Challenge sepsis. Change lives.



Children's Hospital Association 2022 Sepsis Webcast Series

FOSTERING A SHARED MENTAL MODEL TO IMPROVE SEPSIS TEAM DYNAMICS

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IPSO COLLABORATIVE

Goals

Accomplishments to Date

- ✓ Reducing mortality
- Preventing hospital-onset critical sepsis
- Improving outcomes for sepsis survivors
- Creating effective sepsis response systems hospitalwide: ED, ICU, oncology, & general care







- ✓ 30% increase in sepsis patients identified
- Measurable improvement in outcomes and processes
- ✓ 403,386 sepsis episodes captured
- ✓ 57 children's hospitals



Our Speakers



Anthony Sochet, M.D, M.H.S Johns Hopkins All Children's Hospital St. Petersburg, Fl



Elliot Melendez, MD Connecticut Children's Medical Center Hartford, Ct



Team Science in Healthcare Implementation Science and Quality Improvement Metrics

Anthony A. Sochet, MD, MHSc

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Learning Objectives

- Exemplify team science paradigms within quality improvement and implementation science
 - How it is applicable to all specialties and healthcare
 - Team science is relevant when the n > 1 for any work.
- Segway into sepsis-related quality improvement (Dr. Melendez)
- Provide mechanisms/tools for team-based success

Disclosures

• None...

What is TEAM-SCIENCE and WHY should you care?

all we do all for kids."

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Healthcare teams are complex adaptive systems

Pype P, et al. BMC Health Serv Res 2018;18:570.

- "Focus on the relations and interconnections of the system components, rather than the individual components themselves"
- "Inter-individual interaction is a driving force and a defining factor for the whole system behavior"

Simple?

- small-scale
- well-defined
- easily implemented solution

Difficult?

- medium-scale problem
- recognizable solution
- little impact on whole system

Wicked?

- large-scale problem
- poorly defined
- solution impacts system and beyond



Then Solve Accordingly

Poor Quality Teaming = Poor Quality Outcomes



Abraham J et al. *AMIA Annu Symp Proc* 2011;2011:28–37 Bigham MT et al. *Pediatrics* 2014;134:e572–e579 Manser T et al. *Qual Saf Health Care* 2010;19:e44 Nagpal K et al. *Am K Surg* 2013;206(4):494-501 Pucher PH et al. *Surgery* 2015;158:85–95.

Caring for a critically ill child is critically complex



The average, straight forward ICU patient



How a patient gets an order for acetaminophen

Getting antibiotics fast for sepsis is simple...



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Rounds may begin when my all knowing, expert, and unquestioned leadership has been acknowledged.

PharmD

Other

Allied

Health

Advanced Practice Provider

Bedside RN

Dietician

Resident MD/DO

Social Work

MD/DO

Respiratory Care

Case Management

Multidisciplinary Rounds

Charge

RN

Family

Patient

Journey Lesson 2: Wisdom Alone is Wisdom Alone



Working With BUT Maintaining Boundaries **MULTIDISCIPLINARY**

Blending Assumptions and Restrictions
INTERDISCIPLINARY

No boundaries AND Cross Fertilizing TRANSDISCIPLINARY





Tons of Innovation May be Chaotic

25



Disclosure: I'm a pediatric intensivist and translational scientist...



"Before I begin, I'd just like to make it known that I didn't volunteer to do this presentation."

Every Journey Has a Beginning

• For a long time, I absolutely stunk at teaming



2010 – Teaming and Interpersonal Skills



2022 - Teaming and Interpersonal Skills

A QI Project and Masters Assignment Made Me a Significantly Better Doctor (and Person)

- Our OR→PICU handovers needed some TLC
 ~7-10 OR→ PICU Daily
- Poor Attendance by Surgical Staff
- Frustration from Anesthesia Staff
- Frustration from PICU Nursing Staff
- Frustration from PICU Fellows
- At some level, was bad for patients



CAS / Team Assessment: OR→PICU Handover

- Using a team science lens
- Interdisciplinary framework
- Standardized the process
- Behavior requirements
- Commitment to collaborate
- Goals:
 - Improve healthcare data exchange
 - Streamline the sequence of events



What we found...

