Stony Brook Children's

SCHOOL OF MEDICINE

DEPARTMENT OF PEDIATRICSs

Margaret M. McGovern, MD, PhD

Physician-in-Chief

Stony Brook Children's Hospital

Professor and Chair

Department of Pediatrics

May 11, 2016

Welcome to the eighth annual Pediatric Trainee Research Day. It is a pleasure to share with you today the work our residents and trainees have been carrying out in children's health research and scholarship.

As we continue on our journey to creating a world class children's hospital program, we are committed to providing hope to sick children and their families by carrying out the research that will improve existing treatments and make the discoveries that will lead to new approaches to pediatric diseases.

To prepare the next generation of pediatricians to take part in this mission, each of our trainees is required to carry out a mentored project during their training. Coming from diverse backgrounds they can select from a spectrum of projects to best suit their career goals and meet their educational needs. Today they will have the opportunity to present their work to their faculty, peers and other colleagues.

Thank you for joining us and showing support to these young investigators. Special thanks also to Dr. Marian Evinger and this year's Organizing Committee (Drs. Fischel, Fenton, Lane, M. Parker, R. Parker, and Woroniecki) for coordinating the day. Also, we appreciate the entire faculty who have served as mentors to provide guidance and encouragement to our trainees.

Sincerely,

Margaret M. McGovern, MD, PhD
Professor and Chair of Pediatrics
Physician-In-Chief Stony Brook Children's Hospital
Associate Dean for Ambulatory Operations

2016 PEDIATRIC RESEARCH DAY

Wednesday, May 11th
8 am – 1:30 pm
Charles B. Wang Center

8:00 – 8:30 **Registration and Breakfast** – Theater Lobby
8:30 **Welcome –-** Opening Remarks by Dr. Margaret McGovern – Main Theater
8:40 **Keynote Address – Main Theater**
Introduction of Keynote Speaker – Dr. A. Lane
8:50– 9:40 Keynote Speaker: **Ian Krantz, MD**
Professor, Children's Hospital of Philadelphia

"Developmental Insights from Rare Disease Research"

Platform Presentations – Main Theater

9:45 – 10:30 **Introduction of Invited Judges –** Dr. M. Parker
Judging Panel: Ian Krantz, MD, Lauren Hale, PhD, Joseph Laver, MD and Ellen Li, MD, PhD

Residents Platform Presentations (Chair – Dr. R. Woroniecki)
Dianne Lee, DO "Predicting Endotracheal Tube Insertion Depths in Neonates"
Pooja Rathi, DO "Effects of Indomethacin Dosing Strategy on Closure of Patent Ductus Arteriosus in Very Low Birth Weigh Neonates"
Catherine Salussolia, MD, PhD "A Eukaryotic-Specific Transmembrane Segment Carries Out Distinct Roles in AMPA and NMDA Receptor Function"

10:30 – 10:40 **Coffee Bre**ak - Theater Lobby

10:45- 11:10 **PEDsTalks** (Introduced by Dr. M. Evinger)
James Brief, MD "Evolution: From Cosmos to Colonoscopies"
Catherine Salussolia, MD, PhD "Hidden Secrets in Our Genes"
Steven Ricondo, MD "Lessons Learned: The Journey of an LGBT Adolescent"
,

11:10 – 11:40 **Fellows Platform Presentations** (Chair – Dr. J. Fischel) -
Bianca Karber, MD "Optimal Radiologic Position of an Umbilical Venous Catheter Tip as Determined by Echocardiography in Very Low Birth Weight Newborns"
Neera Prakash, MD "Reducing Painful Procedures in Late Preterm Infants by Using Umbilical Cord Blood as Alternative to Admission CBC"

11:40 – 12:30 **Poster Session -** Theater Lobby (Chair – Dr. R. Parker)
Invited Judges plus Drs. M. Parker, K. Fenton(Organizing Committee)

12:30 – 1:20 **Lunch** – Zodiac Gallery
Dr. Krantz to discuss "Tips for Trainees: My Career Path"
Presentation of Awards and Closing Remarks by Dr. McGovern

Keynote Speaker Biography

Ian D. Krantz, M.D.

Professor of Pediatrics,
The Children's Hospital of Philadelphia
The Perelman School of Medicine at The University of Pennsylvania

Dr. Ian D. Krantz earned his degree in medicine from the Sackler School of Medicine in Tel Aviv, after which he completed a residency in pediatrics at New York University. Following a fellowship in Human Genetics and Molecular Biology at The Children's Hospital of Philadelphia, he joined the laboratory group of Dr. Nancy Spinner, at CHOP, as a research fellow. There he contributed to the discovery of mutations in Jagged1 as the cause of Alagille syndrome in 1997, the discovery of mutations in the NIPBL gene as the cause of Cornelia de Lange syndrome in 2004, and the discovery in 2007 that the Notch2 gene is also causative for Alagille. Recently, he described a new syndrome and its cause: CHOPS syndrome, due to mutations in the AFF4 gene. This discovery promises to shed new light on our understanding of the regulation of transcription.

Dr. Krantz has published over 120 peer-reviewed publications, and his current holding of $5.8 million dollars in research grants in this era of reduced biomedical research funding is a testament to a very productive research career. He cares deeply about his patients, this attribute being recognized in the general media by a feature article in People magazine, and by his being nominated for Time Magazine 2013's 100 most influential people award. He has also been featured in on-air segments by the BBC, NPR, and PBS.

Dr. Krantz is a seasoned educator, serving as the director of the genetics' residency and fellowship programs at CHOP. He is a member of the editorial board of the American Journal of Medical Genetics, and leads study sections for the NIH. In addition to this national service he serves internationally as well, reviewing grant proposals for agencies in Italy, Canada, Austria, New Zealand, and France. Currently, he is the director of The Center for Cornelia de Lange Syndrome and Related Diagnoses, and the Director of the Individualized Medical Genetics Center (IMGC) at CHOP.

Abstracts

Resident Platform Presentations

Fellow Platform Presentations

Resident Posters

Fellow Posters

Student Posters

NOTE: All Abstract Authors from Department of Pediatrics unless otherwise noted.

ABSTRACT 1

PREDICTING ENDOTRACHEAL TUBE INSERTION DEPTHS IN NEONATES

Dianne Lee, DO, MBA, Joseph Decristofaro, MD, and Echezona Maduekwe, MD

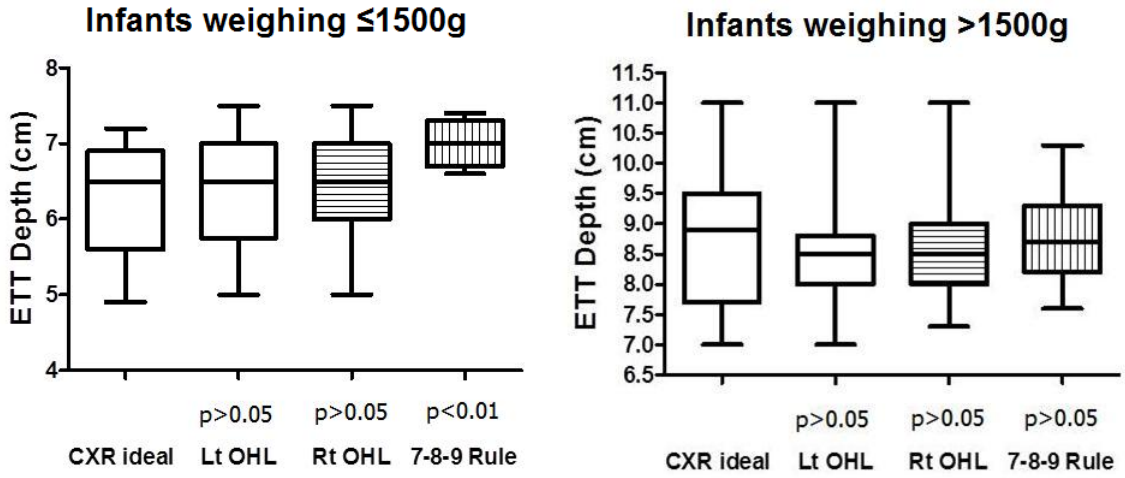
Background: Improperly placed endotracheal tubes (ETT) contribute to neonatal morbidity. The conventional method known as the 7-8-9 rule used to predict ETT depths is often inaccurate, especially for infants weighing<1500g. We identified a new measurement called the oro-helix length (OHL) that correlates with ETT depth.

Objective: To determine the accuracy of OHL in predicting the ETT depth. We hypothesized that OHL length is a better predictor of ETT depth in neonates weighing ≤1500g and is as accurate as the 7-8-9 rule for neonates weighing >1500g.

Study Design: This IRB-approved prospective study enrolled intubated neonates without cranio-facial anomalies or facial trauma using the standard of care. Two independent people measured the OHL length compared to the 7-8-9 rule using paired differences with 95% confidence intervals.

Results: 44 neonates weighing 580-4320g with gestational age 23-42 weeks were enrolled. In infants weighing ≤1500g, there was a statistical difference between the ideal CXR depth and the 7-8-9 rule (n=21, p<0.01, CI -1.3—0.15), and no statistical difference between the left OHL (n=21, p>0.05, CI -0.52—0.55) and right OHL (n=21, p>0.05, CI -0.59-0.48). Similar findings with more pronounced differences were seen in infants ≤1000g. For infants >1500g, there were no statistical difference among the ideal CXR depth, left OHL (n=23, P>0.05, CI -0.57-0.90), right OHL (n=23, P>0.05, CI -0.65-0.81), and 7-8-9 rule (n=23, P>0.05, CI -0.78-0.68).

