obstacles to Teamwork

- Authority gradient
- Halo effect
- Passenger syndrome
- Hidden agendas
- Complacency
- High risk phase
- Strength of an idea
- Task fixation
- Hazardous attitudes

Have you ever participated in simulation training?

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If you have participated in simulation training before, was it team based or physician / nurse only?

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The Role of Simulation in Improving Teamwork, Communication and Trauma Care

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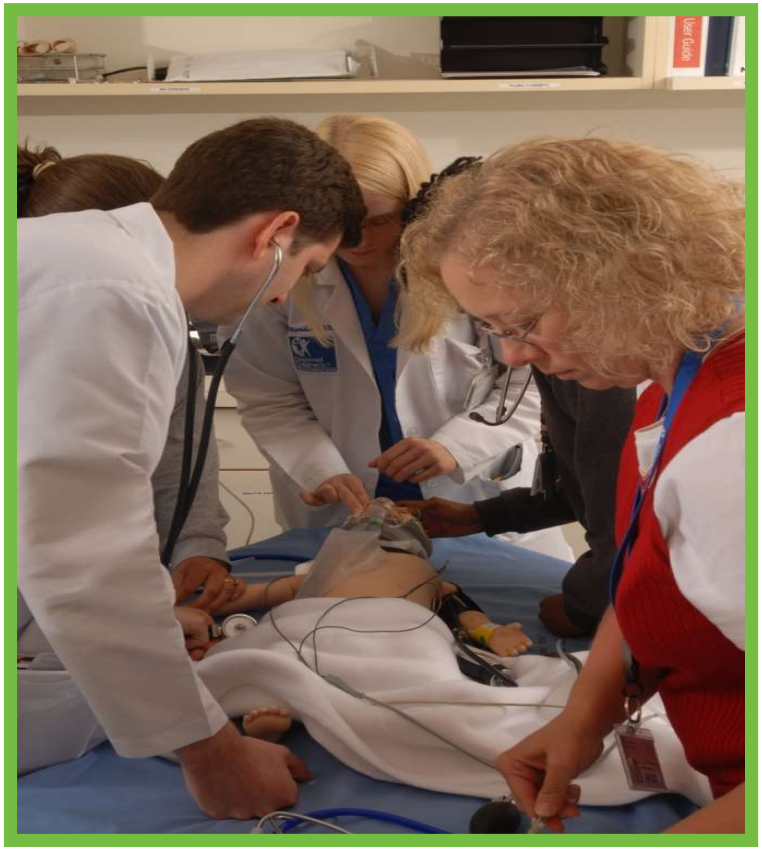
High Fidelity Simulation

- Verbal responses
- Pupillary responses
- Breath sounds and chest movement
- Palpable pulses
- Physiologic response to oxygen/medications/other interventions
- Scenarios can be developed based on actual patients



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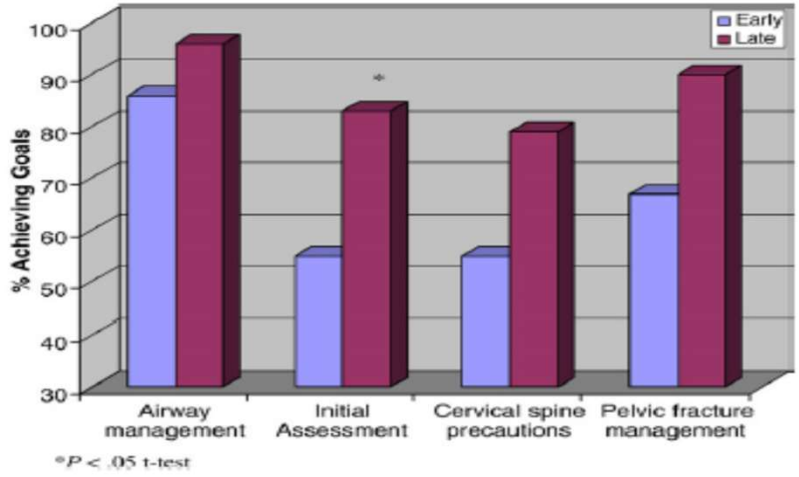
Multidisciplinary pediatric trauma team training using high-fidelity trauma simulation

Richard A. Falcone Jr *, Margot Daugherty, Lynn Schweer, Mary Patterson, Rebeccah L. Brown, Victor F. Garcia

Journal of Pediatric Surgery (2008) 43, 1065–1071

Table 1 Multidisciplinary team members participating in simulated trauma sessions

	No. of participants
Pediatric surgery faculty	11
Emergency medicine faculty	7
Surgical/pediatric residents	72
Nurses (23 trauma core nurses)	60
Critical care fellows	4
Paramedics	2
Respiratory therapists	4
Total	160



*$P < .05$ t-test

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ORIGINAL ARTICLE

Simulation-based training is associated with lower risk-adjusted mortality in ACS pediatric TQIP centers

Aaron R. Jensen, MD, MEd, MS, Cory McLaughlin, MD, Haris Subacius, MA, Katie McAuliff, PhD, Avery B. Nathens, MD, MPH, PhD, Carolyn Wong, PhD, Daniella Meeker, PhD, Randall S. Burd, MD, PhD, Henri R. Ford, MD, MHA, *and* Jeffrey S. Upperman, MD, *Oakland, California*

J Trauma Acute Care Surg. 2019;87: 841–848.