- Content improved
- Efficiency maintained
- Staff felt respected
- Reported value of handover
- Attendance improved

OPEN

Standardization of Postoperative Transitions of Care to the Pediatric Intensive Care Unit Enhances Efficiency and Handover Comprehensiveness

Anthony A. Sochet, MD, MSHS*; Ashley Siems, MD⁺; Grace Ye, MD⁺; Nihal Godiwala, MD⁺; Lauren Hebert, MD[§]; Christiane Corriveau, MD⁺

Abstract

Introduction: To determine the impact of standardization of postoperative transitions of care to the pediatric intensive care unit on handover efficiency and the quality of healthcare data exchange. **Methods:** This was a prospective, pre-post observational study after standardization of postoperative transitions in a 44-bed pediatric intensive care unit in a 313-bed tertiary care pediatric hospital from April to July 2015. Standardization was completed using a multidisciplinary handover checklist. Primary outcomes were efficiency expressed as mean handover duration and the comprehensiveness of healthcare data exchange. **Results:** Forty-seven post-operative transitions were observed of which 23 were preintervention and 24 were postintervention. After standardization, efficiency improved from 10.5 ± 5.4 to 7.8 ± 2.7 minutes (P < 0.05). Healthcare data exchanged between surgical, anesthesia, and critical care providers were more robust including intraoperative, historical, and anticipatory guidance (all P < 0.05). **Conclusions:** Standardization of postoperative transitions improved efficiency, healthcare data exchange, and anticipatory planning. Future research is required to link standardization of transitions to improved patient outcomes and measure the development of shared mental models.

PEDIATRIC

VTIJAUD . HTJAJ

INTRODUCTION

Postoperative transitions of care from the operating room (OR) to the pediatric intensive care unit (PICU), defined as the physical and intellectual exchange of healthcare data, knowledge, and accountability between providers, represent critical opportunities for introduction of medical errors.¹ Transitions, commonly referred to as handovers, have been linked to 80% of in-hospital sentinel events and may be

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Preliminary data from this manuscript were presented at the April 2016 Pediatric Academic Society Meeting, Baltimore, Md., as an original abstract presentation.

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Received for publication July 22, 2016; accepted September 30, 2016. Published online November 29, 2016 DOI: 10.1097/pa9.000000000000004 associated with delayed treatment, inappropriate testing, and prolonged hospital length of stay.^{2,3} Children undergoing anesthesia and surgery represent a vulnerable population at risk of medical errors after handover from incomplete exchange of pertinent healthcare data, insufficient anticipatory guidance, and lack of a developed, shared mental model.⁴

A successful transition after surgery requires orchestration and teaming between an

informed, diverse group of healthcare disciplines including surgical subspecialties, anesthesiology, critical care medicine, nursing, and supportive staff.^{4,5} Information exchanged during handover can be complex, necessitating collective attention and integration of multidisciplinary knowledge. Ultimately, transitions result in the development of shared mental models where team members analyze, exchange, and come to mutually understand the patient's disease, surgery, and postoperative plan.

The current pediatric literature is limited but suggests the benefits of structured transitions. For example, after implementation of handover checklist bundles among resident physicians, hospitalized children experienced fewer medical errors and adverse events without disruption of physician workflow.^{6,7} After pediatric cardiothoracic surgery, standardization of handover has been shown to improve healthcare data exchange,⁸⁻¹⁰ reduce communication errors,^{11,12} improve perceptions of handover quality,^{11,13,14} and limit adverse events such as unplanned

Journey Lesson 2: Checklists can standardize behaviors as much as processes or data.

all we do. all for kids."

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SMMi is THE Outcome from Teaming

- Structured framework permitting individuals to:
 - recognize and prioritize relationships
 - -explain or infer the importance of observations & stimuli
 - generate expectations for performance and predicted behavior individually and of a team

Custer JW, et al. *Pediatr Crit Care Med* 2012;13(3):278-284. Fackler JC, et al. *Crit Care* 2009;13(2):R33. Mathieu JE, et al. *J Appl Psychol* 2000;85(2):273-283. Rouse WB, Morris NM. *Psycholog Bul* 1986;100:349-363. Starmer AJ, et al. *N Engl J Med* 2014;371:371:1803-1812.

Shared Mental Models & Handovers

- Physical and cognitive exchange of responsibility
 - Primary outcome of teaming = SMMi
- Handovers are critical to patient safety
- Standardization of handovers result in improved healthcare outcomes:
 - Efficiency, comprehensiveness, teaming, satisfaction, etc.