Conclusion: OHL is more accurate than the 7-8-9 rule in predicting the optimal ETT depth in infants weighing ≤1500g, and is just as accurate in infants weighing >1500g.



ABSTRACT 2

EFFECTS OF INDOMETHACIN DOSING STRATEGY ON CLOSURE OF PATENT DUCTUS ARTERIOSUS IN VERY LOW BIRTH WEIGHT NEONATES

Pooja Rathi, DO[1], Catherine Messina, PhD[2] and Jonathan P Mintzer, MD[1]
Departments of [1]Pediatrics and [2]Family, Population and Preventive Medicine

Background: Indomethacin is used for medical closure of patent ductus arteriosus (PDA) in very low birth weight (VLBW) neonates. Currently, it is unclear whether a specific indomethacin dosing regimen, e.g., every 12 hour (q12h) compared to every 24 hour (q24h), demonstrates favorable efficacy and safety for initial PDA closure.

Methods: We performed a retrospective chart review of VLBW neonates receiving indomethacin between July, 2010 and July, 2015. Comparisons between q12h and q24h regimens were performed for the primary outcome of successful initial PDA closure, defined as a lack of multiple indomethacin courses and/or PDA ligation.

Results: We identified 103 eligible subjects: 56 (54%) received q12h and 47 (46%) received q24h indomethacin at equivalent dosing (0.2 mg/kg). This subject population was sufficient to demonstrate a 30% effect size between groups with 80% power and a 2-tailed alpha of 0.05. No difference was observed between groups regarding repeat medical or surgical PDA treatment. Less PDA ligation occurred with q12h dosing, though this effect was mitigated when controlling for birth weight and gestational age. Both groups increased BUN and creatinine during treatment, though the degree of increase was not statistically different between groups. Between the q12h and q24h groups, no significant differences were seen in secondary outcomes studied (see Table).

Conclusion: Both indomethacin regimens demonstrated similar efficacy and safety for initial PDA management. The q12h regimen could be preferred considering the convenience of a shorter treatment duration. Further prospective analysis of indomethacin dosing strategy is warranted.

TABLE	**q12h (N=56)**	**q24h (N=47)**	**p-value**
Repeat Indomethacin Courses	10 (18%)	13 (28%)	0.21
PDA Ligation	6 (11%)	12 (26%)	**0.05**
Total Ventilator Days	14 (6-38)	22 (10-41)	0.25
Total Oxygen Days	49 (23-78)	49 (22-86)	0.95
High Frequency Ventilation	32 (57%)	37 (79%)	**0.02**
Total Parenteral Nutrition Days	21 (16-32)	25 (18-37)	0.39
Spontaneous Intestinal Perforation	1 (2%)	5 (11%)	0.06
Necrotizing Enterocolitis	3 (5%)	4 (9%)	0.53
Intraventricular Hemorrhage	22 (39%)	20 (43%)	0.74
IVH > Grade 2	11 (20%)	9 (19%)	0.95
Bronchopulmonary Dysplasia	40 (71%)	30 (64%)	0.41
Length of Stay	72 (46-102)	65 (22-104)	0.41
Mortality	6 (11%)	10 (21%)	0.14

Categorical data expressed as number (%); continuous data expressed as median (IQR).

ABSTRACT 3

A EUKARYOTIC-SPECIFIC TRANSMEMBRANE SEGMENT CARRIES OUT DISTINCT ROLES IN AMPA AND NMDA RECEPTOR FUNCTION

Catherine L. Salussolia MD, PhD[1,8], Johansen Amin[5,7,8], Kelvin Chen[7], Rashek Kazi[6,7,8], Mark E. Bowen PhD[2] and Lonnie P. Wollmuth PhD[3,4,8]

Departments of [1]Pediatrics, [2]Physiology & Biophysics, [3]Neurobiology & Behavior, [4]Biochemistry & Cell Biology, Graduate Programs in [5]Cellular and Molecular Pharmacology, [6]Neuroscience, and [7]Medical Scientist Training Program, and [8]Center for Nervous System Disorders.

Background: Ionotropic glutamate receptors (iGluRs), most notably AMPA (AMPAR) and NMDA (NMDAR) receptors, are ligand-gated ion channels that mediate fast excitatory neurotransmission in the brain. Functional iGluRs are tetramers. The transmembrane domain, composed of hydrophobic segments (M1-M4), forms the ion channel. The ion channel core, M1-M3, is structurally and evolutionarily related to an inverted two transmembrane K^+ channel. Eukaryotic iGluRs have an additional transmembrane segment (M4), which is associated with the ion channel core of an adjacent subunit. In AMPARs, the M4 segment is required for tetramerization. In contrast to AMPARs, NMDARs are obligate heterotetramers composed of two GluN1 and typically two GluN2 subunits; however, the functional role of the NMDAR M4 segments is unknown. Recently, numerous *de novo* missense mutations in NMDAR M4 segments associated with neurodevelopmental disorders have been identified.

In AMPARs, a specific face of the M4 segment, the 'VLGAVE' face, is closely aligned with M1&M3 of an adjacent subunit. In NMDARs this interface appears less intimate. Initially, we characterized transmembrane interactions by introducing tryptophan (W) – a large bulky amino acid that disrupts transmembrane interactions – in GluN1 and GluN2A M4 segments.

Results: We characterized the effect of these substitutions using a functional assay. Surprisingly, and in contrast to AMPARs, no extensive repetitive pattern of positions that blocked assembly occurred in either GluN1 or GluN2A. Instead, tryptophan substitutions had strong effects on NMDAR gating.

Conclusions: Our experiments suggest that in contrast to AMPARs, which requires the M4 segment for tetramerization, the NMDAR M4 segment plays a modulatory role in receptor gating.

ABSTRACT 4

OPTIMAL RADIOLOGIC POSITION OF AN UMBILICAL VENOUS CATHETER TIP AS DETERMINED BY ECHOCARDIOGRAPHY IN VERY LOW BIRTH WEIGHT NEWBORNS

Bianca Fornier Karber, MD[1], James Nielsen, MD[1], Dvorah Balsam, MD[2], Catherine Messina, PhD[3], and Dennis Davidson, MD
Departments of [1]Pediatrics, [2]Radiology and [3]Family, Population and Preventive Medicine

Objective: The purpose of this study was to compare chest X-ray with echocardiogram (ECHO) in localization of umbilical venous catheter (UVC) tips in very low birth weight (VLBW) infants.

Study Design: This was a prospective, sequentially enrolled, masked, single center study. After UVC placement, 1 or more anterior-posterior X-rays were ordered by the clinical team to verify that the UVC tip location in the central right atrium (cRA) or thoracic inferior vena cava (TIVC)-RA junction. The pediatric radiologist and cardiologist were masked to each other's reading. Secondary objectives determined the association between tip placement by vertebral body level on X-ray to ECHO, and length of the TIVC-RA junction by ECHO.

Results: The newborns (n=51) were 27(±3) weeks gestational age with birth weights of 1029(±288) grams (mean ± SD). The radiologist read 50 UVC tips (98%) in the cRA or TIVC-RA junction and 1 (2%) in the LA. The cardiologist read 22 (43%) in the cRA or TIVC-RA, 21 (41%) in the LA and 8 (16%) tips could not be located. When the UVC tip was interpreted by X-ray as located in the TIVC-RA junction 8/29 (28%) were in the LA by ECHO. There was no association between vertebral level and tip position by ECHO. The TIVC-RA junction measured 6±1 mm and correlated with birth weight $r = 0.54$ ($p<0.001$).

Conclusion: In VLBW newborns, placement of the UVC tip into the cRA or TIVC-RA junction by X-ray does not avoid misplacement in the LA as demonstrated by ECHO. For VLBW infants, it is suggested that echocardiography may be helpful in verifying placement of the UVC tip into the LA has not occurred.

ABSTRACT 5

REDUCING PAINFUL PROCEDURES IN LATE PRETERM INFANTS BY USING UMBILICAL CORD BLOOD AS ALTERNATIVE TO ADMISSION COMPLETE BLOOD COUNT

Neera Prakash, MD and Echezona Maduekwe, MD

Background: The long term consequences of early, repeated painful experiences in neonates caused by needle insertions and punctures have been established by physiologic studies. We hypothesize that the number of painful procedures in late preterm infants with no perinatal exposure to chorioamnionitis (presumed sepsis) can be reduced by using umbilical cord blood as an alternative to admission complete blood count (CBC.)

Objective: To evaluate if umbilical cord blood can be used as an alternative to CBC drawn at the time of NICU admission in late preterm infants with no presumed sepsis.

Design/Methods: We conducted an IRB approved, prospective study in which CBC was performed on 96 paired umbilical cord and admission blood samples from late preterm infants with no presumed sepsis. Sampling occurred from September 2014 to November 2015. Umbilical cord blood was obtained in the delivery room within 10 minutes of delivering the placenta, and admission CBCs within one hour of age. The primary outcome measure was how closely related were the umbilical cord white blood cell count (WBC), hematocrit (Hct) and platelet (Plt) to the admission CBC. Data analysis was done using paired t-test, one way analysis of variance (ANOVA) and Pearson's correlation coefficient.

