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Senior Resident REACH Project Summary

2020-2021

Mental Health Concerns among Primary Immunodeficiency Patients and their Caregivers

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Background

- Children with chronic diseases and their caregivers may be at increased risk for psychological distress and decreased quality of life, which may impact medical outcomes.
- Caregiver mental health and its impact on patient outcomes has also been studied in a small number of studies, primarily among patients with cancer but has not been evaluated to date among patients with immunologic diseases such as primary immunodeficiency disorders (PID).
- The Patient Reported Outcomes Measurement Information System (PROMIS) is a set of short questionnaires that assess patient-reported physical, mental, and social well-being and are considered standardized, reliable, and valid measures.
- This study aimed to assess mental health concerns among PID patients and their caregivers in order to better understand the unique mental health needs of this population.

Methods

- Caregivers of children with PID (ages 0-17 yrs) and children with PID (ages 8-17 yrs) were recruited from a pediatric immunology clinic to complete PROMIS surveys on REDCap.
- Patients were classified into mild and severe PID groups based on clinical severity and/or expected trajectory of disease. For example, mild group included patients with antibody defects, CVID, suspected PID with mild recurrent infections Vs severe group that included SCID, CGD, AT*.
- Parent PROMIS surveys assessed anxiety, depression, fatigue, sleep disturbance, emotional support, and informational support.
- Child and parent proxy PROMIS surveys assessed fatigue, anxiety, depression, pain interference, mobility, and peer relationships. Children completed assessments if they were ages 8-17 year. Parents completed assessments regarding their child if they were 5-17 years.
- Domain scores were converted to t-scores. Higher PROMIS t-scores represent more of the concept being measured.
- For negatively-worded concepts like Depression, a t-score of 60 is one SD worse than average. By comparison, a Depression t-score of 40 is one SD better than average.
- Correlations among PROMIS t-scores and demographic/medical variables were conducted as well as independent samples t-tests using PID severity as group.

CVID: Common variable immunodeficiency, SCID: Severe combined immunodeficiency, CGD: Chronic Granulomatous disease, AT :Ataxia telangiectasia

Participants

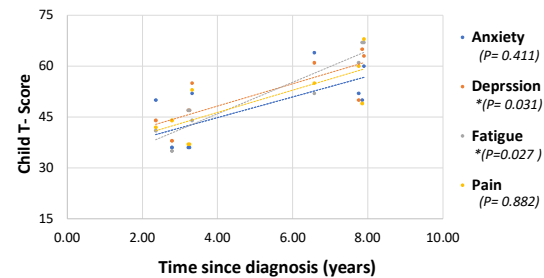
Table 1. Participant Characteristics (N=41)

Child Age	M (SD)	PID Severity	N (%)
Age of child (years)	8 (4.59)	Mild disease	18 (44%)
		Severe disease	23 (56%)
Child Sex/Race	N (%)	PID Characteristics	M (SD)
Sex (male)	28 (67%)	Time since diagnosis (years)	3.99 (3.50)
Race		Number of ED visits	0.73 (1.24)
Caucasian	29 (69%)	Number of hospitalizations during the past year	0.51 (0.99)
African American	5 (12%)	Number of days hospitalized during the past year	5.22 (21.72)
Other	8 (19%)	Number of medical teams providing care	5.38 (3.11)

Results

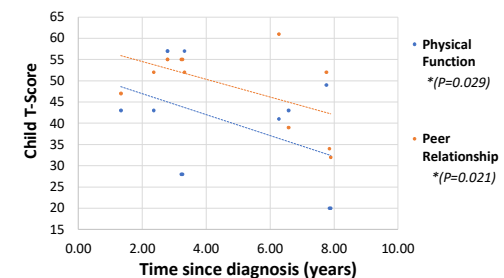
1. Greater Time since Diagnosis was Associated with Greater Child-Reported Anxiety, Depression, Pain, and Fatigue

Figure 1: Time since Diagnosis versus Child-Reported Anxiety, Depression, Pain & Fatigue Scores (n=13)



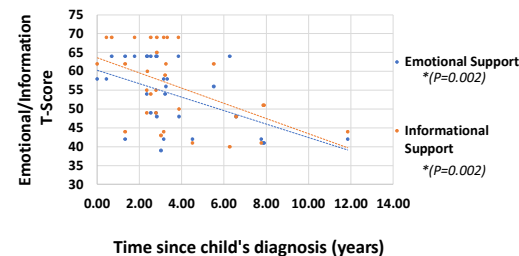
2. Greater Time since Diagnosis was Associated with Worse Child-Reported Physical Function and Less Peer Support

Figure 2: Time since Diagnosis versus Child-Reported Physical Function and Peer Support (n=13)



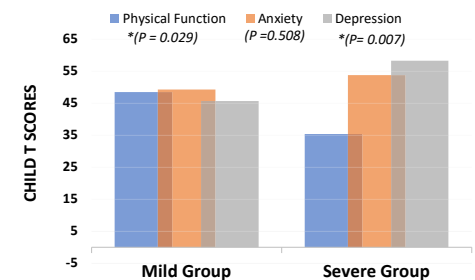
3. Greater Time since Diagnosis is Associated with Less Parent-reported Emotional and Informational Support

Figure 3: Time since Diagnosis versus Parent-Reported Emotional & Informational Support (n=31)



4. PID Severity Impacts Multiple Psychosocial Measures Reported by Children

Figure 4: Psychosocial Measures in Children in PID Severity Groups (n=13)



Conclusion

- Mental health concerns are detectable in PID patients and their caregivers regardless of disease severity.
- Psychosocial functioning in this sample appeared to decline with greater time since diagnosis. One hypothesis is that families may receive more support during the acute diagnostic and treatment periods of PID than they do during chronic daily management of PID.
- A larger sample will need to be investigated to better understand the population mental health needs.

References

- Fagnano M, Berkman E, Wiesenthal E, Butz A, Halterman JS. Depression among Caregivers of Children with Asthma and its Impact on Communication with Health Care Providers. Public Health 2012; 126: 1051-1057.
- Irwin DE, Stucky B, Langer MM, Thissen D, DeWitt EM, Lai J-S, Varni JW et al. An item response analysis of the pediatric PROMIS anxiety and depressive symptoms scales. Quality of Life Research. 2010;19(4):595-607

Supported by the Division of Allergy and Immunology, Children's National Hospital, Washington, DC

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RESIDENTS WANT DISASTER MEDICINE TRAINING: NON-VIRTUAL PREFERRED

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Introduction

Disaster medicine training is established in emergency medicine residency curricula, but a known deficit in other residency programs. There is a necessity for disaster education, elucidated by the COVID-19 pandemic, which highlighted disasters are not theoretical and can affect every residency specialty.

Objective

Assess the knowledge, confidence, and attitudes of residents towards disaster medicine education in the COVID-19 era, addressing the educational gap.

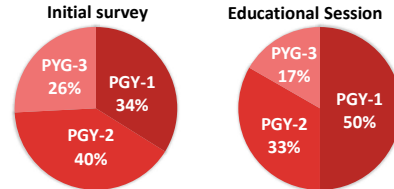
Methods

Survey distributed to 120 pediatric residents at a tertiary care center, assessing confidence in disaster medicine knowledge and skills and preferred educational methods, with 51.6% response rate. Based on residents' responses, 18 person virtual and in-person educational session implemented. This session was a tabletop simulation during a scheduled noon conference, simultaneously conducted in-person and virtually via Zoom. The participants were evenly distributed between each teaching platform and a structured outline of the narrative was followed by facilitators.



Methods (Continued)

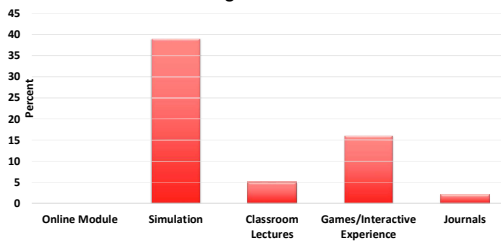
The narrative outlined a mass casualty incident in which residents reacted to the scenario in a fictitious emergency room, resolving the problems presented throughout the simulation. A post-survey evaluated the effectiveness of the education.



Results

Simulation was the most preferred method of teaching. Participating in academia within a group versus alone was favored by 61.3%, with an overall greater desire to partake in educational activities if their peers were participating versus with other members of hospital staff (80.6%).

Most Effective Learning Model for Disaster Medicine

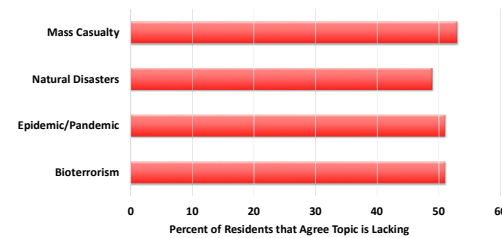


Almost half (46.8%) of residents had <1 hour of disaster training, with only 9.7% having experience with prior disaster event. Most residents were eager to increase their knowledge of disaster medicine due to metropolitan areas (96.8%),

Results (Continued)

political tensions (54.8%), and social media surrounding COVID-19, natural disasters and mass shootings (66.1%). Almost all residents (96.8%) were interested in disaster medicine education as a curricula standard.

Disaster Medicine Topics Lacking in Pediatric Education



Low confidence of disaster medicine knowledge and skills was consistently seen in all levels of training without statistical significance between training year. Subsequent virtual and in-person educational session demonstrated improvement in confidence scores. There was no statistical significance between the virtual and in-person improvement in confidence scores.

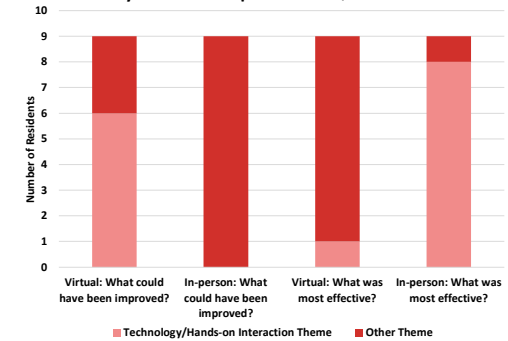
Disaster Medicine Topics: Initial Survey	Mean Confidence Score (0-10)	P value: PGY level
Patient Triage	3.6	0.44
Hospital Protocols	2.6	0.09
Resident Role	2.7	0.52
Patient Care	3.0	0.8

Disaster Medicine Topics: Post-Survey	Mean Confidence Score (0-10)	P value: Virtual vs In-person
Patient Triage	5.7	0.24
Patient Care	5.8	0.11

Results (Continued)

However, key themes were identified in open-ended questions on the post-survey regarding technology and in-person interactions. 66.7% of the virtual subset emphasized education was hindered by technical limitations and absence of hands-on interactions. In contrast, most of the in-person residents (88.9%) regarded the ability to interact hands-on advantageously.

Key Themes of Open-ended Questions



Conclusion

Residents are enthusiastic to close the educational gap of disaster medicine, but stressed that although virtual education can provide a foundation, in-person simulation is preferred for effective training.



Developmental Delay Chart Review From CHC Clinic

AJ Cohen, D Felten, S Berger; Children's National Hospital

Background

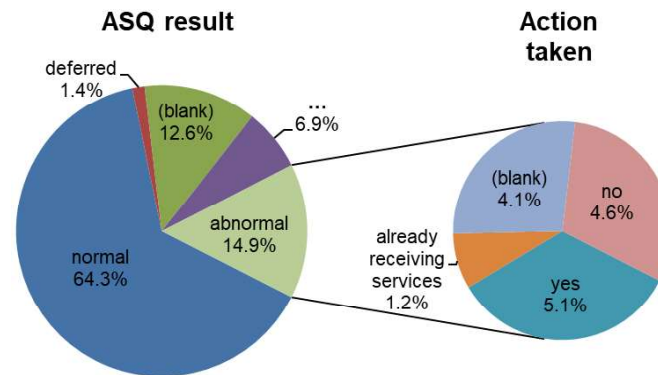
- Developmental delay is a common issue, estimated to affect >800,000 children under 5yo in the USA
- The AAP recommends that developmental screening is performed for all children at 9, 18, and 30-month check ups
- There are many well established risk factors for developmental delay. However, many children with developmental delay do not have identified risk factors, highlighting the value of universal early screening
- The short and long term outcomes for children without identified risk factors after abnormal developmental screening are poorly understood

Methods

- Identify 9- and 18-month visits occurring in 2014 in the Children's Health Centers (CHC) clinics with abnormal developmental screening on the Ages & Stages Questionnaire (ASQ) charted in E-Clinical Works (ECW)
- Review ECW notes preceding the 9- or 18-month visit to identify pre-existing medical conditions and risk factors
- Review ECW notes through the five year well child check to identify children who had further evaluation for developmental delay and who received supportive services or interventions
- Review specialty clinic notes in Cerner following the 9- or 18-month visit, and catalog workup, including imaging, laboratory testing, and genetic testing

Results

- 2189 unique patients had a 9- or 18-month well child check in 2014
- ASQ screening field was marked as "normal" for 1407 patient, "deferred - known developmental delay, receiving services" for 30, blank for 275, "..." (the default field entry) for 150, and "abnormal" at least once for 327 patients (Figure, left)
- Of 327 patients with ASQ result marked as abnormal, action taken field was marked as "yes" for 111 patients, "already receiving services" for 27, blank (the default) for 89, and "no" for 100 patients (Figure, right)



- The majority of patients had an identifiable risk factor prior to abnormal developmental screening, the most common of which was prematurity
- In the subset of patients reviewed, less than half were documented as receiving early intervention at any point through their 5 year well child check

- In the subset of patients reviewed, more than half had documentation of ongoing concern for delays at some point between their abnormal developmental screening and their 5 year old well child check
- In the subset of patients reviewed, the most common specialist referrals were to developmental pediatrics and audiology

Discussion

- A significant minority of patients had abnormal developmental screening at their 9- or 18-month well child checks
- Given that patients with the screening documentation field left as default may in fact have had abnormal screening, the proportion of CHC patients with may be as high as 1/5
- Only a small proportion of children with abnormal screening referred to early intervention were charted to have received services. It is unclear if this reflects limited interest among families, barriers to enrollment, low rates of follow up/documentation at following well child checks, or a low specificity of the screening tool used in the CHC population

Acknowledgements

Thank you to CNH REACH program, and ECW research team for their assistance with patient cohort extraction





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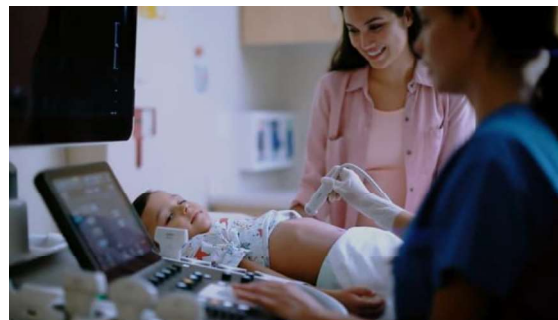
A Brief Educational Intervention in Point of Care Ultrasound (POCUS) is Effective in Sustainably Improving Participant Knowledge and Confidence at the Pediatric Trainee Level.

Marc A. Delaney, MD; Angela Maxwell, MD; Sonali Basu, MD

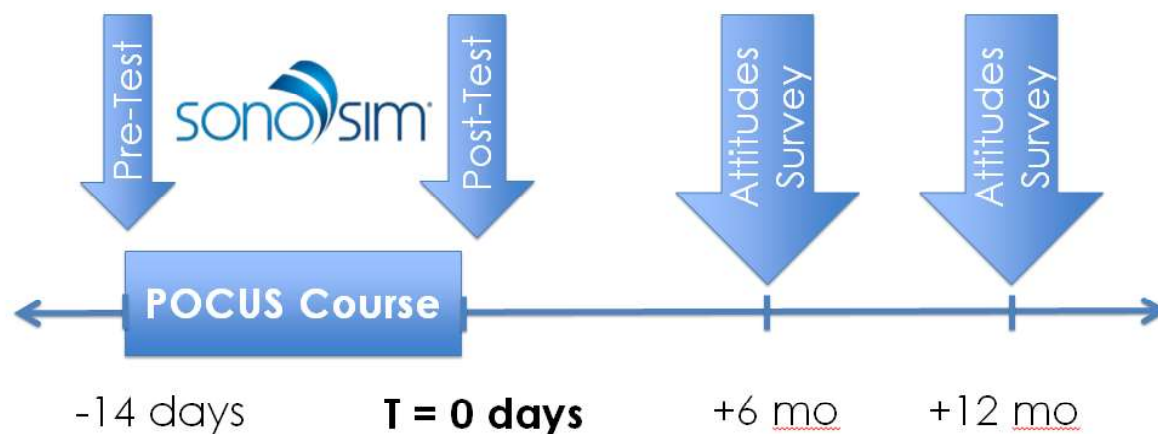


Background

- POCUS in pediatrics can improve patient care.
 - Physical exam and diagnostics
 - Procedural guidance
- Brief POCUS educational courses are common in *adult* post-graduate training.
- We hypothesized that **a brief POCUS course** would...
 - **Sustainably** increase POCUS **knowledge** and **confidence** in...
 - Indications
 - Image acquisition
 - Interpretation
 - Application to clinical context.