Abraham J, et al. *AMI Annu Symp Proc* 2011;2011:28-37. Bigham MT, et al. *Pediatrics* 2014;134:e572-e579 Breuer RK, et al. *Pediatr Crit Care Med* 2015;16:256-263. Sochet AA, et al. *Pediatr Qual Safe* 2016;1(2):1-5. Sochet AA, et al. *Pediatr Crit Care Med* 2018;19(2):e-72-e79

Transport Handover Standardization

Sampling Two 8-week data collection periods

> 4 week Study Intervention Education Period

Primary Outcome

Shared Mental Model Index (SMMi):

Congruence regarding key patient healthcare data

Secondary Outcomes

Efficiency (mean handover duration), attendance, interruption frequency, team inclusiveness, prompting for clarification, & comprehensiveness.



Standardization of Pediatric Interfacility Transport Handover: Measuring the Development of a Shared Mental Model*

Sochet et al. Pediatr Crit Care Med 2018;19:e72-e79

Objectives: To determine if standardization of pediatric interfacility transport handover is associated with the development of a prototypical shared mental model between healthcare providers. **Design:** A single center, prepost, retrospective cohort study. Settings: A 259-bed, tertiary care, pediatric referral center. Patients: Children 0 to 18 years old transferred to our critical care units or emergency center from October 2016 to February 2017. Interventions: Standardization of interfacility handover using a multidisciplinary checklist, didactic teaching, and simulation conducted midway through the study period.

Measurements and Main Results: The primary outcome was a shared mental model index defined as percent congruence among handover participants regarding key patient healthcare data including patient identification, diagnoses, transport interventions, immediate postadmission care plans, and anticipatory guidance for ongoing care. Secondary outcomes were handover comprehensiveness and teaming metrics such as efficiency, attendance, interruption freguency, and team member inclusion. During the study period, 100 transport handovers were observed of which 50 were preintervention and 50 post. A majority of handovers represented transfers to the emergency center (41%) or PICU (45%). There were no observable differences between prepost intervention cohorts by general characteristics, admission diagnoses, or severity of illness metrics including Pediatric Index of Mortality-3-Risk of Mortality, length of stay, mortality, frequency of invasive and noninvasive ventilation, and

*See also p. 172.

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DOI: 10.1097/PCC.000000000001396

vasoactive use. The shared mental model index increased from 38% to 78% following standardization of handover. Attendance (76% vs 94%), punctuality (91.5% vs 98%), attention (82% vs 92%), summarization (42% vs 72%), and provision of anticipatory guidance (42% vs 58%) also improved. Efficiency was unchanged with a mean handover duration of 4 minutes in both cohorts.

Conclusions: Considerable enhancements in handover guality, team participation, and the development of a shared mental model after standardization of interfacility transport handover were noted. These findings were achieved without compromising handover efficiency. (Pediatr Crit Care Med 2018; 19:e72-e79) Key Words: handover; pediatric critical care; shared mental model; teamwork; transport medicine

Transitions of care, commonly referred to as patient handovers, represent the physical movement of patients between healthcare settings and the cognitive exchange of healthcare data, anticipatory planning, and accountability among clinical providers (1). Inadequate or incomplete handover has been associated with 80% of in-hospital sentinel events, therapeutic errors, inappropriate testing, increased hospital costs, and prolonged hospital lengths of stay (2-4). Consequently, emphasis has been placed on improving transitions of care by organizations such as the Joint Commission (5) and Children's Hospitals' Solutions for Patient Safety Children's Healthcare Network (6). Critically ill children undergoing interfacility transport represent a uniquely vulnerable population given multiple, preexisting transitions of care in the field or at outlying facilities and the wide range of age-dependent pathophysiologic data necessitating interpretation, prioritization, and effective communication between providers.

High-quality transitions after patient transport demand a tightly orchestrated team of nursing, respiratory therapists, physicians, transport specialists, and supportive staff committed to the safe and comprehensive exchange of complex, multidisciplinary knowledge. Providing structure and scripting reduces adverse events, improves data exchange, enhances

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The authors have disclosed that they do not have any potential conflicts of interest

Study Intervention: Checklist Tool

Checklist outlined:

- Individual duties
- Timeline of events
- Data to be conveyed
- Behavioral expectations
- Obligatory prompting for participation

Bedside Nurse Duties

- 1. Inform APP/resident & attending physician of patient arrival & room number.
- 2. Confirm clinical stability of the patient.
- 3. Ensure functionality of monitoring devices & equipment.
- 4. When ALL team members are present, perform patient ID safety check ("Time Out").
- 5. Clearly indicate that it is **OKAY** to start handover.