Survey of pediatric trauma centers (94/125 responded) demonstrated the risk adjusted odds of mortality was lower in centers with a high volume of training vs centers with no simulation.

42. Making a Move: Using Simulation to Identify Latent Safety Threats to the Care of Injured Patients in a New Physical Space

*Meera Kotagal, *Richard A. Falcone, Jr., *Margot Daugherty, Brant Merkt, Gina L. Klein, Shawn McDonough, Stephanie D. Boyd, Gary L. Geis, Benjamin T. Kerrey

Cincinnati Children's Hospital Medical Center, Cincinnati, OH

Multidisciplinary team using high-fidelity simulation to identify and mitigate latent safety threats (LSTs) prior to the opening of our new Critical Care Building.

8 scenarios were designed to test the workflow in the new building. Included a multiple resuscitation

201 clinicians participated in the simulations averaging 25 people per session.

A total of 118 potential LSTs were identified or about 15 per session with the most common related to equipment

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Video Recording in the Trauma Bay

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Obtaining Support from Risk Management

- Focus on patient safety and education
- Defined process for destruction of recordings
- Protected from legal discovery as part of performance improvement
- Video consent is part of our medical consent for treatment

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Consent for Medical Treatment & Assignment of Benefits and Release of Information (Financial Responsibility)

Downtime Form

Name: _____

DOB: _____

MRN: _____

Parent/Legal Guardian: To protect the rights and honor the wishes of our patients and their parents/legal guardian(s), Cincinnati Children's Hospital Medical Center must be aware of the name, relationship and telephone number of the patient's parent/legal guardian. Except in emergency situations determined by our medical staff or when the patient is legally permitted to consent to his/her own treatment, the patient's parent/legal guardian must authorize hospitalization and any special procedures. Patients should be discharged only to an appropriate individual pursuant to the Medical Center Policy entitled Persons Authorized to Consent for Admission, Treatment and Discharge of Patients.