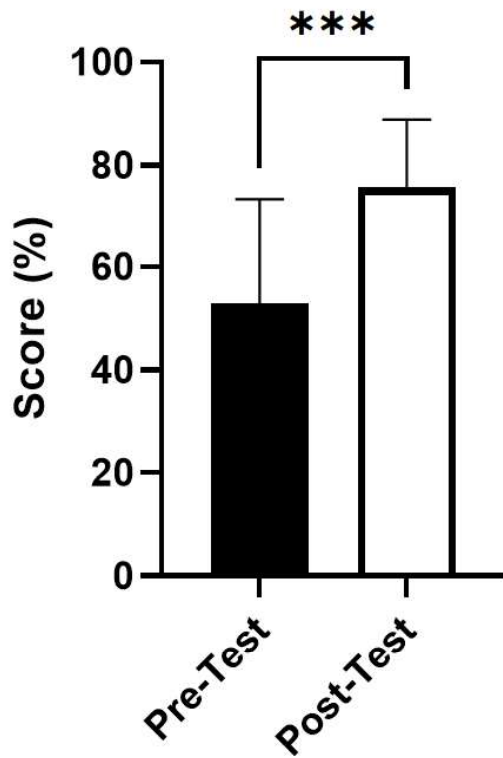


Methods

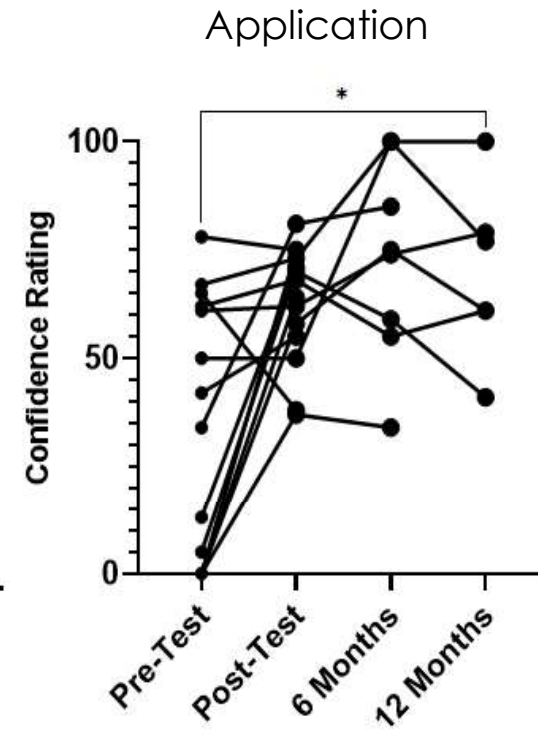
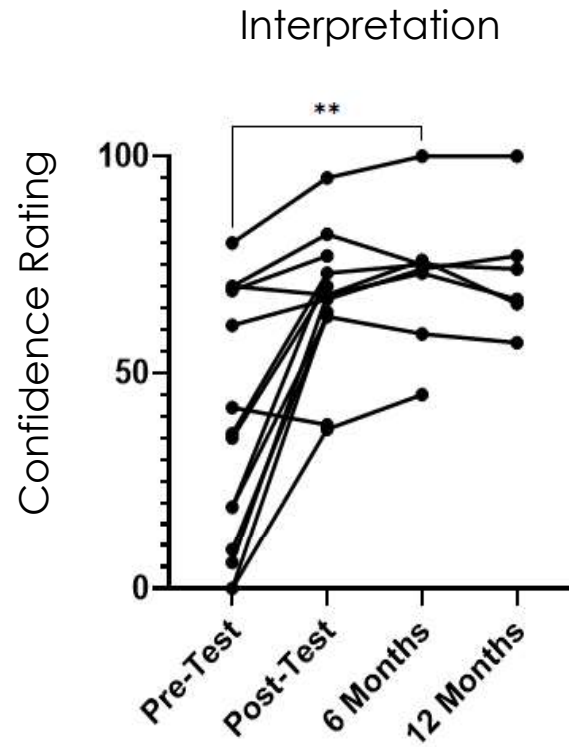


Results

Knowledge



Confidence



Conclusions

- A 2-week POCUS Course at the **trainee level...**
 - improved **knowledge** and instilled **longitudinal confidence**
- This is a **promising** strategy to bring **the benefits of POCUS to the future of pediatrics.**

- **Future Directions:**
 - Expand sample size, improve “feasibility”
 - Preceptor observation /objective assessments
 - Use data or Patient Experience / outcomes endpoints

Acknowledgements: *Thank you!*

- CTI-CN department of Biostatistics, Epidemiology, and Research Design (BERD)
- ED Scan staff: Drs. Cohen, Abo, Maxwell, Patel, Thomas-Mohtat, and ER/US fellows!
- Association of Pediatric Program Directors (Mid-Atlantic Chapter) Resident Research Grant
- Angelica Despain, MD; Paul Arichai, MD; April Slamowitz, MD





BACKGROUND

- Since the COVID-19 pandemic disruption, adolescents have increased participation in risk-taking behaviors, such as those related to sexual activity.
- While parent-adolescent communication surrounding reproductive health can delay sexual debut and decrease risky behaviors, these conversations remain daunting, often leading to parents offering vague advice or avoiding topics altogether.
- Group sessions between parents and pediatric providers can improve parent comfort surrounding these topics, but these in-person meetings must now evolve to incorporate social distancing mandates.

OBJECTIVE

- To determine the efficacy and impact of using Zoom-videoconferencing as a platform to educate parents of early adolescents on communicating effectively with their children regarding conversations surrounding sex topics.

METHODS

- Subjects: parents of adolescents aged 11- to 14-years-old, recruited from three different Children's Health Center adolescent clinics (N=28).
- Intervention: one-hour group Zoom session with a pediatrician and parents.
- Topics: how to initiate conversations, overcome discomfort/barriers to conversations, find reliable resources on sexual health topics.
- Primary outcomes: Parents' acceptability/perceived usefulness of the Zoom-based education session and overall comfort level on conversations with their early adolescent children before and immediately after intervention.

RESULTS

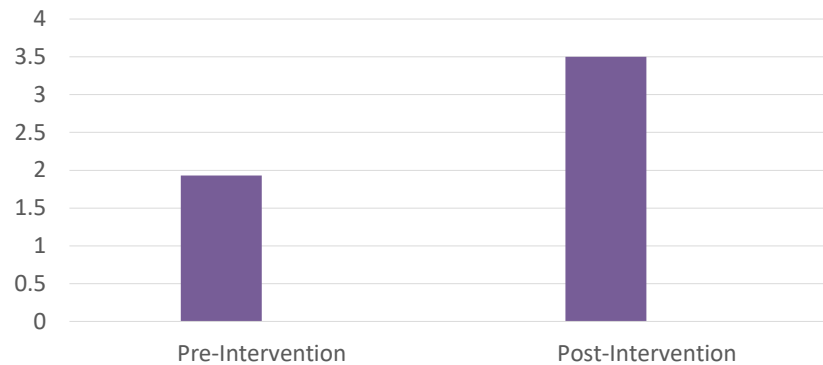
Overall comfort-level and perceived barriers

- Increase in overall comfort-level observed by parents post-intervention and decrease in perceived barriers to discussing sexual health with their teens/preteens

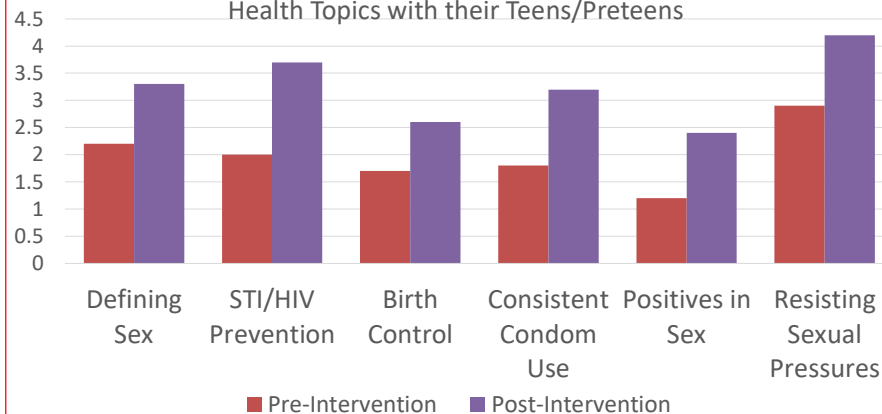
Comfort-level in specific topics

- Increase in parental comfort in all the following subjects: defining sex, STI/HIV prevention, birth control, consistent condom use, positives in sex, and resisting sexual pressures.

Average Overall Parental Comfort-Level in Discussing Sexual Health with their Teens/Preteens



Average Parental Comfort-Level in Discussing Specific Sexual Health Topics with their Teens/Preteens



DISCUSSION

- This study supports the use of brief group sessions with parents of teens/preteens can be an effective way to deliver education about how parents can more comfortably discuss topics about sexual health.
- It suggests that Zoom-videoconferencing can be a relatively convenient way to host group health education sessions in the future, particularly in times of social distancing requirements.

LIMITATIONS

- Study did not evaluate decrease in sexual risky behaviors of teens/preteens after conversations with parents.
- Difficult to control for bias as presentation was given to parents who expressed interest in learning how to speak to their teens/preteens about sexual health
- Study did not evaluate longevity of comfort-level or change in opinion after the intervention

ACKNOWLEDGEMENTS

A special thank you to the Children's National REACH program, Adolescent Medicine, and AHC, CHC @ THEARC, and CHC @ Anacostia.

Factors Associated With Psychiatric Readmissions in Children and Adolescents

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Children's National

BACKGROUND

Mental health disorders account for 10% of hospitalizations in children & adolescents. Nearly 1/3 of youth will be readmitted within 1 year of discharge from inpatient psychiatric settings. Readmissions are burdensome and costly to patients, families and the health care system. Studies examining factors associated with readmission reveal inconsistent results, and few have investigated predictors of multiple readmissions.

OBJECTIVE

As part of a quality improvement (QI) initiative to decrease psychiatric readmissions, this study aimed to characterize rates of readmission and factors associated with readmission.

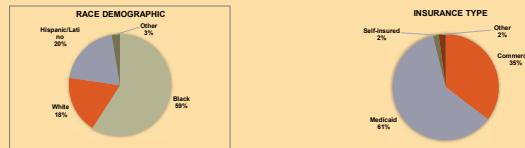
METHODOLOGY

A medical record query was performed to obtain psychiatric admission data for pediatric patients admitted to a large children's hospital from July 2017-July 2019. Patients were excluded if they had a psychiatric admission within one year prior to their first admission in the study period. The following factors were analyzed to assess their impact on readmission outcomes; age, race, length of stay (LOS), insurance type, primary psychiatric diagnosis, and suicidality. For our outcome measure, we calculated how many readmissions each patient had within 1 year of their initial discharge date. Count of readmissions was recoded into a binary (none vs. any readmission) as well as an ordinal categorical (0 vs 1 vs ≥ 2 readmissions) variable. Logistic regression was performed to analyze factors associated with any readmission within 1 year. A multinomial logistic regression was performed to analyze factors associated with ordinal category-membership in terms of number of readmissions (0, 1, or ≥ 2).

RESULTS

DEMOGRAPHICS

A total of 1,604 patients were included in the study. The demographic characteristics of the study participants are as follows: most participants were adolescent, self identified as Black race, English-speaking, and Medicaid-insured.



CLINICAL FACTORS

The clinical characteristics of the study population included mostly youth diagnosed with mood disorder, and who had a length of stay <7 days. Half of all participants had suicidal ideation or attempt at admission.



READMISSION RATES

Overall, 248 patients (15.4%) were readmitted within 1 year of their index admission; of those 174 (10.8%) were readmitted once and 74 (4.6%) admitted ≥ 2 times.

ASSOCIATIONS BETWEEN PREDICTORS & READMISSION RISK

Estimated Odds Ratios for Multivariate Logistic Regression Model of Any Readmission within 1 Year, by Significant Demographic and Clinical Factors (Figure 1)

	Any Readmission within 1 Year	95% CI	p
n=1604	ACR		
Race			
Black	1.82	1.17 - 2.83	0.007
Hispanic	1.29	0.77 - 2.17	0.33
White+other	ref		
Insurance Type			
Commercial+other	ref		
Medicaid	1.51	1.09 - 2.08	0.01
Length of Stay			
0-3 days	ref		
>7 days	1.58	1.19 - 2.1	0.002

Estimated Odds Ratio for Random Effects Multinomial Logistic Regression Model of Readmissions within One Year, by Significant Demographic and Clinical Factors (Figure 2)

	Readmitted Once vs. None			Readmitted 2 or More Times vs. None		
	ACR	95% CI	P-value	ACR	95% CI	P-value
n=1604						
Race						
Black	1.68	0.99 - 2.85	0.08	2.48	0.99 - 6.2	0.05
Hispanic/Latino	1.55	0.85 - 2.84	0.16	0.96	0.31 - 2.97	0.94
Other	1.32	0.43 - 4.09	0.63	0	0 - 1	
Unknown						
White	ref			ref		
Insurance type						
Commercial	ref			ref		
Medicaid	1.2	0.82 - 1.74	0.34	1.91	1.02 - 3.57	0.04
Self	0	0 - 1	0	0 - 0	0 - 0	
Other	0.64	0.15 - 2.77	0.55	1.06	0.13 - 8.43	0.95
Length of stay						
0-7 days	ref			ref		
>7 days	1.44	1.03 - 2.01	0.03	1.92	1.19 - 3.1	0.01

The odds of any readmission within 1 year were 1.82 times higher for Black patients; 1.51 times higher for Medicaid insured patients; and 1.58 times higher for patients with length of stay >7 days. (Figure 1)

Odds of being readmitted 2 or more times were 2.48 times higher for Black patients; 1.91 times higher for Medicaid insured patients; and 1.92 times higher for patients with length of stay >7 days. (Figure 2)

CONCLUSION

This retrospective secondary data analysis revealed that Black race, Medicaid status and a longer length of stay were each independently associated with higher odds of any readmission. The strength of the relationship increased when assessing the risk of multiple readmissions in a one year period.

Age, language, suicide attempt, suicidal ideation, and psychiatric diagnosis category were not associated with increased odds of readmission.

The study findings highlight a disparity in mental health outcomes for youth who are Black and Medicaid-insured. Further research investigating the impact of race, socioeconomic status, and other social factors will prove critical in identifying ways to address treatment gaps, barriers to care, systemic inequities and potential stigma associated with seeking mental health care for high risk groups.

FUTURE IMPLICATIONS

The results of this study will be used to inform the design of our transitional care coordination pilot program which was developed to facilitate connections from inpatient to outpatient mental health treatment and to reduce psychiatric readmissions.

It is important that the pilot program uses a racial and health equity lens when assessing risk and developing target interventions. Further characterization of the intervening period between initial discharge and subsequent re-admission may be warranted to inform future QI interventions.

ACKNOWLEDGEMENTS

The Robert H. Parrot REACH Program, The Alexander and Margaret Stewart Trust, Anqing Zhang, PhD; Jaeho (Thomas) Chang, and DC Mental Health Access in Pediatrics Program.

Health Care Utilization in Children with Asthma with Limited English Proficiency in Washington, DC

Mickey Emmanuel, MD, Rachel Margolis, PhD, Nikita Kachroo, AE-C, Stephen Teach MD, MPH, Kavita Parikh, MD, MSHS

Background

- Asthma continues to disproportionately affect minority and low-income children with disparity in asthma outcomes
- Few studies have looked at limited English proficiency (LEP) and its risk as it contributes to healthcare utilization in asthma
- Studies have suggested that LEP, not specific to Asthma patients, can lead to unnecessary admissions, poor health outcomes, worse postoperative pain, and longer hospital length of stay

Objective

The objective of this study is to determine the association between LEP and healthcare utilization for children with asthma in Washington, DC.

Methods

- This study utilizes the Children's National Hospital Asthma Registry, a population-level disease specific registry of patients with asthma in the District of Columbia
- Exposure variable of English proficiency/Limited English Proficiency was defined by the language noted in the Registry for the patient through various encounters.
- Primary outcome is healthcare utilization, defined specifically as emergency department (ED) visits or hospitalizations for asthma in 2019.
- Poisson multi-variate analysis is used to determine relationship of language proficiency and healthcare utilization, controlling for race/ethnicity, age, insurance status and diagnosis of persistent asthma.

Results

OVERALL RESULTS:

- Limited English Proficiency in patients with Asthma in 2019 was associated with increased risk of Emergency Department visits in the total population
- In the Hispanic subset of population in Washington DC, Limited English proficiency was associated with both increased Emergency Department visits as well as Hospitalizations for Asthma in 2019

FULL SAMPLE (N=16174)			HISPANIC SUBSET (N= 1696)		
	Adjusted Relative Risk (95% CI)			Adjusted Relative Risk (95% CI)	
	ED VISITS	HOSPITALIZATIONS		ED VISITS	HOSPITALIZATIONS
Age Group			Age Group		
• 2-11 yo	Reference	Reference	• 2-11 yo	Reference	Reference
• 12-17 yo	0.39 (0.36-0.42)***	0.30 (0.26-0.33)***	• 12-17 yo	0.39 (0.30-0.49)***	0.13 (0.08-0.22)***
Sex			Sex		
• Male	Reference	Reference	• Male	Reference	Reference
• Female	1.03 (0.97-1.10)	1.08 (0.99-1.18)	• Female	0.94 (0.78-1.13)	0.82 (0.63-1.06)
Race/Ethnicity			Insurance		
• White	Reference	Reference	• Private	Reference	Reference
• Black	1.74 (1.40-2.17)***	0.88 (0.67-1.14)	• Public	2.03 (1.36-3.02)***	4.06 (1.87-8.81)***
• Hispanic	1.58 (1.22-2.04)***	0.83 (0.60-1.14)	• Multiple payers	0.77 (0.47-1.28)	2.03 (0.87-4.75)
• Other/unknown	1.64 (1.30-2.06)***	1.05 (0.80-1.38)	• Self-pay/other/unknown	1.07 (0.58-1.98)	1.11 (0.32-3.82)
Insurance			Persistent Asthma		
• Private	Reference	Reference	• No	Reference	Reference
• Public	2.27 (2.00-2.57)***	2.93 (2.41-3.57)***	• Yes	1.76 (1.46-2.13)***	3.02 (2.36-3.87)***
• Multiple payers	1.92 (1.67-2.21)***	2.91 (2.36-3.58)***	Limited English Proficiency		
• Self-pay/other/unknown	1.14 (0.93-1.39)	1.26 (0.92-1.72)	• No	Reference	Reference
Persistent Asthma			• Yes	1.42 (1.14-1.78)***	2.21 (1.56-3.16)***
• No	Reference	Reference			
• Yes	2.01 (1.90-2.13)***	4.37 (4.00-4.79)***			
Limited English Proficiency					
• No	Reference	Reference			
• Yes	1.08 (0.97-1.33)	1.49 (1.20-1.85)***			

Discussion

- Limited English Proficiency in families was associated with higher risk of Emergency Department visits in patients with Asthma in 2019, and also associated with increased hospitalizations in the Hispanic subset of the population
- Describes a vulnerable population in Washington, DC and potentially broader that requires increased investment in resources and research to determine what specific barriers due to limited English proficiency contribute to higher risk of ED visits and hospitalizations
- Emphasizes that more research is necessary to determine how best to utilize resources to alleviate barriers in care of families with LEP

Limitations

- Single center study that is limited to population in Washington, DC
- Only covers data collected in 2019
- Definition of language obtained from objective chart data without qualitative context

References

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BACKGROUND

- Vaccine coverage in the US remains below Healthy People 2020 goals, and disparities among pediatric populations continue to exist.
- The estimated 2.5 million homeless children in the U.S. may be particularly at risk for vaccine-preventable diseases due to potentially crowded or unsanitary living conditions.
- The factors that may limit their access to vaccinations remain unknown.

OBJECTIVES

Identify parental barriers to and concerns about vaccination among homeless families, as well as sources of vaccine information, and use of government regulated or supported services that may impact vaccination uptake.

DESIGN & METHODS

We interviewed 135 parents of children ages 19-35 months at emergency homeless shelters, transitional housing and diaper dispensaries who were homeless for ≥30 days in Washington, DC. We determined each child's up-to-date (UTD) status with the combined vaccination series 4:3:1:3:3:1:4 (≥4 DTaP, ≥3 IPV, ≥1 MMR, ≥3 Hib, ≥3 HepB, ≥1 Var and ≥4 PCV) using medical records obtained from all their prior healthcare providers.

RESULTS

Demographics:

- Most participants were female (94.8%), African American (91.9%), single (83.0%), unemployed (69.6%), had a high school education/GED (65.9%), and had other children (79.3%).
- Median age of parent was 27 years (IQR 24 - 34) and of child was 26 months (IQR 21 - 31).
- Nearly all children were publically insured (96.3%).

UTD status:

- Only 69 (51.1%) of children were UTD.
- Most children had a medical home (92.6%), which was associated with being UTD (98.6% vs. 86.4%, $p < 0.05$).