Transport Nurse Duties

- 1. Provide a succinct review of relevant past medical history.
- 2. Clearly state the chief complaint(s) & reason for hospitalization.
- 3. Review care provided at outlying facility including: medications, lab results, & imaging.
- 4. Summarize transport course & additional care provided en route.
- 5. Identify any immediate care needs for the patient.

Transport RT Duties

- 1. Describe any difficulties with the airway or breathing.
- 2. Describe any care provided at outlying facility regarding the respiratory system.
- 3. Summarize transport course with regards to respiratory care en route.
- Identify any immediate respiratory care needs for the patient.

Accepting Physician / APP Duties

- Provide a brief summarization of transport team handover including: patient ID, medical history, reason for hospitalization, & care provided at outside facility / en route.
- Outline an integrative plan for immediate hospital care including: immediate medical care, labs, imaging, & consultations.
- 3. Give clear anticipatory guidance & identify the responsible attending physician / APP providers to be contacted.
- Provide an opportunity for questions & clarifications.
- 5. Clearly indicate that handover has concluded.

HANDOVER TEAMING REMINDERS

- Do not begin until ALL team members are present & the bedside nurse indicates the "OKAY" to start.
- · Remain quiet if not presenting (aka pay attention & no side conversations).
- Following each presenter, pause to allow for questions & clarification.
- Remain present throughout the entirety of handover.

4

What's in the Model?

Who is the patient?

What should prompt concern & escalation?

What is the post-transport plan?

What are the diagnoses?

What was done already?


Shared Mental Model Indices Can Be Measured



A Good Team Shares Well Regardless of Team Size



Standardizing a Process Can Result in Expected Ideal Teaming Behaviors

Table 2. Pediatric Inter-facility Handover Duration, Attendance, Process, and Team Science Data

	8-weeks Preintervention	8-weeks Postintervention	1-year Follow-up	
Variables	(n = 50)	(n = 50)	(n = 48)	P
Handover duration, mean min \pm SD	4.3±2.1	4.1±2.2	4.5±2.1	0.58
Attendance, n (%)				
Bedside nursing	50 (100)	50 (100)	47 (98)	0.35
Respiratory care	30 (60)	39 (58)	34 (71)	0.37
Advanced practice provider	29 (58)	32 (64)	36 (75)	0.14
Attending physician	38 (76)	47 (94)	44 (92)	0.01
Tardiness (%)	8.5	2	2.5	<0.01
Process and teaming data, n (%)				
Quiet room	38 (76)	44 (88)	35 (73)	0.15
Nurse gives okay to start	49 (98)	50 (100)	46 (96)	0.34
Handover leader identified	49 (98)	50 (100)	48 (100)	0.37
Handover interrupted	20 (40)	15 (30)	5 (10)	<0.01
Attention by all team members	41 (82)	46 (92)	48 (100)	<0.01
Anticipatory guidance provided	21 (42)	29 (58)	41 (85)	<0.01
Prompts for questions/clarification	47 (94)	49 (98)	28 (100)	0.17
Provider summarization	21 (42)	36 (72)	41 (85)	<0.01

Transport Handover Standardization

- Content improved
- Efficiency improved
- Enhanced teaming
- Measured and improved SMMi

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A Longitudinal and Sustainability Assessment of Pediatric Interfacility Transport Handover Standardization

Anthony A. Sochet, MD, MSHS*; Kelsey S. Ryan, MD+; Walter Miller, RRT+; Jennifer L. Bartlett, MSN, CPNP*; Thomas A. Nakagawa, MD*; Ladonna Bingham, MD*±