Results: Of the 96 patients recruited in the study, 48% were female, 55% were delivered via cesarean section. Fifty percent were Caucasians, 36% Hispanic, 10% African-American, and 4% Asians. The mean difference between the cord WBC and admission WBC was -2.65 (SD of 3.73); Hct was -2.42 (SD of 5.28); and Plt was 9.27 (SD of 67.5.) Umbilical cord and admission WBC, Hct, and Plt counts are all significantly ($P<0.001$) correlated with paired neonatal samples ($R=0.63, 0.68, 0.74$.) No difference was noted if cord blood was from the umbilical vein or artery, and no difference was noted if admission CBC was from the capillary or artery.

Conclusions: Umbilical cord blood can be used for admission CBC taken within the first hour of life in late preterm infants with no presumed sepsis. Eliminating the admission CBC will decrease the number of painful procedures on these infants. Future studies will need to focus on babies with presumed sepsis.

ABSTRACT 6

PHYSICIANS' BELIEFS AND SELF-REPORTED PRACTICE REGARDING SECOND AND THIRD HAND SMOKE AND ELECTRONIC CIGARETTES: AN INSTITUTIONAL SURVEY

Christal Achille, MD[1], Catherine R. Messina, PhD[2] and Rachel Boykan, MD[1]
Departments of [1]Pediatrics and [2]Family, Population, & Preventive Medicine

Background: There is broad consensus among physicians regarding the morbidity and mortality associated with tobacco use and second hand smoke exposure (SHS). However, the consequences of third hand smoke exposure (THS) and the use of electronic cigarettes (e-cig) are not universally appreciated.

Methods: A confidential web-based survey was distributed to Stony Brook University Medical Center Attending physicians (n=650) to define physicians' beliefs/practices regarding SHS, THS and e-cigs and to identify areas for improvement in addressing patients' smoking. Three physician groups were defined: pediatrics only, adult only, adult and pediatrics. Relationships were examined using the Chi square test of independence.

Results: Pediatricians appeared to be more familiar with THS (59.5% pediatrics; 44.8% adult/pediatrics; 35.6% adult; p=0.06), and were more aware of THS role in asthma (95.2% pediatrics; 96.4% adult/pediatrics; 74.5% adult; p= <0.001). Forty-one percent of respondents appropriately defined THS using key terms.

Ninety-seven percent of those surveyed felt responsibility to address smoking with patients/patients' families. Pediatricians felt more responsibility to address patients' families' smoking (97.6% pediatrics; 73.2% adult/pediatrics; 79.3% adult; p=0.01). However, pediatricians reported the lowest levels of assisting with smoking cessation (14.3% pediatrics; 25.0% adult/pediatrics; 61.0% adult; p=<0.001). Most commonly cited barriers were lack of time (81%) and lack of resources (56%). Overall 50% addressed e-cigs (47% pediatrics; 40% adult/pediatrics; 59.6% adult).

Conclusions: Most physicians believe they should address smoking with patients/patients' families, but fewer assist with cessation. Most appreciate THS effects but need education regarding methods/resources to support patients' quitting. The physician's role in addressing e-cigs should be further defined.

ABSTRACT 7

NORMAL LEFT VENTRICULAR SIZE IN PREMATURE NEWBORNS BY THE ECHOCARDIOGRAPHIC BULLET METHOD.

Ken-Michael Bayle, DO[1], G. Galotti[1]; J. Nielsen-Farrell[3], James C Nielsen, MD[1], J. Yang[2], and Laurie Panesar, MD[1]
Departments of [1]Pediatrics and [2]Family, Population and Preventive Medicine, Stony Brook University School of Medicine, and [3]MoonPenny Consulting, Delaware, Ohio.

Objective: The purpose of this study was to define the normal range for left ventricular (LV) end-diastolic volume (LVEDV) in premature neonates with BSA<0.20m^2 by a Bullet echocardiographic (ECHO) method.

Methods: LVEDV was calculated retrospectively for 85 normal neonates and analyzed to produce centile nomograms and tabular data for Z-score calculation. The utility of the normal ranges for LVEDV was compared to the current standard for LV size (LV dimension) in 19 subjects who were treated for a patent ductus arteriosus (PDA). In addition, comparison of LVEDV was made to prior published data of larger (BSA=0.21-0.66m^2) newborns and infants.

Results: The indexed LVEDV for the normal cohort was 63.0±11.2 ml/m^2.76 which is significantly different than the published normal value of 70.4±9.1 ml/m^2.76, p<0.001 in larger newborns and infants. The centile nomograms for LVEDV per BSA are presented. For the comparison cohort, the 19 PDA subjects had a mean gestational age and weight of 25±2 weeks and 0.87±0.3kg, respectively. The mean LVEDVi of the PDA group (97.7±22.2ml/m^2.76) was significantly larger than the normal group (63.0±11.2 ml/m^2.76), p=0.002. The sensitivity of LVEDV was better (68% versus 11%) compared to LV dimension (the current standard) in detecting a large LV in the PDA subjects.

Conclusions: LVEDV calculated by the Bullet method can now be utilized to determine the size of the LV in neonates with a BSA<0.2m2. In patients with a PDA, an elevated LVEDV > +2 Z-scores can serve as objective data to aid in management decisions.

ABSTRACT 8

COMBINED SUPRAVALVAR AND VALVAR AORTIC STENOSIS IN A NEONATE WITH FAMILIAL NOONAN SYNDROME

Michael R. Bykhovsky, MD, James C. Nielsen, MD, and Laurie E. Panesar, MD

Background: Noonan's syndrome is an autosomal dominant genetic disorder that occurs in 1/1000-1/2500 newborns, with one-third to one-half of cases resulting from a mutation in the PTPN11 gene. Congenital heart disease affects 80-90% of patients, particularly pulmonary valve stenosis, atrial septal defects and hypertrophic cardiomyopathy, yet left heart obstructive lesions are rarely described.

Case: We report a unique case on a full-term infant male born to a mother with PTPN11 Noonan's Syndrome. Prenatal fetal echocardiogram described moderate combined aortic stenosis. The infant was born at 38-weeks with physical examination consistent with Noonan's Syndrome and cardiovascular exam positive for III/VI harsh systolic ejection murmur at the right upper sternal border with click in the aortic position. Transthoracic echocardiogram confirmed a dysplastic trileaflet aortic valve with moderate-to-severe valvar and supravalvar aortic stenosis. The peak gradient across the aortic valve was 50-60mmHg with a mean gradient of 30-34mmHg. Genetic testing confirmed identical PTPN11 gene mutation in the infant as the mother (c.181G>A).

Supravalvar aortic stenosis is rare, affecting approximately 1/20,000 individuals, and is commonly associated with a microdeletion of the elastin gene found within chromosome 7q11.23. Noonan's syndrome has reported findings of aortic annulus and root dilation, yet scarce accounts of supravalvar stenosis. Prior investigations suggest that abnormal signaling via the RAS-MAPK pathway of Noonan Syndrome may result in alterations in the integrity of the aortic wall leading to aortic aneurysms. By an alternate mechanism, derangement in the RAS-MAPK signaling may have a role in the development of supravalvar aortic stenosis in this patient.

ABSTRACT 9

HOW OFTEN WILL CHILDREN WITH GASTROESOPHAGEAL REFLUX DOCUMENTED BY PH MONITORING/IMPEDANCE STUDIES SHOW EVIDENCE OF ESOPHAGITIS?

Anupa Dalal, DO, Anuparma Chawla, MD, and Robert Woroniecki, MD

Purpose: Diagnosis of gastroesophageal reflux disease (GERD) in children is challenging, as there is no defined gold standard. GERD is suspected by either the presence of acid reflux documented during esophageal pH monitoring and/or by esophagitis documented by endoscopy. There are two methods of esophageal pH monitoring including 24-h-pH-multichannel-intraluminal-impedance measurement (pH-MII) or Bravo pH monitoring. It is unclear how often children with GERD will have both pathological reflux detected esophageal pH monitoring, histopathological changes of mucosal injury seen on esophageal endoscopy, or both.

Methods: We retrospectively examined clinical characteristics and frequency of gastroesophageal reflux in subjects evaluated at our center between January 2009 and July 2014. Subjects on anti-reflux medications or with known esophagitis secondary to conditions other than GERD were excluded.

Results: There were a total of 220 patient charts reviewed and 134 met inclusion criteria. All of the patients had an endoscopy and a 24-48 hour pH monitoring study. Breakdown of results and clinical features is seen in Figure 1. Only a minority (24/86) of subjects with GERD had both abnormal EE and pH, and the majority (41/86) had abnormal pH only. However we found that 21/86 had abnormal EE without any pH abnormality, of these subjects, 5/21 were newly diagnosed with eosinophilic esophagitis.

Impression: Children with GERD documented by Bravo/Impedance studies did not have significant changes of esophagitis detected on endoscopy. These two methods of detecting GERD are independent of each other and do not yield consistent results.

FIGURE 1

	Normal pH Normal EE	Abnormal pH Abnormal EE	Abnormal pH Normal EE	Normal pH Abnormal EE
Subjects (N=134)	35.8%(48)	17.9% (24)	30.6% (41)	15.7% (21)
Age (years)	9.8	10.0	7.1	11.0
Gender - Male	35.4% (17/48)	70.8% (17/24)	48.8% (20/41)	50% (10/20)
BMI	18.7	19.1	20.3	20.0

EE: Endoscopic evaluation
pH: 24-48 hour reflux monitoring

ABSTRACT 10

EVALUATING FOLLOW-UP VISITS IN THE PEDIATRIC RESIDENT CONTINUITY CLINIC

Samantha Feld, MD and Robyn Blair, MD

Background: Improving continuity of care and patient follow-up in Resident Continuity Clinic presents a unique challenge, as resident schedules are limited to once per week at most. Creating a process in the electronic medical record (EMR) for a follow-up visit (FUV) order should facilitate patient scheduling follow-up visits in the continuity clinic.