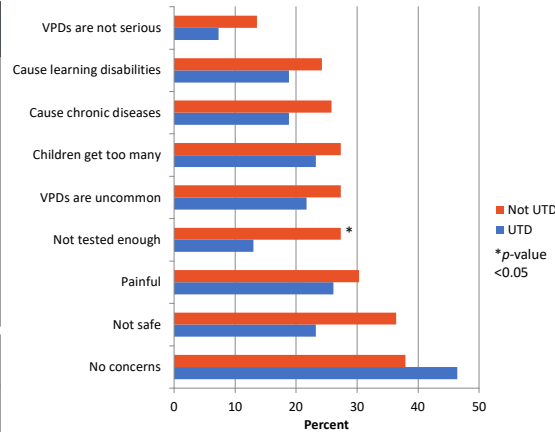


Figure 1. Parental concerns about vaccines and vaccine preventable diseases (VPD) among up-to-date (UTD) and not UTD children

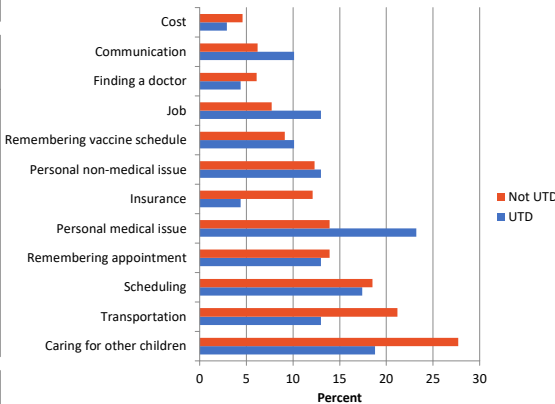


Figure 2. Moderate or extreme barriers to vaccination among up-to-date (UTD) and not UTD children

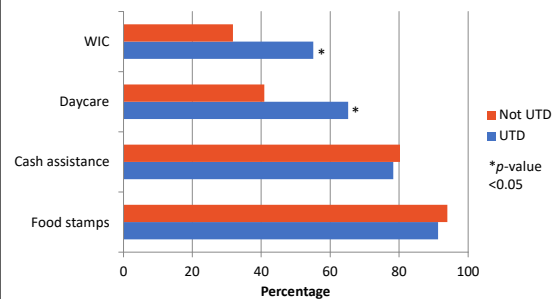


Figure 3. Enrollment in government regulated or supported services among up-to-date (UTD) and not UTD children
Note: WIC: Special Supplemental Nutrition Program for Women, Infants, and Children.

RESULTS

Concerns & Barriers (Figs. 1 & 2):

- Most parents had at least one concern (57.8%).
- A lower percentage of children whose parents were concerned about inadequate vaccine testing were UTD compared to children whose parents were not concerned (13.0% vs. 27.3%, $p < 0.05$).
- The most common barriers were getting a convenient appointment time (46.3%), remembering appointments (44.8%), and getting transportation to the office (44.4%).
- The most common moderate or extreme barriers were caring for other children (23.1%), dealing with a personal medical issue (18.7%), getting a convenient appointment time (17.9%), and getting transportation to the office (17.0%).

Sources of Information:

- The most trusted sources of vaccine advice were a healthcare provider (57.8%), partner/spouse or other parent (33.3%), and family member (23.0%).

Services Utilized (Fig. 3):

- Using a licensed daycare/childcare voucher and WIC were associated with being UTD (65.2% vs. 40.9% and 55.1% vs. 31.8% respectively, $p < 0.05$). These two services were utilized by roughly half of the participating families.



CONCLUSIONS

- Parental concerns related to vaccine safety may contribute to lower vaccination coverage and under-immunization among homeless children.
- Reducing the logistical burden of healthcare visits may improve vaccination compliance among homeless children.
- Helping homeless families access licensed daycare centers and WIC—which require some evidence of vaccination for eligibility—may also increase coverage.



Children's National

Quantification of the Burden of Hypoxic Ischemic Encephalopathy in Bahir Dar, Ethiopia

Danielle Gladstone MD, Kathy Ferrer MD, Alamirew Alebachew MD, Eiman Abdulrahman MD MPH
Children's National Medical Center and Bahir Dar University

BACKGROUND

- Sub-Saharan Africa continues to experience rates of neonatal asphyxia, or hypoxic ischemic encephalopathy (HIE), in excess of the global average.
- This oxygen deprivation to the brain at birth leads to short-term and long-term consequences, impacting individuals, families and communities.
- In partnership with Tibebe Ghion Specialized Hospital, Children's National Hospital established a collaboration to determine the burden of neonatal asphyxia and evaluate the need for further education regarding neonatal resuscitation.

OBJECTIVE

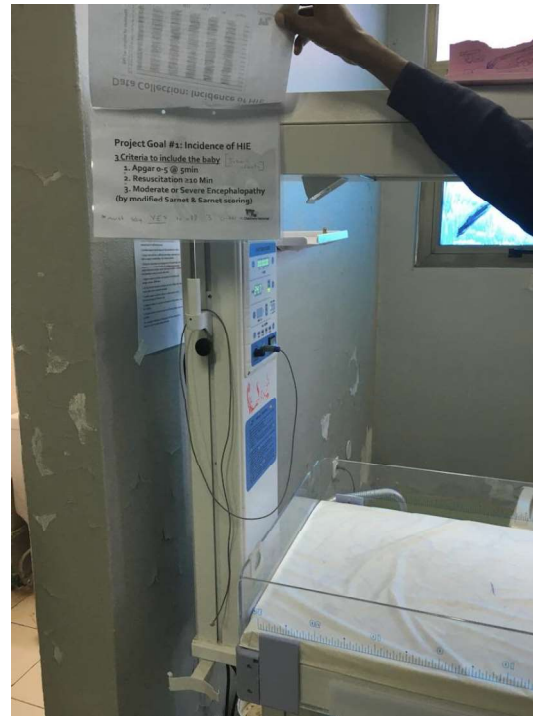
A multidisciplinary team of pediatricians, OB/GYNs, midwives, quality improvement (QI) researchers and regional public health experts planned to quantify baseline HIE data of inborn infants from Tibebe Ghion Specialized Hospital, a public hospital outside of Bahir Dar, Ethiopia, and compare it with previously collected data by the QI department and Amhara Regional Health Bureau. The project also sought to provide education regarding neonatal resuscitation to the Pediatric Residents of Bahir Dar University.

METHODS

- A data collection tool designed to assess the incidence of infants with HIE born within the hospital used "x" marks for infants meeting criteria (low APGARs, prolonged resuscitation, abnormal neurological exam), with other nonidentifiable patient data (date of birth and APGARs) to ensure accurate counting.
- Due to time constraints, pediatric residents were trained to collect data and simultaneously provided with hands on education of modified Neonatal Resuscitation Protocol and Helping Babies Breathe using Global Health Media Project videos.

RESULTS

Due to challenges with international IRBs and the inability to travel internationally during the COVID-19 pandemic, intended data has not yet been collected. Preliminary analysis of the previously collected data provided to the team by the Amhara Regional Bureau reveals elevated incidence in comparison to other regions but will not be shared due to pending study results, IRBs and interdisciplinary agreements. Quantification of the regional burden of neonatal asphyxia is crucial to leveraging data to gather resources.



DISCUSSION

- This study supports the continued multi-site collaboration of institutions across the world in order to promote public health measures with a global health approach.
- All institutions around the world face distinct challenges in improving newborn health, but site assessments should be done prior to designing interventions, in order to confirm that expected outcomes align with a community's goals.
- Local data collection is crucial for applying for and obtaining additional resources, as showing a need is the first step in obtaining internal or external funding.

LIMITATIONS

- HIE and need for cooling at Children's National is defined using advanced lab data, which is not currently available or in use in Bahir Dar, meaning that this will not be directly comparable to data sets obtained using distinct definitions of HIE

FUTURE DIRECTION

Continued collaboration between Children's National and Bahir Dar University, with the emphasis on sharing of knowledge, best practices and cross-cultural training of residents.

ACKNOWLEDGEMENTS

A special thank you to the Children's National REACH program, Bahir Dar University, and the GHI Resident Travel Grants.

EQUITABLE ACCESS TO CAR-T CELL TRIALS: AN ANALYSIS OF PATIENT DEMOGRAPHIC AND SOCIOECONOMIC FACTORS AT A SINGLE INSTITUTION

Oren Gordon, Anurekha Gollapudi, Hema Dave

Background:

Demographic factors, such as race, ethnicity, and socioeconomic status (SES), have been shown to be associated with inferior outcomes in pediatric acute lymphoblastic leukemia (ALL) patients. Low SES is an independent predictor of relapse and previous studies have shown that patients with low SES are also less likely to enroll on clinical trials. However, these studies have primarily focused on conventional chemotherapy trials, and data regarding trial participation for novel cellular therapies is lacking. Given the limited number of pediatric cellular therapy centers and associated travel-related costs, these therapies may not be equally accessible to all patients.

Objective:

To describe the demographic and socioeconomic characteristics of patients accessing chimeric antigen receptor-T cell (CAR-T) trials for pediatric ALL.

Design/Method: Retrospective chart review was performed on all patients with ALL diagnosed between 2012 and 2018 and treated at Children's National.

Demographic data (including self-reported race/ethnicity and distance traveled to receive treatment) were collected for each patient and analyzed using descriptive statistics. For patients residing within the United States, ArcGIS NSES Index software was used to assign SES score by census tract (0-100, with 50 as the national average).

Results:

Our cohort included 188 patients with 109 males (58%). Our patient population had no self reported racial majority with 30.9% reporting as White, 22.9% Black or African American and 6.9% Unknown. In addition, 39.7% reported Other for race and Hispanic or Latino for ethnicity. The median distance traveled to CAR-T therapy was 92.5miles (IQR: 191, 2802) and 731 miles (IQR: 81.5, 1636) for the entire cohort and domestic patients, respectively. Median SES score was 53.3 (IQR: 46.45, 65.75), with only 2.5% of patients falling in the lowest quartile (SES <25).

Conclusion:

Only 2.5% of domestic patients treated at our center were in the lowest SES quartile, suggesting economic barriers to participation in CAR-T cell trials. Patients traveled long distances to participate, likely representing a financial burden which could deter patients with lower SES from enrolling in CAR-T cell trials. We plan to collect similar data from additional institutions to assess whether these findings are consistent across regions.



Evaluating for artesunate resistance in Malawian children with cerebral malaria

Geoffrey Guenther¹, Alexuse Saidi², Rima Izem³, Xiaojun Chen⁴, Karl Seydel^{2,5}, Douglas Postels^{2,6}

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⁵ Michigan State University College of Osteopathic Medicine
⁶ Division of Neurology, Children's National Hospital

Background

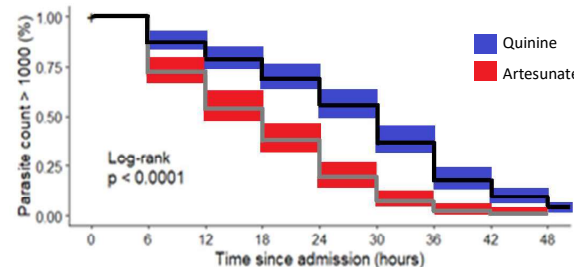
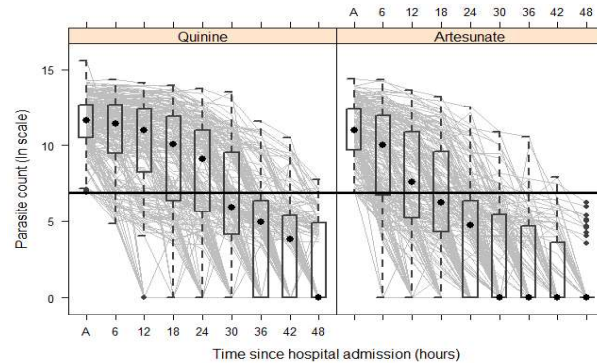
- Artesunate (an artemisinin) is first-line treatment for severe malaria since the 2010s
- In southeast Asia, *P. falciparum* has significant resistance to oral artemisinins
- Artemisinin resistance-conferring mutations in *P. falciparum* have recently been found in Africa, but so far no clinically-significant resistance is known

Objective:

Assess and compare parasite clearance time across years since the introduction of artesunate in Malawi in 2014

Methods / Design

- **Design:** retrospective cohort study
- **Methods:** Determine population time from admission to parasite density < 1000/ μ l for each calendar year, then compare to 2014
- **Population:** Children 6 months to 14 years admitted to Queen Elizabeth Central Hospital (Blantyre, Malawi) with cerebral malaria

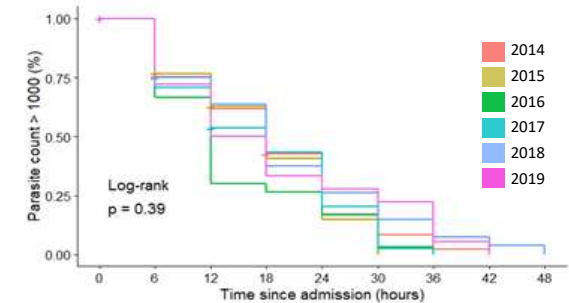


Survived & parasite count > 1000 (%)

■	100	95	80	70	61	48	32	15	8
■	100	97	69	51	35	18	7	2	0

Results / Discussion

- No significant change in parasite clearance time between 2014 and 2019
- No association between time to reach parasite density of < 1000/ μ l and risk of mortality



Conclusion: In Malawian children with cerebral malaria, evolving resistance to artesunate from 2014 to 2019 is unlikely

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Post-malarial anemia is rare in Malawian children with cerebral malaria

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 5 Division of Neurology, Children's National Hospital

Background

- Post-artesunate hemolysis (PAH) is severe hemolysis several weeks after treatment
- PAH is common in adult returning travelers
- Children in malaria-endemic areas: PAH less common, but incidence varies by malaria severity and type of severe malaria syndrome

Methods / Design

- **Design:** retrospective cohort study
- **Cases:** 2014-2019, received artesunate (n=235)
- **Controls:** 2010-2013, received quinine (n=258)
- **Population:** Children 6 months to 14 years admitted to Queen Elizabeth Central Hospital (Blantyre, Malawi) with cerebral malaria

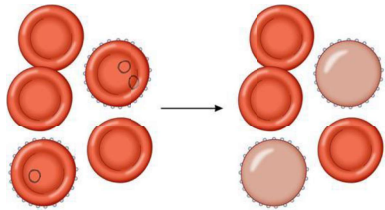
Results / Discussion

- Post-malarial Hct drop: **5.3% (4.7% quinine, 5.8% artesunate, p value = 0.582)**.
- Risk factors: higher Hct on admission, lower qHRP2 level, splenomegaly
- 23.1% of children with Hct drop had positive malaria smear; 0 needed transfusion

Objective:

Determine the incidence and severity of post-artesunate anemia in Malawian children surviving cerebral malaria

Conclusion: In Malawian children surviving cerebral malaria, post-treatment anemia is rare, mild, and unassociated with the antimalarial treatment the patient received



The mechanism of PAH:

- Artesunate kills blood-stage parasites, → removed from RBCs by the spleen
- Previously infected RBCs resealed instead of lyse
- Previously infected RBCs remain "pitted" in circulation with a lifespan of 7-21 days
- Sudden clearance by spleen leads to single hemolytic episode

Figure from: Arquin PM. Case definition: postartemisinin delayed hemolysis. *Blood*. 2014 Jul 10;124(2):157-8



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Clinician Experiences with a Food Insecurity Protocol in a Large Urban Pediatric Primary Care Network

Sarah Haley Gross, MD; Robert McCarter, ScD; Mark Weissman, MD; Michaela Morton, MPH; and Kofi Essel, MD, MPH

Children's National Hospital

Objective

- The purpose of this study was to evaluate the impact of a recently-implemented food insecurity (FI) management protocol on clinician practices and attitudes at a large urban pediatric primary care network in Washington, DC.

Background

- FI affects 10.5% of households and 1 in 6 children in the US
- Populations at higher risk include those with incomes near the FPL, children of single parent households, families in urban or rural settings, as well as African American and Hispanic headed households in direct association with structural racism and systemic injustices.
- Health impact of FI on include but are not limited to iron deficiency, decreased bone density, poorer growth, obesity, increased physical illness, decreased IQ attainment, poor school performance, behavior problems, dysthymia and suicidal ideation.
- The AAP recommends universal screening and intervention to address FI. The AAP also suggests using a simplified 2 question validated screener (Hunger Vital Sign™) to detect FI, assigning an ICD-10 diagnosis code Z59.4 (lack of access to adequate food and water), and noting interventions in the EMR.

Methods

- 2019, a cross sectional analysis was conducted of clinician knowledge, behavior, and attitudes 2 years after implementation of a FI clinical protocol.

Results

-Thirty-five primary care clinician respondents reported universal screening for FI (100%) at well child checks. However, on average only 50% of clinicians reported adding FI to the problem list, only 14% of families reported resolution of FI on rescreening and only 23% of families indicated provided resources met their needs. After implementation of a comprehensive FI protocol, knowledge and awareness improved but the lack of closed loop communication made successful management difficult in the primary care setting.



Image source: <https://www.independent.com/2017/02/24/welc-ome-department-food-security/>

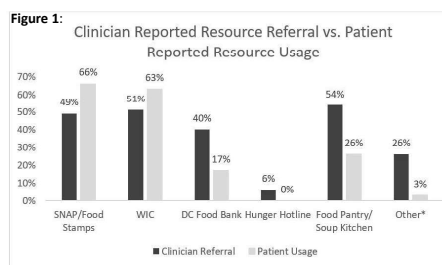


Table 1. Responses to Food Insecurity (FI) Detection, Documentation and Referral

Food Insecurity Knowledge Level	Total	WCC	Sick Visits	All visits	Concern	Chi square
When Clinicians screen for FI	34 (97%)	1 (3%)	1 (3%)	1 (3%)	15 (43%)	0.305
Number of families with + FI screen/month	9 (26%)	6 to 10	6 to 10	11 to 15	16+	0.311
Attend/view any of the following	6 (17%)	Didactic*	SD**	Guide***	None	0.596

Key: * Didactic Training **Self Directed training on local and federal referrals and interventions *** Resource Guide in hard copy given to clinicians to reference

-Stratification on physician self reported knowledge level showed statistically significant differences in rates of documentation of FI, rates of adding FI

to the problem list of patients, and rates of referring to emergency food resources; those who rated themselves as very/moderately knowledgeable had increased performance in all three questions. See below in table 2.