Abstract

Introduction: Standardization of interfacility transport handover is associated with improved shared mental model development. efficiency, and teaming. We sought to build upon previously published data by evaluating 1-year follow-up data, assessing face-validity, and describing sustainability. Methods: We performed a pre-post, retrospective cohort study in a stand-alone, tertiary, pediatric referral center for children 0-18 years of age transported to our pediatric intensive care unit, neonatal intensive care unit, or emergency department from October 2016 to November 2017. Handover was standardized using multidisciplinary checklists, didactics, and simulation. Data were collected for three 8-week periods (preintervention, postintervention, and 1-year follow-up). Outcomes included shared mental model index (shared mental model congruence expressed as an index, percent congruence regarding healthcare data), teaming data (efficiency, attendance, interruptions, interdependence), and face validity (5-point, Likert scale questionnaires). Statistics included 1-way analysis of variance, Kruskal-Wallis, chi-square, and descriptive statistics. Results: One hundred forty-eight handovers (50 preintervention, 50 postintervention, and 48 at 1-year) were observed in the emergency department (41%), pediatric intensive care unit (45%), and neonatal intensive care unit (14%). No differences were noted in demographics, diagnoses, PIM-3-ROM, length of stay, mortality, ventilation, or vasoactive use. Sustained improvements were observed in shared mental model congruence expressed as an index (38% to 82%), physician attendance (76% to 92%), punctuality (91.5% to 97.5%), interruptions (40% to 10%), provision of anticipatory guidance (42% to 85%), and handover summarization (42% to 85%, all P < 0.01) Efficiency was maintained throughout (mean duration 4.5±2.1 minutes). Face validity data revealed handover satisfaction, effective communication, and perceived professionalism. Conclusions: Enhancements in teaming, shared mental model development, and face validity were achieved and sustained 1-vear following handover standardization with only minimal reeducation during the study period. (Pediatr Qual Saf 2018;3:e118; doi: 10.1097/pg9.000000000000118; Published online November 8, 2018.)

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A portion of these data will be presented between October 5 and 7, 2018, at the 25th Pediatric Critical Care Colloquium in Baltimore, Md., as an original abstract presentation

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INTRODUCTION

OUALITY · SAFETY · HEALA Insufficient or poor-quality handover has been linked to in-hospital sentinel events, therapeutic errors, inappropriate laboratory testing, increased hospital costs, and prolonged lengths of stay.1-5 It is also well known that communication errors increase as the number of handovers increase. As a result, organizations such as the United States Joint Commission, World Health Organization, Air Medical Physician

> Association, and Children's Hospitals Solutions for Patient Safety Children's Healthcare Network have focused on handover standardization as a priority to improve patient care and reduce medical errors.6-8 Critically ill children undergoing interfacility transport represent a uniquely high-risk population having undergone several transitions of care and medical interventions before arrival at an accepting institution.

> A healthcare worker's ability to determine the importance of environmental stimuli, distinguish and prioritize workplace relationships, and generate expectations for clinical performance is regulated by internal, cognitive frameworks known as mental models.9,10 Throughout handover, individual participant cognitive models are

The missing link



CLABSI? VAP? Errors?

- 1. Completion of prioritized tasks
- 2. Workplace behavior and cultural values

A HOW TO GUIDE

- Team Goals during rounds:
 - -Incorporate participant expertise
 - -Interpret / exchange data
 - Develop short-term, shift goals
 - -Offer anticipatory guidance



Study Design

- Design: A prospective, pre-post observational study from Nov 2018 – Jan 2020
- Setting: 28-bed PICU, quaternary referral center
- Data obtained via:
 - (1) Direct observation
 - (2) Post-rounds survey data
- Intervention: A collaboratively-developed checklist, didactic training, and observed simulation

Step 1: Getting all our Stakeholders to the Table



Trainees

Advanced Practice Providers

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Step 2: Map out the Inputs, Processes and Outputs for PICU Work Rounds



Shared Mental Model – IPO Diagram



Input

- Equipment
- Experience
- Broader organizational resources
- Other shared mental models



- Verbal
- Cognitive
- Reactive
- Anticipatory



- Teaming
- Communication
- Shared planning
- Leadership
- Expectation management (anticipatory guidance)

Goal

- Accuracy
- Quality
- Efficiency
- Team development
- Organizational advancement
- Tasks accomplished

GOALS

Team input:

- Team composition
- Team familiarity
- Team experience
- •Team leadership

Participant input:

Subject area expertise
Interpersonal skills
Cognitive capacity
Experience level
Performance expectations

Patient input:

Medical complexity
Acute condition & stability
Active medical care & monitoring
Patient expectations of care
Family expectations of care

Organization input:

- Unit-specific location & structure
 Equipment, supplies, & resources
 Time of day
- Preexisting procedures & protocols
 Safety culture

- **Team Input:** composition, familiarity, experience as a team, & leadership.
- **Participant Input:** expertise, interpersonal skills, cognitive capacity, experience, & expectations.
- **Patient Input:** medical complexity, stability, active care, monitoring, & family/patient expectations.
- **Organization Input:** unit structure, resources, time of day, pre-existing procedures/protocols, & institutional safety culture.