Methods: Data regarding FUV orders and FUV scheduling were abstracted from the EMR on patients 0-3 years old seen by a resident for a well check at the Stony Brook Pediatric Continuity sites. Baseline data were used to guide the first intervention, which included an email and verbal reminder with instructions on how to place a FUV order. During the second intervention, progress data were shared with physicians during re-education on FUV order placement. Analyses included comparing the percentage of FUV orders placed to FUVs scheduled.

Results: There were 1116, 634, and 713 visits at the baseline, first and second intervals respectively. The percentage of FUV ordering increased from 39% at baseline to 52% with both the first and second intervals. There was a significant difference in the percentage of patients who scheduled a FUV with and without orders placed.

Discussion: Future analysis will be needed to determine if placing an order facilitates scheduling with the same provider to improve continuity. Deeper investigation into the scheduling process to improve ordering and scheduling FUVs must be performed to further improve this process.

ABSTRACT 11

HURRICANE SANDY: A MODEL FOR EMERGENCY DEPARTMENT UTLIZATION DURING REGIONAL DISASTER

Bradley Goldberg, MD[1], Sergey Kunkov, MD, MS[1], Jeffrey Hom, MD[1], Henry Thode, PhD[2]
Departments of [1]Pediatrics and [2]Emergency Medicine.

Background: Hurricane Sandy in October 2012 was one of the worst natural disasters in the Northeastern United States this century. The extent of damage to vital infrastructure presented many challenges to the local, regional, and state healthcare systems.

Methods: This study analyzed the patterns of Pediatric Emergency Department utilization of a level I regional trauma center in Suffolk County, New York during and immediately following Hurricane Sandy. A secondary weather event, the February 2013 nor'easter "Nemo" was analyzed looking for similar patterns of emergency department use.
Data were collected from a preexisting database of emergency department encounters at Stony Brook University Hospital. Patients from age birth to less than 19 years of age were included in the study. Baseline patient visits, admission rates, trauma visits, and number of non-emergent visits were established surrounding both storms. Baseline results were then compared to the day of each storm's landfall and the following 72 hour periods.

Results: During Sandy and Nemo a significant decline in total visits to the emergency department, 33.5 and 50.0 percent respectively were seen. In the 72 hour period following Sandy there was a significant increase in daily visits (+30.8%), and an increase in non-emergent visits (+475.1%).

Conclusions: Regional disasters provide for large variations in emergency room visits, admission rates, and patient acuity both during and after the events. These findings can be used in hospital emergency planning including staffing needs, hospital bed, and resource management for future regional disasters.

Hurricane Sandy	**Mean Visits (SD)**	**% Change**	**OR**	**95% CI**	**P-value**
Baseline Total Daily ED Visits (ref)	63.2 (11.4)	--	1	--	--
- Visits During Sandy (24hr)	42	- 33.5%	.67	[.49 – .90]	.01
- Total Daily Visits 72 Hr. Avg. Post-Sandy	82.7 (10.5)	+ 30.8%	1.31	[1.15 – 1.49]	<.001
Baseline Total Daily Trauma Visits (ref)	23.3 (6.9)	--	1	--	--
- Trauma Visits During Sandy (24hr)	7	- 70.0%	.30	[.14 – .63]	.002
- Trauma Visits 72 Hr. Avg. Post-Sandy	23.3 (4.0)	+ 0.1%	1	[.79 – 1.28]	.99
Baseline Total Daily Non-Emergent Visits (ref)	1.3 (1.6)	--	1	--	--
- Non-Emergent Visits During Sandy (24hr)	1.0	- 21.6%	.78	[.11 – 5.68]	.81
- Non-Emergent Visits 72 Hr. Avg. Post-Sandy	7.3 (5.5)	+ 475%	5.75	[3.49 – 9.48]	<.001

Winter Storm Nemo	**Mean Visits (SD)**	**% Change**	**OR**	**95% CI**	**P-value**
Baseline Total Daily ED Visits (ref)	68.0 (12.3)	--	1	--	--
- Visits During Nemo (24hr)	34	- 50.0%	.50	[.36 – .70]	<.001
- Total Daily Visits 72 Hr. Avg. Post-Nemo	51.7 (5.5)	- 24.0%	.76	[.65 – .89]	.001
Baseline Total Daily Trauma Visits (ref)	17.7 (5.3)	--	1	--	--
- Trauma Visits During Nemo (24hr)	8	- 55%	.45	[.23 – .91]	.03
- Trauma Visits 72 Hr. Avg. Post-Nemo	14.7 (1.5)	-17.1%	.83	[.61 – 1.12]	.23
Baseline Total Daily Non-Emergent Visits (ref)	1.0 (1.1)	--	1	--	--
- Non-Emergent Visits During Nemo (24hr)	2.0	+ 110.5%	2.11	[.51 – 8.73]	.31
- Non-Emergent Visits 72 Hr. Avg. Post-Nemo	0.67 (1.2)	- 29.8%	.70	[.17 – 2.91]	.63

ABSTRACT 12

FACTORS PREDICTING ATTRITION FROM PEDIATRIC WEIGHT MANAGEMENT PROGRAM AT STONY BROOK

Melanie Iglesias, MD, Rosa Cataldo, DO, MPH, and Nkoli Akaolisa MS 3

Background: Obesity affects almost one third of children and adolescents in the United States. In an effort to help with weight management, numerous multidisciplinary programs have been created throughout the country. However, attrition from such programs is a common and major limiting factor to effective weight loss.

Objective: The objective of this study is to identify factors predicting attrition from Stony Brook's Pediatric Weight Management Clinic.

Methods: This is a retrospective analysis of data obtained in the process of clinical care on patients enrolled in the Stony Brook Weight Management Program from November 2013 to December 2014. There were a total of 79 subjects between the ages of 5 and 18 years-old. We examined the association between body mass index (BMI), parental concern, health insurance type, race/ethnicity, gender, age and travel distance on rates of attrition.

Results: Fifty-three percent of patients had no follow-up visits at the time data collection was complete. Patients who did not follow-up were more likely to be male (p= 0.017) and live further away from the clinic site (p=0.035). Interestingly, parents that did not bring their child for a follow-up visit were more likely to report higher levels of concern initially.

Conclusions: The current study focused on demographic factors and provides information that may be important to the design of intervention models that improve the rate of attendance for male patients and those that live further away from clinic site. However, it will be important for future studies to also assess psychologic and qualitative factors to identify patients at risk for treatment dropout.

Table 1. Predictors of attrition in the Pediatric Weight Management Program at Stony Brook Children's Hospital

Effect	**Adjusted Odds-Ratio (OR)**	**95% Confidence Interval (CI)**	**P-Value**
Gender			
Girls	4.03	1.3-12.6	.017*
Boys	1.00		
Insurance Type			
Medicaid	0.52	0.1-2.5	0.408
Private	0.82	0.2-3.3	0.780
Self-Pay	1.00		
Age	0.82	0.6-1.0	0.094
BMI	1.06	0.96-1.2	0.232
Travel Distance	0.92	0.86-0.99	0.035*
Parental Concern	0.72	0.52-0.99	0.048*
Ethnicity			
Non-Hispanic	0.43	0.12-1.54	0.195
Hispanic	1.00		

ABSTRACT 13

ENHANCING PATIENT SAFETY VIA TRANSFER MEDICATION RECONCILIATION

Noah Jablow, MD[1], Kim Derespina, MD[1], Robyn Blair, MD[1], Daniel Sloniewsky, MD[1], Margaret Connolly, MD[1], Catherine Salussolia, MD, PhD[1], Vivian Siu, MD[1], Bradley Goldberg, MD[1], Denise Martorana, RN, MS[2], Sherene Samu, Pharm D, BCPS[3]

Departments of [1]Pediatrics, [2]Critical Care Nursing, and [3]Pharmacy

Background: The most common types of patient safety errors involve medication, and these errors occur commonly at points of transition in care. It has been widely recognized that medication reconciliations decrease the incidence of errors that occur during transitions of care, including admission, transfer, and discharge.

Objectives: 1.To assess the baseline compliance in performing transfer medication reconciliation in patients transferred from the pediatric intensive care unit (PICU) to the general pediatric ward. 2. To assess compliance improvement following a series of plan-do-study-act (PDSA) cycles with a goal of 100% compliance.

Methods: Electronic Medical Records (EMR) of patients transferred from the PICU to the pediatric ward over a six-month period were reviewed to assess a baseline completion rate of transfer medication reconciliation. Educational interventions were then presented to pediatric residents to explain the process and importance of reconciliation. Compliance rates were collected just prior to and following each intervention.

Results: The baseline pre-intervention rate of completion of transfer medication reconciliation was 10.3%. Following the first educational intervention, the completion rate rose to 70%. After a longer observation period and prior to a second intervention, the rate was noted to drop to 60%. Following a second re-education intervention, completion rate rose to 90%. Data following initiation of a senior resident attestation is pending (Fig 1).

Discussion: Completion rates of transfer medication reconciliation rose significantly following resident education. Further interventions must be tested for the purposes of sustaining such compliance.