Table 2 Likert Scaled Responses to Food Insecurity (FI) Detection, Documentation and Referral by Clinician FI Knowledge

Food Insecurity Knowledge Level	Very/Moderately Knowledgeable			Somewhat/Not Knowledgeable			Total			p-value	
	Always/Often	Sometimes	Rarely/Never	Always/Often	Sometimes	Rarely/Never	Always/Often	Sometimes	Rarely/Never		
On an average month, how often do you:	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	Chi square	Linear trend
Document FI using ICD-10 Code	17 (70.8)	4 (16.7)	3 (12.5)	3 (27.3)	4 (36.4)	4 (36.4)	20 (57.1)	8 (22.9)	3 (20.0)	0.051	0.018
Add FI to Problem List	16 (66.7)	5 (20.8)	3 (12.5)	1 (10.0)	5 (50.0)	4 (40.0)	17 (50.0)	10 (29.4)	7 (20.6)	0.031	0.004
Document FI Resources in EMR	17 (70.8)	6 (25.0)	1 (4.6)	5 (45.5)	4 (36.4)	3 (18.2)	22 (62.9)	10 (28.6)	3 (8.6)	0.241	0.118
Referral of FI to Federal Nutrition Prog	10 (41.7)	8 (31.4)	6 (25.0)	6 (54.6)	3 (27.3)	2 (18.2)	16 (45.7)	11 (31.4)	8 (22.9)	0.773	0.491
Referral of FI to Emergency Resources	15 (62.5)	3 (12.5)	6 (25.0)	6 (54.6)	3 (27.3)	0 (0.0)	21 (60.0)	8 (22.9)	6 (17.1)	0.04	0.855
Referral of FI to Specialist	8 (33.3)	12 (50.0)	4 (16.7)	3 (27.3)	3 (27.3)	5 (45.5)	11 (31.4)	15 (42.9)	4 (16.7)	0.18	0.224
In Prior FI, how often:											
Families Report Resolution of FI	4 (20.0)	13 (65.0)	3 (15.0)	1 (14.3)	3 (42.9)	3 (42.9)	5 (18.5)	16 (59.3)	6 (22.2)	0.312	0.233
Clinician Ask if Referrals Met Needs	7 (29.2)	5 (20.8)	12 (50.0)	1 (9.1)	4 (36.4)	6 (54.6)	8 (22.9)	9 (25.7)	12 (51.4)	0.354	0.496
Families indicate Referrals Met Needs	5 (23.8)	7 (33.3)	9 (42.2)	0 (0.0)	4 (44.4)	5 (55.6)	5 (16.7)	11 (36.7)	14 (46.7)	0.276	0.279

Discussion

- The resources clinicians report using most often correlate with evidence-based approaches to combat FI, namely federal nutrition programs (i.e., SNAP, WIC, and school meals) and emergency food interventions (i.e., food banks and pantries). However, the reported degree to which they met a family's needs on follow up remained very low (23%). We cannot determine whether this is a problem with the resources themselves, or with engagement with the resources. This is a study limitation as we cannot differentiate between these alternatives.

- Our clinicians cite a desire for standardized resources, improved charting practices, continued educational opportunities, streamlined referral processes, and additional support staff when asked what changes are needed. A large study conducted by the Kaiser Permanente Colorado health system found that clinics with social workers had more confident clinician screening and higher connection to resources by facilitating connections, not merely handing parents a phone number/resource sheet. They showed an increase in successful participation with their community resource hotline from 5% to 75% by having families contacted vs. merely querying whether parents called the hotline. While our study cannot demonstrate whether or not families follow up with their referred resources, we recognize that there is a higher likelihood of attrition due to the lack of a standardized warm handoff via a closed loop referral system.

Conclusion

-While our community primary care centers have successfully standardized FI screening in their clinics, as self-reported by clinicians, there is a need for improved support to increase utilization of resources to counteract FI. Next steps for improving efficacy of FI interventions should include development of standardized resources, standardized processes for resource referral within the health system, and dedicated staff to improve connection to those resources.



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The Resident Perspective On Creating a Health Equity Curriculum

Sara Halpern, MD, Cara Lichtenstein MD, MPH, Paula MaGee, MD

BACKGROUND

Despite clear evidence of the importance of including health equities in medical training, to our knowledge, there are no formal pediatric curricular guidelines at the graduate medical education level.

OBJECTIVES

This study aims to determine baseline resident knowledge, preparedness, and skills to identify, address, and prevent health inequities.

METHODS

This mixed methods study included an initial quantitative online survey sent to all CNH pediatric residents in October 2019. The survey asked residents to self-assess knowledge, preparedness, and skills needed to identify, address, and prevent health inequities. The survey responses were analyzed to identify the areas of greatest deficiencies (i.e., self-described deficiencies present in more than 50% of respondents). These were then used to create relevant focus group questions. Focus groups were completed between March and December 2020 with groups of 2-4 residents in person or over Zoom. The recordings were transcribed and will be analyzed for themes using content analysis.

RESULTS

Sixty-one of 121 residents completed the online survey. Residents identified strengths in knowledge about social determinants of health and racism. They reported deficiencies in knowledge about community engagement, and in preparedness to address all of the above issues. Thus far 6 focus groups have been completed with 16 residents. Focus groups are still ongoing, but early themes include a lack of knowledge and tools to address health inequities, and the need for increased exposure and learning opportunities.

DISCUSSION

Residents reported feeling knowledgeable about the root causes of health inequities yet unprepared to address them. They expressed interest in more community engagement and longitudinal formal teaching sessions. The future plan is to integrate these findings with those from community-based focus groups and from CNH faculty to develop a robust curriculum for the pediatric residency program.





Children's National

More Than Safe Sleep: Goldberg Center Infant Mortality Risk Identification

Katrina Hammond-Jack, MD, Michaela Morton, MPH, Jessica Nash, MD, EShadey Bekele, MD, Julie Krueger, MD, Alison Page, LICSW, CCM, Sahira Long, MD.

BACKGROUND

- Infant mortality reflects the overall health of a community. In the District of Columbia, the infant mortality rate has trended down with a record low of 6.8 per 1,000 live births in the year 2013. Unfortunately, this rate still remains above the national rate, as well as the Healthy People 2020 target of 6.0 per 1,000 births.
- Of note, Wards 5, 7 and 8 have infant mortality rates that exceed that of the entire District of Columbia, with rates of 9.2, 9.32, and 14.6 per 1,000 live births averaged over 5 years (2012-2016), per the DC Department of Health Perinatal Health and Infant Mortality Report.
- The Goldberg Center is the largest primary care provider for vulnerable children in the District of Columbia, and therefore in prime position to address this health issue.
- Children's National Health System has identified reducing infant mortality as one of its strategic priorities.
- In order to develop an infant mortality reduction plan for the Goldberg Center for Community Pediatric Health, this retrospective review of records was deemed necessary to determine the modifiable risk factors that should be included in this plan.

OBJECTIVE

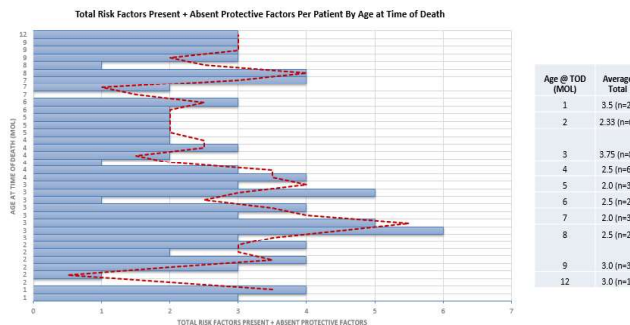
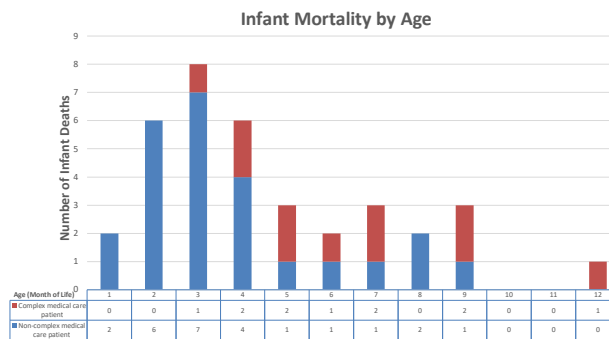
The purpose of this project is to identify trends in risk factors present in infants who received primary care in the Children's National Goldberg Center that died prior to one year of age between 2015-2018 to aid in development of an infant mortality reduction plan.

METHODS

- This is an IRB-approved retrospective chart review.
- A query was run in eClinical Works (eCW) and Cerner Power Chart (CPC) to identify all deceased patients between the ages of 0-364 days in 2015-2018.
- Charts were reviewed to determine which patients received at least one primary care visit at the Goldberg Center.
- Included charts were reviewed in eCW and CPC to determine details regarding cause of death and presence of risk or absence of protective factors related to infant death.

RESULTS

Sixty-one deceased patient charts were screened; 38 patients met inclusion criteria. The average and median age of death were 123.3 days and 106.5 days, respectively. Approximately 57.7% of infant deaths occurred within the first 4 months of life. Twelve patients (31.5%) had documented medical complexity; the remaining 26 patients (68.4%) were otherwise healthy.



Overall Median Risk factors and Absent protective factors per patient: 3
Overall Mean Risk factors and Absent protective factors per patient: 2.68

Age @ TOD (MOA)	Healthcare encounters - Inpatient/outpatient/ambulatory, age dependent of death	ADDITIONAL RISK FACTORS	HOUSING INSECURITY	FOOD INSECURITY	DELAYED INTAKEN WEIGHT GAIN	INTERNAL OPERATIONS RELATED DEPT	PROCP/PS INCUBATOR	SCHEMATIC SUPPLY CODE	PHI RISK REPORT	PHN/PTT
1	1	0	0	0	0	0	0	0	0	0
2	1	1	0	0	0	0	0	0	0	0
3	1	1	0	0	0	0	0	0	0	0
4	1	1	0	0	0	0	0	0	0	0
5	1	1	0	0	0	0	0	0	0	0
6	1	1	0	0	0	0	0	0	0	0
7	1	1	0	0	0	0	0	0	0	0
8	1	1	0	0	0	0	0	0	0	0
9	1	1	0	0	0	0	0	0	0	0
10	1	1	0	0	0	0	0	0	0	0
11	1	1	0	0	0	0	0	0	0	0
12	1	1	0	0	0	0	0	0	0	0

MOA = month of life
CMC = complex medical care
NON-CMC = non-complex medical care

**Factors monitored for documented interventions

DISCUSSION

- On preliminary review, the leading cause of death identified was cardiorespiratory arrest with further mention of inability to rule out asphyxiation given forensic finding of co-sleeping.
- Often, sudden infant death syndrome/sudden unexpected infant death (SIDS/SUID) was not identified as cause of death.
- Many patients interfaced with the healthcare system (PCP/ED) recently prior to death.
- There was a lack of standardization in documentation and screening for SIDS/SUID.

FUTURE DIRECTION

A SIDS/SUID risk assessment tool will be piloted at all newborn and infant visits through 4 months of age at Goldberg Center sites CHC-Anacostia, Columbia Heights, and THEARC. The goal is to develop a risk stratification system to identify patients to be automatically referred for social services intervention. It is our hope that there will be improvement in screening and documentation practices to support early identification of and intervention for patients at high risk of SIDS/SUID.

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Food Insecurity in a Pediatric Emergency Department

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Background

- Food insecurity is a public health problem affecting more than 1 in 10 children in the United States¹.
- Studies show food insecurity negatively impacts childhood health, behavior, and cognition.²⁻⁴
- Understanding the frequency of FI in an emergency department (ED) population is necessary for the development of targeted interventions to improve the health of children.

Objectives

To measure the frequency of food insecurity and associated sociodemographic and social determinants of health (SDH) in a pediatric ED population

Methods

Study Design: Secondary data analysis of survey data collected from an urban pediatric ED of adolescents aged 13-21 years and caregivers of children 0-17 years from July 2017 to August 2019.

Outcomes: Food insecurity was screened using the Two-item Hunger Vital Sign designed by Hager et al.⁵

“ Within the past 12 months we worried whether our food would run out before we got money to buy more.”
“ Within the past 12 months the food we bought just didn't last and we didn't have money to get more.”

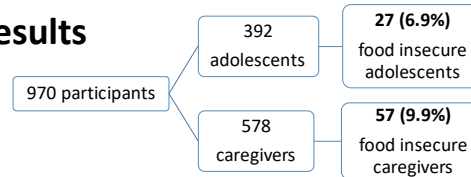
Sociodemographic data was obtained: gender, race/ethnicity, age, insurance, education, and household income. Participants were also screened regarding 12 social and behavioral risk factors:

- | | | |
|----------------------|---------------------------|------------------------------|
| 1. Food insecurity | 5. Mental health concerns | 9. Intimate partner violence |
| 2. Housing concerns | 6. Education concerns | 10. Legal concerns |
| 3. Safety concerns | 7. Substance abuse | 11. Sexual health concerns |
| 4. Healthcare access | 8. Immigration concerns | 12. Human trafficking |

Questions used to evaluate the 12 social and behavioral risk factors were adapted from previously validated questionnaires. The questions were used to score each risk factor as yes/positive or no/negative

Analysis: Bivariable and multivariable logistic regression were used to measure the associations of food insecurity with sociodemographic factors and of food insecurity with other social/behavioral health risks. All models were adjusted for age, gender, race, and insurance status (in adolescents) or income (in caregivers).

Results



Association between Food Insecurity and Sociodemographic Characteristics:

CI 1.1, 9.9) and household income <\$80,000 among caregivers (aOR 28.5; 95% CI 3.7, 218.4). Food insecurity was not associated with age, race/ethnicity, education, or insurance status.

Association between Food Insecurity and other SDH:

SDH	Adolescent (n=392) Adjusted odds ratio (95% CI)	Caregivers (n=578) Adjusted odds ratio (95% CI)
Housing Concerns	5.6 (2.4, 13.3)	7.1 (3.4, 15.4)
Safety Concerns	3.9 (1.6, 9.4)	1.6 (0.9, 3.1)
Healthcare Access	1.4 (0.6, 3.5)	1.3 (0.6, 2.9)
Mental Health Concerns	4.0 (1.1, 13.6)	1.8 (0.9, 3.4)
Education Concerns	1.9 (0.8, 4.7)	1.8 (0.8, 4.1)
Substance Abuse	6.4 (2.7, 14.9)	1.6 (0.4, 6.4)
Immigration Concerns	2.3 (0.3, 19.1)	1.0 (0.4, 2.6)
Intimate Partner Violence	3.8 (1.3, 11.2)	5.7 (1.4, 23.8)
Legal Concerns	7.5 (2.6, 21.7)	2.1 (1.0, 4.4)
Sexual Health Concerns	1.8 (0.8, 4.3)	Not assessed
Human Trafficking	9.3 (3.1, 28.2)	Not assessed

Among both adolescent and caregiver respondents, food insecurity was associated with **housing insecurity, intimate partner violence, and legal issues.**

Among adolescents alone, food insecurity was associated with **safety concerns, mental health issues, substance abuse, and human trafficking**

Discussion

- The emergency department's role as the medical safety net for the community makes it an optimal location to screen for and address the many social needs of the most vulnerable and disenfranchised populations.
- This study aims to use food insecurity as a model to highlight the complex relationships between social determinants of health. Screening positive for food insecurity using the 2-question Hunger Vital Sign may indicate the need for comprehensive screening to identify associated social/behavioral risk factors.

Conclusion

- Almost 10% of surveyed respondents reported being food insecure.
- Food insecurity was associated with multiple behavioral and social health risks.
- Given that food insecurity is not found in isolation, clinicians aiming to address food insecurity should also consider the entire social context of their patients.
- More study is needed to determine how to better optimize screening in the emergency department to identify patients with the highest social needs.

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IMPACT OF ANTIBIOTICS ON THE LUNG MICROBIOME AND LUNG FUNCTION IN CYSTIC FIBROSIS PATIENTS 1 YEAR AFTER HOSPITALIZATION FOR AN INITIAL EXACERBATION

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Children's National.

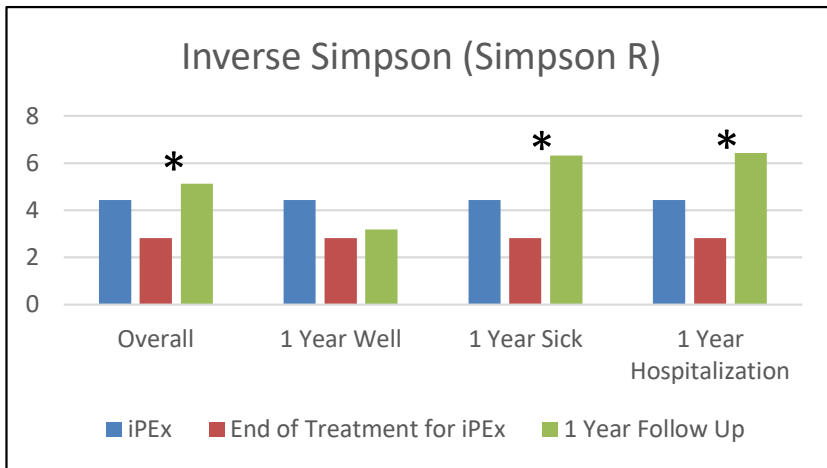
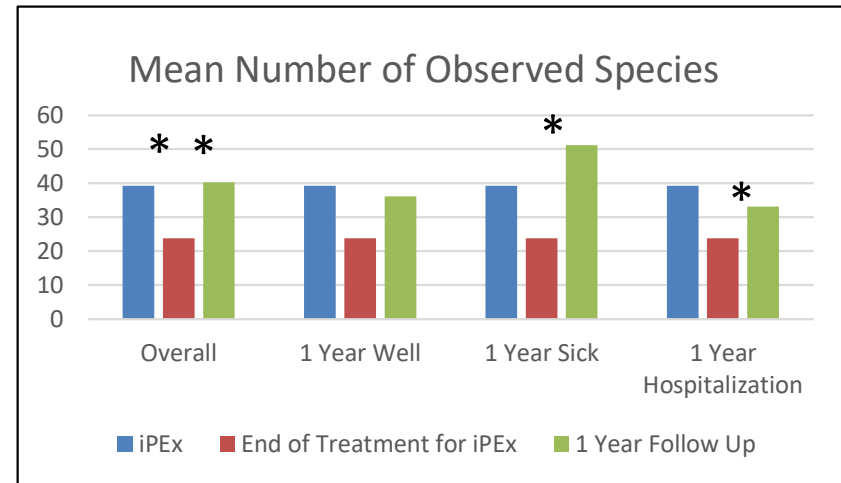
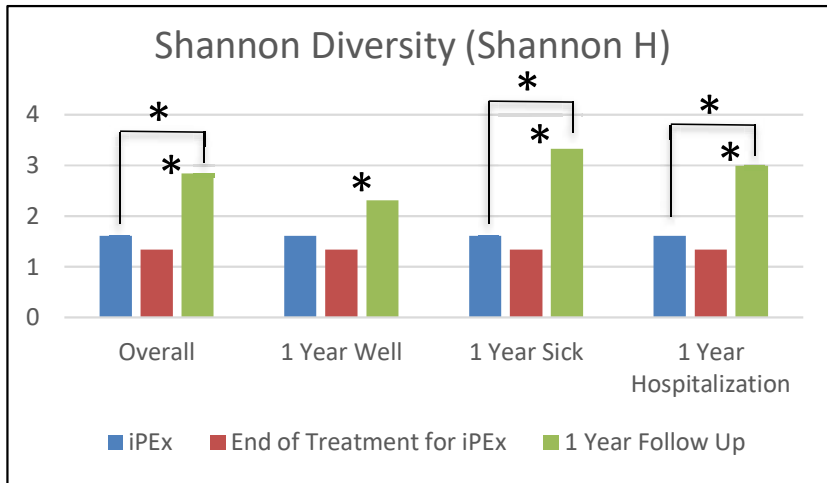
Introduction

- Cystic fibrosis is an autosomal recessive disease, characterized by recurrent pulmonary exacerbations and lung function decline.
- The cumulative effect of antibiotic treatment on lung microbial diversity and associated change in lung function remain unknown.
- We sought to evaluate changes in alpha diversity, microbial richness, and lung function over a one year follow up period.

