

Section on Emergency Medicine

Reducing Time to Opioid Administration for Vaso-occlusive Crisis in Patients with Sickle Cell Disease

10/21/2023

Poster Presentation

Karen Yaphockun, DO¹; Michelle Keyser, MD²; Amy W. Bryl, MD³; Jenny Kim, MD³; Denise Burns, BSN, RN, CPEN³; Brittanee Randle, BSN, RN, CPN, CPEN³, (1) Rady Children's Hospital - San Diego, Division of Pediatric Emergency Medicine, San Diego, CA, (2) Rady/UCSD, San Diego, CA, (3) RCHSD, San Diego, CA

Purpose/Objectives: The National Heart, Lung, and Blood Institute recommends early opioid administration within 1 hour of arrival for treatment of severe pain in sickle cell vaso-occlusive crisis (VOC). Previous studies have shown that intranasal (IN) fentanyl provides effective and timely analgesia in pediatric sickle cell VOC. In 2016, our emergency department (ED) launched a QI initiative where patients noted to have an extremity deformity or burn injuries in moderate to severe pain were offered IN fentanyl to ensure timely opioid administration. This reduced our median time to first opioid to less than 1 hour of arrival for this population. Children with sickle cell disease is a small and underrepresented population in our institution, and there was no such mechanism in place to ensure timely opioid administration.

Design/Methods: A multidisciplinary team including ED and hematology physicians and nurses reviewed baseline data and identified barriers to achieving the national benchmark. Initial considerations were made to utilize metrics for arrival to first opioid, however, given that this project was initiated during an unprecedented volume surge at our institution and at pediatric EDs nationwide, the primary metric utilized was room to first opioid. The primary aim was to decrease time from rooming to first opioid administration in patients in VOC with a pain score of ≥ 4 from a baseline of 81 to 45 minutes by June 2023. Secondary aims were to: increase the proportion receiving IN fentanyl from a baseline of 12% to 50% and decrease time to registered nurse (RN) pain reassessment from a baseline of 35 to 20 minutes. We conducted monthly PDSA cycles. Interventions included nursing and physician education, reintroduction of a pre-existing ED Sickle Cell Pain order set, and the addition of best practice alerts (BPA) for nurses and physicians to utilize IN fentanyl. We used statistical process control to examine changes in measures over time.

Results: From June 2021-December 2022, time from rooming to first opioid administration decreased from 81 to 39 minutes (Figure 1). Arrival to first opioid metrics were tracked and did follow a similar decreased from 95 to 57 minutes (Figure 2). Although no centerline shifts have been sustained in the proportion of patients who received IN fentanyl with baseline of 12% (UCL 69, LCL 0), two points of special cause variation were noted. No significant changes have been noted in RN time to pain reassessment which began at a baseline of 35 mins (UCL 95,

LCL -25). No cases of adverse reactions were reported.

Conclusion/Discussion: We reduced time to first opioid delivery to treat moderate-severe pain in sickle cell VOC using the implementation of BPAs which promote IN fentanyl utilization. Our current goal is to create a sustainable change in our practice of managing VOC in the ED.

Figure 1. Room to First Opioid XbR Chart

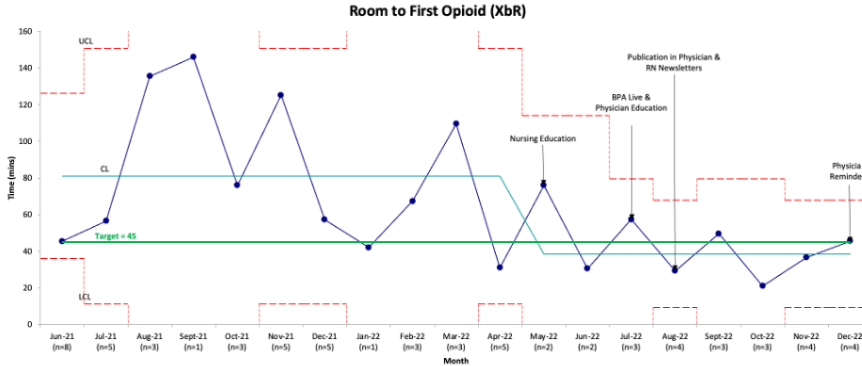
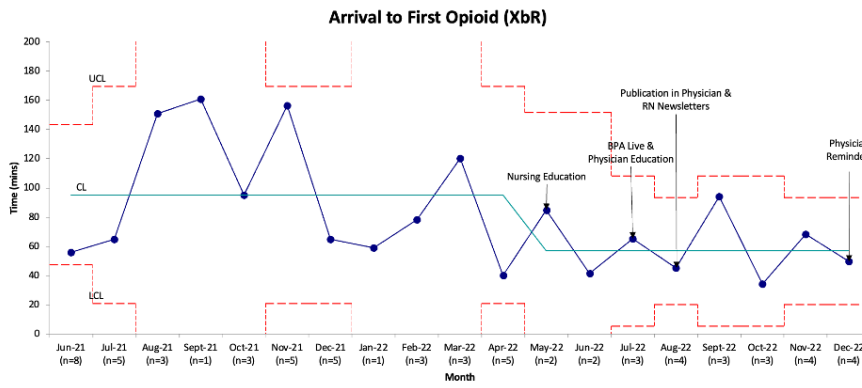


Figure 2. Arrival to First Opioid XbR Chart



Association of Community Characteristics and Patient Socio-demographics with Setting of Care for Pediatric Concussion

10/21/2023

Poster Presentation

Kristy B. Arbogast, PhD¹; Daniel Corwin, MD MSCE²; Daniele Fedonni, MPH²; Peter Camacho, MS²; Melissa Godfrey, MPH²; Tyra Bryant-Stephens, MD²; Christina L. Master, MD², (1) Center for Injury Research and Prevention, Children's Hospital of Philadelphia, Philadelphia, PA, (2) Children's Hospital of Philadelphia, Philadelphia, PA

Background: Concussion is a common childhood injury characterized by a broad range of mechanisms, time to presentation and symptom profiles. As a result, there are numerous points of healthcare entry for concussion patients that range from emergency/urgent care, primary care or specialty care. Previous research has identified disparities by race, ethnicity, income, and education in concussion recovery and outcomes. Understanding where different socio-

demographic groups access concussion care is a first step in developing strategies to improve health equity. The objective of this analysis was to use a concussion registry from a broad children’s hospital healthcare network to identify differences in initial setting of healthcare access by key socio-demographic features of the injured child and their community.

Methods: Using the Minds Matter Concussion Registry, we queried data of children, aged 0-18 years, diagnosed with a concussion, and seen between January 2017 and March 2023 in either the emergency department (ED), urgent care (UC), primary care (PC), or specialty care (SC) settings. Differences in initial setting of healthcare were analyzed by patient age, sex, race/ethnicity, and insurance status as well as the following metrics associated with patient zip code: median family income and proportion of residents age 25+ with >Bachelor’s Degree. The median Child Opportunity Index national normed score was calculated for the patient cohort seen in each healthcare setting. Categorical and quantitative variables were compared across settings by Pearson’s Chi-squared test and Kruskal-Wallis rank sum test, respectively.

Results: During the study time frame, 16,105 patients with concussion, age 0-18 years, were seen in the network: 43.7% had initial visits in PC, 25.6% in SC, 20.7% in ED, and 10.0% in UC. Patients in ED and UC were younger than PC and SC. (Table 1) A greater proportion of boys (vs girls), and non-Hispanic blacks (vs Hispanics and non-Hispanic whites) were seen in the ED. Characteristics of the patient’s community varied by healthcare setting with those seeking initial care in the ED coming from lower opportunity communities. (Table 2)

Conclusion: Non-Hispanic black youth, who come from communities impacted by systemic and structural racism resulting in limited resources, as well as their male and publicly insured peers, appear to be more likely to seek initial concussion care in the ED compared to other settings. This finding, coupled with prior research showing care delivered for concussed youth in emergency care settings can be negatively impacted by competing acute needs and limited follow-up, suggests the least resourced children seek concussion care in settings with the greatest challenge delivering comprehensive resources. Equipping ED and UC providers with easy-to-use assessments and educational tools, as well as encouraging concussed youth to seek care with pediatricians and family practice providers may improve equity in recovery and outcomes.

Table 1

	Emergency Department (ED)	Urgent Care (UC)	Primary Care (PC)	Specialty Care (SC)	p-value
Median (IQR)					
Patient Age (yrs)	12.4 (8.6-15.2)	13.0 (10.4-15.3)	14.0 (11.3-16.1)	15.1 (13.0-16.8)	<0.001
N (%)					
Patient Sex					<0.001
Female	1,408 (18%)	791 (10.0%)	3,438 (43%)	2,289 (29%)	
Male	1,931 (24%)	823 (10%)	3,592 (44%)	1,833 (22%)	
Patient Race/Ethnicity					<0.001
Hispanic	273 (25%)	96 (8.7%)	492 (45%)	242 (22%)	
Non-Hispanic Black	1,529 (53%)	154 (4.6%)	901 (31%)	348 (12%)	
Non-Hispanic White	1,196 (12%)	1,191 (12%)	4,784 (47%)	2,974 (29%)	
Other	339 (17%)	193 (9.9%)	853 (44%)	558 (29%)	
Patient Insurance					<0.001
Medicaid	1,662 (41%)	250 (6.2%)	1,450 (36%)	676 (17%)	
Private	1,877 (14%)	1,364 (11.1%)	5,580 (48%)	3,446 (29%)	

Table 1: Patient demographics by initial health care setting for concussion. P-value calculated from Pearson’s Chi-square test.

Patient demographics by initial health care setting for concussion. P-value calculated from Pearson's Chi-square test.

Table 2

	Emergency Department (ED)	Urgent Care (UC)	Primary Care (PC)	Specialty Care (SC)	p-value
Median (IQR)					
Income of Patient Zip Code (5)	54,935 (37,434, 85,766)	104,232 (86,696, 117,344)	97,008 (76,710, 110,452)	97,305 (76,710, 116,895)	<0.001
% of Aged 25+ with ≥Bachelors Degree in Patient Zip Code	30 (18, 51)	53 (44, 62)	49 (32, 58)	49 (33, 60)	<0.001
Child Opportunity Index (COI) national norm score of Patient Zip Code	26 (4, 74)	88 (76, 95)	82 (63, 93)	84 (64, 94)	<0.001

Table 2: Characteristics of patient's zip code of residence by initial health care setting for concussion. P-value calculated from Kruskal-Wallis rank sum test.

Characteristics of patient's zip code of residence by initial health care setting for concussion. P-value calculated from Kruskal-Wallis rank sum test.

Establishing the Age at Which Children Can Apply a Combat Application Tourniquet (CAT) for Hemorrhage Control

10/21/2023

Poster Presentation

Cindy D. Chang, MD¹; Nichole Bosson, MD, MPH, NRP²; Marianne Gausche-Hill, MD³; Shira A. Schlesinger, MD, MPH⁴; Brad Sobolewski, MD, MEd⁵; Melissa Williams, MSN RN CPN TCRN⁵; Regina Menninger, RN, BSN⁶; Nusrat Harun, PhD⁷; Michelle D. Eckerle, MD MPH⁵, (1) Cincinnati Children's Hospital Medical Center, Cincinnati, OH, (2) Los Angeles County EMS Agency, Harbor-UCLA Medical Center, Santa Fe Springs, CA, (3) Los Angeles County EMS Agency, Harbor-UCLA Medical Center, Hermosa Beach, CA, (4) Harbor-UCLA Medical Center, Torrance, CA, (5) Cincinnati Children's Hospital Medical Center, Cincinnati, OH, (6) University of Cincinnati Medical Center, Cincinnati, OH, (7) Cincinnati Children's, Cincinnati, OH

Background: Uncontrolled hemorrhage is the single most preventable cause of death following a traumatic injury, occurring in 20% of civilian traumatic deaths. Overall, 50% of these deaths are deemed potentially preventable with adequate hemorrhage control. Emergency response plans across the United States are being reviewed and calls have been made to teach hemorrhage control techniques to children. The age at which children are able to understand the need and apply hemorrhage control techniques, including tourniquet placement, is unknown. This information could inform national recommendations on the appropriate age at which to teach this content. We aimed to identify the youngest age at which children can identify when and how to use a tourniquet and have the motor strength to tighten a tourniquet adequately to achieve hemorrhage control.

Methods: We conducted a prospective cohort study of children 8 to 12 years old in local

schools from January 2023 – March 2023. Didactic training on hemorrhage control and tourniquet application was given to classes of 25 to 50 students. A trained facilitator provided hands-on instruction and practice to groups of 4 to 6 children in placement of a combat application tourniquet (CAT) on medical training manikins. They were then individually assessed on their cognitive and motor abilities to manage hemorrhage and place the tourniquet correctly. Correct tourniquet placement was defined as placing it 2 inches above the wound (not on a joint) and turning the windlass at least once with instructor unable to slide a tongue depressor underneath the tourniquet after the windlass was secured. Results were summarized with descriptive statistics and analyzed using one-way ANOVA. We defined a minimum acceptable success rate of 60% in all domains.

Results: 315 children were enrolled, 183 were male and 132 were female. The age distributions were 8-years-old (n=33), 9-years-old (n=63), 10-years-old (n=76), 11-years-old (n=88), and 12-years-old (n=55). Table 1 lists results. All age groups met the minimum acceptable success rate in both cognitive and motor domains. The differences between groups were only significant in the assessment of ability to tighten the tourniquet adequately, but this was driven by differences between the 10 and 11-year-old age groups.

Conclusion: Children 8-years-old and above can cognitively understand the concept of hemorrhage control, including use of a CAT, and are physically able to correctly place and tighten the tourniquet adequately.