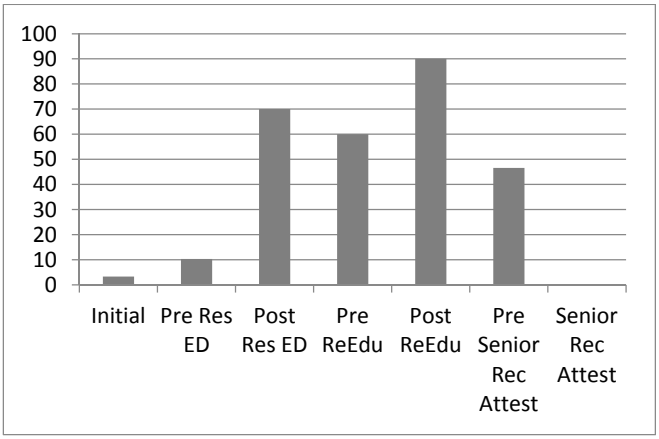


Figure 1.

ABSTRACT 14

VALIDATED SCORING OF PEDIATRIC RESUSCITATION TEAM PERFORMANCE IN HIGH-FIDELITY SIMULATIONS

Noah Jablow, MD, Devin Grossman, MD, Ken-Michael Bayle, DO, and Rahul Panesar, MD

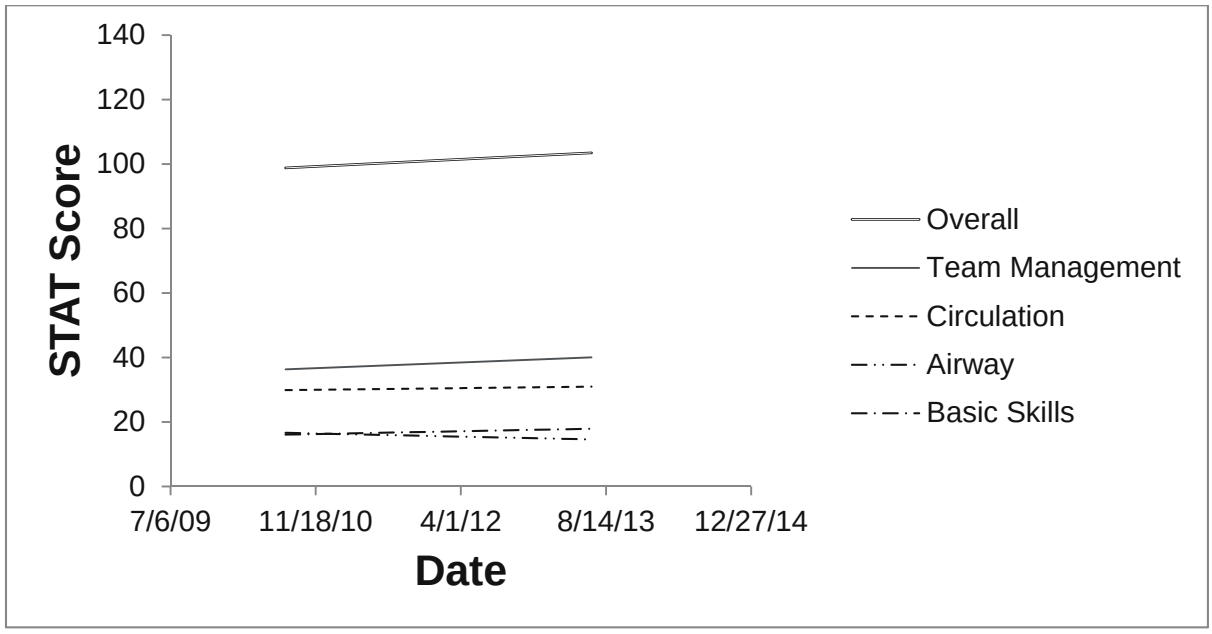
Background: The use of a validated assessment tool to track performance of pediatric residents in high fidelity code simulations over the course of a pediatric residency has not yet been described in the literature. The Simulation Team Assessment Tool (STAT) provides a scoring scheme that may help collect such data.

Objectives: The purposes of this study were to:
1. Determine whether or not the STAT is a reliable tool for evaluation of simulations over a three-year period.
2. Identify the effect of nursing presence and number of senior residents on team performance.
3. Implement an intervention in the form of a scripted video and assess its effectiveness on performance.

Methods The study analyzed 64 pediatric mock code videos from 2010 to 2014 at a University Hospital. Each video was reviewed using the STAT. Scores were compiled and analyzed for change over time. The intervention is a video for mock code participants demonstrating examples of poor and "ideal" performance. Following inception of the interventional video, the STAT was again used to score performance.

Results Data showed consistency of scoring with STAT over a three-year period (Figure 1). An increase in overall average scores was noted with nurses present and also with a higher number of senior residents participating. Scores following inception of the intervention are currently being collected and analysis will be performed upon completion of data collection.

Discussion The STAT provides a reliable method of assessing team performance in simulated pediatric codes. We hypothesize that demonstrating poor and ideal team performance via videos will improve overall performance.



ABSTRACT 15

A SYSTEMATIC REVIEW AND META-ANALYSIS OF THE EFFICACY OF LEVETIRACETAM IN NEONATAL SEIZURES

Shannon C. Lancaster, MD[1], Daryl C. McHugh, BA[2], and Louis N. Manganas, MD, PhD[2]
Departments of [1]Pediatrics and [2]Neurology and the Neurosciences Institute, Stony Brook Medicine

Background: Phenobarbital (PB) remains the first-line anti-epileptic drug (AED) for neonatal seizures in spite of its known association with neurotoxicity and long-term cognitive impairment. Levetiracetam (LEV) is a newer AED FDA approved for adults and children, but not neonates.

Objective: Our objective was to compare the efficacy of LEV to PB in neonatal seizures based upon published data.

Methods: We searched Pubmed to perform a systematic review and meta-analysis in accordance with the PRISMA statement. We calculated odds ratios (OR) comparing efficacy of LEV to PB, using PB as the reference value.

Results: Our search yielded 155 results. Five studies of LEV met all inclusion/exclusion criteria and were included in the final analysis. The pooled sample size for LEV was 102 (48 received primary LEV and 54 received secondary LEV). The pooled sample size for PB was 52. The overall OR for seizure cessation with primary LEV was 2.02 (95% confidence interval (0.89, 4.57), p=0.09). The overall OR for seizure cessation with secondary LEV was 1.14 (95% confidence interval (0.57, 2.28), p=0.72). These data demonstrate no significant difference in the odds of achieving seizure cessation with LEV compared to PB.

Significance: We found no significant association between LEV and improved seizure reductions compared to PB. However, the lack of significant results may be due in part to the small sample size, as the association between primary LEV and seizure cessation was near significance (p=0.09). Regardless, LEV may offer equivalent seizure control efficacy as PB without known neurotoxicity.

ABSTRACT 16

ETHANOL INTOXICATION IN INFANTS: A CASE SERIES AND SYSTEMATIC REVIEW

Dianne Lee, DO, MBA, and Ilana Harwayne-Gidansky, MD, MA

Background: Pediatric ethanol exposure is a commonly encountered problem with an estimated 11,026 exposures in children under five years old in 2013. However, ethanol exposure in infants 3 months and younger is uncommon and potentially life-threatening.

Objective: To describe the clinical presentation and sequelae of ethanol intoxication in infants under 3 months.

Methods: Case series and systematic review of the literature through PubMed and MESH databases using keywords “ethanol” AND “poisoning” or “toxicity” filtered for human subjects only, and ages birth through 3 months which identified 121 articles. 19 articles were selected and manually reviewed in addition to reference lists of potentially relevant articles to identify any unidentified studies.

Results: Of 13 total case reports, peak serum ethanol levels in infants under 3 months ranged from 43mg/dL to 525mg/dL. Common presentations included altered sensorium (n=10,77%), metabolic acidosis (n=6, 46%), hypotonia (n=4, 31%) and hyperglycemia (n=4, 31%). Severe manifestations included apnea and respiratory failure (n=4, 31%) with 2 requiring intubation (n=2, 13%), seizure activity (n=2, 13%), circulatory failure (n=1, 8%) and coma (n=1, 8%). There were no reported cases of hypothermia or hypoglycemia and no patients died.

Conclusion: Acute ethanol intoxication in young infants present with varied clinical manifestations. Most commonly noted were altered sensorium, metabolic acidosis, hypotonia and hyperglycemia. Given the ubiquity of ethanol within the household, it is necessary for health professionals to maintain a high index of suspicion for ethanol intoxication when encountering an infant presenting with nonspecific symptoms of acutely altered sensorium, metabolic acidosis and hypotonia.

ABSTRACT 17

KIDNEY LENGTH, PREMATURITY, AND CARDIOVASCULAR STATUS.

Natalie Raines, DO, Katarina Supe-Markovina, MD, Robert P. Woroniecki, MD

Background: Prematurity has been associated with abnormal nephron mass, renal function, and hypertension (HTN). However, the effect of kidney length (KL) on estimated glomerular filtration rate (eGFR), blood pressure (BP), and Left Ventricular Mass Index (LVMI) is unclear in children.

Objective: The purpose of this study was to examine relationship between KL (unadjusted, adjusted to body mass index (KL*BMI), eGFR, Gestational age (GA), in-office and 24-hr ambulatory BP (ABPM), and LVMI.

Design/Methods: We collected retrospective data on children evaluated for HTN between 08/2014-02/2015. We obtained GA, anthropometric, ABPM, renal sonographic and echocardiographic measurements. KL, KL*BMI, LVMI and eGFR were calculated. Children with renal lesions affecting kidney size (e.g. hydronephrosis, cysts, etc.) were excluded.

