May 3, 2014

****PAS Oral Presentation**

PREDICTORS OF FAMILY ENGAGEMENT IN FAMILY-CENTERED ROUNDS

Elizabeth Cox, MD PhD, Victoria Rajamanickam, MS, Tasha Scott, BS, and Gwen Jacobsohn, MA

Background: Experts endorse family-centered rounds (FCR) to ensure high quality inpatient care. However, some families may not engage optimally in FCR.
Objective: To identify families less engaged in FCR.
Design/Methods: Surveys of demographics and hospitalization characteristics and daily videos of FCR were collected from 151 families of children on our hospitalist, hematology, oncology, or pulmonary services. Trained coders assessed family engagement, coding the number of utterances in 4 key visit tasks (relationship building, information giving and gathering, and decision making) from videos using standard methods. To represent family engagement across the child's stay, the number of utterances for each day of FCR was averaged, for each of the 4 key tasks. Adjusted multivariate negative binomial regression was used to examine associations between engagement and child, parent, and hospitalization factors.
Results: Mothers were often present for FCR (89%); fathers were present for 38%. Parent education varied: 19% had a high school education or less, 34% some college, and 47% college graduates. Children were, on average, 5.6 years old (sd 5.6). Common reasons for hospitalization included breathing problems (31%), fever (19%), or gastrointestinal problems (19%). Intercoder reliabilities were near perfect (kappa>0.8). In multivariate models, average family engagement in FCR was significantly associated with the proportion of FCR attended by the mother and less so by the father. For a 5-day stay, each day the mother attended FCR resulted in 13.1% more relationship building, 11.4% more information giving and 26.8% information gathering (all $p<0.05$). Each day the father attended resulted in 4.3% more relationship building, 1.2% more information giving, and 2.6% information gathering (all $p<0.05$). Compared to parents with a high school education or less, parents with some college or a bachelor's degree had significantly more engagement in information giving (47% and 60% more, respectively; $p<0.05$) and twice as much information gathering ($p<0.01$). Compared to families whose children stayed 1 day, family engagement in decision making was double for those staying 2-3 days and almost five times greater for those staying >3 days ($p<0.01$). **Conclusion:** Support may be needed to optimize engagement for fathers, for parents without any college education, and during short hospital stays. Future work could examine interventions such as peer support or engagement coaches.
PAS DATE/TIME/LOCATION 5/3/2014; 11:00 AM- 11:15AM; East 11 (Vancouver Convention Center)

****PAS Oral Presentation**

TRANSITION PRACTICES AND PRIMARY CARE FOLLOW-UP AFTER HOSPITAL DISCHARGE

Ryan J Coller, MD, MPH, Thomas S Klitzner, MD, PhD, Adrianna Saenz, BA, Carlos Lerner, MD, MPhil, Bergen B Nelson, MD, MS, Sungmee Park, Paul J Chung, MD, MS

Background: While follow-up with primary care providers (PCPs) after discharge is assumed to represent high-quality care, little is known about how transition practices influence follow-up rates.
Objective: To examine associations between transition practices and PCP follow-up after hospitalization.
Design/Method: Prospective cohort study enrolling randomly selected children admitted for at least 24 hours to a tertiary children's hospital during 2012-2013. Hospitalizations <24 hours, patients >17 years, NICU/nursery hospitalizations, transfers and deaths were excluded. Questionnaires with families were conducted at admission, 2 and 30 days after discharge, and with PCPs 30 days after discharge. **Results:** Preliminary analyses of the first 442 patients found that 97% reported having a personal provider. Follow-up visits within 30 days of discharge were reported by PCPs after 42% of discharges, with over 80% responding that the follow-up timing was appropriate. After adjusting for complexity (>2 subspecialists, need for home health and durable medical equipment), patient age, and respondent language, the odds of having PCP follow-up were higher when the PCP was notified about hospitalization (AOR 2.1, $p=0.03$) or received verbal handoff (AOR 3.3, $p=0.03$), or the discharge summary specified follow-up timing (AOR 4.5, $p<0.001$). Parents reporting appointments made prior to discharge and PCPs reporting receipt of discharge summaries were not associated with follow-up. Odds of having a follow-up visit were lower among families reporting presence of a Maternal and Child Health Bureau-defined medical home on admission (AOR 0.48, $p=0.03$). Finally, PCP follow-up was not associated with 30-day readmissions or 7-day emergency department visits.
Conclusions: Higher PCP follow-up after discharge might be achieved through specific transition practices, though whether this is associated with better utilization outcomes remains unclear. Presence of a medical home might reduce perceived need for in-person PCP follow-up after discharge by families, discharging providers or PCPs. Patients with medical homes may also have different forms of contact with PCPs after discharge. Final adjusted analyses will include additional demographic, clinical and severity of illness covariates.
PAS DATE/TIME/LOCATION May 3, 2014; 4:15 PM; East Ballroom C (Vancouver Convention Centre)

May 4, 2014

****PAS Oral Presentation**

FITNESS EFFECTS OF CDC PHYSICAL ACTIVITY STRATEGIES ARE LIMITED AND VARY BY GENDER

Tasa S. Seibert, MD; Aaron L. Carrel, MD; Jens Eickhoff, Phd, John Bowser, Phd; David B. Allen, MD