Table 1: Results

	Overall success percentage n (%)	Success percentage by age group n (%)	P-value
Cognitive Able to answer the following: What is the first step to control bleeding in someone with a bleeding wound? Answer: Pressure	285 (90)	8yo: 29 (88) 9yo: 56 (89) 10yo: 72 (95) 11yo: 81 (92) 12yo: 47 (85)	0.42
Cognitive Able to answer the following: If pressure cannot control the bleeding in an arm or a leg, what should be used next? Answer: Tourniquet	299 (95)	8yo: 30 (91) 9yo: 57 (90) 10yo: 73 (96) 11yo: 88 (100) 12yo: 51 (93)	0.06
Motor Placed tourniquet in correct location? Defined as: at least 2 inches above simulated wound and not on a joint.	287 (91)	8yo: 28 (85) 9yo: 61 (97) 10yo: 68 (89) 11yo: 83 (94) 12yo: 47 (85)	0.10
Motor Able to tighten tourniquet adequately? Defined as: at least 1 turn on the windlass and unable to slide a tongue depressor underneath in between the manikin and the tourniquet after the windlass is secured.	256 (81)	8yo: 24 (73) 9yo: 49 (78) 10yo: 55 (72) 11yo: 80 (91) 12yo: 48 (87)	0.01

The Impact of Food Insecurity and Social Determinants of Health on Families in a Pediatric Emergency Department

10/21/2023

Poster Presentation

Andrew W. Kramer, MD; Margaret B. Nguyen, MD¹; Kathryn Hollenback, PhD, MPH¹; Brianna Irons, Medical student²; Michael Gardiner, MD¹, (1) UCSD/Rady Children's Hospital, San Diego, CA, (2) UC San Diego, Boston, MA

Background: Food insecurity (FI) in childhood has been shown to result in poor health outcomes and increased risk of chronic disease. FI also frequently occurs with other negative social determinants of health (SDH). The California Health Information Survey (CHIS) estimated that 18.8% of San Diego County children experienced FI in 2017. Our pediatric emergency department (PED) serves a large catchment area, and represents a unique location to identify a food insecure population. We aim to estimate the prevalence of FI in families presenting to the PED, compare sociodemographic factors between FI and non-FI families, and investigate geographical trends of FI in our region.

Methods: We conducted an electronic survey of caregivers presenting to the PED. The survey consisted of six previously validated FI screening questions, and 26 questions regarding demographics and SDH. Caregivers were approached via convenience sampling and were permitted to omit any items. Screening took place on participants' personal electronic devices after scanning a QR code. FI was determined according to prior methods from CHIS. Food-secure and FI groups were compared using chi-square for categorical variables and student t-test for continuous variables. Spatial cluster analysis and geographic information systems (GIS) software was utilized to identify areas with high rates of FI.

Results: Between 06/2022 and 02/2023, 1000 caregivers were approached for participation with 526 completing the screening (52.6% survey completion). Food insecurity was reported by 50.0% of caregivers (95% CI 45.7% - 54.3%). Characteristics of food-secure and food-insecure families are presented in Table 1. Compared with food-secure caregivers, those reporting FI were significantly more frequently of Hispanic ethnicity or black race, reported lower household income, and higher rates of caregiver disability, difficulty paying rent/mortgage, and homelessness. Despite FI families frequently receiving local or government food services, greater than 50% of FI families reported not receiving services. Figure 1 geographically represents the proportion of FI by zip code, and identifies recognizable areas with high rates of FI.

Conclusion: Half of caregivers presenting to the PED screened positive for FI. Families experiencing FI were more likely to have lower income and experience housing and employment insecurity. Despite 90% of FI families reporting having a PCP, more than half additionally reported not receiving food services. Several zip codes demonstrated higher than average rates of FI. These results support the importance of FI screening and the potential impact of resource provision and social service support at the point-of-care in the PED, as well as community efforts targeted at geographic areas with higher FI burden.

Table 1

Table: Characteristics of Food Insecure and Food Secure Children, Caregivers, and Families

	All Respondents* n = 526	Food insecure n = 263	Food Secure n = 263	p-value
Survey language, <i>Spanish</i>	69 (13.1)	48 (18.3)	21 (8.0)	< 0.001
Child sex, <i>female</i>	147 (47.3)	78 (51.3)	69 (43.4)	0.16
Child age, <i>years, mean (SD)</i>	6.0 (5.3)	6.5 (5.4)	5.6 (5.1)	0.05 [†]
Child chronic medical condition	88 (17.2)	48 (19.0)	40 (15.3)	0.26
Child has Primary Care Provider	463 (92.1)	223 (89.6)	240 (94.5%)	0.12
Caregiver sex, <i>female</i>	382 (74.2)	204 (79)	178 (69)	0.019
Caregiver age, <i>years, mean (SD)</i>	36.0 (8.6)	35.1 (8.7)	36.8 (8.4)	0.03 [†]
Caregiver ethnicity, <i>Hispanic</i>	213 (42.4)	125 (49.8)	88 (35)	0.002
Caregiver Race				< 0.001
Hispanic or Latino	213 (50)	125 (62.8)	88 (38.8)	
White non-Hispanic	144 (33.8)	41 (20.6)	103 (45.4)	
Black non-Hispanic	34 (8.0)	21 (10.6)	13 (5.7)	
Asian non-Hispanic	35 (8.2)	12 (6.0)	23 (10.1)	
Caregiver disability	37 (7.1)	27 (10.4)	10 (3.8)	0.003
Caregiver employed	337 (65.7)	143 (56.7)	194 (74.3)	< 0.001
Full time employees in house				0.001
0	66 (13.3)	40 (16.4)	26 (10.3)	
1	255 (51.4)	139 (57.0)	116 (46.0)	
2	147 (29.6)	52 (21.3)	95 (37.7)	
3 or more	28 (5.6)	13 (5.3)	15 (6.0)	
Household Income				< 0.001
\$0 - \$20,000	77 (16.9)	57 (25.0)	20 (8.7)	
\$20,000 - \$40,000	106 (23.2)	75 (32.9)	31 (13.5)	
\$40,000 - \$60,000	83 (18.2)	45 (19.7)	38 (16.6)	
\$60,000 - \$80,000	55 (12.0)	28 (12.3)	27 (11.8)	
\$80,000 - \$100,000	17 (3.7)	9 (3.9)	8 (3.5)	
\$100,000 - \$150,000	32 (7.0)	6 (2.6)	26 (11.4)	
> \$150,000	68 (14.9)	1 (0.4)	67 (29.3)	
Difficulty with rent/mortgage, <i>1 year</i>	228 (44.6)	184/253 (72.7)	44/258 (17)	< 0.001
Homelessness, <i>5 years</i>	38 (7.4)	35 (13.8)	3 (1.3)	< 0.001
Receives food services [‡]	184 (36.1)	122 (48.6)	62 (23.9)	< 0.001
Child receives school lunch	282 (56.0)	175 (70.3)	107 (42.0)	< 0.001

All data reported as n (%) and statistical analyses chi-squared unless otherwise specified

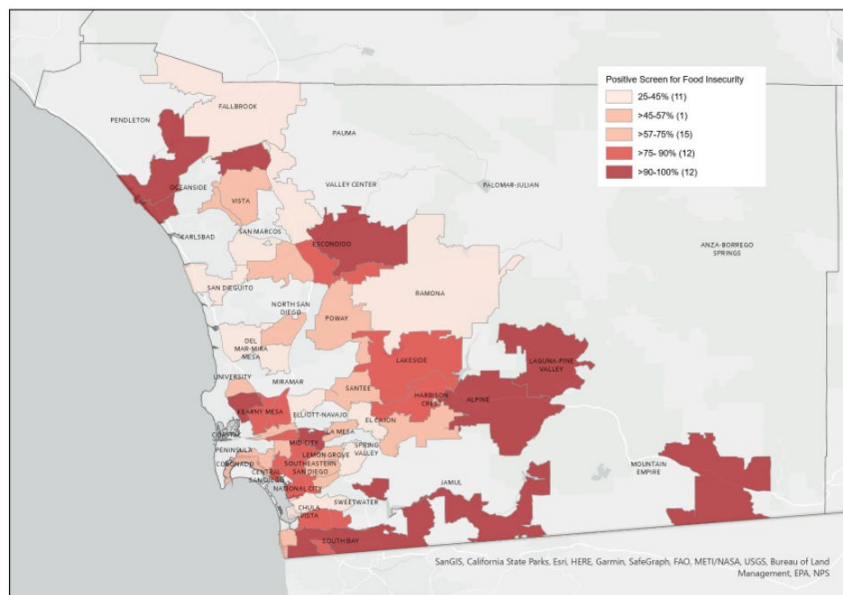
*Number of respondents varies for each item based on number of omitted questions

[†]Student t-test

[‡]Local or government services that help provide food, examples include SNAP and WIC

Characteristics of all respondents, food insecure, and food secure families.

Figure 1



Percentage of food insecure screening families per zip code in San Diego county.

Use of Pocket-sized Ultrasound (PsUS) for the Assessment of the Pediatric Elbow: A Feasibility Study

10/21/2023

Poster Presentation

Alisa K. Brennan, MD¹; Lindsay Jaeger, MD²; Rachel Danzig, MD²; Henry Nguyen, MD²; Alejandro Pasaret, MD²; Holly J. Benjamin, MD³, (1) Ann & Robert H. Lurie Children's Hospital, Chicago, IL, (2) Comer Children's Hospital, Chicago, IL, (3) Comer Children's Hospital/University of Chicago, Chicago, IL

Background: Pocket-sized ultrasound (PsUS) is a novel area of point-of-care ultrasonography and has the potential to be a useful tool in evaluating pediatric elbow injuries in resource-limited settings. Previous research has evaluated hospital grade ultrasound devices in the evaluation of elbow injuries in children but no studies exist that have used PsUS to evaluate these kinds of pediatric injuries. In order to prepare for a larger study, we conducted a feasibility study to train pediatric emergency medicine (PEM) physicians to perform a standardized elbow exam protocol using a PsUS device. Our main objective was to determine the feasibility and efficacy of a brief structured training curriculum to teach PEM physicians, who were previously novice to elbow ultrasonography, to perform an adequate pediatric PsUS elbow exam. Our secondary objective was to evaluate the feasibility of completing the study's PsUS elbow exam protocol in pediatric patients in a busy emergency department (ED).

Methods: Eight PEM physicians including attendings and fellows completed a curriculum composed of virtual and in-person didactic teachings, followed by hands-on workshops. Each provider was then required to complete 3 elbow exams on patients between the ages of 1-16

years old in a pediatric ED with study assistance available. The elbow exam protocol consisted of 10 standard views which was recorded as videos and reviewed by experienced study staff for adequate ultrasound quality (Fig. 1). Exams were evaluated based on if all necessary views were obtained with key landmarks included, the overall quality of images, and the interpretability of images.

Results: Twenty-one pediatric patients tolerated the exam with 42 elbow exams completed. Six out of the 8 providers completed all 3 feasibility exams during the duration of the feasibility study. Only 1 provider needed to complete remediation on exams after initial feasibility training and exams. A total of 404 elbow videos were obtained of the standardized views and there were only 3 missing views from all of the exams completed. The quality of the images were graded as great (269/404, 66%), good (117/404, 29%), blurry/poor (15/404, 4%), unable to interpret (6/404, 1%) (Fig. 2). Adequate ultrasound image quality was considered videos that were of “Great” or “Good” quality, which resulted in 94% of images being graded as adequate.

Conclusion: This study demonstrates PEM physicians can readily achieve competence in pediatric PsUS elbow exams and the majority can obtain adequate, interpretable images with key landmarks after a brief structured training curriculum. The results of this study also show this standardized PsUS elbow exam can easily be tolerated by pediatric patients. Both the PsUS training curriculum and the elbow exam protocol developed in study are feasible as well as effective in teaching novice users and should be considered for use in future studies.

PsUS Elbow Exam Protocol

[13402C1C-9C07-480A-91D8-BC49987C2641.jpeg](#)

Figure 1. The PsUS elbow exam protocol included 10 key views: posterior, anterior, lateral and medial, each in long and short axis, along with long axis views of radial head and ulna.

Image Quality

[C0040081-6B98-4CE4-AFBD-D6F8AFCD8D23.jpeg](#)

Figure 2. Image quality grading. Images were graded as “great”, “good”, “blurry/poor”, and “unable to interpret”. There was a total of 404 images with 3 missing views (A). Adequate images were considered those that were either of “Great” or “Good” quality, which resulted in 94% of images being graded as adequate and 6% being graded as inadequate (B).

A Failure to Activate: Factors Associated with Under-triage of Pediatric Major Trauma Victims

10/21/2023

Poster Presentation

Jillian K. Gorski, MD MS¹; Seth Goldstein, MD, MPhil¹; Suhail Zeineddin, MD¹; Sriram Ramgopal, MD², (1) Ann & Robert H. Lurie Children’s Hospital of Chicago, Chicago, IL, (2) Lurie childrens hospital, Oak Park, IL

Background: Traumatic injuries are the leading cause of death for children in the United States. In hospital-based settings, trauma team activations ensure prompt, comprehensive bedside resources at the time of patient arrival. Measures of hospital-based under-triage

include the failure to trigger “highest-level” activations for both patients meeting prehospital criteria as well as those with “major trauma”, who ultimately require substantial resources for stabilization. The objective of this study was to identify factors associated with under-triage of pediatric victims of major trauma.

Methods: We performed a retrospective cross-sectional study of children < 16 years using the 2021 American College of Surgeons (ACS) National Trauma Data Bank, excluding children with primary injury mechanisms of burns or drownings and those missing activation level or emergency department (ED) disposition. We considered differing criteria for critical trauma, including pre-hospital criteria developed by the ACS (hypotension, intubation, Glasgow coma score [GCS] < 9, and proximal penetrating injury) and three sets of major trauma criteria: the Cribari Matrix (CM; injury severity score >15), Need for Trauma Intervention (NFTI; procedural interventions, transfusion needs, intensive care, and/or early mortality), and Standard Triage Assessment Tool (STAT; combination of CM and NFTI). We defined children who were under-triaged as those meeting each set of criteria who did not receive a highest-level activation. We evaluated the proportion of children under-triaged for each set of criteria and described their demographic, trauma, and transport/hospital characteristics. We performed univariable and multivariable logistic regression to determine factors associated with STAT under-triage, excluding out-of-ED transfers.