INPUTS

PROCESSES

OUTCOMES

GOALS

Team input:

- Team composition
- Team familiarity
- Team experience
- •Team leadership

Participant input:

Subject area expertise
Interpersonal skills
Cognitive capacity
Experience level
Performance expectations

Patient input:

Medical complexity
Acute condition & stability
Active medical care & monitoring
Patient expectations of care
Family expectations of care

Organization input:

- Unit-specific location & structure
 Equipment, supplies, & resources
 Time of day
- Preexisting procedures & protocols
 Safety culture



Shared language Leveled gradients etosicalografiscussion Dataplinten pitea atsiten Shared goals Nogmittoong transfer Nashageoneiled **Prioritization Emergent** states

Team inn

OUTCOMES

GOALS

A shared mental model:

- •High level of agreement between team members
- •Clear expectations for individual & teammate performance
- Prediction of emergent states & ensuing behaviors



Step 3: Jointly Determine Responsibilities/Expectations

1. Bedside Nurse	 Patient identification & admission diagnoses Review acute overnight events Current clinical data, exam & vital signs by systems
2. Resident/APP	 Summarize and interpret clinical data Provide a succinct assessment statement Present care-plan by systems
3. Attending	 Obtains input from <u>ALL</u> team members Reviews any concerns from patient or caregivers Provide feedback to presenters & education
4. Charge Nurse	 Review individual Patient Quality & Safety Checklist items Prompts team members for anticipatory guidance
5. Resident/APP	Specify anticipatory guidance and notifications:I.E. When to call? What to look out for?
6. Bedside Nurse	Summarize shift goals by systemSummarize anticipatory guidance

Create Checklists that Spark Conversation

	0	Foley catheter (Y/N) – Required? (Y/N)
Invasive access & tubes		Central venous access (Y/N) – Required? (Y/N); Functionality?
		Arterial access (Y/N) – Required? (Y/N); Functionality?
	0	Adequate pain control? (Y/N)
	0	Adequate sedation? (Y/N)
Sodation / analgosia	0	Withdrawal scores ordered? (Y/N)
Sedation / analgesia	0	Delirium scores ordered? (Y/N)
	0	Sedation scale scores ordered? (Y/N)
	0	Restraints needed? (Y/N) – Order current? (Y/N)
Mahilita	0	Rehab services (PT/OT/ST) consulted? (Y/N)
WIODIIIty	0	Early mobility score for the shift?
Shin issues	0	Risk factors for pressure injury discussed? (Y/N)
	0	Current skin issues? (Y/N)
	0	Daily labs ordered? (Y/N) – Required? (Y/N)
Labs & Imaging	0	Daily radiographs ordered? (Y/N) – Required? (Y/N)
	0	Blood gas frequency discussed? (Y/N)
	0	Verify antibiotics and duration? (Y/N)
Antimiarabials	0	Adequate access for antimicrobials? (Y/N)
Anumiciopiais	0	Therapeutic drug levels required? (Y/N)
	0	Change drugs today from IV to enteral? (Y/N)
	0	Venous thrombosis prophylaxis? (Y/N)
Prophylaxis	0	Stress ulcer prophylaxis? (Y/N)
	0	Bowel (Constipation) regimen ordered? (Y/N)
	0	Ventilation orders are up to date? (Y/N)
Invasive ventilation	0	Extubation readiness assessed? (Y/N)
	0	Endotracheal tube leak assessment? (Y/N)
	0	Palliative care consultation? (Y/N)
Other / Miscellaneous	0	Healthcare Acquired Event (HAE) risk factors: CLABSI, CAUTI, PIVIE, pressure injury, VAP, unplanned
		extubation, critical airway, sepsis, neutropenia, or self-harm
Family / Social	0	Family concerns verbally addressed on rounds? (Y/N)



Study Outcomes

Shared mental model index (SMMi)	% congruence regarding healthcare data among rounds participants
Teaming outcomes:	% attendance, attention, interdependence, interruptions, task allocation, prompts for inclusion or clarification, and closed-loop summarization
Rounds comprehensiveness:	% discussion of key patient and healthcare data
Rounds efficiency:	Rounds duration in minutes
	Rounds content / duration
Participant face validity:	Assessed on 5-point, parametric Likert scales
Rounds-established goal completion rate	Derived from attending survey data
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Comparative Groups for Study