Results: Subject demographics are presented in Table 1. Children <37GA had lower BMI (23.5±5.5 vs 27.5±4.9, p=0.042), KL (9.9±0.21 vs 10.6±0.9cm, p=0.049) and KL*BMI (228.3±36.7 vs 302.9±55.5, p=0.002), but not age (13.7±2.8 vs 14.7±3.0 years, p=0.4), LVMI (44.7±12.9 vs 40.8±9.3, p=0.5), eGFR (94.6±16.9 vs 96.4±22.2ml/min, p=0.83) or systolic BP by ABPM (122.2±9.5 vs 122.0±9.2mmHg, p=0.96) than those ≥37GA. BMI and KL*BMI were associated with LVMI; r^2=0.22, p=0.003, and r^2=0.2, p=0.016, respectively. KL was associated with eGFR and office systolic BPs; both with r2=0.11, p=0.03.

Conclusions: We have found that prematurity is associated with lower KL, eGFR, and higher office systolic BP, and KL*BMI is associated with LVMI. In addition to BMI, KL determination may be a simple and useful measure in the evaluation of HTN in children and its prognostic value should be prospectively tested in clinical trials.

Table 1. Subjects Demographics	N= 56
Age (years)	14.9 ± 2.8, range [6, 20]
Male	60.7% (34)
Ethnicity (n=51) -White - Latino - Other	60.8% (31) 27.4% (14) 11.8% (6)
Body Mass Index (BMI [kg/m2])	25.7 ± 5.3, range [14.7, 35.3]
Birth Weight (gm)	2.6 ± 1.2 (IQR: 1.4, 3.7)
Averaged Kidney Length (KL=RK+LK/2) [cm]	10.6 ± 0.8
Estimated Glomerular Filtration Rate (eGFR [ml/min/1.73m2])	96.2 ± 19.9
Left Ventricular Mass Index (LVMI [gm/m2.7])	44.4 ± 14.2

ABSTRACT 18

ASSESSING PEDIATRIC PROVIDER DOCUMENTATION OF PSYCHOSOCIAL SCREENINGS, COUNSELING, AND INTERVENTIONS IN A HOSPITALIZED ADOLESCENT POPULATION

Steven Ricondo, MD[1], Allison Eliscu, MD[1], & Catherine Messina, PhD[2]
Departments of [1]Pediatrics and [2] Family, Population and Preventive Medicine

Background: Providers must screen for high-risk behaviors in adolescents and provide appropriate anticipatory guidance to decrease associated morbidity. The HEADSS inventory is a well-established questioning framework that facilitates this task. Current literature advocates for screening during all medical encounters given adolescents' underutilized preventative care services and pediatricians' infrequent screening.

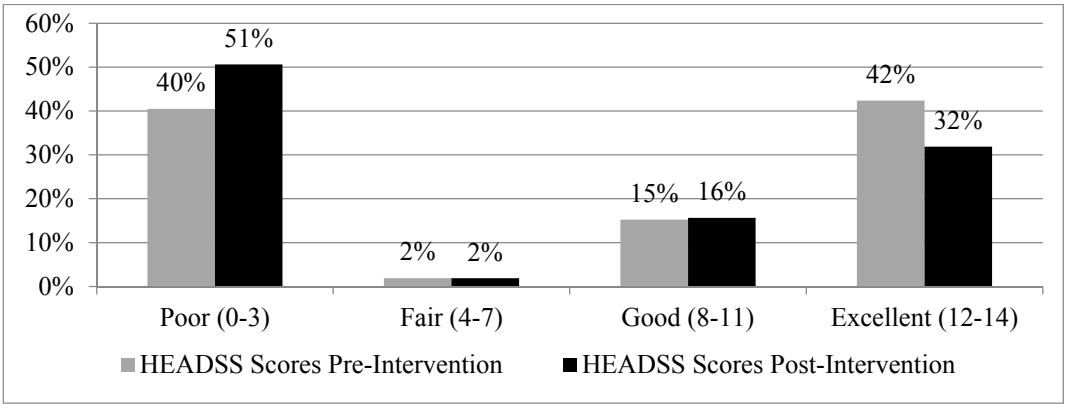
Objective: This study assesses resident documentation of psychosocial screenings, counseling, and interventions in a hospitalized adolescent population before and after an educational pediatric resident intervention.

Methods: Electronic medical records were accessed for 13-21 year old patients admitted to Stony Brook Children's Hospital between 7/1/15-10/15/15 and 11/1/15-2/14/16 for pre- and post-intervention retrospective chart reviews. Collected data included demographic information and documentation of psychosocial screenings, counseling, and interventions. Documented screenings were scored for completeness. An educational presentation regarding psychosocial screenings was emailed to residents for review during the two weeks between chart reviews.

Results: Residents documented screenings in 60% and 50% of pre- and post-intervention charts ($p = 0.03$). The post-intervention group was less likely to ask screening questions compared to pre-intervention counterparts even after controlling for patient age, sex, and in-patient service. >90% of residents failed to screen for eating disorders. Only 15% and 6% of residents documented appropriate risk reduction counseling pre- and post-intervention ($p = 0.01$).

Conclusion: Resident performance of psychosocial screenings and documentation of counseling in hospitalized adolescents is suboptimal and did not improve following a non-interactive educational intervention. Residents should receive interactive educational sessions stressing the importance of completing HEADSS screenings for each adolescent medical encounter and appropriate counseling to reduce risky behaviors.

Comparison of Resident HEADSS Scores Pre- and Post-Intervention



ABSTRACT 19

ANAPHYLAXIS SIMULATION PROGRAMS CAN IMPROVE KNOWLEDGE, ATTITUDES AND BEHAVIORS OF PEDIATRIC RESIDENTS

Kiranjit K. Uppal MD, MPH[1], Michelle B. Levinson MD[2], Susan J. Schuval MD[2]
Departments of [1]Internal Medicine and [2]Pediatrics

Background: Anaphylaxis is a life-threatening medical condition requiring immediate treatment. Current physician training does not include adequate education regarding recognition and management. In a previous study, we sought to improve resident anaphylaxis knowledge, attitudes and behavior (KAB) through an educational intervention that included a didactic presentation and a hands-on demonstration of epinephrine auto injectors. Although resident short-term knowledge improved, this knowledge was not retained over time.

Objective: We hypothesized that the addition of simulation training, to a didactic presentation and hands-on epinephrine auto injector demonstration, would improve short-term and long-term resident KAB regarding anaphylaxis.

Methods: Twenty-six pediatric residents of all levels of training were enrolled. Anonymous questionnaires including demographic information, prior clinical experience and confidence with anaphylaxis, were administered at baseline. A 10-item pre-test was followed by a PowerPoint presentation on anaphylaxis diagnosis and management, and a hands-on demonstration of epinephrine auto injectors. An anaphylaxis simulation program was then conducted. Residents were evaluated on their ability to diagnose anaphylaxis and treat the patient with epinephrine in a timely manner. A 10-item posttest was administered immediately afterward following by 10-item long-term posttest 8- 12 weeks later.

Results: Mean pre-test scores were 8.19 + 1.72, mean post-test scores were 9.19 + 0.63 and long-term post-test scores were 8.62 + 0.97, $p=0.014$.

Conclusion: Residents have limited exposure to anaphylaxis in the clinical setting, prompting the need for improved educational strategies. Despite the addition of an anaphylaxis simulation scenario to a didactic educational lecture, resident anaphylaxis KAB declined over time. However, as expected, short term KAB did improve. Our results indicate an ongoing need to improve and maintain resident anaphylaxis KAB overtime. Future studies will focus on improving long- term retention of knowledge by repeating the educational intervention (simulation lab) over time to promote further reinforcement of knowledge.

ABSTRACT 20

CAN TRACHEAL ASPIRATE CULTURES PREDICT SEVERITY OF BRONCHOPULMONARY DYSPLASIA IN VERY LOW BIRTHWEIGHT NEONATES?

Shravani Vundavalli, MD and Jennifer Pynn, MD

Background: In the Neonatal Intensive Care Unit (NICU), premature neonates with very low birth weights (VLBWs) often require endotracheal intubation and as a result are at risk for bronchopulmonary dysplasia (BPD). Prolonged intubations can result in colonization with bacteria which do not cause invasive disease and do not require medical treatment leaving the physician to question the clinical relevance of the results.

Objective: The purpose of this study is to determine if tracheal colonization can predict the severity of BPD in the VLBW population.

Methods: This is a retrospective observational study of 33 VLBW neonates admitted to the Stony Brook NICU from January 2012 - December 2014 who had ≥1 tracheal aspirate sent during their hospital course. All neonates were <1500g at birth and a total of 71 tracheal aspirate cultures were obtained during their hospitalization.

Results: The tracheal colonization rate was 58%; positive cultures were more likely sent later in life compared to negative cultures (mean day of life: 57 vs 33; p=0.02). The overall prevalence of BPD in this study population was 79%; 23% mild, 35% moderate and 42% severe. Tracheal aspirate results did not distinguish between severity of BPD for negative vs positive culture results (overall BPD: 72% vs 84%; mild: 14% vs 21%, moderate: 21% vs 32%, severe: 36% vs 32%).

Conclusion: Although tracheal aspirate results did not distinguish between severity of BPD, a prospective study comparing tracheal aspirate results done immediately after endotracheal tube placement may help to decrease colonization as a confounding variable.