Results: We included 109,920 children. Of these, 6.0% met criteria for highest-level activation per the ACS, while 9.1%, 13.0%, and 4.9% met criteria for major trauma per the CM, NFTI, and STAT, respectively. Of those meeting criteria, 29%, 56%, 58%, and 33% were under-triaged, respectively (Table 1). In multivariable analysis of 5,129 children with major trauma (Table 2), factors associated with higher odds of under-triage included falls and striking mechanisms, arrival by private vehicle, and transfers from outside hospitals. Factors associated with lower odds of under-triage included objective measures of clinical instability (hypotension, low GCS, intubation, tachycardia, hypothermia), penetrating mechanisms (firearms, cut/pierce), arrival by flight, and evaluation at adult level 1 or pediatric level 2 trauma centers.

Conclusion: Regardless of criteria, many children with major trauma were under-triaged, exposing them to potentially higher mortality and morbidity. While most children with major trauma with vital sign instability or high-risk penetrating mechanisms were triaged appropriately, those with lower-risk histories, such as private vehicle arrivals or fall mechanisms, were frequently under-triaged. Future work should seek to develop risk-stratification systems that are both sensitive and specific at identifying children with major trauma, particularly those with blunt traumatic mechanisms.

Table 1

Table 1. Undertriage by metric

	All activation status	ACS-6		Cribari Matrix (CM)		Need for Trauma Intervention (NFTI)		STAT (CM + NFTI)	
		No. meeting criteria (% of all)	% Under-triaged p-value	No. meeting criteria (% of all)	% Under-triaged p-value	No. meeting criteria (% of all)	% Under-triaged p-value	No. meeting criteria (% of all)	% Under-triaged p-value
N	109,930	6,606 (5.7%)	26%	10,039 (8.1%)	56%	14,271 (13.0%)	58%	5,425 (4.9%)	33%
ACS-6 criteria									
GCS < 9	3,949	3,949 (100%)	15%	2,720 (68.9%)	12%	3,722 (94.3%)	13%	2,654 (67.2%)	12%
Proximal penetrating injury	1,614	1,614 (100%)	24%	409 (25.3%)	6%	670 (41.5%)	12%	376 (23.3%)	5%
Hypotension	2,108	2,108 (100%)	36%	1,156 (54.8%)	16%	1,489 (70.6%)	15%	1,085 (51.5%)	13%
Inubated (prior to arrival or during survey)	2,193	2,193 (100%)	14%	1,527 (69.6%)	12%	2,193 (100%)	14%	1,527 (69.6%)	12%
Heart rate									
Bradycardia	4,630	851 (18.4%)	16%	831 (17.9%)	32%	1,166 (25.2%)	33%	676 (14.6%)	19%
Normal	79,344	2,968 (3.7%)	32%	5,372 (6.8%)	66%	8,209 (10.5%)	68%	2,403 (3.0%)	41%
Tachycardia	22,238	2,228 (10.0%)	22%	3,615 (16.3%)	48%	4,486 (20.2%)	46%	2,222 (10.0%)	30%
Missing	3,708	159 (4.3%)	16%	221 (6.0%)	54%	310 (8.4%)	55%	124 (3.3%)	27%
Temperature									
Hypothermia	3,862	1,103 (28.6%)	17%	1,214 (31.4%)	28%	1,506 (39.0%)	27%	997 (25.8%)	19%
Euthermia	96,150	3,737 (3.9%)	32%	7,341 (7.6%)	66%	10,672 (11.1%)	67%	3,326 (3.5%)	42%
Feverile	837	120 (14.4%)	27%	178 (21.0%)	55%	214 (25.6%)	51%	123 (14.7%)	41%
Missing	9,071	1,244 (13.7%)	14%	1,308 (14.4%)	12%	1,879 (20.7%)	13%	979 (10.8%)	18%
Mechanism									
Traffic related	31,226	2,436 (7.8%)	16%	5,652 (16.2%)	51%	5,431 (17.4%)	44%	2,832 (9.1%)	28%
Fall	47,409	752 (1.6%)	48%	1,957 (4.1%)	78%	3,800 (8.0%)	84%	663 (1.4%)	55%
National/environmental	5,171	85 (1.6%)	41%	136 (2.6%)	63%	611 (11.8%)	79%	72 (1.4%)	43%
Firearm	3,194	1,577 (49.4%)	18%	823 (25.8%)	7%	1,306 (40.9%)	12%	739 (23.1%)	6%
Cut/perce	2,846	371 (13.0%)	43%	71 (2.5%)	17%	473 (16.6%)	58%	52 (1.8%)	12%
Struck by/against (excluding above mechanisms)	10,004	217 (2.2%)	41%	611 (6.1%)	75%	870 (8.7%)	76%	227 (2.3%)	51%
Other	3,761	78 (2.1%)	45%	96 (2.6%)	51%	357 (9.5%)	74%	47 (1.2%)	23%
Missing	6,309	690 (10.9%)	38%	1,293 (20.5%)	68%	1,423 (22.6%)	59%	793 (12.6%)	53%
Injury score									
ISS < 15	99,881	3,072 (3.1%)	38%			8,846 (8.9%)	73%		
ISS > 15 (major trauma)	10,039	3,134 (31.2%)	14%			5,425 (54.0%)	33%		
Race									
White	59,582	2,406 (4.0%)	29%	4,893 (8.2%)	63%	7,142 (12.0%)	65%	2,365 (4.0%)	38%
Black	19,958	2,079 (10.4%)	27%	2,156 (10.8%)	43%	2,995 (15.0%)	40%	1,401 (7.0%)	25%
Hispanic ethnicity	11,267	573 (5.0%)	22%	1,120 (9.9%)	60%	1,577 (13.9%)	59%	600 (5.3%)	38%
Other	16,536	919 (5.6%)	27%	1,534 (9.3%)	56%	2,120 (12.9%)	57%	840 (5.1%)	33%
Missing	2,477	229 (9.2%)	22%	336 (13.6%)	48%	428 (17.3%)	47%	210 (8.5%)	27%
Payer type									
Government	53,528	3,458 (6.5%)	27%	4,983 (9.3%)	55%	7,295 (13.6%)	56%	2,876 (5.4%)	34%
Private	46,701	1,896 (4.1%)	27%	3,947 (8.5%)	61%	5,485 (11.7%)	64%	1,890 (4.0%)	35%
Self-pay	5,980	564 (9.4%)	18%	679 (11.4%)	42%	952 (15.9%)	46%	404 (6.8%)	20%
Not billed	77	8 (10.4%)	13%	9 (11.7%)	22%	18 (23.4%)	44%	8 (10.4%)	13%
Other	1,834	116 (6.3%)	19%	206 (11.2%)	50%	238 (12.4%)	44%	108 (5.9%)	20%
Missing	3,800	160 (4.2%)	23%	215 (5.7%)	47%	292 (7.7%)	44%	130 (3.4%)	21%
Sex									
Male	67,647	4,014 (5.9%)	25%	6,290 (9.3%)	56%	8,980 (13.3%)	57%	3,444 (5.1%)	33%
Female	39,927	2,086 (5.2%)	26%	3,604 (9.0%)	57%	5,022 (12.6%)	59%	1,908 (4.8%)	33%
Non-binary	45	2 (4.4%)	0%	2 (4.4%)	50%	5 (11.1%)	40%	1 (2.2%)	0%
Missing	2,201	104 (4.7%)	42%	143 (6.5%)	61%	204 (9.3%)	72%	75 (3.4%)	36%
Age									
0-3 years	21,847	1,289 (5.9%)	36%	2,446 (11.2%)	68%	2,716 (12.4%)	60%	1,254 (5.7%)	46%
4-7 years	33,851	1,373 (4.1%)	26%	2,112 (6.2%)	53%	4,050 (12.0%)	65%	1,195 (3.5%)	31%
8-11 years	22,228	901 (4.1%)	29%	1,645 (7.4%)	58%	2,729 (12.3%)	64%	842 (3.8%)	33%
12-15 years	31,994	2,643 (8.3%)	20%	3,836 (12.0%)	50%	4,776 (14.9%)	47%	2,134 (6.7%)	27%
From scene	61,808	4,085 (6.6%)	23%	5,998 (9.7%)	50%	8,466 (13.7%)	51%	3,449 (5.6%)	28%
Transfer type									
Transfer from OSH	48,112	2,111 (4.4%)	32%	4,041 (8.4%)	66%	5,805 (12.1%)	68%	1,976 (4.1%)	42%
Transport mode									
Private vehicle	40,567	610 (1.5%)	63%	1,252 (3.1%)	88%	2,617 (6.5%)	91%	358 (0.9%)	68%
Ground transport	59,780	3,730 (6.2%)	25%	6,072 (10.2%)	58%	8,329 (13.9%)	56%	3,221 (5.4%)	33%
Flight	8,806	1,788 (20.3%)	16%	2,630 (29.9%)	43%	3,173 (36.0%)	36%	1,790 (20.3%)	28%
Other transport	412	66 (16.0%)	9%	62 (15.0%)	26%	83 (20.1%)	19%	41 (10.0%)	7%
Missing	355	12 (3.4%)	33%	23 (6.5%)	48%	69 (19.4%)	81%	15 (4.2%)	33%
Trauma center level									
Pediatric level 1	43,408	2,224 (5.1%)	30%	4,003 (9.4%)	63%	4,653 (10.7%)	57%	2,051 (4.7%)	38%
Pediatric level 2	16,832	810 (4.8%)	22%	1,487 (8.8%)	55%	2,752 (16.5%)	67%	893 (5.3%)	24%
Adult level 1*	9,696	837 (8.6%)	17%	1,074 (11.1%)	40%	1,772 (18.1%)	46%	713 (7.4%)	23%
Adult level 2 or lower*	13,791	809 (5.9%)	24%	1,147 (8.3%)	54%	1,839 (13.3%)	60%	600 (4.4%)	32%
Not a trauma center	26,193	1,520 (5.8%)	27%	2,268 (8.7%)	55%	3,255 (12.4%)	56%	1,168 (4.5%)	31%

STAT - Standard Trauma Assessment Tool; ACS - American College of Surgeons; GCS - Glasgow Coma Score; OSH - outside hospital

*Age-based vital sign cutoffs established by ATLS and PALS

*omitted, overlap with outcome variable

*adult trauma centers lacking pediatric verification

Table 2

Table 2. Odds of under-triage for patients meeting STAT criteria			
	Factor	Univariable OR (95% CI)	Multivariable OR (95% CI)
ACS-6 criteria	GCS < 9	0.11 (0.09-0.12)	0.16 (0.13-0.20)
	Hypotension	0.24 (0.20-0.29)	0.73 (0.57-0.92)
	Prehospital intubation	0.19 (0.16-0.22)	0.62 (0.49-0.80)
Heart rate	Bradycardia	0.33 (0.27-0.41)	0.88 (0.66-1.17)
	Normal	Ref	Ref
	Tachycardia	0.63 (0.55-0.71)	0.75 (0.64-0.88)
	Missing	0.55 (0.37-0.83)	1.17 (0.66-2.09)
Temperature	Hypothermia	0.33 (0.28-0.39)	0.68 (0.54-0.84)
	Euthermia	Ref	Ref
	Febrile	1.00 (0.69-1.46)	1.35 (0.84-2.15)
	Missing	0.29 (0.25-0.35)	0.71 (0.56-0.90)
Mechanism	Traffic related	Ref	Ref
	Fall	3.07 (2.57-3.67)	1.71 (1.37-2.14)
	National/environmental	1.83 (1.13-2.97)	1.09 (0.62-1.90)
	Firearm	0.16 (0.12-0.22)	0.16 (0.11-0.23)
	Cut/pierce	0.27 (0.11-0.68)	0.17 (0.06-0.45)
	Struck by/against	2.47 (1.87-3.27)	1.63 (1.16-2.29)
	Other	0.75 (0.38-1.48)	0.85 (0.39-1.86)
	Missing	2.73 (2.32-3.22)	2.22 (1.72-2.87)
Race	White	Ref	Ref
	Black	0.53 (0.46-0.62)	0.84 (0.68-1.03)
	Hispanic ethnicity	0.99 (0.82-1.2)	1.13 (0.89-1.44)
	Other	0.81 (0.69-0.96)	0.81 (0.65-1.00)
	Missing	0.64 (0.46-0.88)	0.98 (0.66-1.46)
Payer type	Government	Ref	Ref
	Private	1.06 (0.94-1.2)	0.94 (0.80-1.10)
	Self-pay	0.45 (0.34-0.59)	0.73 (0.52-1.03)
	Not billed	0.26 (0.03-2.15)	0.25 (0.03-2.38)
	Other	0.51 (0.32-0.82)	0.61 (0.34-1.08)
	Missing	0.91 (0.63-1.33)	0.89 (0.56-1.43)
Sex	Male	Ref	Ref
	Female	1.02 (0.91-1.15)	0.95 (0.81-1.10)
	Non-binary	*omitted	*omitted
	Missing	1.10 (0.68-1.79)	1.06 (0.56-1.98)
Age	0-3 years	2.33 (2.01-2.71)	1.16 (0.92-1.47)
	4-7 years	1.26 (1.07-1.47)	1.03 (0.84-1.26)
	8-11 years	1.26 (1.14-1.62)	1.04 (0.84-1.29)
	12-15 years	Ref	Ref
Transfer type	From scene	Ref	Ref
	Transfer from OSH	1.74 (1.54-1.95)	1.91 (1.62-2.25)
Transport mode	Private vehicle	4.50 (3.51-5.77)	3.13 (2.27-4.32)
	Ground transport	Ref	Ref
	Flight	0.75 (0.66-0.85)	0.72 (0.61-0.85)
	Other transport	0.15 (0.05-0.49)	0.25 (0.07-0.93)
	Missing	0.96 (0.33-2.82)	0.34 (0.10-1.18)
Trauma center level	Pediatric level 1	Ref	Ref
	Pediatric level 2	0.88 (0.74-1.03)	0.73 (0.60-0.90)
	Adult level 1 [‡]	0.52 (0.42-0.63)	0.60 (0.47-0.77)
	Adult level 2 or lower [‡]	0.93 (0.75-1.15)	1.03 (0.79-1.35)
	Not a trauma center	0.78 (0.67-0.91)	0.87 (0.71-1.06)