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Similar Patient Characteristics

- No differences were observed in:
 - Patient demographics
 - Patient medical complexity
 - Attending providers observed
 - Advanced practice providers and trainees observed

Rounds Became Comprehensive



Pre-NLR PDSA C1 PDSA C2

Efficiency Did NOT Suffer

Variables units	Pre-NLR	PDSA C1	PDSA C2	2	
variables, units	(n=50)	(n=52)	(n=52)	ρ	
Rounds duration, <i>min</i> ± SD	11.1 ± 5.2	11.8 ± 6.3	10.8 ± 6.3	0.99	

Standardized Process → Good Behaviors



Pre-NLR PDSA C1 PDSA C2

Dramatic Improvements in SMMi

Variables, units	Pre-NLR (n=50)	PDSA C1 (n=52)	PDSA C2 (n=52)	р
Group size, n ± SD	6.9 ± 1.5	7.4 ± 1.2	6.8 ± 1.2	0.07
Subcategory SMMi, % Patient diagnosis Overnight events Primary shift goals Anticipatory guidance	56% 46% 34% 28%	92% 79% 67% 79%	87% 88% 88% 92%	<0.01 <0.01 <0.01 <0.01
Total SMMi, % ± SD	41 ± 31%	79 ± 23%	89 ± 17%	<0.01

End-of-Shift Goals Were Achieved w/Higher Frequency: 80% → 92%

Journey Lesson 4: Big or small, don't rush teaming.



WHEN WE FOCUS ON THE TEAM...

...MEMBERS REPORT IMPROVED SELF-VALUE

Face Validity Data, Median (IQR)	Pre-NLR (n=294)	PDSA C1 (n=358)	PDSA C2 (n=301)	p
Rounds were efficient	2 (1-2)	1 (1-2)	1 (1-1)	<0.01
Nurse presentation clarity		1 (1-2)	1 (1-1)	<0.01
Rounds plan clarity	2 (1-2)	1 (1-2)	1 (1-1)	<0.01
Participant self value	2 (1-2)	1 (1-2)	1 (1-1)	<0.01
Rounds satisfaction	2 (1-2)	1 (1-2)	1 (1-1)	<0.01
Sufficient prep time	2 (1-2)	1 (1-2)	1 (1-1)	<0.01

*Likert scale: 1=strongly agree, 2=agree, 3=neutral, 4=disagree, 5=strongly disagree

Limitations

- The focus was on "Nurse-Led" Rounds
 - Maybe it should be "Team-empowered, Family-centered"
- End-of-shift goals were biased
 - Implies that MD/DO goals are the only relevant ones
 - Patients are dynamic complex adaptive systems...so they are never static and goals will need be modified throughout a shift.

Now that you are drinking the Team Science Kool-Aid, Please Welcome Dr. Melendez.



all we do all for kids™

Factors Relating to Ideal Teaming in Healthcare

Foronda C, et al. *Nurse Educ Pract* 2016;19:36-40 Pype P, et al. *BMC Health Serv Res* 2018;18:570



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Overcoming Barriers to Teaming in Healthcare

Weller J, et al. *Postgrad Med J* 2014;90(1061):149-154 Eddy K et al. *JBI Database System Rev Implement Rep* 2016;14(4):96-137.

Teaching effective communication strategies

Train teams together (simulation)

Inclusive / collaborative interdisciplinary teaming

Create democracy (level gradients)

Support teamwork with protocols / procedures

Develop and foster organizational support

Mechanisms to improve workplace resilience

Canadas-de la Feunte, et al. *Psychooncology* 2018;27(5):1426-1433 Pastores SM, et al. *Crit Care Med* 2019;47(4):550-557

- Identify and treat emotional exhaustion
- Eliminate depersonalization
- Promote and recognize professional accomplishment
- Standardize behavior to be inclusive and interdependent
- Diverse workforce (the TEAM!)

Summative Suggestions

- Routine QI Processes
 - Baseline data assessments
 - Assure stakeholder involvement
 - Identify measurable metrics
 - Plan for iterations
 - Longitudinal assessments

- Team Science Processes
 - Foster interdependence.
 - Develop collegiality and nonthreatening environment.
 - Create opportunities for inclusivity, establish trust, and build participant value.
 - Don't assume a shared language, roles, or expectations.
 - Conflict resolution process.