	Trach Aspirate Negative	**Trach Aspirate Positive**	**p-values**
Total Tracheal Aspirate Cultures, N (%)	**21 (29.6)**	**50 (70.4)**	
Total Number of Patients, N (%)	**14 (42)**	**19 (58)**	
GA (weeks), mean ± std dev	26±4	27±3	0.692
BW (grams), mean ± std dev	831±232	862.5±217	0.598
Gender, N (%)			
Male	7 (50)	12 (63)	
Female	7 (50)	7 (37)	
DOL Tracheal Aspirate Sent, mean ± std dev	33±37	57±41	**0.02**
Duration of ETT Prior to Tracheal Aspirate, N (%)			0.615
≤1day	4 (19)	14 (28)	
2days	5 (24)	8 (16)	
>2days	12 (57)	27 (54)	
FiO2 at Time Tracheal Aspirate Sent, N (%)			0.135
21%	0	1 (2)	
22-40%	15 (71)	23 (46)	
>40%	6 (29)	26 (52)	
Patients with BPD (on O2 at 28days), N (%)	10 (72)	16 (84)	0.61
O2 at 36 Weeks Corrected, N (%)			
None	2 (14)	1 (5)	0.85
Mild, 21% FiO2	2 (14)	4 (21)	
Moderate, <30% FiO2	3 (21)	6(32)	
Severe, >30% FiO2	5 (36)	6 (32)	
Mortality, N (%)	2 (9.5)	2 (11)	

ABSTRACT 21

IS THERE A CORRELATION BETWEEN SELF-REPORTED THIRD HAND SMOKE EXPOSURE AND ASTHMA EXACERBATION SEVERITY?

Andrea Zambetti, MD[1], Catherine Messina, PhD[2], and Jeffrey Hom, MD, MPH[1]
Departments of [1]Pediatrics and [2]Family, Population, and Preventive Medicine

While the effects of active smoking and second-hand smoke (SHS) are well documented, third-hand smoke (THS) is a newer concept. We describe self-reported THS exposure in the home of children seen at Stony Brook Children's Hospital (SBCH) for an asthma exacerbation.

This retrospective, cross-sectional study utilizes data obtained from the SBCH Electronic Medical Record (EMR) for 311 children <18 year old with asthma who presented to the pediatric emergency department (PED) with an asthma exacerbation during 12/31/2012-12/31/2014. Three groups were defined based on smoke exposure: exposed to SHS; exposed to THS; no smoke exposure (NSE) in the home and compared on indicators of asthma exacerbation severity using cross-tabular analyses and the chi-square test of independence.

Of 526 asthma cases, 448 met inclusion/exclusion criteria. 134 (30%) children had no documented smoke exposure data and were excluded from the analysis. Of the 311, 80% (248) had NSE, 16% (51) had THS exposure and 4% (12) had SHS exposure.

Category	NSE % (n)	THS % (n)	SHS % (n)	P-value
Age: ≥ 2yo	72.6% (180)	70.6% (36)	58.3% (7)	0.55
Gender: Male	66.1% (164)	68.6% (35)	58.3% (7)	0.79
Body-Mass Index: < 25 kg/m^2	95.4% (166)	93.9% (31)	83.3% (5)	0.41
Respiratory Viral Panel: Positive	71.4% (40)	76.5% (13)	50.0% (1)	0.72
Length of stay in PED: ≤ 5 hrs prior to discharge	92.7% (102)	88.9% (16)	66.7% (2)	0.25
Inpatient Admission: Required	56.8% (139)	64.7% (33)	75.0% (9)	0.25
Length of Stay in Pediatric Ward ≤ 24 hrs > 24 hrs and ≤ 48 hrs > 48 hrs	 38.0% (49) 40.3% (52) 21.7% (28)	 54.8% (17) 29.0% (9) 16.1% (5)	 33.3% (3) 55.6% (5) 11.1% (1)	0.39
Length of stay in PICU ≤ 24 hrs > 24 hrs and ≤ 48 hrs > 48 hrs	 48.9% (22) 42.2% (19) 8.9% (4)	 25.0% (2) 0.0% (0) 75.0% (6)	 100.0% (2) 0.0% (0) 0.0% (0)	**< 0.01**
Oxygen Supplementation: Given	40.1% (77)	41.5% (17)	27.3% (3)	0.68
Type of Oxygen Supplementation: None Blow- By Nasal Cannula	 59.9% (115) 18.2% (35) 21.9% (42)	 58.5% (24) 17.1% (7) 24.4% (10)	 72.7% (8) 18.2% (2) 9.1% (1)	0.87

There was a significant different among the smoke exposure groups regarding length of stay in the PICU.

Increased length of stay in the PICU for THS exposed subjects has significant implications for asthma severity and hospital time, cost and resources. Although other indicators of asthma exacerbation severity were not found, possible confounders in the study may include misidentification of NSE in the EMR and inaccurate self-report of SHS vs. THS exposure by parents. Future research should focus on identifying THS exposure objectively (i.e. urine cotinine levels), to promote smoke-free home environments for susceptible children.

ABSTRACT 22

OPIOID-INDUCED HYPONATREMIA IN A PATIENT WITH CENTRAL DIABETES INSIPIDUS: INDEPENDENCE FROM ADH

Nandini Bhat, MD, Andrew Lane, MD, Jennifer Osipoff, MD, and Thomas Wilson, MD

Background: Hyponatremia can be a complication of opioid therapy, thought to be secondary to inappropriate antidiuretic hormone secretion (SIADH).

Case: We report severe hyponatremia following wisdom teeth extraction in a 19-year-old female with diabetes insipidus (DI) and acquired panhypopituitarism that challenges this theory.

Panhypopituitarism and DI were secondary to Rathke's cleft cyst. Home medications included levothyroxine, hydrocortisone, desmopressin and oral contraceptives. Compliance was excellent with stable serum sodium concentrations. Hydrocortisone was tripled for 48 hours perioperatively. She continued her usual dose of the other medications. Post operatively, she received hydrocodone, acetaminophen and penicillin. She reported increased thirst for two days post operatively.

Four days after teeth extraction, she presented with dizziness, vomiting and altered mental status. She withheld desmopressin the evening prior to admission. Her sodium level was 110 mEq/L. She was given 75 mg of hydrocortisone IV and started on a continuous infusion of 2% hypertonic saline at maintenance rate. Serum glucose, thyroid function tests and lipid panel were unremarkable. Sodium gradually increased to 135.

Since this patient has DI, we believe opioid treatment caused severe hyponatremia by the following mechanisms:

Opioids have a direct antidiuretic effect independent of the change in ADH as demonstrated in brattleboro rats with central DI

Hydrocodone may have stimulated this patient's thirst center contributing to hyponatremia. This has been shown in animal studies

Conclusion: Opioid use can cause hyponatremia in patients independent of ADH. It is important for clinicians to be aware of this so that patients can be appropriately counseled.

ABSTRACT 23

THE IMPACT OF AN INTERACTIVE COMPUTER APPLICATION ON THE QUALITY OF COLONOSCOPY PREPARATION, OVERALL PATIENT SATISFACTION AND OUTPATIENT AMBULATORY CENTER EFFICIENCY

James Brief, MD, Anupama Chawla, MD, and Jeffrey Morganstern, MD

Background: We developed software (an "app") that reminds patients when to take colonoscopy prep medications, answers commonly-asked questions and informs patients of when and where to report for their colonoscopy.

Methods: Forty six patients aged 5-18 were randomized to receive either written or software bowel prep instructions. Prep quality was measured with the Boston Scoring Scale. The number of calls to the gastroenterology service and arrival time on the day of the procedure were recorded. A questionnaire was completed by patients or parents on the day of the colonoscopy.

Results: App users had superior mean Boston scores of 9.80 versus controls' 7.96 ($p = 0.014$). There was no difference between arrival times for app users and controls. Ten of 20 (50%) app users had improved knowledge of the colonoscopy versus 8/22 (36.4%) of controls ($p=0.37$). Twenty of 20 (100%) app users completed the prep on time versus 18/22 (81.8%) controls ($p=0.45$). Six phone calls were made to the gastroenterology service by controls versus 2 from app users ($p=0.27$).

Conclusions: App users had better quality preps, felt better informed and more knowledgeable about the colonoscopy prep than the control subjects. All completed the prep on time. More phone calls were received from control subjects however this was not statistically significant. App and control subjects arrived at the hospital at nearly the same time. In addition to improving the software's capabilities, we plan to repeat the study with a larger number of subjects, which may be able to show statistically significant differences in additional areas.

ABSTRACT 24

SGA BABIES' PHALLUS LENGTH STUDY

Prajakta Kulkarni, MBBS[1], Catherine Messina, PhD[2], Andrew Lane MD[1], and Kimberly Tafuri DO[1]
Departments of [1]Pediatrics and [2]Family, Population, & Preventive Medicine

Background: A small phallus may indicate significant neonatal pathophysiology such as panhypopituitarism or disorders of sexual differentiation; determination of normal length is therefore critical. Normative standards are available for Appropriate for Gestational Age infants (AGA), but not for Small for Gestational Age (SGA) infants. Defining normal phallus lengths in SGA infants could minimize unnecessary lab tests.

Objective: We hypothesize that there is no difference in length-indexed or weight-indexed phallus lengths between AGA and SGA infants (calculation: phallus length divided by birth length (pl/bl) or by birth weight (pl/bw).

Methods: Subjects were recruited from the UHSB NICU and nursery. The phallus was measured by day 7 of life. 27 SGA and 38 AGA babies were identified.

Results: Based on linear regression analyses, pl/bl showed 96% and 87% variance for AGA and SGA infants respectively, while the pl/bw showed 71% and 52% variance in stretched penile length after controlling for gestational age. The mean (SD) pl/bl for SGA babies was 0.06 and for AGA babies was 0.07 ($p < 0.001$). The mean (SD) pl/bw for SGA babies was 1.28 and for AGA babies was 0.85 ($p < 0.001$).