STAT = Standard Triage Assessment Tool; OR = odds ratio; CI = confidence interval; ACS = American College of Surgeons; GCS = Glasgow Coma Score; OSH = outside hospital

Age-based vital sign cutoffs established by ATLS and PALS

*omitted; predicts failure perfectly

[‡]adult trauma centers lacking pediatric verification

Addressing Adolescent Relationship Abuse in a Pediatric Emergency Department: Intervention Mapping Using Community Collaborators

10/21/2023

Poster Presentation

Lenore R. Jarvis, MD, MEd¹; Elizabeth Miller, MD, PhD, FSAHM²; Eden Efrem, BA¹; Summer Khalefa, MS¹; James M. Chamberlain, Chamberlain, MD³; Monika K. Goyal, MD, MSCE¹; Pamela S. Hinds, PhD, RN, FAAN¹, (1) Children's National Hospital, Washington, DC, (2) UPMC Children's Hospital of Pittsburgh, Pittsburgh, PA, (3) Children's National Hospital and George Washington University, Gaithersburg, MD

Background: Adolescent relationship abuse (ARA) affects millions of adolescents annually and is associated with negative mental and physical health outcomes. The pediatric emergency department (ED) can serve as a strategic venue for healthy relationship promotion and intervention for adolescents experiencing ARA. However, evidence-based interventions in this setting are currently lacking.

Methods: To adapt existing evidence-based ARA interventions for the pediatric ED setting using community collaborative input. Two groups, one comprised of adolescents and another with adults, were recruited between March and May 2022 for six, iterative sessions using intervention mapping methodology. A social-ecological framework was used by the moderators to contextualize ARA. Enrolled participants were also asked questions about ARA needs assessment and healthy relationship promotion and ARA intervention programmatic development. Data were analyzed using consensus coding.

Results: Participants included two groups of individuals: adolescent (n=12) and adult (caregivers of adolescents, clinicians, social workers, and ARA community partners) (n=9). Overall, participants believed that ARA is normalized and intergenerational. Groups provided reflections for the context of ARA and several ARA programmatic recommendations (see Tables 1 and 2). Both groups recommended universal ARA education about healthy and unhealthy relationships and available resources, potentially followed by universal ARA screening. Neither group recommended universal brief motivational interviewing to address ARA but believed that adolescents would benefit from an opt-in approach to speaking to an ARA advocate or social worker. Groups stated that it is important for adolescents to understand ARA confidentiality and mandatory reporting requirements and discussions surrounding ARA should occur without parents in the room. Electronic methods and technology solutions were preferred over paper or verbal solutions.

Conclusion: Adolescent and adult community collaborators recommend universal ARA education and available resources using electronic methods within a pediatric ED.

Table 1. Adolescent and Adult* Community Collaborator Groups Describe the Context of Adolescent Relationship Abuse Using a Social-Ecological Framework

Table 1. Adolescent and Adult* Community Collaborator Groups Describe the Context of Adolescent Relationship Abuse Using a Social-Ecological Framework

Adolescents			
Individual	Relationship	Community	Societal
<ul style="list-style-type: none"> Being pressured to do stuff they don't want to do Unstable partner An individual who doesn't realize that they are being manipulated Hard for them to break out of it Vulnerable, confused Insecure Feel unwanted or unloved Hanging onto a part of the person [they were before] ... that they're in love with Pushing boundaries and making them feel uncomfortable Partner being disrespectful Hard to let go 	<ul style="list-style-type: none"> Demanding and taxing [Perception] – you want to be deemed as “up there.” Show a façade of we're so happy... but behind closed doors, you're not We usually see heteronormativity when it comes to relationships. Our first romantic relationship we see is our parents. So, we see our parents arguing or not having good relationships and that could break what our view of a relationship is. Or we could see perfect relationships where our parents are never arguing or getting mad at each other and think that's what a relationship is supposed to be. 	<ul style="list-style-type: none"> In schools, most of the time, it's always “I'm going to get a school boyfriend or girlfriend”. And those school relationships are usually toxic and that's kind of the norm with school relationships. Some relationships don't work when you're influenced by other students, or other students or teachers interfere with your relationship, which can make it toxic. If you're in a toxic relationship in your friend group, you don't want to speak out or get into an argument because that could break up your friend group and cause problems. People can tend to just ignore it and “oh that's not really happening”. 	<ul style="list-style-type: none"> Hard to tell when someone is in an abusive relationship Social media, everyone has relationship goals Social media influencers (Jada and Lil' Baby) Being toxic or disrespectful to each other is something that's good. It means you love each other. You grow up thinking “because he's hitting me, that means he loves me”. Romantic dramas- in a lot of them, the male lead is very controlling and always telling the female lead what to do.
Adults			
Individual	Relationship	Community	Societal
<ul style="list-style-type: none"> Any & everybody 12-18 yo Hx of abuse (witnessed or themselves) Witness violence in their community Experience of ACEs Gender, LGBTQ+ Cultural & language barriers Poor self-esteem, not validated Lesser form of abuse than prior experiences Do not view themselves as a “victim” – stigmatizing Normalized; people might not recognize it Acceptance – “if no drama, he doesn't love you” Not a positive relationship model Rationalization 	<ul style="list-style-type: none"> Provider conscious or unconscious biases re race Provider feeling resources (community, time, etc.) are limited Provider working with current stage of change of person ED – “not your doctor;” no trust and hard to build rapport Confidentiality concerns Intersectional professions - lack of training among teachers Bi-directional violence Gaslighting; minimizing [Partner] providing basic needs Love in relationship 	<ul style="list-style-type: none"> Under resourcing from the city DC does not prioritize/specialize in victim services, especially for adolescents Incr violence during COVID More visible violence in certain communities Violence more normalized Lack of community – no supportive family/friends to tell them it's not normal or to help provide basic needs 	<ul style="list-style-type: none"> Interconnected through social media – similar to community context

* Adult community collaborators included caregivers of adolescents, clinicians, social workers, and adolescent relationship community partners

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Table 2. Select Adolescent and Adult Recommendations for Improvement

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How could the ED be used as a setting for intervention?
Adolescents
<ul style="list-style-type: none"> As a doctor you can tell when someone fell down the stairs or got punched in the face. You ask them and eventually, if they want to talk, they'll tell you you're in an abusive relationship. You can take that time to talk to them with whatever therapist you have. To give them an intervention they need... remind [them] they're doing it for [their] good and remind [them] of [their] worth and explained to [them] that this isn't love. I'm pretty sure they have pamphlets about this thing. Even in the bathrooms talking about "if this is happening, talk to your doctor". It works because people in the hospitals know what to look out for and they're trying to help people. If you have a partner who is physically abusing you that you have to go to the hospital, the doctors can see the signs and refer you to a therapist or other help. Ask the parents to step out and just have a conversation with the kids even if they don't show signs of abuse or hurt, you could always check in because you could never know... You could have a therapist come in and talk to the kids without their parents inside if they want to open up. You can't always get a child to open up, but you can always try. Even if someone is not ready to share, you could tell them that other people go through terrible things and have gone through this situation. Give people a choice. Like "You don't have to talk to me", or "Do you want to talk to me"? Giving people a choice, makes it feel like it's their decision and makes them more comfortable talking to you. Having the healthcare provider or parents tell you you're not going to get in trouble if you do share. Not victim blaming... Letting them say which steps they want to take.
Adults
<ul style="list-style-type: none"> Have more resources (e.g., social work, support workers, violence specialist, interpreters) More than a RN screen Universal screening; universal education; targeted screening Tablet screening with targeted social work response Real-time response Not necessarily feasible in ED - social worker (trained in trauma) sees every patient to follow-up on social, emotional, & mental side
If you could imagine or create an ARA intervention/program for the ED, what would be the goals?
Adolescents
<ul style="list-style-type: none"> Make sure it's a safe environment. And have kids there who have experienced similar things. The actual goal would be to inform. Goal would be to build stronger people... It can be like a zoom meeting where people come together to talk about their experiences... I would have therapists come in and have discussions about healthy relationships and boundaries. Then I also would have healthcare workers talk to us. And I would have open domestic violence or abusive relationship survivors come in and educate on how we can be or do better. Taking the parents out of the equation... You can have a private room where the person can go with a therapist or social worker, not at the same time, where they can first talk. Just talk... I think the simplest thing is to have a social worker always on standby to talk to the child. You could have someone come in, take the parents out and ask about the child's life. Talk to them and see how they're feeling. Like a check-in... For the groups, you could have a card, and if the kid feels safe enough to join the group, they can do that. But if they want to talk in the ER they can do that. Someone said while you're in the ER it takes a while. So while you're waiting you can have groups that happen during certain times. Like if it's 3:30, you can start a group to talk about this. The kids who are waiting can have something to do. Then you can have more kids who aren't just there who are abused or hurt. As a nurse or medical professional, you're a mandated reporter. So, I think they should make it clear. Have the healthcare provider make it seem like a normal conversation on how to help you and find out what they're doing... Transparent, honest, and open but not scripted is something that is important. I know some kids would be reluctant to open up if it's structured and if it was they felt unsafe or tattling on their partner. A chat forum From an intervention program, I would like to see young adults. People who could relate to my past experiences. I feel more comfortable talking to people who are my age.
Adults
<ul style="list-style-type: none"> Screening and referring to some entity – internally to social work or externally to a service agency. First part of the conversation focused on keys to prevention and understanding. A true intervention – not just a referral to an outside organization. Community based programs (virtual or [in the community]): train the trainer (peer to peer) – peer support group or resiliency/coping skills group to learn about safe and healthy relationships

Changes in Emergency Department Antibiotic Prescribing for Pediatric Urinary Tract Infections, 2011-2020

10/21/2023

Poster Presentation

Jane Hinkle, MPH¹; Kathleen D. Snow, MD²; Kathryn Bedard, MD²; Nikita S. Kalluri, MD²; Ryan C. Perkins, MD²; Mari M. Nakamura, MD, MPH³, (1) Case Western Reserve University School of Medicine, Cleveland Heights, OH, (2) Boston Children's Hospital, Boston, MA, (3) Boston Children's Hospital/Harvard Medical School, Jamaica Plain, MA

Background: Urinary tract infections (UTIs) are among the most common pediatric infections requiring antibiotic use in children. Antibiotic selection has become challenging over time as providers balance concerns for resistant pathogens with antibiotic stewardship efforts. Prior

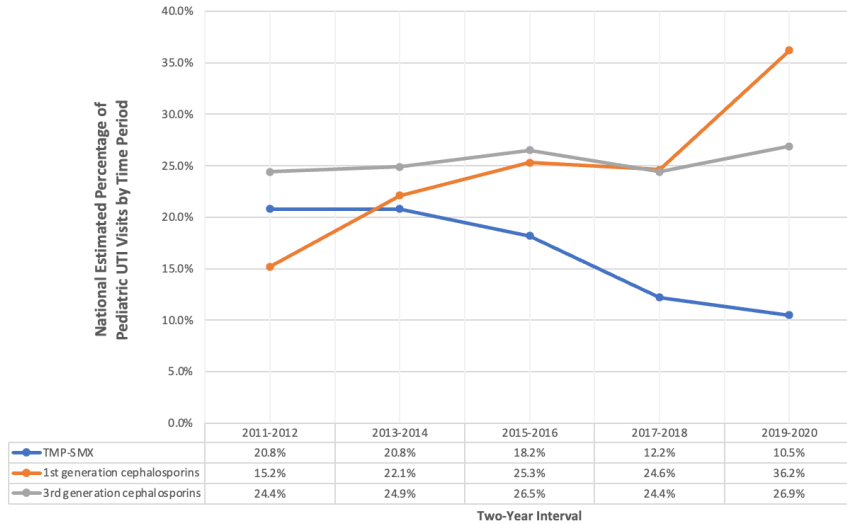
studies of national antibiotic prescribing practices for pediatric UTIs demonstrated that use of third-generation cephalosporins, a broad-spectrum class for these infections, doubled from 1998 to 2007. More recently, updated susceptibility criteria for *Escherichia coli*, which causes most UTIs, have clarified that first-generation cephalosporins—a preferred option due to their relatively narrow spectrum—provide reliable empiric therapy for pediatric UTIs. To assess whether this change has affected clinical practice, we investigated national antibiotic prescribing patterns in emergency department (ED) visits over a recent 10-year period.

Methods: We performed a retrospective cross-sectional analysis of the 2011-2020 National Hospital Ambulatory Medical Care Surveys (NHAMCS), a multi-stage probability sample survey that collects information on emergency care services based on a sample of hospital visits nationally. We included children < 18 years of age who presented to the ED with a diagnosis of UTI, as defined by diagnosis codes. Over two-year intervals across the study period, we assessed changes in prescribing patterns for common enteral options for UTIs: trimethoprim-sulfamethoxazole (TMP-SMX), first-generation cephalosporins, and third-generation cephalosporins. Three multivariable logistic regressions were performed, one for each treatment option, to adjust for potential confounders including age, sex, race/ethnicity, visit payment method, fever at presentation, geographic region of hospital, and subsequent hospital admission. We used SAS 9.4 survey procedures to account for the complex sampling design; we present weighted results to reflect national estimates.