STILL HAVE A LONG WAY TO GO! What is wrong here?



Thank You to our Diverse Team

- Michele Cooper, PA-C
- Jennifer Criscola, MD
- Corey Fowler, PharmD
- Laura Gourley, RN
- Elizabeth Halterman, RN
- Katherine Holm, RN
- Meghan Roddy, PharmD
- Gretchen Thompson, RRT

- All PICU Nursing / Allied Health Personnel at JHAC
- JHAC Psychology Team

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Thank You.



Questions. Comments. Feedback.

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Discussion

Use the Zoom Chat function to send us your questions and comments or raise your hand to indicate you'd like to share!





Challenge sepsis. Change lives.



Sepsis Huddle: What does it add?

Presenter(s) Elliot Melendez, MD Chief, Pediatric Critical Care Connecticut Children's April 14, 2022



No conflicts of interest or financial disclosures





















None of us wake up in the morning and say: "I plan to give less than 100% today!"





When Feedback Sought

"I ordered the bolus to be given over 20 min and then went to recheck and the bolus was on a pump. I informed the charge and the bedside nurse to not put it on the pump and to pressure bag and they did. We also got 2nd IV at this time."



But it's not about blame





- No blame, just trying to understand:
 - When did all the team members know the patient had sepsis?
 - When did the team know what were the goals of care and the expectation for timeliness?



The single biggest problem in communication is the illusion that it has taken place. - George Bernard Shaw











In a Cardiac Arrest

Everyone knows this is an emergency!



And we've learned how to use effective communication skills in a code





Perceived Barriers to Timeliness of Treatment





Perceived Barriers to Timeliness of Treatment



CHILDREN'S HOSPITAL ASSOCIATION

Perceived Barriers to Timeliness of Treatment



So in sepsis, not being on the same page is common!





So can we improve communication?

Are We Listening





What has IPSO taught us: If a sepsis screen is +, perform a huddle





Why a Huddle?

- Sepsis mgmt should be a PDSA Cycle
 - Thus, a Sepsis Huddle should occur as part of the planning
- Main goal of huddle \rightarrow get the team on the same page!
 - Confirm if sepsis is present
 - Acknowledge that <u>SEPSIS IS AN EMERGENCY</u>!!!
 - Define actions and who owns the action



Making the huddle communication effective?

- Use tools for effective communication
 - IPASS
 - SBAR
 - Others
- Create Script

RN Will Call Resident/APP: "My patient in Rm _____ triggered the sepsis recognition tool with a sepsis score of ____".



Sepsis Huddle Checklist

Huddle requires attending, provider(s), bedside RN, charge RN

< 5 minutes:

- [] Sepsis/Septic Shock Confirm/Deferred
- [] Set BP goal
- [] Set priorities
- [] Assign actions and expectations for completion
- [] COW to bedside: Order Abx STAT/Call Pharmacy
- [] Define time for reassessment/contingency plans
- [] Each team member summarizes their role (read back)



How do we sustain?

• When a new team member join unit, they received a button





Huddle Compliance

GenPeds Measurement





Gen Peds

"Are providers promptly coming to bedside?"





Was the Huddle Effective?

Division of Medicine Critical Care Time from Sepsis Antibiotics Ordered to Time Administered (Minutes) Aug 2012-Jan 2016



JHACH ED Huddle outcomes...

• Time to Huddle = 4 minutes

	Huddle	No Huddle
Screen to abx order	55 min	68 min
Screen to abx admin	77 min	108 min


CT Children's: Huddle vs No Huddle: ED Median Time from CDTZ to Intervention



Summary

 A process for recognizing/acknowledging sepsis is an essential precursor to timely treatment

- A sepsis huddle allows a team to create a shared mental model and should include:
 - The providers who can drive care
 - An acknowledgement that sepsis is present and that it is an emergency
 - A standardized process: checklist and/or script
 - Setting of clear priorities and assignment of roles, continual assessment, and contingency planning



Challenge sepsis. Change lives.



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Contact Thaissa Davila for follow up questions:

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Thank you for attending today We want to hear from you!

Please complete the brief survey by April 22. This must be completed to receive CE credit!

Please email <u>mary.headley@childrenshospitals.org</u> for any CE credit questions