Methods

- Prospective, observational cohort study of 20 children with cystic fibrosis
- Sputum samples and spirometry collected
 - Airway microbial diversity
 - Richness, Shannon diversity, inverse Simpson index
 - Lung Function
 - FEV1, FVC, FEF 25-75
 - Type of Visit: Well, Sick, Hospitalization
- Number of pulmonary exacerbations and antibiotic treatment

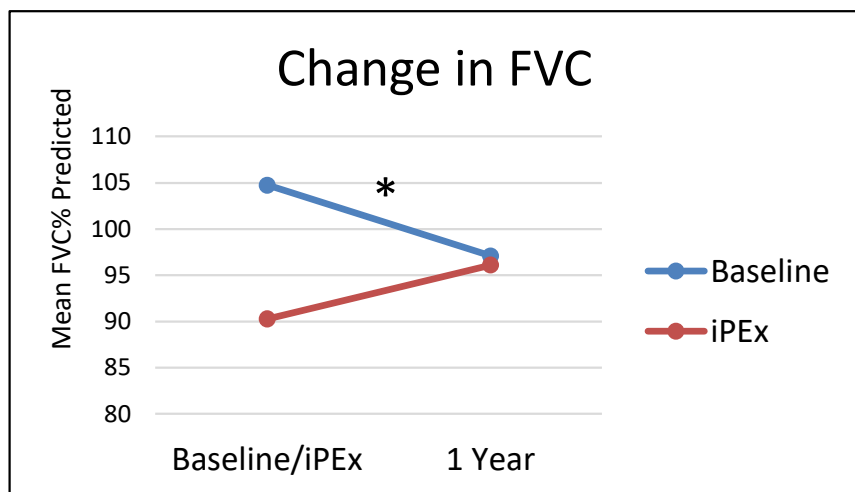
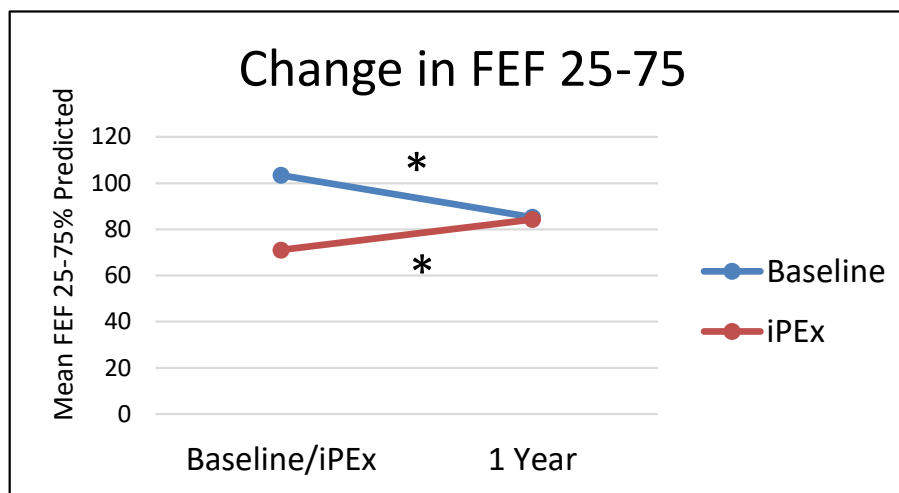
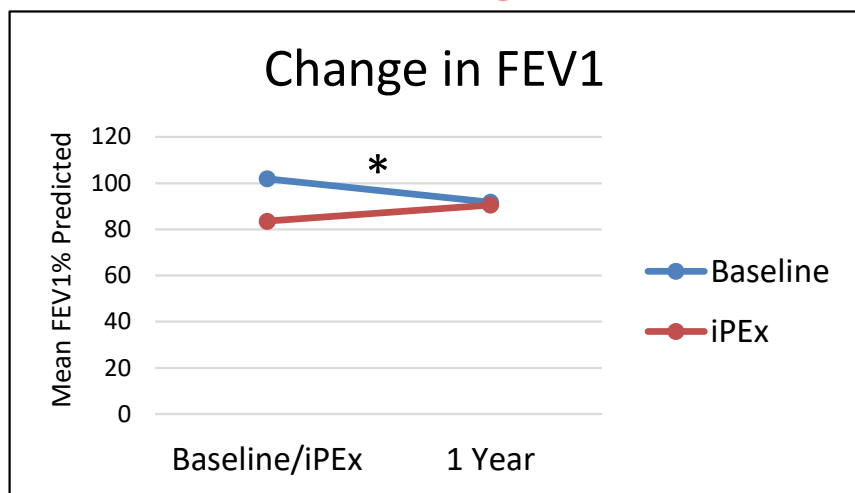
Results: Microbial Diversity



* $p < 0.05$

- iPEX: initial pulmonary exacerbation

Results: Lung Function



* $p < 0.05$

- iPEX: initial pulmonary exacerbation

Conclusions

- These findings suggest that alpha diversity and species richness are affected longitudinally, despite type of visit samples were collected in and factoring in number of pulmonary exacerbations
- Overall lung function is similarly affected.
- Unclear if longitudinal changes in microbial diversity are predictive of future disease progression.

QUALITATIVE EXAMINATION OF MILESTONE ACQUISITION IN LEARNING NEONATAL ENDOTRACHEAL INTUBATION

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Background:

- Neonatal endotracheal intubation is a critical procedure in which pediatric residents should demonstrate competency per ACGME program requirements.
- Changes in neonatology (i.e. increased use of non-invasive respiratory support) have led to less intubation opportunities overall.
- Specific milestones for this procedure are primarily based on expert consensus.

Objectives:

- Identify milestones for neonatal intubation skill based on described experiences of trainees and instructors, to help inform procedural training and assessment.

Methods:

- In-depth interviews of 32 neonatology fellows and attendings conducted.
- Basic qualitative analysis performed to-date on 10 transcripts (3 second-year fellows, 5 third-year fellows, 2 attendings).
- Themes coded and matched to Dreyfus and Dreyfus model of skill acquisition.
- Triangulation performed among 4 members of varied clinical backgrounds (peds resident, NICU attending, peds attending, simulation educator) to minimize bias.

Results:

Stage per Dreyfus and Dreyfus model	Milestones	Representative Quote
Novice	Demonstrate familiarity with equipment	"They helped with making sure I was directing the laryngoscope in the right direction so as to not harm the patient ... talking me through, okay, do you see the cords, yes, okay, here's the ET tube, go ahead and insert it."
	Identify vocal cords	
Advanced Beginner	Adjust patient positioning	"I learned from that experience the importance of having the blade in the right place, having a full view of the cords and actually fully watching the tube pass through the cords. I think prior to that, it was kind of hit or miss with the view and sometimes to be honest, I probably was lucky that I got in."
	Perform sequential steps of intubation	
Competent	Modify maneuvers for individual airway	"Knowing how to manipulate the situation, so maybe reposition the airway or suction the airway or a bit more troubleshooting."
	Adjust technique after failed attempts	
Proficient	Anticipate difficult intubations	"The more you do it, the more refined your skill set becomes. You become a little more adept. I think I became better at not the routine airway, but the more difficult airway so things with different anatomy... smaller sizes became a little bit easier."
	Develop individualized techniques	
Expert	Demonstrate automaticity of motion	"An expert would notice if there was a small jaw, a small chin, sort of plan ahead and be aware – have an awareness of what's going on around, what potential complications there could be and what one might do if one runs into that."
	Plan contingencies	

Discussion:

- Ongoing qualitative analysis indicates that progression of learning the procedural skill of neonatal intubation closely resembles the Dreyfus and Dreyfus model.
- Experiences can be mapped to milestones to assess trainee intubation competency and identify educational modalities that address needs at each stage of learning.
- Teaching was also identified as an important theme, from peer-assisted learning to proficient providers teaching new learners.
- Coding of remaining transcripts will continue until saturation is reached.

Acknowledgements

Children's National REACH program

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COVID-19 Highlights Need for Reverse Triage Training in Pediatric Residency Program

Claire F Maggiotto, MD, Stacey Stokes, MD MPH, Joelle Simpson, MD

BACKGROUND

Recent increases in both man-made and natural disasters, such as the COVID-19 pandemic, have brought disaster preparedness to the forefront of emergency medicine. These events create an influx of patients that stress the hospital system and put high demand on a resource-limited environment. The use of reverse triage – the identification of hospitalized patients that would be safe for discharge home – has been applied in disaster preparedness scenarios in an attempt to conserve resources rather than increase resources when demand surpasses supply.

OBJECTIVE

This study was created to assess the CNH pediatric residents' understanding of and ability to implement reverse triage principles during a disaster event.

METHODS

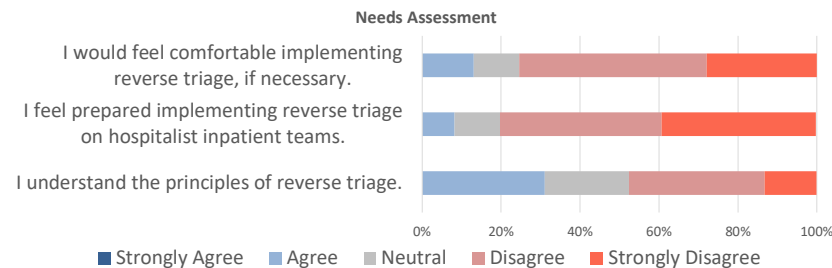
This survey was distributed to 120 pediatric residents during the summer and fall of 2020 and received 61 responses.

ACKNOWLEDGEMENTS

Special thank to Drs Simpson, Stokes, Ren and Kulesa for their help with this project.

RESULTS

Among the pediatric residents, this study found that 48% did not understand the principles of reverse triage, and 75% would not feel comfortable implementing reverse triage if necessary. Accordingly, this study found that residents would like to be educated in reverse triage procedures during a noon conference (36%) or via a disaster drill or mini-simulation (46%).



DISCUSSION

In the current climate, mass casualties and natural disasters have become frequent and common. This study found that pediatric residents are not prepared to implement disaster protocols due to lack of understanding and education. Data also shows that residents want this education in order to feel more prepared in the current and future roles as physicians.

LIMITATIONS

The major limitation of this study was lack of time to implement reverse triage curriculum and assess its effectiveness.

FUTURE DIRECTION

- Work with current interested stakeholders (ED, hospitalist fellows/attendings) to adapt current reverse triage simulation curriculum for the residents.
- Implement simulation at yearly during noon conference or monthly on hospitalist rotations so all residents can participate and contribute
- Complete pre and post simulation assessment to understand benefit of simulation



Factors Contributing to Determination of Patient Watcher Status

Mary Ball Markow, MD, Laura Sigman, MD, JD, Kristen Breslin MD, MPH, Kathleen Brown, MD
Children's National Medical Center

BACKGROUND

- One handoff technique that has been studied extensively and implemented in numerous hospitals including the inpatient services at Children's National is I-PASS which is a mnemonic for Illness severity, Patient summary, Action list, Situation awareness and contingency planning, and Synthesis by the receiver.

- In one study documented in the article "Changes in medical errors after implementation of a handoff program" with first author Starmer published in the *New England Journal of Medicine*, I-PASS handoff among residents caring for hospitalized patients showed a decrease in medical errors by 23% and decrease in preventable adverse events by 30% from 2010-2013 across nine children's hospitals.

- There are a variety of handoff tools and severity scores used to identify pediatric patients at risk of clinical deterioration, referred to as "watcher status." At our institution, watcher status is currently defined in part based on Pediatric Early Warning Score (PEWS) and in part based on clinician judgment).

OBJECTIVE

To describe patient characteristics prompting residents to designate watcher status at times of hand-off or transition in care team.

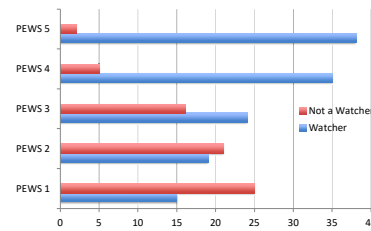
METHODS

-Created and distributed an online survey to pediatric residents at a free-standing, tertiary-care children's hospital. Survey questions were based on literature review of watcher designation at other children's hospitals.

- Identified characteristics used in watcher patient designation for patients recently admitted from the emergency department.

RESULTS

We received 40 responses out of 119 invitations (33.6%), including 18 responses from third-year residents and 11 from second-year residents.

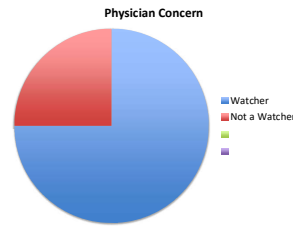
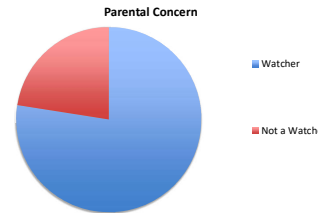


PEWS Scores

Several questions were dedicated to PEWS scores. The graph depicts a question targeted towards cardiorespiratory status and corresponding PEWS scores. The calculated PEWS scores were not included in the question stems but added in the figure. At the time of survey distribution, PEWS scores of 3 in single category or 4 trigger watcher huddles on inpatient units and PEWS score of 5 trigger RRT.

Parental Concern

Most residents (77.5%) did not designate watcher status based on parental concern alone with a normal exam.



Physician Concern

Most residents (75%) felt that clinician gestalt should be a factor in determining watcher status.

Poster intended for 2021 REACH project. Not intended for publication.

DISCUSSION

Resident classification as watcher status did correspond to elevated PEWS scores. Higher oxygen requirement, abnormal mental status, and clinician gestalt were also frequently cited. Residents did not consider underlying conditions in the absence of symptoms to define watcher status.

LIMITATIONS

-A mistake was found after survey distribution with a question stem with repetition of a multiple choice answer. This was not believed to significantly affect survey results.
- The hospital changed PEWS policy after administration of the survey. Results were interpreted in according to PEWS system current at the time of survey administration.

FUTURE DIRECTION

- Complete analysis of survey data gathered from nursing staff, hospitalists, and emergency department providers.
- Compare survey findings to current practice and determine if there are changes to existing watcher patient handoff policy that would enhance communication.

ACKNOWLEDGEMENTS

A special thank you to REACH mentors Dr. Kristen Breslin, Dr. Laura Sigman, and Dr. Kathleen Brown and to Isabella Greenberg, and Dr. Asha Payne for their help assembling the survey.



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Assessing Pediatric Residents' Knowledge and Attitudes Concerning Conditional Discharges on the Inpatient Academic Teams

Tara Neary MD, Lynsey Vaughan MD, and Paul Manicone MD

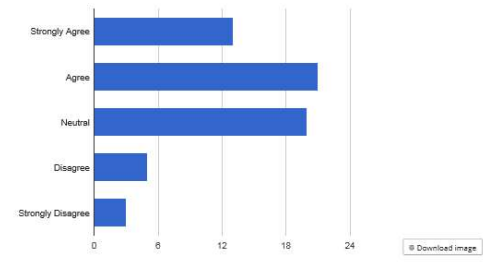
Background: Quality improvement (QI) studies in pediatric populations have shown that various interventions can improve discharge timeliness and efficiency. One such intervention is the conditional discharge order (CDO), which sets specific criteria for discharge and creates a shared mental model amongst providers and the patient's family. Although most inpatient teams at Children's National Hospital (CNH) utilize CDOs, there are opportunities to improve the knowledge and engagement of CDOs at the resident level. This project was part of a larger QI initiative to increase timely discharges using an educational bundle.

Objective: The aim of this study was to obtain baseline data regarding pediatric residents' attitudes toward CDOs and the systems-based factors that contribute to the discharge process, as well as identify resident-specific barriers to CDO usage.

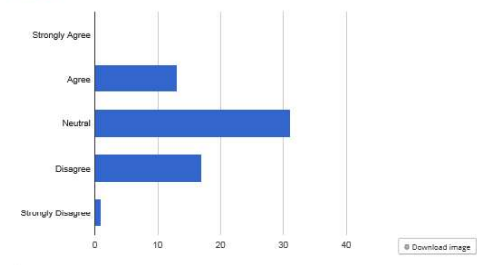
I am motivated to perform conditional discharges (motivated)

Total Count (N)	Missing	Unique
62	0 (0.0%)	5

Counts/frequency: Strongly Agree (13, 21.0%), Agree (21, 33.9%), Neutral (20, 32.3%), Disagree (5, 8.1%), Strongly Disagree (3, 4.8%)



Counts/frequency: Strongly Agree (0, 0.0%), Agree (13, 21.0%), Neutral (31, 50.0%), Disagree (17, 27.4%), Strongly Disagree (1, 1.6%)



Methods: A 14-question anonymous, voluntary survey was disseminated via email to pediatric residents at CNH. Interns who had not rotated on an academic team were excluded. Residents were queried on the intended goals of CDOs; their motivation to perform CDOs; and their perceptions of the efficiency of the CDO process.

Results/Discussion: 50% (62/124) of residents responded to the survey. While the majority of residents recognized the intended goals of CDOs, only 55% of respondents reported feeling motivated to perform them. Additionally, only 21% of residents reported that the discharge process is efficient. Barriers to utilization included a lack of contingency planning when discharge criteria are not met and poor communication between providers.



Pregnancy Patterns Among Exploited Youth

Esther M. Neustadt, MD, Lisa Tuchman, MD, MPH, Monika Lemke MSN, MPH, RN-CNL, Ariel White, MD, Katherine Deye, MD, FAAP
Children's National Hospital

BACKGROUND

Child sex trafficking has been thought to be one of the most egregious forms of exploitation leading to significant acute and chronic physical and mental health consequences. Youth who have experienced sexual exploitation are at high risk for reproductive coercion, as well as intended and unintended pregnancy, in part due to limited access to reproductive health education and comprehensive medical care. Although previous studies have demonstrated higher pregnancy rates among this population, these studies have largely been limited by small sample sizes. Moreover, research involving the identification of risk factors and their potential associations in pregnant youth who have been sexually exploited is lacking. Through partnership with CAPC and Adolescent Medicine, a comprehensive primary care medical home, CAREs clinic, was created as a trauma-informed, interdisciplinary team providing forensic mental health and medical care for adolescent victims of trafficking. We sought to further explore pregnancy rates and other potential risk factors within this CAREs patient population to better understand who is at risk of becoming pregnant, reduce possible barriers to reproductive health, and provide propitious healthcare interventions.

OBJECTIVE

To investigate the demographic, reproductive, behavioral, and medical risk factors of pregnant youths suspected or confirmed to be victims of trafficking, as compared to non-pregnant youths within this same vulnerable population, with the overarching goal of providing more comprehensive and informed care.