Results: A total of 1,083 children were included in our study, representing an estimated 6.9 million ED visits for pediatric UTI. Demographic and visit characteristics remained similar across the study period. Over the 10-year period, the national estimated percentage of UTI visits where first-generation cephalosporins were prescribed more than doubled, while the percentage halved for TMP-SMX, and was largely unchanged for third-generation cephalosporins (Figure). Adjusting for the previously described covariates, each 2-year time interval increase was associated with an adjusted odds ratio (aOR) of 0.81 (95% CI 0.70-0.94) for TMP-SMX prescription receipt ($p=.0049$) and an aOR of 1.32 (95% CI 1.11-1.57) for first-generation cephalosporin prescription receipt ($p=.0014$) (Table). The aOR for third-generation cephalosporin prescription receipt was 0.99 (95% CI 0.86-1.15) for each two-year time interval increase ($p=.94$).

Conclusion: Prescribing practices for pediatric UTI in the ED setting have changed significantly from 2011 to 2020 among a nationally representative sample, with decreased odds of TMP-SMX and increased odds of first-generation cephalosporin use. This study suggests that nationally, ED providers are responding to evolving understanding of *E. coli* susceptibility patterns, as well as stewardship concerns. However, third-generation cephalosporin use showed no significant change.

Antibiotic Prescriptions for Pediatric UTI Visits by Time Period



National estimates of the percentage of ED visits for pediatric UTI at which trimethoprim-sulfamethoxazole (TMP-SMX), first-generation cephalosporins, and third-generation cephalosporins were prescribed, from 2011-2020. Of note, percentages do not total to 100% in each time period, as patients may have received other enteral or parenteral antibiotics or no antibiotics during their visit.

Multivariate Analyses for Trimethoprim-Sulfamethoxazole, First-Generation Cephalosporin, and Third-Generation Cephalosporin Receipt

		TMP-SMX Prescription Receipt		First-Generation Cephalosporin Prescription Receipt		Third-Generation Cephalosporin Prescription Receipt	
		aOR (95% CI)	p-value	aOR (95% CI)	p-value	aOR (95% CI)	p-value
Covariates significantly associated with antibiotic receipt in at least one model							
Time period	Continuous 2-year intervals	0.81 (0.70, 0.94)	.0049*	1.32 (1.11, 1.57)	.0014*	0.99 (0.86, 1.15)	.94
Age	<2 years old (Ref.)						
	2-18 years old	2.70 (1.14, 6.38)	.02*	1.64 (0.85, 3.18)	.14	0.36 (0.20, 0.65)	.0006*
Geographic Region	Northeast (Ref.)						
	Midwest	0.97 (0.45, 2.10)	.93	0.77 (0.39, 1.52)	.45	1.04 (0.49, 2.21)	.91
	South	1.00 (0.49, 2.06)	.99	0.65 (0.31, 1.36)	.25	1.36 (0.73, 2.53)	.33
	West	0.62 (0.27, 1.38)	.24	2.60 (1.32, 4.95)	.0053*	0.79 (0.38, 1.64)	.52
Admitted to Hospital	No (Ref)						
	Yes	0.50 (0.13, 1.9)	.31	0.15 (0.03, 0.76)	.02*	4.48 (1.73, 11.62)	.0021*

Each model also adjusted for the following covariates, none of which were significantly associated with TMP-SMX, first-generation cephalosporin, or third-generation cephalosporin prescription receipt: sex (male or female), race/ethnicity (Black, Non-Hispanic Black, Non-Hispanic White, or Non-Hispanic Other), visit payment method (private insurance, Medicare/Medicaid/CHIP, or other), and fever at presentation (temperature <100.4F or >100.4 F).

Croup Is Still Croup in the COVID Era: Opportunity to Decrease Admissions from the Pediatric Emergency Department

10/21/2023

Poster Presentation

Lori Rutman, MD MPH¹; Yongtian T. Tan, MD MBA²; Emily A. Hartford, MD MPH¹; Dwight Barry, PhD³; Russell Migita, MD¹, (1) Department of Pediatric Emergency Medicine, Seattle Children's Hospital, Seattle, WA, (2) Seattle Children's Hospital, Kenmore, WA, (3) Department of Clinical Analytics, Seattle Children's Hospital, Seattle, WA

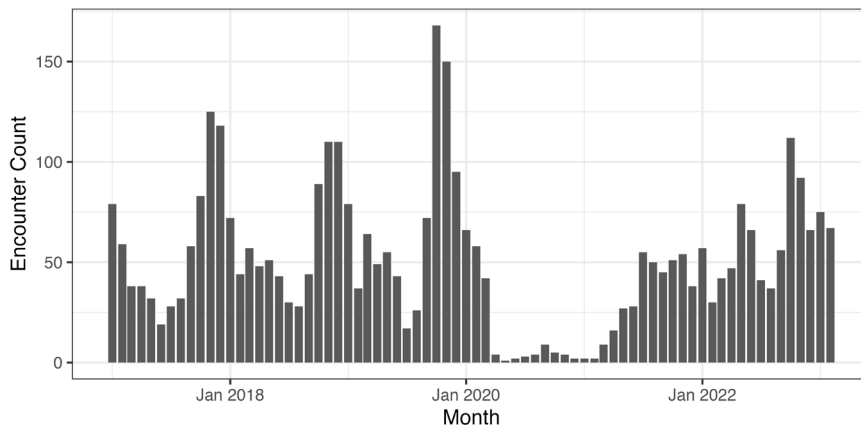
Background: Croup is a common presenting illness in the pediatric emergency department (PED). Multiple doses of racemic epinephrine given in the PED is a common basis for admission, but prior studies show low rates of additional interventions after hospitalization. Covid-19 subvariants, especially Omicron, represent a novel viral etiology for croup. We aimed to describe croup management trends and outcomes preceding and following the appearance of COVID-19 in a large freestanding pediatric hospital, and to analyze differences in admission outcomes according to COVID status.

Methods: This was a retrospective cohort study of children ages 6 months to 6 years diagnosed with croup in a large academic PED from January 2017 to February 2023. We excluded encounters where patients arrived by ambulance or interfacility transfers, and children defined as chronically complex by the Pediatric Medical Complexity Algorithm. We used logistic regression and log linear modeling to assess the odds of admission and likelihood of racemic epinephrine use after admission.

Results: There were 3,734 total patient encounters across the six-year study period. There was a sharp drop in croup encounters between April 2020 and February 2021 corresponding to the overall decrease in PED volumes early in the COVID-19 pandemic, and loss of seasonal variability in all the months following (Figure 1). During the study period, 230 patients (6%) were admitted to the hospital from the PED, 21 (0.6%) to the intensive care unit (ICU). 47 patients (20%) were given at least 1 dose of racemic epinephrine after admission, while the rest (80%) did not receive any significant interventions post-admission. Transfer from the medical unit to the ICU after admission occurred for 0.6% of patients. Unplanned return visits to the PED within 72 hours after discharge was 2.7%; 13% of these patients were admitted. Among all croup patients who received viral testing, there was no statistical difference in odds of admission between COVID positive and negative patients (OR 0.65, 95% CI 0.30-1.44). Among those tested, COVID positive patients received less racemic epinephrine after admission than COVID negative patients ($p = 0.009$).

Conclusion: Only 20% of children admitted to the hospital from the PED for croup received additional racemic epinephrine after admission, and transfers to the ICU were rare. For those discharged, the number of unexpected return visits were few. Among patients with viral testing, COVID positive patients received less racemic epinephrine after admission than COVID negative patients. There is an opportunity to refine admission criteria and reduce avoidable admissions for croup from the PED.

Figure 1: Croup patient encounters across the six-year study period from January 2017 to February 2023



Reducing Risk in the Physiologically Difficult Pediatric Airway: A Secondary Analysis of a Multicenter, Observational Study

10/21/2023

Poster Presentation

Tanner Heckle, MD, MPH; Benjamin T. Kerrey, MD, MS; Preston Dean, MD, MS, Cincinnati Children's Hospital Medical Center, Cincinnati, OH

Background: Cardiac arrest is the most feared adverse event during tracheal intubation, and pediatric patients who meet high risk criteria for the physiologically difficult airway are especially at risk. Little is known about strategies to mitigate this risk. The objective of this study was to determine if pre-intubation interventions designed to optimize the physiologic status of high-risk pediatric patients are associated with a reduced risk of peri-intubation arrest.

Methods: We conducted a secondary analysis of a multicenter, observational, retrospective cohort study of intubations in eight US pediatric emergency departments. Inclusion criteria were patients less than 21 years old who underwent rapid sequence intubation (i.e., non-crash) and met at least one of six previously identified high-risk criteria for peri-intubation arrest (persistent hypoxemia despite supplemental oxygen, persistent hypotension, concern for cardiac dysfunction, post-return of spontaneous circulation, severe metabolic acidosis, and status asthmaticus). We compared patients that received pre-intubation interventions designed to optimize physiologic status (intravenous fluids, vasoactive medications, and sodium bicarbonate) to patients that did not receive these interventions. Our primary outcome was peri-intubation cardiac arrest. Secondary outcomes included hypotension, hypoxia, and in-hospital mortality. We performed unadjusted and adjusted analyses, evaluating for an association between exposures and outcomes of interest.

Results: Each of the eight sites reviewed their 150 most recent intubations that met inclusion criteria, resulting in 1200 pediatric intubations. There were 332 patients that met at least one high-risk criterion. Of these, 264 (79.5%) received at least one pre-intubation intervention (257 [77.4%] patients received IVF, 87 [26.2%] received vasoactive medications, and 20 [6%] received sodium bicarbonate). For unadjusted and adjusted analyses, there was no significant difference in peri-intubation cardiac arrest between patients that received no pre-intubation interventions and those that received at least one. However, when analyzed by number of pre-intubation interventions received, there was an increased rate of peri-intubation cardiac arrest

as patients received additional pre-intubation interventions. In general, the rates of hypoxia, hypotension and in-hospital mortality also increased as patients received additional pre-intubation interventions.

Conclusion: To our knowledge, this is the first study to evaluate for an association between pre-intubation interventions and peri-intubation cardiac arrest in high-risk pediatric intubations. In general, pre-intubation interventions were not associated with peri-intubation cardiac arrest, though our data suggest that patients that received multiple additional interventions were at increased risk. Based on our experience, we do not believe our data suggest that pre-intubation interventions are causing harm and instead believe that not all high-risk patients are created equal. Physiologically difficult airways are nuanced and complex clinical cases, representing a large variety of physiologic derangements. These high-risk patients can likely be further risk stratified beyond current risk-stratification systems. We believe further multicenter, prospective video-review based studies are warranted to help understand which patients are at the highest risk.

Table 1. Exposures and outcomes of interest

Table 1. Exposures and outcomes of interest

	0 pre-intubation interventions (n = 68)	1 pre-intubation intervention (n = 175)	2 pre-intubation interventions (n = 78)	3 pre-intubation interventions (n = 11)	p-value
Peri-intubation cardiac arrest	4 (5.9%)	10 (5.7%)	11 (14.1%)	4 (36.4%)	0.0011
Hypoxia	16 (23.5%)	33 (18.9%)	22 (28.2%)	6 (54.5%)	0.0290
Hypotension	14 (20.6%)	37 (21.1%)	35 (44.9%)	7 (63.6%)	<.0001
Mortality	13 (19.1%)	12 (6.9%)	12 (15.4%)	5 (45.5%)	0.0003

Table 2. Multivariable models for peri-intubation cardiac arrest. Data were analyzed using generalized linear mixed models, controlling for age and indication for intubation.

Table 2. Multivariable models for peri-intubation cardiac arrest. Data were analyzed using generalized linear mixed models, controlling for age and indication for intubation.

	Adjusted Odds of peri-intubation arrest (95% CI)	p-value
0 pre-intubation interventions	ref	0.014
1 pre-intubation intervention	0.7 (0.2, 2.5)	
2 pre-intubation interventions	2.5 (0.7, 9.4)	
3 pre-intubation interventions	8.1 (1.3, 52.2)	

The Effect of Respiratory Viral Infections on Febrile Children with Sickle Cell Disease

10/21/2023

Poster Presentation

Joshua Pulinat, MD¹; Banu Aygun, MD²; David Teng, MD³; Abena Appiah-Kubi, MD², (1) Cohen Children's Medical Center - Northwell Health, GLEN OAKS, NY, (2) Zucker School of Medicine at Hofstra/Northwell, Pediatric, Queens, NY, (3) Zucker School of Medicine at Hofstra/Northwell, Pediatric, Glen Oaks, NY

Background: Background: Children with sickle cell disease (SCD) lose splenic function very early in life and are at risk of developing bacteremia with encapsulated organisms. Therefore,

fever is considered an emergency, and families are instructed to bring their children to the ED for evaluation and management of fever. Standard evaluation includes a blood culture, and the child is treated with empiric broad-coverage antibiotics. In our single, large tertiary care pediatric hospital, children, by protocol, are evaluated with nasal respiratory viral panels (RVPs) to identify if they have a viral infection. There have been few reports describing the clinical implications of viruses such as influenza and human metapneumovirus (hMPV) in children with SCD. We undertook this study to see how respiratory viruses affect children with SCD.

Methods: Methods: This was a retrospective chart review of all children aged < 21 years with SCD (HbSS, HbSC, HbS β +thalassemia, or HbS β ⁰thalassemia) who presented to the ED at Cohen Children's Medical Center with fever and had a positive respiratory viral panel test from 2014 to 2022. In addition to the type of virus isolated, we also collected information on their clinical outcomes, whether the ED visit led to an inpatient admission, intensive care unit (ICU) stay, acute vaso-occlusive crisis (VOC), acute chest syndrome (ACS), or packed red blood cell (pRBC) transfusion.