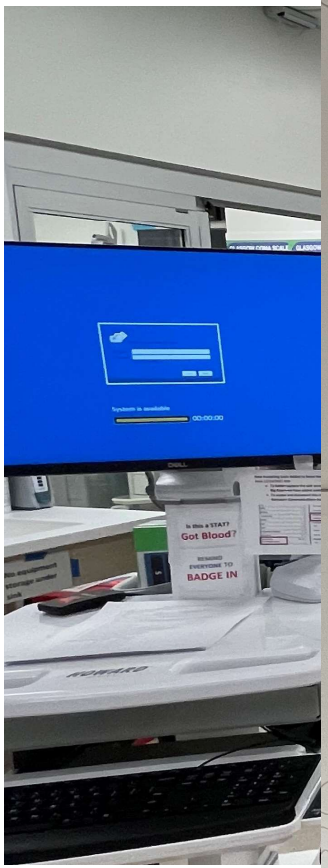
CONSENT FOR MEDICAL TREATMENT

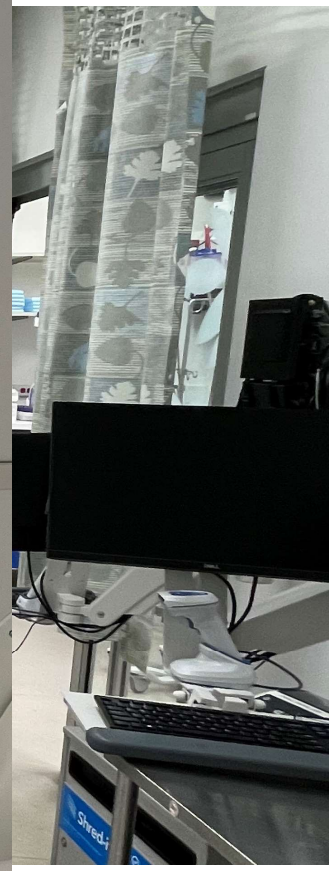
For those patients being treated at Cincinnati Children's Hospital Medical Center (CCHMC), I authorize CCHMC and the doctor(s) participating in the care of my/our child to use any treatment or procedures that may be deemed necessary in the medical or dental care and that may be reasonably expected to be part of the normal inpatient or outpatient service. This shall include the use of drugs, medicines, laboratory procedures, X-ray procedures and diagnostic testing (whether performed at CCHMC or at nearby facilities), immunizations, preventive medicine procedures, routine recreational activities, and the use of local anesthesia during laboratory procedures and diagnostic testing. This consent for treatment does not authorize any type of surgical or medical procedure requiring the use of general anesthesia or sedation. I understand that during the diagnostic or treatment process, the medical team may determine that it is in the best interest of my child to refer him/her to other services within CCHMC. I authorize such transfer and treatment. This authorization shall allow the doctors to provide continuing services until revoked by me in writing. For patients receiving care in the shock/trauma suite, I authorize CCHMC and their physicians to take video/audio recordings of me/my child or part of my/my child's body while under the care of the hospital. These images can only be used for medical education or performance improvement. Images obtained for either purpose will be destroyed after 180 days. CCHMC may provide certain services utilizing telehealth technology, including transmission of images, video and audio that are encrypted for privacy. The remote provider will determine whether the condition being diagnosed or treated is appropriate for telehealth, and I understand that there is no guarantee of diagnosis, treatment, or prescription for myself/my child. I understand that I/my child may have to travel to see a health provider in-person for certain diagnosis and treatment or in the event of a technical failure.

ASSIGNMENT OF BENEFITS AND RELEASE OF INFORMATION (FINANCIAL RESPONSIBILITY)

In consideration of services rendered, I authorize payment to Cincinnati Children's Hospital Medical Center for all hospital,

Digit em





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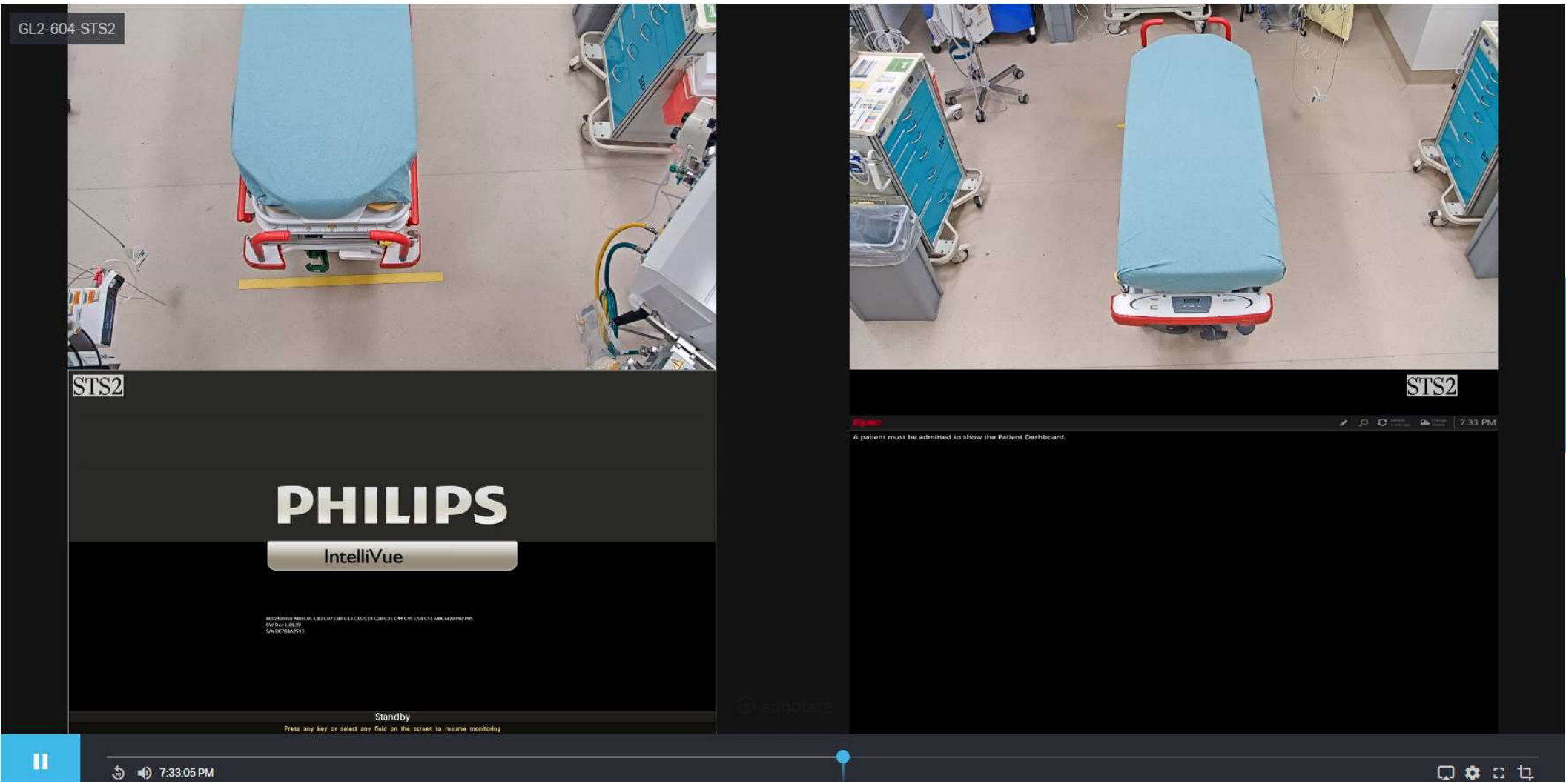
Video Review System