METHODS

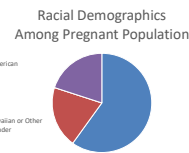
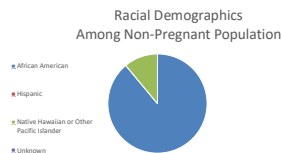
This is a single center retrospective study performed at an urban medical center in Washington, D.C. Internal registry of 20 CAREs patients, adolescents and young adults ages 12-22 years that were identified at risk for exploitation between 2009-2020, were included. Comprehensive electronic medical record chart review conducted. Demographic and clinical information collated and separated by pregnancy status. Z test analysis performed on data

RESULTS

	Pregnant (%)	Nonpregnant (%)	p Value
IEP/504*	17%	29%	p = 0.61
Psych Hospitalizations*	38%	29%	p = 0.72
Suicide Attempt*	11%	14%	p = 0.86
Substance Use (Alcohol)	50%	11%	p = 0.08
Substance Use (Marijuana)	70%	67%	p = 0.89
Substance Use (Cocaine)	20%	0%	p = 0.16
Substance Use (Opioid)	10%	11%	p = 0.94
Substance Use (Tobacco)	40%	0%	p = 0.03
Birth Control (Condom)	60%	56%	p = 0.86
Birth Control (Depo)	30%	56%	p = 0.25
Birth Control (Nexplanon)	30%	40%	p = 0.65
Birth Control (OCP)	20%	33%	p = 0.52
Birth Control (Plan B)	30%	11%	p = 0.31
STI (Chlamydia)	60%	44%	p = 0.52
STI (Gonorrhea)	30%	33%	p = 0.89
STI (Trichomonas)	10%	33%	p = 0.22
History of Sexual Assault*	78%	25%	p = 0.03
History of Running Away*	89%	63%	p = 0.2
History of Homelessness	30%	22%	p = 0.69
History of Foster Care	30%	0%	p = 0.07
History of Child Abuse*	57%	43%	p = 0.60

*comparison based off smaller sample size

There was a statistical difference between pregnant and non-pregnant adolescents in tobacco use and history of sexual assault. All other variables compared were not statistically significant.



DISCUSSION

This study, while limited, begins to investigate demographic, reproductive, behavioral, and medical differences between pregnant and non-pregnant youths suspected or confirmed to be victims of trafficking. Preliminarily, this data does not show differences in most categories between the two populations, likely because trafficked youth share many risk factors regardless of pregnancy status.

LIMITATIONS

There were many limitations to this study, most notably its small sample size. This study investigated a small pool of the >200 patients in the internal registry of CAREs patients. As such, the power of this study is low. Other variables may have also been considered, such as pregnancy intent, past medical history, psychiatric history, medication use, interactions with CNH system. This study does not explore possible correlations and so while descriptive, the ability to generalize this data is also limited.

FUTURE DIRECTION

Explore possible opportunities to offer LARC contraception during ED or other non-contraception related visits. Enhance trauma-informed care and approach vulnerable patients more holistically. Identify potential risk factors early in childhood with potential to intervene before trafficking occurs.

ACKNOWLEDGEMENTS

A special thank you to the Children's National REACH program, the Department of Adolescent Medicine, the Child and Adolescent Protection Center.



Utility of Cardiac Magnetic Resonance T1 values and random EMB fibrosis quantification in assessing clinical markers of graft health

Devika Patel, M.D., Nyshida Gurijala, B.S., Jason Mandell, M.D., Karin Hamann, RN, BSN, Christopher Rossi, M.D., Joshua Kanter, M.D., John Berger, M.D., Laura Olivieri, M.D.

Background

Cardiac Magnetic Resonance (CMR) has emerged as an invaluable tool for cardiac graft assessment in adult heart transplant recipients, although pediatric recipients are largely still managed via results of random endomyocardial biopsy (EMB) samples of the right ventricle. Parametric mapping is particularly valuable as a quantitative tool to measure degree of myocardial edema and fibrosis, which may give insight into graft fibrosis and subsequent dysfunction. Thus our aim is correlate volumetric T1 parametric mapping measurements with EMB fibrosis% and clinical markers of diastolic dysfunction.

Demographic	Value
Total Encounters	40
Total Single Patients	19
Average Age (per encounter)	12.5 +/- 4.9
Average Graft Age (per encounter)	5.6 +/- 4.2
Percentage Female	37.5%
Ethnicity-Hispanic/Latino	32.5%
Race-Black	15%
Race-White	70%
Race-Asian	5%

Methods

In this IRB approved prospective study, 39 subjects (age 12.5 +/- 4.9, graft age 5.6 +/- 4.2, 36% female, LVEF 63.4 +/- 5.4) underwent simultaneous EMB and CMR. EMB was analyzed for histopathological fibrosis% using digital analysis of Maisson's trichrome slides (Aperio ImageScope, Illinois). Siemens 1.5T CMR imaging included 8 short axis slices of breath-held T1 mapping using the modified Look-Locker (MOLLI) technique. Regions of interest were drawn on the anteroseptum, inferoseptum and lateral wall of the middle 6 slices. Data were analyzed using linear regression models.

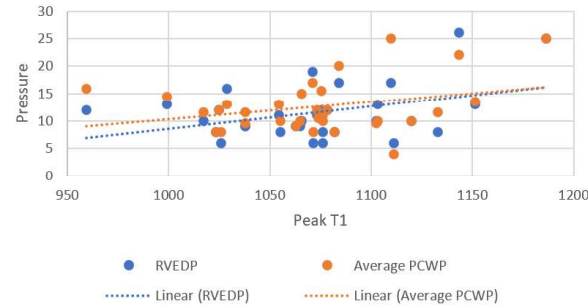
Results

A strong positive correlation was noted between peak T1 values and clinical variables of brain natriuretic peptide (BNP), right ventricular end-diastolic pressure (RVEDP), and average pulmonary capillary wedge pressure (PCWP). Novel fibrosis quantification was found to have reliable measurements between different readers and an accredited pathologist (intraclass correlation coefficient of >0.75). No correlation was found between quantified fibrosis percentage on random EMB and T1 values nor clinical variables.

	Fibrosis %	BNP	RVEDP	PCWP
Mean T1	0.13	0.595**	0.246	0.155
Peak T1	0.001	0.525*	0.391*	0.454*
Fibrosis %	1.00	0.0981	0.156	0.047

Data reported as correlation coefficients between parametric map values, histopathological fibrosis measurements, and clinical variables. * = p<0.05, ** = p<0.001

Peak T1 vs RVEDP & Average PCWP



Conclusion

In pediatric heart transplant patients, T1 values obtained from comprehensive CMR parametric mapping, known to indicate level of fibrosis, are here demonstrated to be consistent with clinical variables of cardiac function. Random myocardial sampling is insufficient in providing this insight, demonstrated by the lack of correlation with quantified fibrosis percentage. Thus, there is a need to reassess the utility of random EMB samples and the potential for adapting CMR as a reliable tool for evaluation of graft health.

Limitations

Limitations include small sample size, lack of validation of fibrosis quantification method due to lack of gold standard. Young graft age

Future Direction

Continuing similar work with a larger sample size, to add variety of cases; studying other markers;

Acknowledgements

A special thank you to Children's National Departments of Pediatric Cardiology, Radiology, and Pathology and the REACH program. Thank you to the National Institute of Health for funding this work.



Isolated Absent Septum Pellucidum: A Retrospective Study on Postnatal Outcomes

Elizabeth E.S. Pickup MD, Sarah S. Schlatterer MD PhD, Adre J. du Plessis MBChB MPH, and Sarah B. Mulkey MD PhD
Children's National Hospital

BACKGROUND

- Absent septum pellucidum (ASP) is a midline abnormality identified on fetal ultrasound often associated with neuroanatomic malformations including septo-optic dysplasia (SOD).
- Prenatal counseling emphasizes the risk of complications even when ASP is an isolated finding.
- Limited data on neurodevelopmental outcomes with isolated ASP.

OBJECTIVE

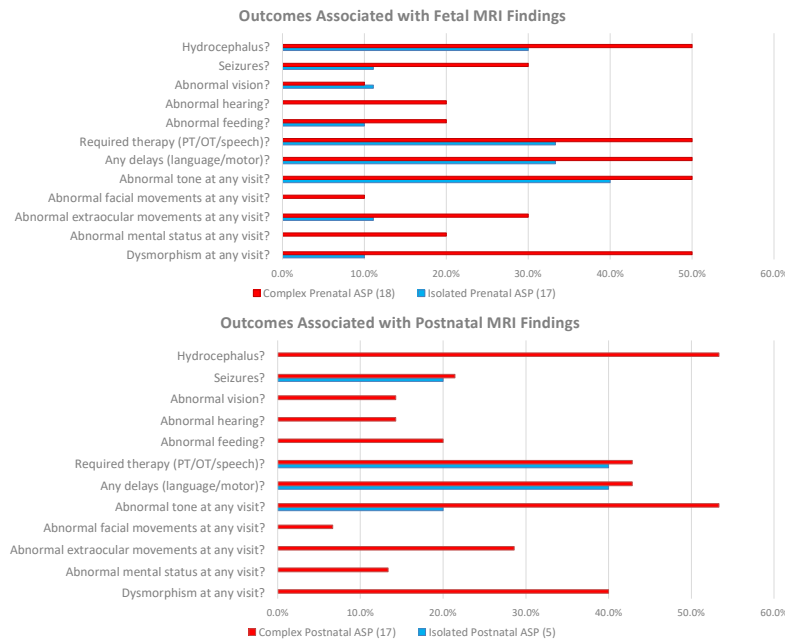
This study aimed to determine how frequently isolated ASP, diagnosed by fetal MRI (feMRI), was confirmed on postnatal imaging and to examine clinical outcomes for isolated ASP.

METHODS

- We examined EMR data from maternal-fetal dyads with ASP referred to Children's National Hospital from January 1, 2012 to June 30, 2019.
- ASP was isolated if it was the only brain abnormality on feMRI and complex if additional brain abnormalities were present.
- Patients were divided into two groups (isolated vs complex ASP) based on feMRI findings and again into two groups based on postnatal imaging findings.

RESULTS

- ASP was diagnosed in 35 fetuses on feMRI at an average of 26.7 ± 4.7 weeks gestational age.
- Of 17 fetuses with isolated ASP, 10 had postnatal follow-up.
- Postnatal imaging revealed additional brain abnormalities in 5/10 cases.
- Only one infant with prenatal isolated ASP was later diagnosed with SOD (10%).



DISCUSSION

- Children with prenatal isolated ASP (whether isolated or complex postnatally) had lower rates of developmental delay, seizures, hydrocephalus, and abnormal hearing than infants with prenatal complex ASP.
- Children with postnatally confirmed isolated ASP had lower rates of abnormal feeding, hearing, and vision and lower rates of hydrocephalus than those with complex ASP.
- Notably, there was a low rate of postnatal diagnosis of SOD in our cohort of infants with prenatal isolated ASP.

LIMITATIONS

- Small sample size
- Several patients lost to follow up
- Lack of standardized developmental assessments at follow up appointments

CONCLUSIONS

- Postnatal MRI is important to ensure a diagnosis of isolated ASP
- The low rate of SOD in our cohort is important for prenatal counseling.





BACKGROUND

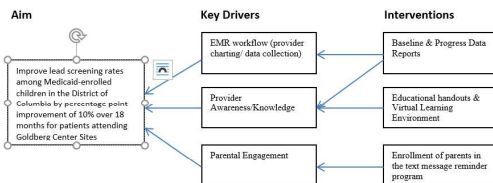
- Childhood Lead exposure can lead to significant neuro-cognitive disabilities in the short and long term. Despite the District law requirement of two mandatory lead screening tests prior to two years of age, a 2016 study by Mathematica® showed that only 32% of children on Medicaid received the screening tests.⁸ The racial and socioeconomic disparities associated with lead exposure further highlighting the need for interventions targeting vulnerable populations facing economic and social barriers to healthcare.

OBJECTIVE

The overall Aim is to improve lead screening rates among Medicaid-enrolled children in the District of Columbia by a percentage point improvement of 10% over 18 months for patients attending Goldberg Center sites.

Specific Aims

- Engage D.C. based pediatricians at Goldberg Center sites in an 18-month lead screening virtual learning collaborative utilizing quality improvement methodologies.
- Determine the effectiveness of lead screening at Goldberg Center Sites by obtaining data through eCW population health data attribution and verify accuracy of EMR data with brief chart review.
- Assist Goldberg Clinic Sites in identifying current baseline lead screening rates, and using QI methods and metrics, help identify where change can be made to intervene and improve lead screening rates for children in the identified age ranges.
- Enroll families attending Goldberg Clinic Sites in the lead text message-reminder program to help families with knowing when blood lead tests are needed.



METHODS

The initial phase of the project consisted of obtaining baseline data regarding lead screening completion prior to 15 months of age and 27 months of age was obtained from Children's National Goldberg Center Sites. A literature review was conducted to assess available lead screening QI measurement tools and methods. Our second phase consisted of PDSA cycles at each clinical site consisting of /virtual learning educational sessions, training on POC lead screening tools, enrollment of families in text message reminder programs. Our third phase will consist of analyzing the date of lead screening prior to 15months of age and 27 months of age.

RESULTS

We received data from six Goldberg Center sites. We completed several PDSA cycles to achieve our aim of improving lead screening among patients attending Goldberg Center Sites. Interventions are ongoing and include training of clinical staff in the use POC lead screens, enrollment of families in text message reminder programs, and multidisciplinary meetings among providers to discuss PDSA cycles.

DISCUSSION

- This project sought to improve lead screening rates through training on POC testing, physician engagement in educational virtual sessions and enrollment of families in text message reminder programs.
- Through the utilization of Goldberg Site Specific Data and PDSA cycles, we are able to better target interventions that directly impact specific populations and can engage physician and medical staff involvement to change clinical practices.
- The local data used in the educational session is widely available in major cities across the US, providing an opportunity for broader application of this educational intervention.

LIMITATIONS

- Coordinating the training of staff in use of POC testing was difficult given vast locations.
- Given the COVID 19 pandemic, data collection was halted given that REACH time was suspended from Feb-June 2020.
- In addition, in person appointments were restructures to be virtual and impacted regular health screenings including lead screenings.

FUTURE DIRECTION

- The future direction includes continuing PDSA cycles at Goldberg Center Sites. The project will continue in Phase 2 and providing objective data reports to Sites regarding baselines and progress pre and post interventions of the PDSA cycles.
- Developing incentives to increase lead screening with Goldberg Center sites to include Continuing Medical Education Credits and technical assistance with infrastructure support to be provided through DC AAP.
- Consideration for the effectiveness of implementing an EMR alert for providers to recognize the need for a patient to receive a lead screen.

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ACKNOWLEDGEMENTS

A special thank you to the Children's National REACH program and Goldberg Center Sites



BACKGROUND

- Mobile health clinics (MHC's) are used to increase health care access in under-resourced settings and for emergency response. At Children's National, MHC's have historically been an extension of the medical home.
- In recent years, there has been a decrease in MHC utilization. Contiguously, the COVID-19 pandemic led to a significant decline in the number of children receiving routine pediatric primary care services, including immunizations.
- According to the Center for Disease Control and Prevention, 2.5 million fewer doses of non-influenza vaccines were ordered and administered by April 2020. Additionally, the District of Columbia's Vaccine for Children program reported that over 30,000 children were overdue for vaccines in May 2020.
- We experimented with a new approach to MHC use by providing vaccine-only mobile clinics and assessing patient reception of this form of care

OBJECTIVE

To describe a novel use of MHC's during the COVID-19 pandemic, and describe patient/family reception of this mode of care delivery.

METHODS

- We recruited children between 2-18 years who were due for vaccination as determined by the AAP vaccination schedule and pandemic guidelines.
- Patients were recruited by both the Mobile Medical Program and community stakeholders (schools, clinics, and insurance agencies).
- Mobile sites varied within the District of Columbia.
- Parents were responsible for filling out a satisfaction survey after visit.
- Retrospective chart review was also performed for vaccination and demographic information.

RESULTS

16 clinics: June 19, 2020 – November 20, 2020

Total of 494 patients scheduled; 199 received vaccines (avg age 11; 40%); 5 received other services (e.g. medication refills); total of 381 injections given; 303 missed appointment (avg age 10.3; 61%)

Patient Satisfaction survey (n=55): as compared to a fixed site clinic...

- My family was safer from COVID-19: **43 (80%) strongly agree or agree.**
- The location [...] was as convenient: **55 (94.5%) strongly agree or agree.**
- The wait time to receive care [...] was shorter: **44 (81%) strongly agree or agree.**
- Rate your overall experience: **49 (89%) very satisfied or satisfied.**
- If services were offered again during a pandemic I would be comfortable using Children's National Mobile Health Services for my child/my children: **51 (92%) strongly agree and agree.**

Missed appointment survey (n=14): Reasons why you did not attend the drive-up/walk-up vaccine clinic

- I was worried that my child would be exposed to COVID-19 (**40%**).
- I forgot about the appointment (**27%**).

DISCUSSION

- This study supports the use of MHC's during crisis situations as a care delivery model to fill identified gaps in primary care.
- High patient satisfaction was demonstrated from a service and safety perspective.
- Partnership with other community health groups, including schools, insurance groups, and community healthcare workers could improve community buy-in and show-rates for future clinics.
- Patients were interested in receiving other types of medical care on MHC's.

LIMITATIONS

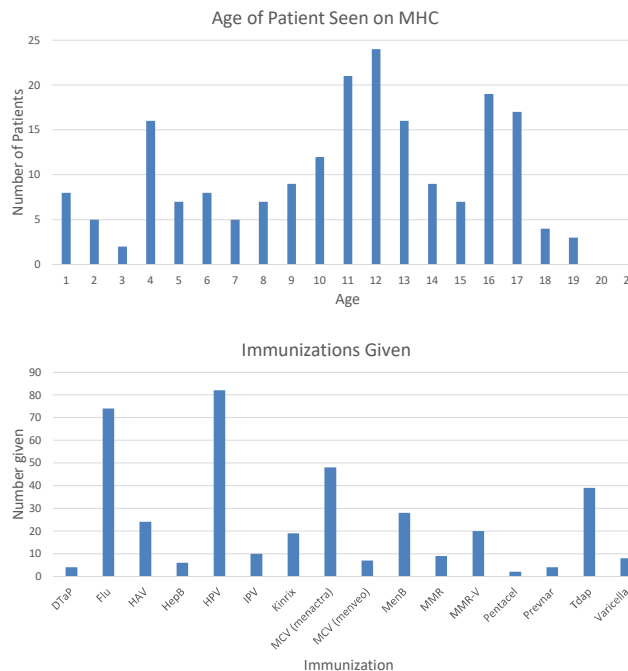
- Age of patients serviced on the MHC was influenced by AAP recommendations for children <2 yo to receive care at their medical home for duration of pandemic.
- Missed appointment survey response inadequately powered, but suggests that safety continued to be a concern as well as a cause for limited care.
- Will need longitudinal assessment to determine if this mode of care delivery increases fragmentation of primary care, including potential disruption of continuity with medical home.

FUTURE DIRECTION

We will investigate other service possibilities on the MHC. Additionally, we will build partnerships with community stakeholders to increase patient buy-in to this service mode.

ACKNOWLEDGEMENTS

A special thank you to the Children's National REACH program and Children's National Goldberg Community Centers.



Coping Mechanisms Utilized by Parents of NICU Infants

Isabelle Riley MD, Lemaat Michael MD, Hannah Chase, Kristen Patrick

Background

Coping within medicine is an individual's ability to understand a diagnosis while undertaking actions that enable them to manage emotional reactions and stressful demands and studies show that one's ability to do so is affected by time, circumstance age and gender. Poor coping by parents has shown to be linked to developmental, social, mood and cognitive disorders in children.