Results: Results: We identified 1301 RVP positive tests performed on 439 patients over multiple encounters (Mean 2.96 +/- 2.9) within our study period resulting in 1519 total viruses detected. Patients with RVPs positive for Adenovirus had the highest rate of viral co-infection at 52.7%. Patients with RVPs positive for Enterovirus/Rhinovirus (ERV) had the highest admission rate at 43.0% and those with Influenza had the lowest admission rate at 32.1%. Patients with RVPs positive for ERV had the highest need for ICU stay at 5.6%. Those with ERV had the highest rate of need for packed red blood cells at 17.8%. Patients with hMPV had the highest rate of supplemental oxygen at 8.9%, with the second highest rate at 7.9% with ERV. Those with RSV had the highest rate of needing respiratory support greater than supplemental oxygen (including high-flow nasal cannula, and all modalities of positive-pressure ventilation) at 3.6%, with the second highest rate at 2.5% with ERV. Those with ERV also had the highest rate of VOC and ACS at 27.3% and 16.8% respectively.

Conclusion: Conclusions: Viral infections are common causes of fever in children with SCD. In our hospital, ERV was associated with considerable morbidity, including higher rates of hospitalization, the need for ICU, need for pRBCs, VOC, and ACS compared to other viruses. Further research and prospective studies must be done to evaluate the relationship of viruses on the clinical outcomes of patients with SCD.

Table 1 - Patient Demographics

Table 1. Demographics at Patient Level (n=439)

Number of patients (MRNs), visits per patient, was 439.

Table 1. Demographics

	Patient Level Statistics (N=439)
Sex	
Female	192 (43.7%)
Male	247 (56.3%)
Race	
African Amer/Black	373 (85.0%)
Asian	3 (0.7%)
Declined	1 (0.2%)
Native Amer/Alaskan	1 (0.2%)
Other/Multiracial	52 (11.8%)
Unavailable/Unknown	2 (0.5%)
White	7 (1.6%)
Ethnicity	
Declined	4 (0.9%)
Hispanic or Latino	34 (7.7%)
Not Hispanic or Latino	320 (72.9%)
Unknown	81 (18.5%)
Number.of.Visits	
Mean (SD)	2.96 (2.90)
Median [Q1,Q3]	2.00 [1.00,4.00]
(Min,Max)	(1.00,20.0)

Protecting Confidentiality in the Age of the 21st Century Cures Act: A Survey of Pediatric and Emergency Medicine Clinicians

10/21/2023

Poster Presentation

Julia Dunbar, B.S.¹; Kathie M. McCans, MD², (1) Penn State University College of Medicine, Hershey, PA, (2) PennState Health Children's Hospital/Hershey Medical Center, Havertown, PA

Background: Federal legislation requires that patients have full access to all health information in their electronic medical records with limited exceptions. While this has been shown to improve many patient-centered outcomes, there are concerns regarding the impact on patient safety and privacy. The goal of this study was to understand how the implementation of open access medical notes has affected how clinicians protect confidential patient information in their practice.

Methods: We surveyed faculty physicians, resident physicians, and advanced practice

providers (APPs) in the Departments of Emergency Medicine (EM) and Pediatrics at a tertiary academic care center with an integrated children's hospital. The survey evaluated clinician attitudes, documentation behaviors, and knowledge about protecting confidential information. All survey questions were optional, and missing data points were excluded from final analysis. Responses were stratified by training background, years of training, and department affiliation. Differences between groups were characterized using contingency table analysis. Significance levels were determined by Chi-Square statistic and Fisher's exact test.

Results: Survey results were returned from 97 participants, representing 61 faculty physicians, 16 resident physicians, and 11 APPs. Participants identified their primary department (Pediatrics, 75.0%; EM, 23.9%; Declined, 1 respondent), and 26 respondents cited an adjunct appointment in Pediatrics or EM. Since the implementation of open access medical notes, Pediatricians were more likely than EM clinicians to have changed how they document a diagnosis ($p = 0.0028$). Resident physicians were the group most likely to discuss with a patient when they were unsure what information should be considered confidential ($p = 0.0480$). Pediatricians were more likely (69.7%) than EM clinicians (57.1%) to report that they know how to use their electronic health record (EHR) to protect confidential information, although this association was not significant ($p = 0.2878$). Almost half of all participants have used features of the EHR to protect confidential information, with 35.2% utilizing a note type that is exempt from access regulation. While over 25% of participants were unaware that some kinds of medical notes are not available for patients to access, 35.2% have utilized a note that is exempt from open access regulation. Pediatricians were more likely (30.3%) than EM clinicians (14.3%) to report knowledge of a situation where patient care was compromised by a patient reading a medical note, but this association was not significant ($p = 0.1471$). Fewer respondents (7.5%) were able to identify a situation where increased access to medical notes contributed to a breach of patient confidential information.

Conclusion: The results of this study affirm that EM and Pediatrics professionals encounter the challenge of protecting confidential information in their medical documentation. Pediatricians were more likely than EM clinicians to identify confidential information and utilize features of their EHR to protect patient privacy.

A Video-based Intervention to Assess COVID-19 Vaccine Acceptability in a Pediatric ED 10/21/2023

Poster Presentation

Brittany G. Ebbing, MD, MPH¹; Lynne Fullerton, PhD²; Sarah Putnam, MPH²; Neehar Kundurti, MD³; Walter Dehority, MD, MSc⁴, (1) Phoenix Children's Hospital, Phoenix, AZ, (2) University of New Mexico School of Medicine, Albuquerque, NM, (3) University of New Mexico, Albuquerque, NM, (4) The University of New Mexico School of Medicine, Albuquerque, NM

Background: Children have unacceptably low rates of COVID-19 vaccine uptake, ranging from 58% among 12 to 17 year-olds to 10% among those 6 months to 4 years old. Given limited access to primary care for many children, Pediatric Emergency Departments (PED) have been suggested as novel settings for COVID-19 vaccine administration. Our study tested the following hypothesis: Among parents of children presenting to a PED, a brief video educational intervention will be associated with an increase in COVID-19 vaccine readiness as reported by parents for both themselves and their children.

Methods: The study consisted of a convenience sample of 339 parents accompanying pediatric patients to a university-based PED over a five-month period. Participants completed a pre-intervention survey via iPad that gathered standard descriptive data as well as data on COVID-19 beliefs and nine questions about general vaccine attitudes and readiness. Participants watched a novel 4-minute educational video created by the study team addressing risks and benefits of COVID-19 immunization and vaccinations overall. Subjects were then re-surveyed with only the nine questions about vaccine attitudes and vaccine readiness. Pre-/post-intervention attitude changes were measured using the nonparametric equivalent of the paired t-test, the Wilcoxon signed-rank test, and an alpha threshold of 0.05 was considered significant.

Results: Participant demographics are presented in Table 1 and beliefs about COVID-19 immunization are shown in Table 2. Table 3 shows pre-/post-intentions that changed significantly after the educational intervention. Post-intervention, COVID-19 vaccine acceptability as reported by parents increased for both themselves ($p=0.0017$) and their children ($p=0.0038$). Participants were also more likely to be willing to talk to a pediatric emergency medicine doctor about influenza vaccine administration for their children after the intervention ($p=0.012$).

Conclusion: A brief, inexpensive, video-based intervention in a PED targeted for parents is associated with improvement in vaccine readiness as reported by parents for both themselves and their children. This type of intervention should be further studied in both PEDs and in general pediatrics settings, with a goal toward improved vaccine uptake.

Table 1. Demographics among participants in vaccine readiness intervention study (n=339)

Table 1: Participant demographics

<u>Parent</u>	Median (IQR)
Age (years)	34 (27, 39)
Income (x \$1,000)	40 (30, 70)
<u>Education</u>	Number (%)
< High school graduate	35 (10.7)
High school degree	101 (31.0)
Some college	91 (27.9)
College degree	67 (20.6)
Graduate degree	32 (9.8)
<u>Rural residence</u>	
yes	103 (30.9)
no	230 (69.1)
<u>Child</u>	Median (IQR)
Age (years)	5 (2, 11)
<u>Ethnicity</u>	Number (%)
Hispanic	233 (69.1)
non-Hispanic	90 (26.7)
Decline to state	14 (4.2)
<u>Race</u>	
White	177 (52.4)
American Indian/ Alaska Native	55 (16.3)
African American	11 (3.3)
Asian	10 (3.0)
Other	66 (19.5)
Decline to state	19 (5.6)
Child has PCP*	307 (91.4)

*PCP=primary care provider

Table 2. Questions asked to participants both before and after the video intervention

Table 2. Questions asked to participants both before and after the video intervention

Scale: 1=strongly disagree; 2=disagree; 3=not sure; 4=agree; 5=strongly agree	Did agreement increase?
<i>How much do you agree with each of the following statements?</i>	p-value
1. In general, I trust vaccinations	0.056
2. I am interested in talking to my child's primary care provider about the COVID-19 vaccine for my child.	0.32
3. I am interested in talking with the Pediatric Emergency Medicine doctor about the COVID-19 vaccine for my child.	0.16
4. I am interested in talking with the Pediatric Emergency Medicine doctor about the influenza vaccine for my child.	0.012*
5. I would be willing to vaccinate my child against COVID-19 when a vaccine is available.	0.39
6. I would be willing to vaccinate my child against COVID-19 in a Pediatric Emergency Department while they wait for their care.	0.0038*
7. I would be willing to vaccinate my child against the flu in a Pediatric Emergency Department while they wait for their care.	0.64
8. I would be willing to be vaccinated against COVID-19 in a Pediatric Emergency Department while waiting for my child's care (by a nurse qualified to do so in adults).	0.0017*
9. I would be willing to be vaccinated against the flu in a Pediatric Emergency Department while waiting for my child's care (by a nurse qualified to do so in adults).	0.12
Sum of change in scores for all questions:	0.039

The Impact of Limited English Proficiency on Pediatric Emergency Department Length of Stay: A Single Center Experience

10/21/2023

Poster Presentation

Katherine McVety, MD¹; Priya Spencer, MPH²; Ciara Brennan, BA³; Ian Kuo, BA⁴; Aarthi Ramesh, DO⁵; Anooj Arkatkar, BS⁶, (1) Children's Hospital of Michigan, Beverly Hills, MI, (2) Children's Hospital of Michigan, Detroit, MI, (3) Central Michigan University, Saginaw, MI, (4) Central Michigan University College of Medicine, Saginaw, MI, (5) Authority Health Pediatrics, St Clair shores, MI, (6) Children's Hospital of Michigan, Troy, MI

Background: Clear communication between healthcare providers and patients is vital in the Emergency Department (ED). A Limited English Proficiency (LEP) person, according to the US Census Bureau, refers to anyone age 5 and older who speaks English less than “very well”. In our Pediatric Emergency Department (PED), families identified as requiring interpreter services have been excluded from the “Fast Track” area due to limited resources. The objective of this study was to assess the impact on the patient experience, primarily length of stay (LOS) and number of tests performed.

Methods: We performed a retrospective chart review of patients 18 years of age or less, triaged as low acuity with an Emergency Severity Index (ESI) of 4 or 5, evaluated in the PED in August 2022. Subjects were excluded if they presented with a chief complaint not seen in our Fast Track such as injury or abuse, were evaluated at a satellite location without Fast Track, or arrived in the PED during times Fast Track was closed. We abstracted demographic information, use of interpreter services, time of ED arrival and discharge, time seen by provider, time of laboratory and/or imaging order, and any procedures performed. Patients identified with a primary language other than English were categorized as LEP patients. Categorical variables were compared by a Chi Square test and continuous variables were compared by a Mann-

Whitney U test. The Institutional Review Board study number is 2022–1408.

Results: We analyzed 1153 patient charts including 50 LEP patients and 1103 primary English speakers (Table 1). The two groups did not differ by age ($p=0.63$) or gender ($p=0.18$). However, there were significant differences in the distribution of race and ethnicity ($p< 0.001$). LEP patients showed longer median lengths of stay (123 minutes vs. 105 minutes, $p=0.028$), slightly higher acuity ($p=0.059$), and more frequent admission ($p=0.035$). A univariate accelerated failure time model confirmed that LEP status was associated with longer stays (Time Ratio [TR]: 1.26, 95% CI: 1.02 – 1.57, $p=0.032$). However, in a covariate-adjusted model (Table 2), longer stays were associated with acuity (TR: 1.43, 95% CI: 1.30 - 1.58, $p< 0.001$) and admission (TR: 7.26, 95% CI: 4.83 – 10.9, $p< 0.001$), but not LEP status (TR: 1.14, 95% CI: 0.93 – 1.39, $p=0.20$).

Conclusion: LEP patients had a significantly longer LOS than primary English-speaking patients. We also found a slight difference in acuity and imaging studies. After adjusting for these variables, the use of an interpreter, but not English proficiency alone, predicted increased LOS. Limitations of the study include inconsistent documentation of preferred language and interpreter use in the medical record. Next steps include improving the identification and documentation of language preference as well as process changes to decrease the LOS for LEP families.