Conclusion: Contrary to our initial hypothesis, these data suggest a statistically significant difference for phalluses indexed to length between AGA and SGA infants, and between these groups for phalluses indexed to weight. The regression analysis indicates birth length may be a better predictor of penile length than birth weight. Heterogeneity in etiologies of SGA may be a reason that an indexing methodology does not permit standardization for comparison of phallus measurements.

ABSTRACT 25

ANNUAL INFLUENZA VACCINATION OF HOUSEHOLD CONTACTS OF IMMUNOCOMPROMISED PEDIATRIC RENAL PATIENTS

Hina Zaidi, MD, Robert Woroniecki, MD and Christy Beneri, DO

Background: Annual influenza vaccination (FV) is essential for household contacts of renal patients on immunosuppression (IS) to reduce secondary transmission.

Objective: We hypothesize vaccination rates (VR) will be low. Our objective is to optimize simple preventative strategies to improve this.

Methods: All households of pediatric renal transplant recipients (RT) and nephrotic syndrome patients (NS), were surveyed. Demographics, IS therapy, influenza history and vaccine status for seasons 2014-2015 and 2015-2016 were recorded. Education was provided on FV importance post season 2014-2015.

Results: Fifteen RT patients aged 7-12 years old and 15 NS patients aged 4-19 years old were followed. One RT and 2 NS patients were lost to follow-up. For season 2014-2015, 93% RT and 87% NS received FV; in season 2015-2016, 86% RT and 69% NS patients were vaccinated. Overall household contacts vaccinated based on degree of patient IS were 36%, 20% and 45% for mild, moderate, and severe IS, respectively. Non-Hispanic households had higher VRs compared to Hispanic households. During season 2015-2016, 62% of those with cold-like symptoms had at least 1 household contact that did not receive FV.

Although patient vaccination rates were fairly high, household contact vaccination rates were poor. More than 50% of caregivers reported that their reasoning against receiving FV was confidence in their own good health and that vaccines cause more harm than benefit. Ninety-two percent reported physician advice to be the most influential factor regarding pro-vaccination. Face-to-face discussions and phone discussions were preferred by these individuals.

Post educational intervention had minimal positive impact on FV response rate. We surmise this may have been to vaccine mismatch from the prior season.

Conclusion: Our conclusion is that families of immunocompromised children have FV misperceptions and, in addition, underestimate the infectious risk they pose to their child.

ABSTRACT 26

ENRICHED MEDICAL HOME INTERVENTION USING COMMUNITY HEALTH WORKERS REDUCES EMERGENCY ROOM USE

Meghana Anugu, BA[1], Amy Braksmajer, PhD, MPH[2], Jiayu Huang PhD[3], Jie Yang, PhD[4], Kristi L. Ladowski, MPH[2], and Susmita Pati, MD, MPH[2]

Stony Brook University [1]School of Medicine, [2]Division of Primary Care Pediatrics, [3]Departments of Applied Mathematics and Statistics and [4]Family, Population and Preventive Medicine

Objective: Community health workers (CHWs) have great potential to extend medical home services and reduce emergent health care use, but evidence in pediatrics is scarce. We evaluated the impact of an existing enriched medical home intervention (EMHI) that directly integrates CHWs on ED visits and hospitalizations for pediatric ambulatory care sensitive conditions (ACSCs).

Methods: The EMHI group in this prospective cohort study received home visits from trained CHWs to support adherence to recommended care while the comparison group received usual care (UC). We compiled sociodemographic characteristics from the EMHI database and abstracted ED and hospitalization information for study participants from a state-wide database. We used doubly robust estimation of risk difference, combining weighting via propensity score and outcome regression models, to compare ED and hospitalization use for ACSCs between the intervention and UC groups because the groups had different characteristics.

Results: The study sample included 922 children (697 intervention; 225 UC). After propensity score matching, our analytic sample included 450 children (225 intervention; 225 UC). We found that 18.6% of all participants (18.2% intervention, 18.8% UC) made at least 1 visit to the ED for ACSC condition in our unadjusted analyses. After matching, we found that the intervention group was significantly less likely than the UC group to visit the ED for an ACSC (18.2% vs. 35.1%, p=.004). We found no differences in ACSC hospitalizations between the two groups.

Conclusion: Our findings suggest that EMHIs using trained CHWs may be a cost effective model to reduce preventable emergency department utilization, especially among vulnerable children.

ABSTRACT 27

WHY ADOLESCENT GIRLS SHOULD AVOID NICOTINE EXPOSURE: A PRE-CLINICAL STUDY ON THE ABILITY OF NICOTINE TO INDUCE MAMMARY TUMORS

Elizabeth Caruso, MS[1], Jingxuan Liu, MD, PhD[2], Kerry Nagee, MD[2] and Marian Evinger, PhD[3], Departments of Physiology and Biophysics[1], Pathology[2], and Pediatrics[3]

Background: Ninety percent of female smokers begin smoking during adolescence, the developmental period for maximal mammary tissue differentiation. We and others have demonstrated *in vitro* that nicotine – a primary component of tobacco and electronic cigarettes - evokes premalignant and malignant changes in mammary epithelial cells via activation of intrinsic nicotinic receptors. However, the effects of nicotine on breast tumor induction, particularly in adolescents, remains to be determined.

Objective: This study tests the hypothesis that nicotine will enhance mammary tumorigenesis in female adolescent rats.

Methods: Nicotine (2 mg/kg) or saline was delivered via osmotic minipumps to female adolescent (P22) and adult (P55) rats. Following administration of 1-methyl-nitrosourea (MNU, for induction of mammary tumors) or vehicle, tumor development was monitored for 16 weeks. Number, size, time of appearance and stage of tumors were evaluated.

Results: Twenty-two tumors arose in the 45 nicotine-treated rats that included both MNU-, and notably, nicotine-only treated adolescents (2 tumors). Adolescent animals developed tumors 4-6 weeks earlier than their adult counterparts. Tumor volumes were 5 times larger in nicotine-treated adolescent rats, while tumors of nicotine-treated adults were ~2 times greater than their saline counterparts. Extensive vascularization characterized tumors from both nicotine-treated adolescents and adults.

Conclusion: Our study demonstrates that nicotine alone can induce and enhance mammary tumorigenesis *in vivo*. This occurs via earlier tumor onset and increased tumor volume. Notably, these effects are more pronounced in adolescent than adult female rats. Therefore, nicotine exposure acquired during teenage smoking may exert pronounced, adverse influences on subsequent development of breast cancer in women.

ABSTRACT 28

IMPROVING ADHERENCE BY FAMILIES TO PEDIATRIC CLINICAL CARE RECOMMENDATIONS USING A COMMUNITY HEALTH WORKER (CHW) INTERVENTION WITH THE PEDIATRIC MEDICAL HOME

Sarah P Justvig, BS[1], Justine Li[2], Giuseppina Caravella, MPH[3], Minqin Chen, MS[3], Hua Wang, MS[3], Lisa A Benz Scott, PhD[4] and Susmita Pati, MD MPH[3].

[1]School of Medicine, [2]College of Arts and Sciences, [3]Department of Pediatrics, [4]Program in Public Health, and School of Health Technology and Management, Stony Brook University,

Background: While community health worker (CHW) interventions have demonstrated mixed results, there is limited evidence about what CHW tasks result in positive outcomes.

Objective: The purpose of this study was to identify and explore domains in which CHWs support "at risk" families to adhere to recommended pediatric clinical care.

Design/Methods: This was a prospective descriptive study of trained CHWs as direct extenders of the pediatric medical home conducting home visits to support adherence to recommended clinical care. Of 161 program participants with informed consent enrolled from May 2013-July 2014 who had an initial home visit, 88 exited by October 2014 and were included in analyses. Completers (N=46) reached agreement with their CHW that the family can navigate healthcare independently. Non-completers (N=42) were lost to follow-up or dropped out. Predictors of program completion were assessed using logistic regression. Using Grounded Theory, two trained coders evaluated CHW tasks recorded in an electronic database and classified across 17 domains with subtasks.

Results: The 88 participants were primarily <24 months (80%), Hispanic (56%), and on Medicaid (67%). CHWs made an average of 3.9 vs. 1.8 home visits to completers and non-completers, respectively. Hispanic families (OR=2.76, p=0.04) and those with self-reported program goals of 'facilitate family's creation of a system to keep track of child's medical information' (OR=3.11, p=0.02) or 'newborn-specific goal' (OR=3.21, p=0.04) were more likely to complete than not. CHWs' most consistent tasks focused on medical appointment logistics, medication maintenance, and health education (interrater reliability: 0.96; intra-rater reliabilities: 0.91 and 1.00).

CHW Tasks in Home Visits

Domain	Frequency of Use	Most Common Subtask
CHW reviewed medication maintenance	100.0%	Confirmed medications
Medical appointment logistics	100.0%	Recorded appointment date, time, etc.
CHW provided health education	94.9%	Gave paper handout
CHW helped family with logging medications	84.0%	Gave paper log sheet
CHW followed up after a medical appointment	52.6%	Verbally reviewed appointment content/discussions
CHW connected families with local resources	51.8%	Reviewed WIC status

Note: Only domains utilized in at least 50% of the home visits are listed in this table.

Conclusions: Stakeholders, including clinicians, can improve CHW training and positive impact on health outcomes by aligning with families' self-reported healthcare navigation goals.