Methods

This study included parents of NICU infants who had been hospitalized >/- 2 weeks, had never been discharged home,, and were not actively dying/given terminal diagnosis and id not include adopted parents. Included parents had to be >18 years of age and must be English or Spanish speaking. Once inclusion criteria was confirmed and consent obtained, parents completed three surveys: A demographic survey, the Edinburg Postpartum Depression Scale, and the Ways of Coping Questionnaire. Data was then analyzed in both a univariate and multivariate table.

Conclusions

There were a total of 54 surveys completed and only 17 EPDS surveys had a score of 10 or greater. Univariate analysis revealed that there was no statistically significant association between age, race, gender or parent or infant, educational status, income, marital status, current work status and household size and elevated EPDS scores.

Results

Univariate Analysis				Multivariate			
	N=	OR	(95% CI)	p-value	OR	(95% CI)	p-value
Age		0.94	(0.85-1.04)	0.207	1	(0.85-1.07)	0.395
Parent Gender							
Male	17	1	REF	REF	1	REF	REF
Female	37	3.1	(0.75-12.8)	0.119	3.1	(0.67-14.11)	0.148
Race							
White	18	1	REF	REF			
Black	31	1.62	(0.41-6/47)	0.763			
Mixed/Other	5	1.83	(0.33-10.09)	0.619			
Hispanic/Latino	8	0.28	(0.03-2.48)	0.25	0.2	(0.02-2.03)	0.173
Infant Gender							
Male	27	1	REF	REF			
Female	26	3.1	(0.18-1.81)	0.337			
Education							
Less than college	20	1	REF	REF			
College or higher	33	0.62	(0.18-2.17)	0.45			
Relationship							
Single	12	1	REF	REF			
Married	31	0.83	(0.20-3.52)	0.426			
Separated	2	1.75	(0.08-36.29)	0.767			
Unmarried Partner	6	1.75	(0.23-13.16)	0.656			
Additional Children in Home	28	0.8	(0.46-1.39)	0.424			
Former Work	38	1.24	(0.35-4.37)	0.734			
Current Work							
No	32	1	REF	REF			
Part-Time	2	0.57	(0.16-1.98)	0.373			
Full-Time	20	1.58	(0.09-27.77)	0.608			
Income							
<50,000	16						
50,000-100,00	12						
>100,000	22						
Household Size		1.04	(0.73-1.47)	0.833			
Ways of Coping							
Confrontive Score		1.05	(0.88-1.27)	0.58			
Distancing Score		0.96	(0.81-1.14)	0.625			
Self Control Score		1.07	(0.92-1.24)	0.395			
Social Score		1.06	(0.92-1.23)	0.412			
Responsibility Score		1.09	(0.92-1.30)	0.327			
Escape Score		1.18	(1.02-1.37)	0.031	1.1	(0.96-1.33)	0.14
Reappraisal Score		0.98	(0.89-1.08)	0.697			
Planful Score		0.97	(0.86-1.10)	0.64			

Table 1. Associations with EPDS Score ≥ 10

Conclusions

Based on the data analysis, any OR <1 indicates a protective measure against depression. The factors that our study identify as being protective are :Hispanic or Latino race, higher education, married partners, other children in the home and the ability to utilize distancing, reappraisal and planful coping skills. These findings are unique in that other studies show Hispanic or Latino race are predictive of depression and the most common protective coping skill is a strong support system, especially for mothers and female caregivers, and that distancing is often a maladaptive coping skill, although no studies link it with depression within a hospital setting.

Limitations in this study were small population size, surveys distributed at only one education, not a standardized survey distribution time during patient hospitalization and surveys only administered once vs. answers being monitored over time for developing changes. While no p value is <0.01 and therefore nothing of statistical significance, this does not indicate a lack of clinical significance. The information presented here can shed light onto who is at risk of depression/protected against it and what coping skills can be utilized and taught to help parents and caregivers during stressful and prolonged Neonatal Intensive Care Unit stays.

References



Reducing Overdiagnosis of Penicillin Allergy In A Primary Care Setting

Kristina Roth, MD, Kelly Cline, MD, Joel Brooks, DO, MPH, Christina Driskill, RN, MPH, Susan Cheng, Ellen Hamburger, MD

Children's National Hospital, Washington, D.C.



Children's National



BACKGROUND

- Penicillin allergy is the most common documented drug allergy in the U.S. and the most common antibiotic class indicated in children
 - Up to 90% of patients with reported penicillin allergy are able to tolerate penicillin
 - The estimated incidence of true allergy is < 1%
- Use of second line agents leads to:
 - increased risk of antibiotic resistance
 - longer hospital stays
 - higher healthcare costs
- Interventions to reduce overdiagnosis of penicillin allergy have yet to be studied in the outpatient pediatric primary care setting

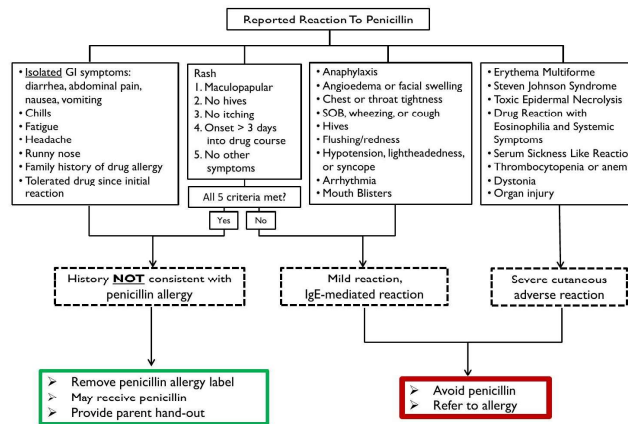
OBJECTIVE

We aimed to decrease the percentage of patients with an active diagnosis of penicillin allergy by 30% at a primary care practice by February 2021

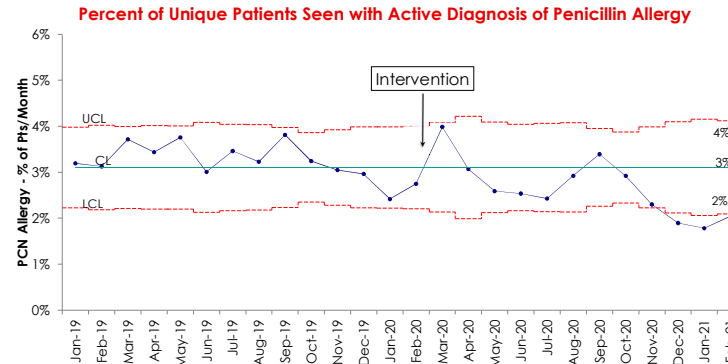
METHODS

- Reviewed patient records at an outpatient pediatric practice with >40K visits/year to determine baseline rates of penicillin allergy
- Developed an evidence-based decision support tool for management
- Hosted an educational session for providers introducing the decision support tool
 - Distributed provider surveys pre- and post-intervention
- Analyzed data monthly measuring the percent of unique patients seen with an active diagnosis of penicillin allergy
- Compared quality of documentation of penicillin allergy pre- and post-intervention

DECISION SUPPORT TOOL



P CHART



RESULTS

Timeframe	Baseline (3/2019-2/2020)	Post-intervention (3/2020-2/2021)
% Penicillin Allergy	3.2 (1347 / 41645)	2.7 (978 / 36386)

- 16% decrease in percentage of patients with penicillin allergy
- p < 0.001

Secondary measures:

- High quality documentation: improved from 32% to 38%
- Provider surveys showed improved recognition of the lack of correlation between family history and patient's risk of true allergy to penicillin

DISCUSSION

- Our intervention had a modest effect with post-intervention rates of active diagnosis of penicillin allergy consistently below baseline
- Of note, our intervention coincided with the start of the COVID-19 pandemic with subsequently reduced patient volumes
- Future directions:
 - Introduction of an EMR prompt
 - Prospective study to track antibiotic use in patients whose penicillin allergy was removed

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Decision Support Tool Reduces Low Probability Cardiology Referrals for Chest Pain from Primary Care: a Quality Improvement Initiative

Lena Saleh, Ellie Hamburger, Lexi Crawford, Edward Sepe, Christina Driskill, Ariel Dubelman, Lena Baram, Kathleen Kadow, and Ashraf Harahsheh

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* I have no financial disclosures or conflict of interest

Introduction

- Many pediatricians identified gaps in their education surrounding the “**red-flags**” that necessitate a referral
- Recent multicenter study, Standardized Clinical Assessment and Management Plans (SCAMPs®), demonstrated:
 - Red-flag criteria were **100% sensitive** in detecting cardiac disease explaining chest pain
- **Purpose:** to decrease low probability cardiology referrals in patients ages 7-21 presenting with chest pain at three local pediatric sites from 17% to 0% by 1/31/2020

Methods

- **Setting:** three pediatric primary care practices affiliated with Children's National. Staffing includes 16 pediatricians and 4 nurse practitioners
- **Study population:**
 - *Inclusion criteria:* patients ages 7-21 presenting with new complaint of chest pain
 - *Exclusion criteria:* patients presenting with acute asthma exacerbation or after trauma
- **Metrics:**

Outcome measure	Decrease low probability cardiology referrals for patients presenting with chest pain
Process measure	Improve provider utilization of a decision support tool (DST)
Balancing measure	Rate of life threatening events and incidental cardiac disease

Methods

- **Interventions:**
 - 1) Creation of decision support tool – utilized established criteria to identify patients with “red-flags” for referral
 - 2) Educational sessions
 - 3) Routine feedback to improve use of referral criteria
 - 4) Patient and family education
- **Data collection:**
 - Single EMR system used across three practices
 - Data was extracted monthly
 - Standardized collection tool

Methods - DST

Form: **ChestPain-ReferralDecisionAide** Auto Neg Uncheck All

CC Chest Pain - Red Flags for Referral ROS PE PE2 Assessment/Plan Draft Search Outline Preview

History of Present Illness

- Y N Intro HPI
- Y N chest pain [browse + F.txt]

Symptom Checklist

- Y N chest pain with exertion
- Y N fainting with exercise (syncope)
- Y N chest pain radiating to the jaw or left arm/shou...
- Y N chest pain made worse by lying down
- Y N fever >38.4 C with chest pain

Past Medical History

- Y N Arthritis/Vasculitis
- Y N Hypercoagulable State
- Y N prolonged bedrest or sitting position
- Y N Congenital Heart Disease
- Y N Secondary Valvular Heart Disease
- Y N Acquired Septal Defect

Physical Exam

- Y N Tachypnea RR>40
- Y N Fever >38.4
- Y N General Appearance - Ill-Appearing
- Y N Non innocent murmur
- Y N Peripheral Edema
- Y N Heart Sounds Distant
- Y N Heart Sounds Gallop
- Y N Pericardial Friction Rub
- Y N S2 with Accentuated P2
- Y N Painful/Swollen Extremities

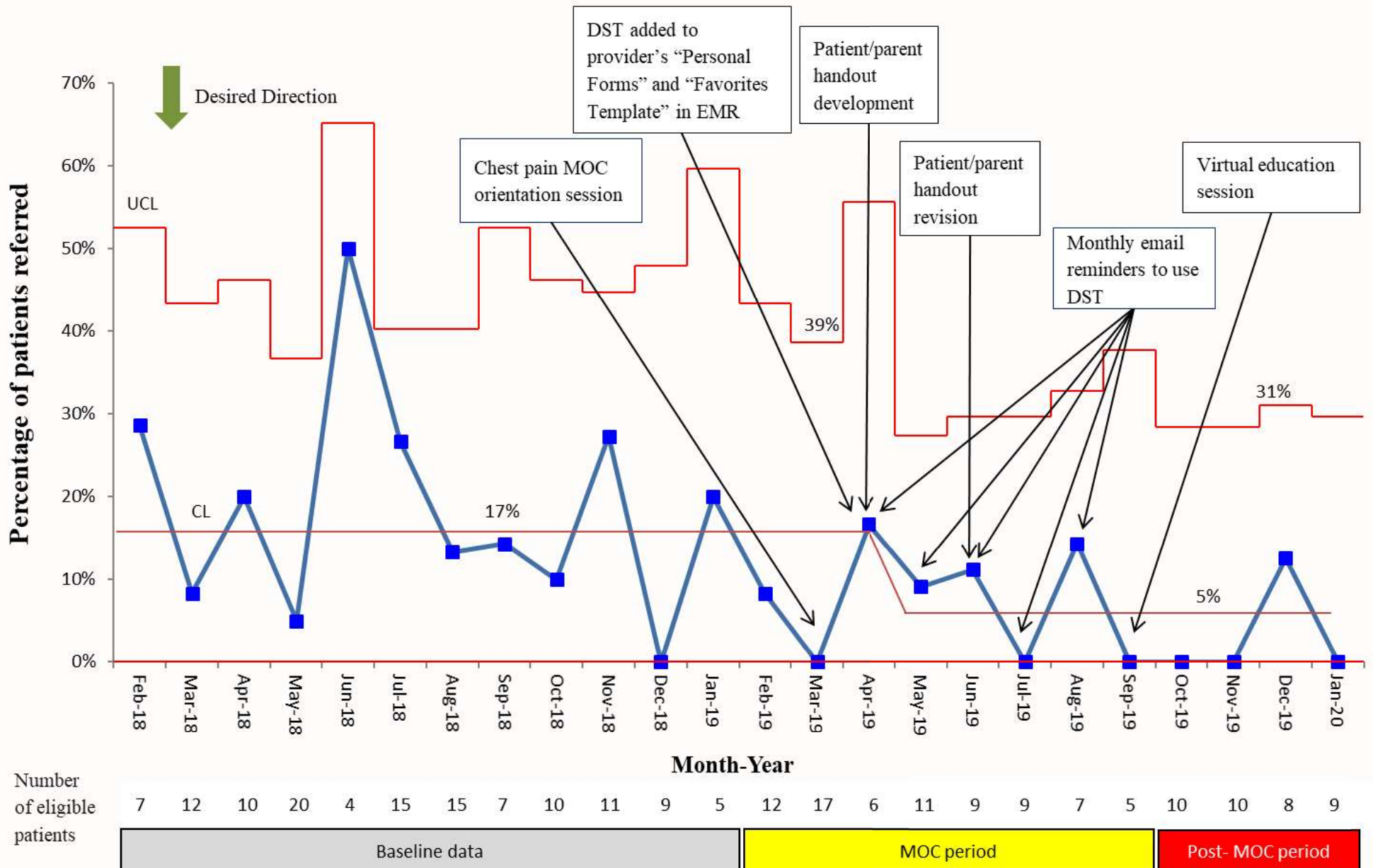
Family History

- Y N Hypercoagulability
- Y N sudden unexplained deaths
- Y N Cardiomyopathy
- Y N heart disease/MI <50yrs old

***Items listed are considered "red flags" that chest pain may be cardiac related. If any items are checked as yes, this indicates that a cardiology referral is indicated unless clearly explained by other medical diagnosis.*

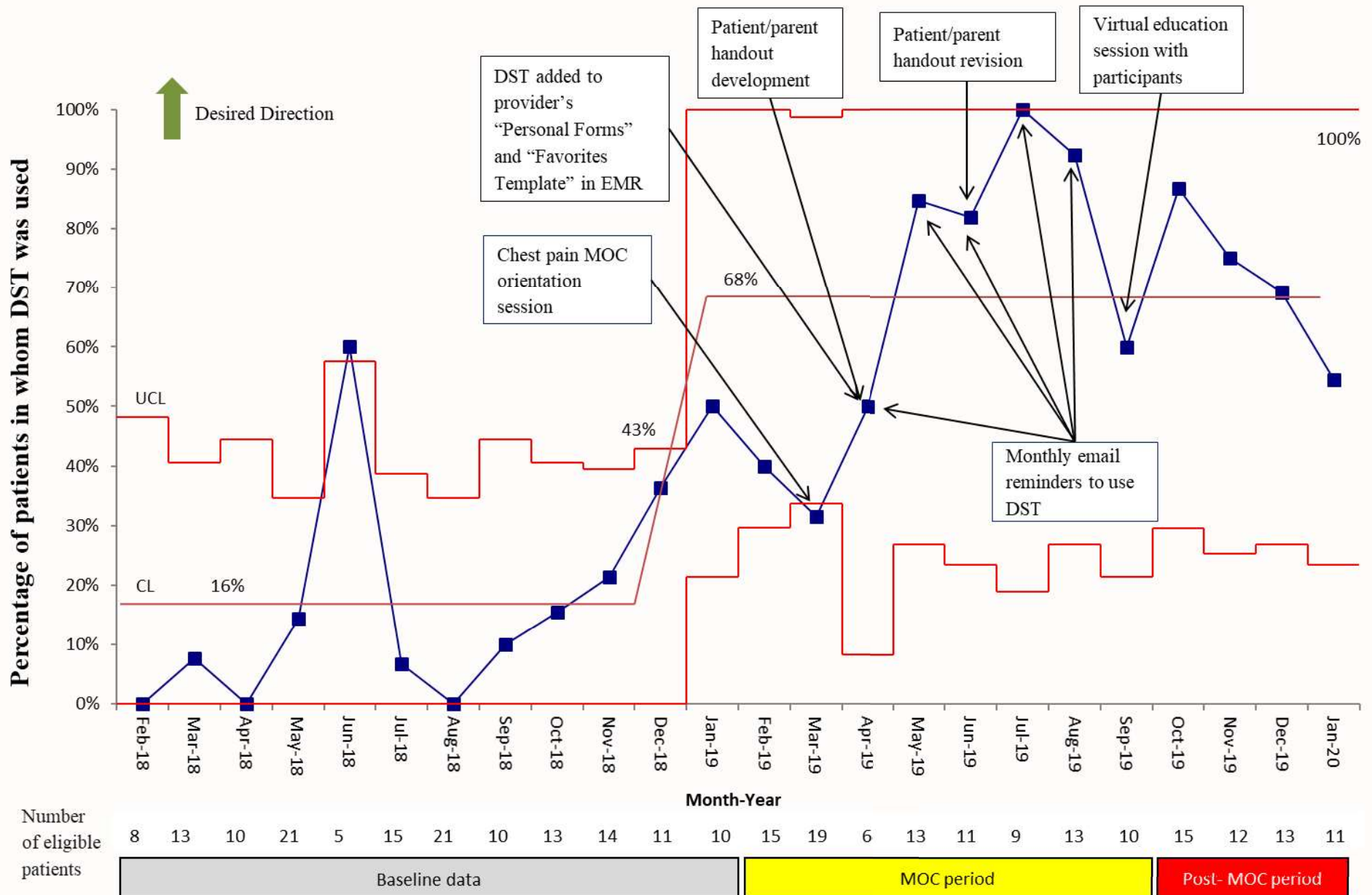
Results

Figure 1. Percentage of Low Probability Referrals for Cardiac Disease Explaining Chest Pain



Results

Figure 2. Utilization of Decision Support Tool



Results

Balance measure

- At median **follow up time of 0.9 years** (IQR 0.3-1.6 years), of the children with low probability referral, there were **no life threatening cardiac events**
- Three patients (0.9%) had incidental cardiac findings
 - *Bicommissural aortic valve*
 - *Wolf Parkinson White syndrome*
 - *Premature ventricular contractions*
- None were restricted from participating in sports

Conclusion

- There was a **71% reduction** in low probability cardiology referrals for children with chest pain
- Concurrently, there was an **increase** in utilization of the DST
- Of patients who met low probability referral, 0.9% were found to have incidental but **not life threatening cardiac findings**
- Expansion and utilization of this DST can help **decrease low probability referrals** and potentially **reduce health care costs**

Thank You

Acknowledgement

Special thanks to Kathy Prestidge, RN and Deena Berkowitz, MD, MPH

For any questions or comments feel free to email us at
Isaleh2@childrensnational.org or **aharahsh@childrensnational.org**



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Exploring the role of podcasts in resident medical education

Shaefali Shandilya, MD, PGY-3 and Alice Shanklin, MD, PGY-3 | March 25, 2021

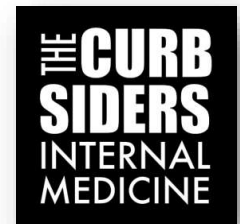
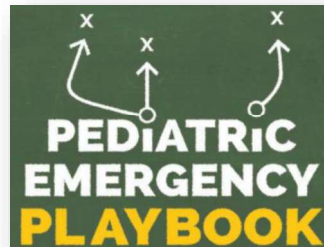


Overview

- ❖ Rise of podcasts in medical education
- ❖ Creating a podcast: Our experience
- ❖ 2020 and beyond: Podcasts as an educational tool for residents

Emergence of podcasts in medical education

- Since the launch of the Apple Podcasts in 2005, podcasts have been an increasingly utilized teaching tool in medicine.¹
- Every medical specialty has at least one educational podcast.
- Podcasts are most popular in emergency medicine, critical care, and pediatrics.