Demographic and Clinical Characteristics of Study Population (August 1-31, 2022, n=1153)

Variable	English(n=1103)	LEP (n=50)	p
Median age (IQR)	3 (5.6)	3 (5.2)	0.63
Sex, n (%)			0.18
Male	576 (52.2%)	31 (62.0%)	
Female	527 (47.8%)	19 (38.0%)	
Race, n (%)			<0.001
American Indian/Alaska Native	1 (0.1%)	0(0%)	
Asian	12 (1.1%)	3 (6.0%)	
Black or African American	816 (74.0%)	3 (6.0%)	
Caucasian	122 (11.1%)	23 (46.0%)	
More than one race	11 (1.0%)	2 (4.0%)	
Unknown/Not reported	141 (12.8%)	19 (38.0%)	
Ethnicity, n (%)			<0.001
Hispanic or Latino	63 (5.7%)	15 (30.0%)	
Non Hispanic or Latino	643 (58.3%)	15 (30.0%)	
Unknown/Not reported	397 (36.0%)	20 (40.0%)	
Median Length of Stay, minutes (IQR)	105 (103)	123 (115)	0.028
Median Door to Doc time, minutes (IQR)	40 (55)	33.5 (55)	0.65
Emergency Severity Index (ESI), n (%)			0.059
ESI 4	844 (76.5%)	44 (88.0%)	
ESI 5	259 (23.4%)	6 (12.0%)	
ED Disposition, n (%)			0.035
Admitted	10 (0.9%)	2 (4.0%)	
Discharged	1093 (23.4%)	48 (96.0%)	

Multivariate Analysis of Factors Associated with Longer Emergency Department Length of Stay Using an Accelerated Failure Time Model

Variable	TR (95% C.I.)	p
LEP	1.14 (0.93 – 1.40)	0.20
ESI 4	1.43 (1.30 – 1.58)	<0.001
Admitted	7.26 (4.83 – 10.9)	<0.001

“baby Box”: Neonatal Resuscitation Box with Asynchronous Training Improves Emergency Medicine Provider Preparedness for Precipitous Delivery

10/21/2023

Poster Presentation

Yvonne Huang, MD, MPH¹; Aaron Chan, Bachelors of Arts²; Alexandra Van Oyen, DO³; Ee Tein Tay, MD¹, (1) NYU Langone Health, New York, NY, (2) Bellevue Hospital, Ridgewood, NY, (3) New York University Grossman School of Medicine, New York, NY

Purpose/Objectives: It is estimated that over 9000 infants are born outside of the hospital annually. Approximately 10% of newborns require some level of resuscitation postnatally. However, there is little published on the standards of equipment and provider readiness in the Emergency Department (ED). The goal of our project is to establish a portable neonatal resuscitation equipment box and improve physician readiness in the ED for precipitous deliveries.

Design/Methods: A neonatal resuscitation box, also known as the “Baby Box,” was created to consolidate resuscitation equipment necessary in an event of a precipitous delivery. We created a video to feature the contents of the Baby Box along with basic information on the Neonatal Resuscitation Program (NRP). A survey was distributed to emergency medicine (EM) residents and attendings, pediatric residents, and pediatric EM fellows and attendings at an inner-city, public hospital. A pre and post video survey was administered to assess provider confidence in neonatal resuscitation, equipment location, and NRP knowledge using a five-point Likert scale. Data was analyzed using paired sample t-test.

Results: Of the 80 respondents who opened the survey, 52 completed the entire survey and attested to watching the video. 65% of these were either EM or pediatric residents, 7% were EM fellows, and 28% were Pediatric EM or EM attendings. 44% of respondents had participated in a neonatal resuscitation at least once in the last year in the ED. Over 90% agreed the NRP was relevant to their job and 71% were confident in using the NRP. While 73% were confident in using provided supplies for resuscitation, only 38% were confident in their abilities to locate supplies in the ED. When the same questions were asked after watching the informational video introducing the Baby Box, 90% were confident in using provided supplies and 92% were confident in their abilities to locate supplies in the ED. Paired t-tests were statistically significant at $p < 0.01$ when comparing confidence before and after the video intervention for using NRP, using equipment, locating equipment, and locating equipment within the ED. Only EM providers had a statistically significant increase in confidence with NRP when broken down by department. (Table 1)

Conclusion/Discussion: An ED-tailored portable neonatal resuscitation box, when paired with an asynchronous video training, increased preparedness for neonatal resuscitations and provider confidence for precipitous and ED deliveries.

Table 1: Survey Results by Level of Training and Department

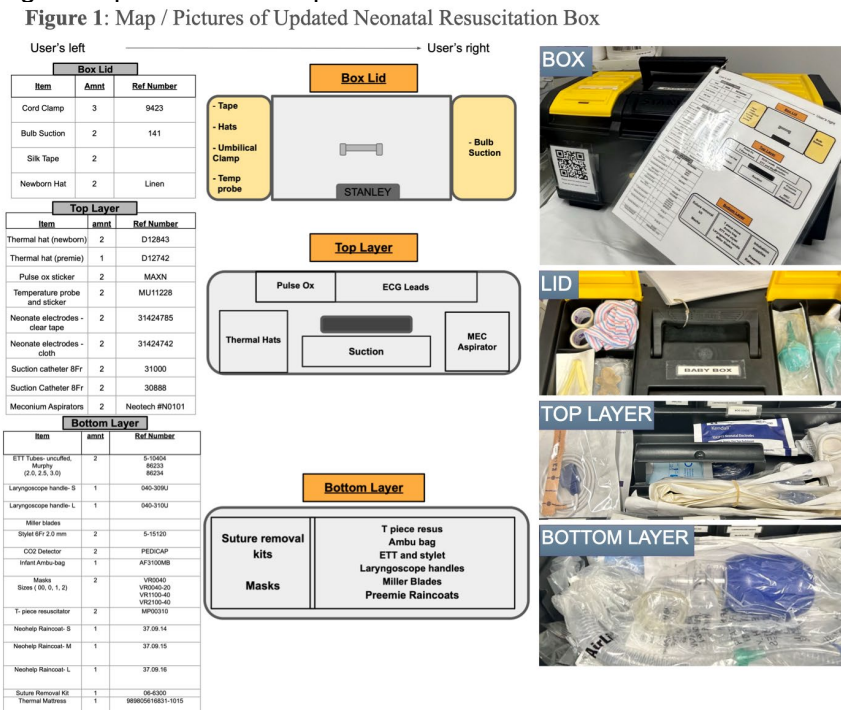
Table 1: Survey Results Before and After Video - By Level of Training and Department (Likert Scale of 1=Strongly Disagree to 5=Strongly Agree)

"In the case of a precipitous delivery in the ED, I feel confident that I can quickly locate what I need for a potential resuscitation"				
	Respondents	BEFORE Mean (SD)	AFTER Mean (SD)	p-value
Overall	52	2.98 (1.2)	4.23 (0.76)	<0.01*
Level of Training				
Resident	33	2.88 (1.27)	4.24 (0.61)	<0.01*
Fellow / Attending	19	3.16 (1.12)	4.21 (0.98)	<0.01*
Department				
Pediatrics	15	2.80 (1.32)	4.20 (0.56)	<0.01*
Pediatric Emergency Medicine	12	3.50 (1.17)	4.33 (0.89)	0.034*
Emergency Medicine	25	2.84 (1.14)	4.20 (0.82)	<0.01*

"I feel confident during neonatal resuscitations and using the current Neonatal Resuscitation Program (NRP) guidelines"				
	Respondents	BEFORE Mean (SD)	AFTER Mean (SD)	p-value
Overall	52	3.54 (0.98)	3.98 (0.67)	<0.01*
Level of Training				
Resident	33	3.61 (0.86)	3.97 (0.53)	<0.01*
Fellow / Attending	19	3.42 (1.17)	4.00 (0.88)	<0.01*
Department				
Pediatrics	15	3.73 (0.70)	4.07 (0.46)	0.055
Pediatric Emergency Medicine	12	4.08 (0.79)	4.33 (0.65)	0.191
Emergency Medicine	25	3.16 (1.07)	3.76 (0.72)	<0.01*

*Statistically significant

Fig 1: Map / Pictures of Updated Neonatal Resuscitation Box



Lactation Culture of Pediatric Emergency Medicine Fellows: A National Survey Study

10/21/2023

Poster Presentation

Shubhi Goli, MD¹; Stefanie Sebok-Syer, PhD²; Bonnie L. Halpern-Felsher, PhD³; Nancy Ewen Wang, MD³; Andrea Fang, Director, Pediatric Emergency Medicine Fellowship³, (1) Stanford University, San Francisco, CA, (2) Stanford University, Palo Alto, CA, (3) Stanford University School of Medicine, Palo Alto, CA

Background: Breastmilk has been shown to decrease infant infection, childhood mortality rates, and improve maternal health outcomes. However, physicians, especially trainees who have children during residency or fellowship, may struggle to lactate (breastfeed or pump breastmilk) given structural and cultural barriers. Specifically, pediatric emergency medicine (PEM) fellows, who may benefit from the relatively more supportive culture of pediatrics, still encounter many challenges inherent in staffing a busy emergency department (ED). This is the first study that aims to assess the lactation culture and needs of PEM fellows, providing the homogeneity and increased sample size lacking in prior studies.

Methods: This is a cross-sectional national survey study distributed via the PEM-Program Director (PD) Survey Committee. Two surveys were developed using an iterative review process: one for program directors (10 questions) and one for PEM fellows (on average, 25 questions). Questions used branching logic and addressed demographics and lactation policy awareness. The fellow survey also included questions on departmental support, lactation devices and time spent lactating, and access to a designated lactation space. Surveys were distributed three times over a six-week period. The program PD was requested to complete the survey and to forward the fellow survey to all their trainees. Fellows with the current or potential ability to lactate were invited to participate in the survey. All responses were anonymous.

Results: 39% (35/90) of PDs, a majority of whom are at academic programs (91%, 32/35), responded to the survey one-week into the study. An estimated 67% (195/293) of their PEM fellows had the potential or current ability to lactate. 31% (60/195) of eligible fellows completed the fellow survey. 97% (58/60) completed General Pediatrics residency prior to starting fellowship. 40% (24/60), 37% (22/60) and 23% (14/60) of fellows were in their first, second and third years of fellowship, respectively. 38% (23/60) of fellows had some personal experience with lactation and another 23% (14/60) hoped to lactate during fellowship. With regards to departmental support, 57% (20/35) of PDs and 43% (26/60) of fellows knew of a lactation policy for PEM fellows. While most fellows did not base their decision to lactate based on knowledge of such a policy, some fellows felt confusion, difficulty, or unsupported. Nonetheless, 97% (36/37) of fellows somewhat or strongly agreed that their workplace was supportive of lactating fellows.

Conclusion: Our results show that lactation is desired and expected in a large proportion of PEM fellows. While the lactation culture of PEM appears to be overall supportive, continued establishment of formal policies and means to ensure awareness of these policies is imperative. These policies may include guidance on schedule accommodations and breaks for lactation, and access to lactation equipment and space.

Monocyte Anisocytosis Portends Severe Inflammatory/infectious Disease in Children

10/21/2023

Poster Presentation

Lael Yonker, MD¹; Serena Sossi, BS¹; Rachel Bloom, BS¹; Abigail Kane, MD¹; Christine Santos, BS²; Brittany P. Boribong, PhD¹; Oluwakemi Badaki-Makun, MD, PhD²; Daniel Irimia, MD, PhD¹, (1) Massachusetts General Hospital, Boston, MA, (2) Johns Hopkins University, Baltimore, MD

Background: Early determination of disease severity in an emergency setting is paramount for improving patient outcomes and healthcare costs. Monocyte anisocytosis, quantified as monocyte distribution width (MDW), has been shown to correspond with immune dysregulation in sepsis, severe COVID-19, and Multisystem Inflammatory Syndrome in Children. We hypothesize that MDW could broadly predict illness severity related to host-immune dysregulation in children.

Methods: We designed a retrospective study to analyze MDW from whole blood samples that were collected and analyzed on a UniCel DxH 900 analyzer (Beckman Coulter, Inc., Brea, CA) between 4/2020-9/2022. We enrolled children presenting to the ED, outpatient clinics, or admitted to the hospital of either Mass General for Children or Johns Hopkins Children's Center. We also enrolled healthy children to serve as controls. Medical information was extracted from electronic medical records. Pediatric Sequential Organ Failure Assessment (pSOFA) scores were assigned to each patient. Outcomes were analyzed by t-test, and receiver operator curve assessed accuracy of MDW in identifying disease severity.

Results: We analyzed samples from 435 children presenting with illness (mean age of 8 years, range 4 days to 18 years) and 216 healthy children (mean age of 12, range 1 to 18 years). MDW was significantly higher in children with illness requiring hospitalization (24.9 ± 6.7 mean and standard deviation) than in healthy controls (16 ± 1.7). Those admitted with fever showed an even greater increase in MDW (27.2 ± 6.4). Children with confirmed infection and a pediatric Sequential Organ Failure Assessment (pSOFA) score >1 (signifying signs of end-organ involvement) had MDW of 28.4 ± 6.9 . A receiver operating curve comparing infected children with a pSOFA of 0 with a pSOFA >1 displayed an area under the curve of 73, suggesting MDW alone may serve as a useful tool in identifying children with severe disease.

Conclusion: MDW may be a useful biomarker to help clinicians quickly identify children presenting to the ED with signs of infection who are at high risk for severe illness and require closer monitoring or aggressive treatment.

The Utility of Preoperative Coagulation Studies for Emergent Pediatric Procedures

10/21/2023

Poster Presentation

Manasi Chitre, MD¹; Katherine Chou, MD²; Jennifer Chao, MD FAAP³; Adam Shore, MD⁴; Richard Sinert, DO⁵, (1) Albert Einstein School of Medicine/Children's Hospital at Montefiore, New York, NY, (2) Jacobi Medical Center, Bronx, NY, (3) Kings County Hospital, Lido Beach, NY, (4) Harlem Hospital, New York, NY, (5) Kings County Hospital, Brooklyn, NY

Background: The American Academy of Pediatrics (AAP) 2014 policy statement regarding preoperative clearance for non-emergent procedures discourages obtaining routine laboratory studies. Despite this recommendation, there is considerable variation in obtaining preoperative tests. A recent meta-analysis concluded that there is currently inadequate data to support or refute routine coagulopathy screening for emergent surgical procedures. The objective of this study is to examine the utility of preoperative coagulopathy screening for children undergoing emergent surgical procedures.