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Multi-Disciplinary Monthly Video Review Conference

- All members of the trauma team attend
- Start with EMS call audio when available
- Focus on teamwork and communication – not individuals
- Add brief topic focused discussion

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Use of Videos for Research

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Rapid Sequence Intubation for Pediatric Emergency Patients: Higher Frequency of Failed Attempts and Adverse Effects Found by Video Review

Benjamin T. Kerrey, MD, MS, Andrea S. Rinderknecht, MD, Gary L. Geis, MD, Lise E. Nigrovic, MD, MPH, Matthew R. Mittiga, MD

Task	Prechecklist (*n* = 222)	Chec (*n* =
Prearrival tasks*		
Team briefed on incoming patient	77.4	8
Patient weight estimated	35.2	6
Primary survey tasks		
Continuous cervical spine immobilization	47.8	6
Airway stated	96.0	9
Breath sounds	100	9
Oxygen administration	42.8	7
Pulses (distal or central)	92.8	9
GCS stated	93.7	9
Pupils	97.3	9
Full exposure†	72.1	8
Warm blanket	91.9	9
Temperature	94.1	9
Blood pressure	100	10
Heart rate	100	10
Respiratory rate	99.1	9
Oxygen saturation	100	10
Secondary survey tasks		
Head	78.8	9
Ears	91.0	9
Eyes	23.0	4
Facial bones	49.1	8
Nose	74.3	8
Mouth	82.4	9
Neck	39.2	6
Cervical spine	66.7	7
Chest	80.2	9
Abdomen	98.7	9
Pelvis	77.9	9
Upper extremities	68.0	7
Lower extremities	92.3	9
Back examination	97.3	9

*Percentage based on resuscitations with prea tion (pre *n* = 199, post *n* = 183).
†Percentage based on the number of patients who arrived clothed (pre *n* = 172, post *n* = 156).
GCS = Glasgow Coma Scale; NA = not applicable.

Table 2. Adverse effects during RSI.

Physiologic Deterioration	**No. (% of 11**
Any episode	45 (39)
1 episode	23 (20)
2 or more episodes	22 (19)
Desaturation	38 (33)
Bradycardia	5 (4)
Hypotension	4 (4)
CPR*	2 (2)
Other adverse effects	
Right mainstem tracheal intubation†	34 (30)
Left hemithorax opacification†	5 (4)
Nonairway tracheal intubation§	
Detected	20 (18)
Undetected	1 (1)
Inadequate paralysis (first attempt)	11 (10)
Vomiting	8 (7)
Dental/oral injury	1 (1)

Checklist Time (SD)	Δ	p-value
1m 13s (49s)	–5s	0.07
1m 22s (52s)	1s	0.29
1m 35s (86s)	–10s	0.44
1m 49s (68s)	–10s	0.18
2m 53s (129s)	24s	0.06
2m 44s (111s)	–2s	0.72
4m 43s (234s)	–43s	0.03
5m 29s (259s)	–40s	0.06
4m 29s (162s)	–78s	<0.001
2m 43s (74s)	–22s	0.02
2m 26s (87s)	–34s	<0.001
1m 59s (75s)	–39s	<0.001
2m 8s (60s)	–20s	<0.001
24m 19s (575s)	–91s	0.19

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Improved Teamwork and Communication

- Pre-brief with opportunity to assign roles and answer questions
- Listening to EMS report
- Orders directed to individuals with clear responses
- Communication and clarification of exam findings
- Shared mental model seeking team input and agreement

Conclusions

- Care of the injured child requires a complex team to come together to provide high quality care under stressful situations.
- Simulation provides a safe environment to learn and practice communication among team members.
- Simulation and video review of real resuscitations provide the opportunity to identify latent safety threats
- Analysis of videos can help measure frequency and timing of events and monitor impact of new interventions

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Do you think your institution could benefit from the use of multidisciplinary team simulation training and video tape review of trauma resuscitations?

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Contact

- Margot.Daugherty@cchmc.org

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Thank You!