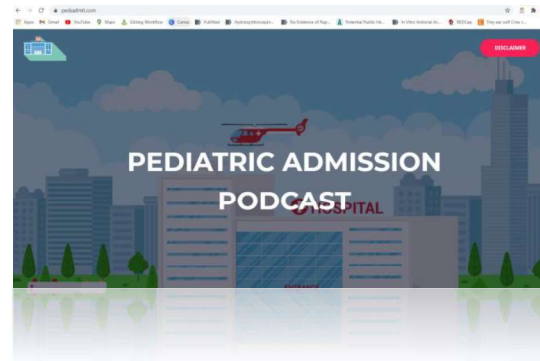


Are podcasts effective learning tools?

- Prior studies have demonstrated equivalence to required reading and in-person lectures.²
- Particularly effective for trainees that enjoy listening to podcasts regularly.³
- Not as conducive to active learning^{4,5}:
 - Exclusive audio processing
 - Multitasking while listening to educational content
 - One-time exposure to material
- Limited data; further studies are needed.

Creating a podcast during residency

- Initial aim:
 - Develop a podcast that distills the clinical pearls passed from attendings, fellows, and senior residents to interns and medical students.
- Proposed format:
 - Interview-style episodes, lasting 30-40 min on average, with attendings, fellows, and senior/chief residents
- Launched in March 2020 at beginning of COVID-19 pandemic.



Creating a podcast during residency

- Shifting gears during the pandemic:
 - Incorporated more COVID-19 content for trainees.
 - Produced multiple episodes covering background information on the virus, updates on emerging evidence, and primers on personal protective equipment.
 - Collaborated with Internal Medicine and Med-Peds residents to create a short series of primers on adult medicine, geared toward pediatric residents who were tasked with treating adults during the height of the pandemic.



Creating a podcast during residency

- Since initial launch:
 - Covered a wide range of topics in pediatric medicine.
 - Expanded scope of topics to include episodes on time management skills and workflow, financial planning, and career development.
 - Continuing to collaborate with fellows and faculty members and focus on our initial aim.

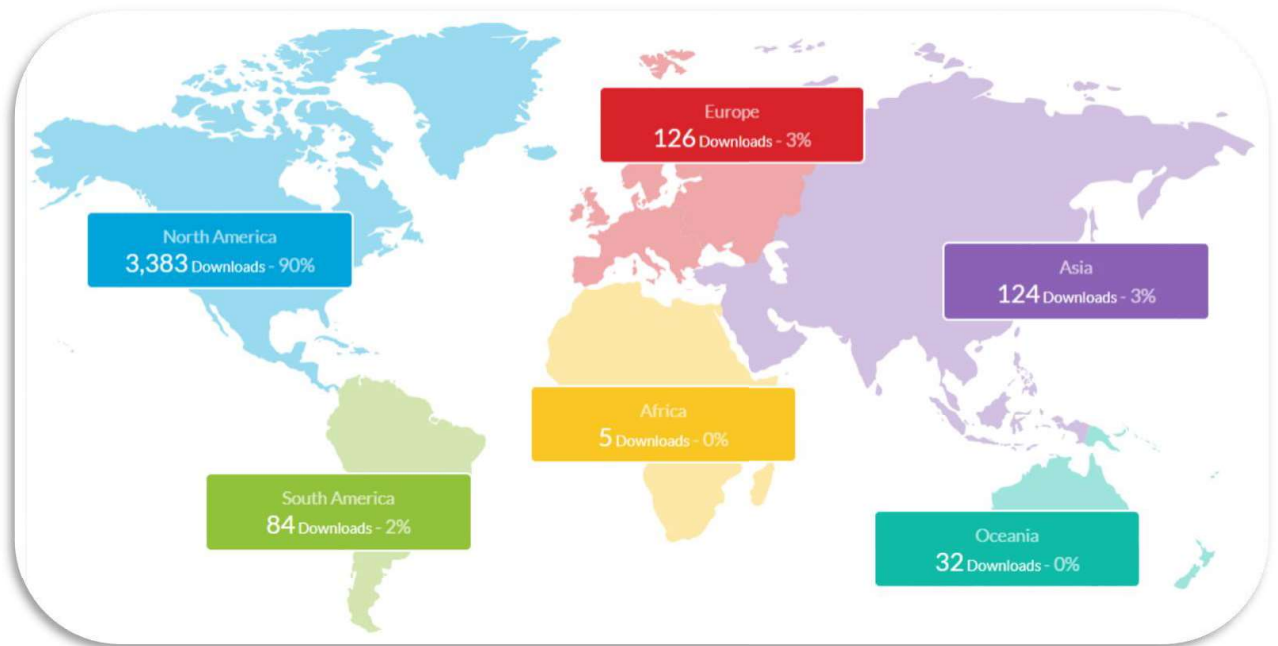


Listening Statistics

>3750
DOWNLOADS
SINCE LAUNCH




120
AVG LISTENERS
PER EPISODE



Listening Statistics

MOST DOWNLOADED EPISODE:

**COVID-19
RESIDENT UPDATE**

WITH DR. MARISU RUEDA-ALTEZ

**COVID-19
RESIDENT UPDATE**

Dr. Marisu Rueda Altez



**MOST DOWNLOADED
PEDIATRIC MEDICINE EPISODES:**

**PREROUNDING &
ROUNDING**

WITH DR. JORDAN TYRIS

INPATIENT ASTHMA

WITH DR. JEREMY KERN

**INPATIENT
WORKFLOW**

WITH DR. SARAH DURRIN

**GENETICS &
METABOLISM**

WITH DR. DEBRA REGIER

**INPATIENT
BRONCHIOLITIS**

WITH DR. TINA HALLEY

**PRE-ROUNDING &
ROUNDING**

Dr. Jordan Tyris



LISTEN NOW:

**INPATIENT
ASTHMA**

Dr. Jeremy Kern



**Genetics &
Metabolism**

With Dr. Debra Regier

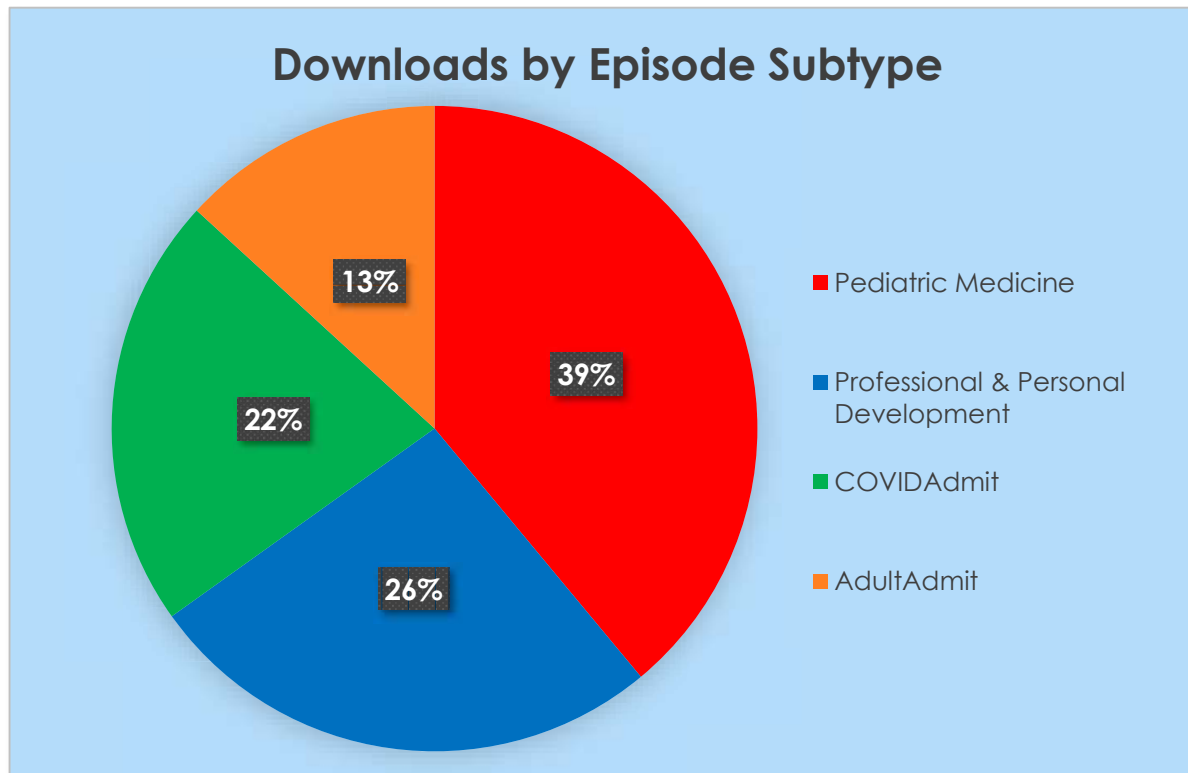


**INPATIENT
BRONCHIOLITIS**

Dr. Tina Halley



Listening Statistics



Challenges in resident education during the pandemic

- Unable to gather in groups for conferences.
- Resident curriculum shifted entirely to virtual learning.
- Difficulty with resident engagement via virtual learning only.
- Need for alternative options, including asynchronous learning.

Podcasts as a teaching tool



Do we find them helpful?

Do you enjoy **podcasts about medicine**?



Residents listen to a median of **2 hours** of podcasts per week (95% CI 0-7 hrs).

Residents listen to a median of **2 different podcasts** (95% CI 1.0-9.1).

83% of residents agree that podcasts have **helped them learn about medicine** during residency.

What's useful for a new intern?

Based on your individual comments:

1. Escalation of care
2. Asthma
3. Workflow tips
4. Antibiotics
5. Common ID conditions (Osteomyelitis, cellulitis, Kawasaki, etc.)
6. Fluids and hydration



What do you wish you knew better as an intern?



1. Common **antibiotics** (93%)
2. Common **medication orders** (75%)
3. **NRP** (27%)
4. **PALS** (42%)
5. **Vaccine** schedule (47%)
6. Visit-specific **anticipatory guidance** (67%)
7. **Genetic** and metabolic disorders (38%)

Next steps: Podcast knowledge acquisition study

- Study Question:
 - Can podcasts help pediatric residents acquire and retain clinical information?
- Hypothesis:
 - After listening to a concise and engaging podcast episode that uses planned repetition, residents will demonstrate a significant improvement in their understanding of common antibiotics and the indications for their use in pediatric medicine, when compared to residents who do not engage with the podcast. They will also retain this information over time.

Next steps: Podcast knowledge acquisition study

- Study Design:
 - Randomized controlled crossover study
 - Participants randomized to one of two groups (Group A or Group B).
 - Both groups take an initial pre-test.
 - Group A gains access to an episode on beta lactam antibiotics first. Group B gains access to an episode on non-beta lactam antibiotics first.
 - After listening to their respective episodes, participants take the first post-test.

Next steps: Podcast knowledge acquisition study

- Study Design, continued:
 - Participants in groups A and B cross over and gain access to the second episode.
 - All participants take a second post-test.
 - About 1 month after their initial exposures to the episodes, all participants take a third and final pre-test to assess knowledge retention over time.
- Current status:
 - Data collection in process and results pending.
 - We anticipate that these data will be useful in designing effective and convenient materials for medical education curricula moving forward.



Closing Thoughts

- ❖ Residents enjoy listening to podcasts and appreciate their educational value.
- ❖ Podcasts that increase awareness of the “hidden curriculum” in pediatric medicine and disseminate information about current events are particularly popular among pediatric residents.
- ❖ Podcasts are convenient tools for asynchronous learning.
- ❖ Podcasts may help improve resident medical education, especially during times of virtual and self-directed learning.

Thank You!

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Children's National

Pain Management and Sedation in Pediatric Ileocolic Intussusception: A Global, Multicenter, Retrospective Study

Dana Stone, MD, Camilo E. Gutierrez, MD
Children's National Medical Center

BACKGROUND

- Ileocolic intussusception is a common cause of intestinal obstruction and one of the most common surgical emergencies in young children.
- Children usually present to the emergency department (ED) with variable symptoms including abdominal pain and usually require urgent pneumatic reduction of intussusception.
- While adequate and appropriately timed analgesia is recognized as an important and compassionate component of treatment, few studies have evaluated the use of analgesia in these patients.
- Global surveys demonstrate wide variation in practice, yet no studies have comprehensively studied this variation.

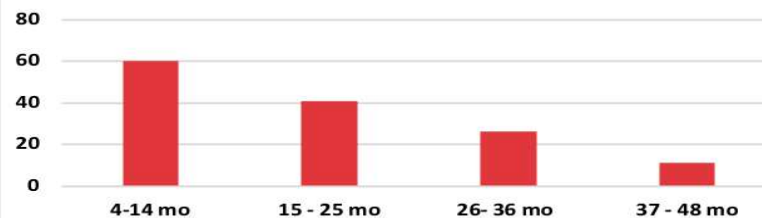
OBJECTIVE

- To explore current global practices related to the provision of analgesia and sedation for reduction of intussusception and to examine the association of sedation with outcomes of reduction of intussusception.

METHODS

- All patients with the discharge diagnosis of "ileocolic intussusception" between 2017 and 2019 were identified.
- Those with clinical and sonographic diagnosis of ileocolic intussusception who underwent attempted reduction of intussusception by means of pneumatic enema were included.
- Those with known gastrointestinal anomalies were excluded. Data was extracted from medical records using a structured case report form.
- Data included but not limited to demographics, history and physical findings, vital signs including pain scores, medications for pain and sedation, time intervals, imaging results, reduction of intussusception techniques and number of attempts, reduction success, medication and procedure related adverse events, recurrence of intussusception, need for admission and / or surgical procedure.
- This data collected at Children's National Hospital was submitted and analyzed collectively with data obtained through the Pediatric Emergency Research Network (PERN) as part of a PERN study.

Age Distribution of Patients Diagnosed with Intussusception



RESULTS

Results are pending at this time

DISCUSSION

- Global surveys demonstrate a wide variety in practice when it comes to analgesia and sedation for the reduction of intussusception. This study continues to demonstrate that this variability does exist. Additionally this study shows that at times patients do not receive any analgesia or sedation at all.
- Additional discussion pending results

LIMITATIONS

- Limitations pending results

FUTURE DIRECTION

This study should aid in the development of a standardized approach to sedation and pain management in children diagnosed with intussusception.

ACKNOWLEDGEMENTS

A special thank you to the Children's National REACH program.



Assessment of Myocardial Strain and Cardiac Rhythm in Children with Refractory Epilepsy

Mrinmayee Takle MD, John Schreiber, MD
Children's National Medical Center

BACKGROUND

- Sudden unexpected death in epilepsy (SUDEP) is the leading cause of epilepsy-related premature mortality and can account for up to 17% of deaths in patients with epilepsy
- Current hypotheses for causes of SUDEP include alterations in cardiovascular function (including arrhythmias and poor myocardial function), respiratory dysfunction (apnea, pulmonary edema), autonomic nervous system dysregulation, and arousal system dysfunction
- Significant lengthening (up to 512) of corrected QT cardiac repolarization has been noted during up to 13% of seizure activity. Rates of ictal bradycardia and systole were found to be 7.2 and 1.9% in patients with drug-resistant epilepsy
- Cardiac abnormalities such as myocyte hypertrophy and myocardial fibrosis have been reported in approximately ¼ of SUDEP cases

OBJECTIVE

- 1) Obtain seizure history and epilepsy characteristics in patients with refractory epilepsy
- 2) Assess cardiac function and myocardial deformation via speckle tracking echocardiogram in patients with refractory epilepsy in comparison with healthy matched controls
- 3) Evaluate for changes in cardiac rhythm via EKG in patients with refractory epilepsy in comparison with healthy matched controls

METHODS

- Inclusion criteria included children of at least one year of age with a history of generalized tonic clonic seizures (GTCs) for at least three years or greater than 25 total GTCs, or a diagnosis of Dravet syndrome
- Cardiac function was assessed using speckle tracking echocardiogram (STE), during which apical four chamber and parasternal short axis images will be acquired, and ejection fraction, shortening fraction, mitral inflow E wave velocity, and lateral tissue Doppler E' velocity was recorded. Strain, strain rate, longitudinal strain, and circumferential strain was analyzed using vendor-specific software.
- EKG data was obtained including heart rate, rhythm (sinus or irregular), axis, intervals (PR, QRS, QTc), RR variability, signs of bundle branch block, and/or signs of hypertrophy on electrocardiogram

RESULTS

- 41 patients (median age 10 years) were enrolled
- Epilepsy etiology included genetic, structural, genetic and structural, infection, and unknown
- Patients had a median duration of epilepsy of 7.8 years
- 11 patients had Dravet syndrome, and 6 had other presumed genetic epileptic encephalopathies
- 73.8% of patients had a history of GTCs
- Longitudinal and circumferential strain were impaired in patients compared to controls
- Shortening valve fraction is higher in patients; mitral valve E wave inflow velocity and tissue Doppler lateral E' wave was decreased
- No difference in ejection fraction

DISCUSSION

- The decrease in longitudinal and circumferential strain, indicates decreased myocardial deformation/contraction in patients with refractory epilepsy, also indicating impaired systolic ventricular strain
- Speckle tracking echo is an effective way to assess myocardial strain
- EKGS all showed normal sinus rhythm
- No difference in ejection fraction
- Echocardiographic changes are not associated with clinical epilepsy history

LIMITATIONS

- Given the COVID pandemic, patient enrollment was severely delayed
- Data obtained during one moment of time in the setting of an interictal periods (not an ictal period)
- STE dependent on the ability of a patient to follow commands patient's ability to follow commands
- Data including refractory epilepsy included patients with Dravet syndrome. As such, these patients were not evaluated separately

FUTURE DIRECTION

Obtain data regarding rhythm and structural abnormalities during ictal periods of patients with refractory epilepsy in comparison to healthy controls

ACKNOWLEDGEMENTS

A special thank you to the Children's National REACH program