Methods: We conducted a retrospective chart review of pediatric patients < 21 years old admitted from the emergency departments (EDs) across the 11 hospitals in the NYC Health + Hospitals system from January 2018 through October 2020. The medical records of patients with either appendicitis or cholecystitis who had coagulation studies (INR, PTT, and platelet count) were included. Patients at risk for bleeding due to medication or medical history were excluded. Demographics and ED diagnoses were collected. Patients with any abnormal coagulation study (INR > 1.2, PTT > 36.7 seconds, or platelets < 130,000/ μ L) were reviewed to determine if the abnormal labs were repeated, surgery was delayed or canceled, further coagulopathy workup or hematology consult were required, or if there were any postoperative complications. Continuous data were reported as means (+/- SD), and categorical data were reported as frequencies (percentages).

Results: A total of 1069 patients had diagnoses of appendicitis or cholelithiasis. Of these, 513 (48%) patients had complete coagulation studies performed and were included in the analysis. The median age was 15.6 years (+/- 4.8); 274 (53%) patients were male. There were 162 patients (32%) with abnormal coagulation studies (119 with abnormal INR, 31 with abnormal PTT, and 12 with more than one abnormal value). Of these patients, 122 (75%) had surgery performed, 12 (8%) had the labs repeated, 2 (1%) had a coagulopathy workup, 1 (0.6%) was identified during prescreening by anesthesiology as having a bleeding disorder, 1 (0.6%) had a postoperative bleed. No patients had their procedure canceled due to abnormal coagulation studies.

Conclusion: While coagulation studies were abnormal almost 1/3 of the time, there was no change in surgical management in our study population. Our findings suggest that preoperative coagulopathy screening is not necessary for emergent procedures. The AAP may expand routine preoperative screening recommendations to include emergent and non-emergent procedures

Integration of Rapid Sequence Intubation Process During Medical and Trauma Resuscitations to Increase Success Rates. a Quality Improvement Study

10/21/2023

Poster Presentation

Osama El-Assal, MD, PhD¹; Kara Weichler, Do²; Jeffery Naples, MD²; Michael T. Bigham, MD, MBA², (1) Akron Childrens Medical Center, Akron, OH, (2) Akron Childrens Hospital, Akron, OH

Purpose/Objectives: Rapid sequence intubation (RSI) is one of the most critical procedures during resuscitation in the emergency department with potential for high-risk complications. Treating RSI as an isolated process during resuscitation can result in unwanted outcomes such as cardiovascular collapse/ arrest. We tested and implemented an intubation check list that

integrated cardiovascular resuscitation in “non-crash” intubations to increase the proficiency and safety of intubations using the quality improvement methodology for both pediatric emergency department (PED) and transport services.

Design/Methods: A pilot study was conducted in PED of a tertiary care facility using quality improvement approach prior to full implementation. The goal was to standardize the RSI with specific attention to potential causes of complications, such as cardiac arrest/ bradycardia, failed intubations, hypoxemia, and less optimal medication choices. We aimed to achieve successful intubation within two attempts. The process was then extended to transport services who often intubate pediatric patients prior to transport from referring facilities with no pediatric experience. Outcome, barriers, and complications were analyzed.

Results: The study was started on May of 2022 with preplanning, educations, and process assessment. A total of 40 patients were included in this study including the pilot phase. The process was fully implemented in October 2022. This was followed by expansion to transport services (figure 1). We sustained > 75% compliance with the checklist (Completing the algorithm and documentations). Successful intubation within two attempts were sustained in all patients with exception of one patient who was determined to be a special cause variation (Figure 2). Oxygen saturations were maintained at > 90 % with few exceptions.

Conclusion/Discussion: Standardization of RSI process significantly improved safe and successful intubations within two attempts for patients with acute emergencies excluding crash-intubations in PED and transport services. Further analyses and expansions are ongoing.

Figure 1

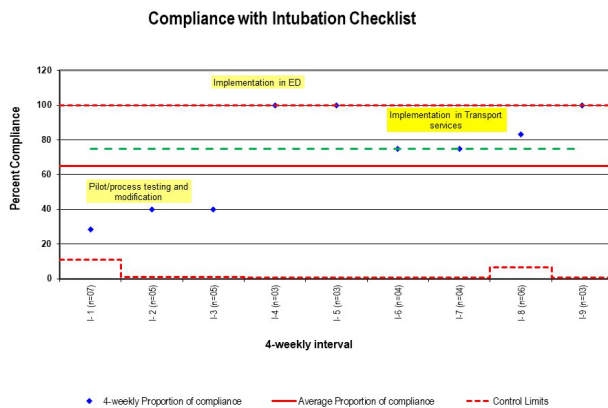
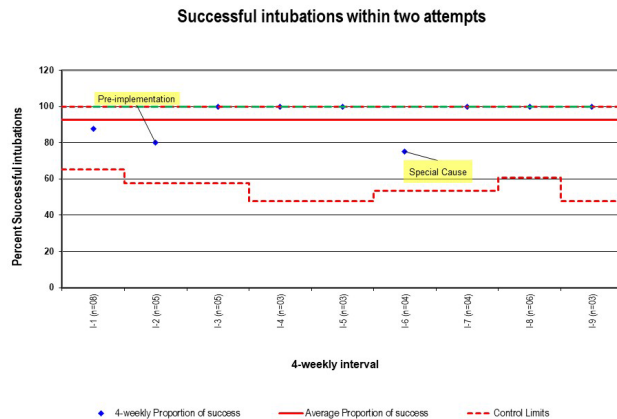


Figure 2



Reduction of Urine Cultures for Febrile Neonates by Implementation of Recent Clinical Practice Guidelines and Institutional Pathway

10/21/2023

Poster Presentation

Katie Giordano, DO¹; Sahar Barfchin, MD, FAAP²; Rachna Kapoor, MD, MS³; Ryan Holton, MD⁴; Monique Devens, N/A, MD⁵; David Bergamo, MD⁶; Arezoo Zomorodi, MD⁷; Karina Chara, n/a⁸, (1) Nemours Children's Hospital, DE, Wilmington, DE, (2) Nemours Children's Hospital Delaware, Wilmington, DE, (3) Nemours Children's Hospital, Delaware, Wilmington, DE, (4) Nemours Children's Hospital - Delaware Valley, Wilmington, DE, (5) Sidney Kimmel Medical College at Thomas Jefferson University; Nemours Children's Hospital, Delaware, Philadelphia, PA, (6) Nemours Children's Hospital Delaware, Media, PA, (7) Nemours Children's Health, Newtown Square, PA, (8) Nemours Children's Hospital, Wilmington, DE

Purpose/Objectives: In the 2021 the American Academy of Pediatrics (AAP) updated their Clinical Practice Guidelines (CPG) for the well appearing febrile infant. In particular, the routine collection of urine cultures in febrile neonates with a negative urinalysis is no longer recommended. The objective of our study was to determine if the creation of an institutional pathway and order set, based on the 2021 CPG, would improve adherence to this recommendation.

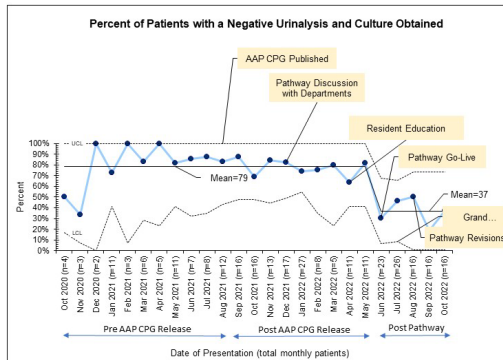
Design/Methods: A clinical pathway utilizing the 2021 AAP CPG was designed by a multidisciplinary team and implemented June 2022, as part of a wider national AAP research project REVISE II: Reducing Excess Variability in Infant Sepsis Evaluation. Prior to the launch of the pathway, institutional approval was obtained and staff was educated on the CPG in the form of presentations and emails as part of an educational initiative for the clinical pathway. With the clinical pathway, we instituted an order set designed to follow the clinical pathway and CPG. Inclusion and exclusion criteria were based on the REVISE II project standards. Only healthy, well-appearing neonates age 8-60 days old were included. A urinalysis was defined as positive if there was any leukocyte esterase, >5 white blood cells per high-powered field on centrifuged sample. Our data collection spanned October 2020-October 2022. Data was obtained for 10 months prior to the introduction of the AAP CPG (August 2021) and for 14 months after the introduction. Our clinical pathway was initiated in June 2022 therefore, patient

encounters were assigned into 1 of 3 groups based on the time they presented: pre-guideline release, post-guideline but pre-pathway, and post-pathway. We were able to compare effect of CPG publishment and pathway implementation. Plan-do-study-act cycles were performed regularly, staff feedback was reviewed and reeducation provided. These interventions are seen in the control chart.

Results: There were 599 charts reviewed during the study period. Of the 285 who met inclusion criteria, 276 had UA obtained and 197 were negative. 207 total cultures were sent. The percent of patients who had a culture sent after a negative UA was 87% during the pre-guideline period, 83% during the post-guideline to pre pathway period and 38% in the post pathway period. This is displayed in Chart 1. Special cause was achieved only after pathway implementation, see control chart.

Conclusion/Discussion: While the CPG decreased the utilization of urine cultures, there was a far greater effect seen with implementation of an institutional clinical pathway and corresponding electronic medical record order set. It is quite complicated to assess harm caused by a change in practice like sending fewer urine cultures, but by one measure we can say it likely did not cause harm— lack of any positive urine cultures with negative UA in our study population.

UA and Culture percentages



Percent of UA with negative cultures

Chart 1

	% patients with UA who had urine culture sent	% of patients with <u>negative</u> UA who had urine culture sent
Pre-guideline (10 months)	96	87
Post-guideline to pre-pathway (9 months)	91	83
Post-pathway (5 months)	42	38
Total (entire study period)	75	68

Providing Screening and Linkage to Preventive Services for At-risk Hiv-negative Patients Aged 13 to 18 in a Pediatric ED

10/21/2023

Poster Presentation

Yvette L. Kearl, FAAP¹; Sophie Terp, MD, FACEP²; Sarah Axen, PhD², (1) USC Keck School of Medicine, La Canada, CA, (2) USC Keck School of Medicine, Los Angeles, CA

Purpose/Objectives: The Pediatric Emergency Department (ED) at LAC+USC Medical Center serves many teenage patients with circumstances and behaviors that place them at risk for HIV. Since May 2022, our department has been conducting opt-out, non-targeted screening for HIV among patients ages 13-21 receiving blood draws, and for those who are HIV-negative, providing risk-assessments to determine need for education and eligibility for linkage to comprehensive outpatient prevention services (CPS).

Design/Methods: Selection criteria for program participation include medically stable ED patients, 13-21 years old, not in the custody of law enforcement, negative for HIV on routine screening. Patients meeting eligibility criteria were screened for behavioral risk factors, and if identified as at-risk, offered linkage to outpatient prevention services. In this paper we describe demographics and key program outcomes for minor patients including number of patients screened, provided with risk assessment, offered linkage to CPS, and attended CPS, as well as general categories of CPS attended May 1, 2022 to February 28, 2023. This study was approved by the University of Southern California IRB

Results: Of patients ages 13-17 presenting to the ED during the study period, 110 of 121 were eligible for risk factor screening. Reasons for ineligibility included in custody of law enforcement (and therefore unable to arrange outpatient services) and not stable from a medical or psychiatric standpoint for evaluation. Among those eligible for risk factor assessment 37 identified as male, and 72 identified as female, 86 (78%) were Hispanic, 6 (5.5%) were Black, 86 (78%) Medicaid insurance, 41 (37%) spoke Spanish and 65 (59%) spoke English language. Among the 52 (%) with risk factors, the distribution was 44 (%) for high-risk sexual behavior and 24 (%) for other behavior-modifying drug use. Among the eligible for assessment, linkage to

CPS was offered to 35 (32%), and scheduled and attended for 26 (24%). Notably, of those offered, 27 (77%) were female and of those scheduled and attended, 24 (92%) were female. Reasons not scheduled were commonly cited as desire to follow-up with own physician, or declined due to lack of interest or perceived need by patient.

Conclusion/Discussion: We have identified a notable gender disparity with females than male patients being screened and linked to care. We suspect that this is related to relatively large volume of female patients in the Pediatric ED presenting with OB/GYN complaints. Given this noted gender differential, it will be important for our OB/GYN colleagues to continue to conversation and offer patients a full range of options for CPS. Additionally, ways in which young men can be targeted for screening and linkage need to be explored and identified to bridge the gender gap.

CASE STUDY

Demographics of those Eligible for Linkage to Care

LAC+USC Medical Center Pediatric Emergency Department

115

Race/Ethnicity



Gender



Age

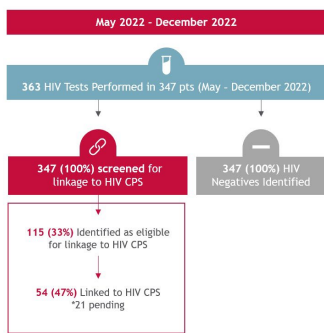


Disclaimer: FOCUS funding supports HIV, HCV, and HBV screening and linkage to a first appointment. FOCUS partners do not use FOCUS awards for activities beyond linkage to a first appointment. Partners may mention activities conducted without the support of FOCUS during presentations.

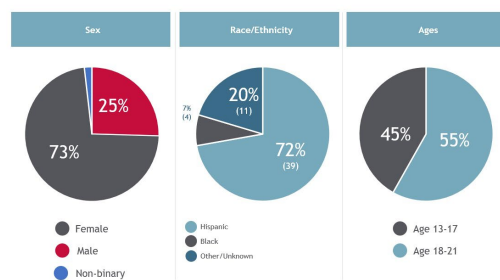
CASE STUDY

LAC+USC Medical Center

Pediatric Emergency Department (Screening and linking those 13 – 21 year of age)



Demographics of Those Linked to Care



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