Background: Low cardiovascular fitness (CVF), more prevalent in children with low SES and minority status, increases risk for insulin resistance and type 2 diabetes. To reduce childhood obesity, the CDC promotes school-based strategies to increase physical activity (PA). Our pilot data showed that implementing 4 or more CDC PA strategies increased students' mean daily steps from 9,849 to 11,148 ($p<0.01$). However, the impact of this increased PA on CVF and obesity has not been evaluated.
Objective: Evaluate the impact of school based CDC PA strategies on CVF and BMI. **Design/Methods:** Forty-eight schools with low SES were assigned to either (1)continue routine PA programs (n=23, 2691 students, 53.1% boys) or (2)implement 4 or more CDC PA strategies (n=25, 3042 students, 51.3% boys). CVF (assessed by PACER, a 20 meter shuttle run) and BMI were obtained at the beginning and end of the school year. Post-study changes in PACER and BMI were assessed. Multivariate analysis evaluated the effect of intervention by ethnicity, location, gender and age.
Results: Mean CVF improved in both intervention and control schools, but there was no difference in CVF (or BMI) between intervention and control school groups. Of interest, in intervention schools, CVF improved in boys ($p=0.019$) but decreased in girls ($p=0.002$). At baseline, Hispanic students were less fit than non-Hispanic students ($p=0.015$) and there was a trend toward decreased fitness in urban compared to rural students ($p=0.058$). There was no intervention effect on CVF or BMI based on ethnicity or location.
Conclusions: Implementation of CDC PA strategies did not significantly change CVF or BMI in intervention schools compared to control schools, but a gender specific effect was noted with improved fitness in boys (but not girls) in intervention schools. Whether this statistically significant change in male CVF is associated with improved metabolic health requires further study. These data suggest that more intensive/effective interventions are needed to achieve positive fitness results for children in general. To address disparities in CVF, specific strategies that effectively increase CVF in at-risk groups (e.g. Hispanic children) and girls are needed.

PAS DATE/TIME/LOCATION May 4, 2014; 8:00 AM-10:00 AM; Obesity and Disordered Eating Section - West 220

****PAS Oral Presentation**

IRON MAY BE THE CRITICAL LINK BETWEEN MATERNAL OBESITY AND ASTHMA IN OFFSPRING

Natalie C Dosch, Shannon E Murray, Rachel M Weigert, Elyssa F Guslits, Theresa W Guilbert, Christoper L Coe, Pamela J Kling

Background: Maternal pre-pregnancy obesity is associated with asthma diagnosis in offspring, however no clear mechanism for this association has been found. Our lab previously showed that obesity during pregnancy was linked to poorer iron status in offspring. Other work also linked iron deficiency at birth to wheezing in infancy. In combination, these studies suggest iron status plays a key role in this unknown mechanism.
Objective: We analyzed newborn iron status and the stimulation of lymphocyte Th1/Th2 cytokine expression in obese vs. control pregnancies. Our hypothesis was that obese pregnancy depletes newborn iron and alters developmental inflammatory processes, predisposing to asthma.
Design/Methods: UW and Meriter Hospital IRBs approved this study. Eligible subjects included mothers delivering healthy term newborns from routine scheduled caesarean sections. Umbilical cord blood from control and obese pregnancies was analyzed for iron status, including hemoglobin (Hb) and plasma ferritin. WBC counts were obtained and lymphocytes isolated for cell culture, stimulated with phytohemagglutinin, and incubated for 24 hours in normal media or low iron media with deferoxamine. Cytokine expression profiles were examined using a multiple cytokine array.
Results: Cord blood from 23 control and 32 obese pregnancies showed similar white blood cells, lymphocytes, neutrophils and Hb. Ferritin was lower in obesity ($p<0.04$). When cytokines were analyzed by obesity, IFN-gamma trended lower and IL-12 was higher than control. When analyzed by iron deficiency, IL-1 and IL-10 were higher, compared to those with normal iron status. All cytokines were lower when incubated in low iron conditions, except IL-1, an iron pathway cytokine, which was increased.
Conclusions: In newborns born to obese mothers, iron status was poorer and the Th1 cytokine production downregulated, while other cytokines were upregulated. Data support a relative dysregulation of cytokine profiles in offspring of obese pregnancy that were further disturbed when iron was depleted during incubation. Low iron at birth due to obese pregnancy may therefore contribute to an atopic phenotype that predisposes infants to asthma and allergies.

PAS DATE/TIME/LOCATION May 4, 2014 3:30 pm-5:30 pm
Session: 2865—Obesity & Disordered Eating II Room: West 214

****PAS Oral Presentation**

HYPERANDROGENISM IS ASSOCIATED WITH NAFLD AND METABOLIC RISK IN BOTH NORMAL AND OVERWEIGHT ADOLESCENT GIRLS

Jennifer Rehm, MD, Peter Wolfgram, MD, Ellen Connor, MD, Scott Reeder, MD,PhD, and David Allen, MD.

Background: In adult women, hyperandrogenism connotes increased risk for metabolic syndrome and up to 3 times greater risk of non-alcoholic fatty liver disease (NAFLD) compared to obesity alone, a difference attributed to elevated androgens. It is unclear whether elevation in androgens in adolescents infers a similar increased risk.
Objective: To compare serum androgen levels to markers of metabolic syndrome and NAFLD in both thin and overweight adolescent girls.
Methods: Cross-sectional study of 103 females aged 11 to 14 years, Fasting glucose, insulin, ALT, total testosterone, free testosterone, DHEAS, sex hormone binding globulin (SHBG), body mass index (BMI), and waist circumference (WC) were measured. Hepatic (HFF), visceral (VAT), subcutaneous (SAT), and total (TAT) fat were quantified using MRI proton density hepatic fat fraction.
Results: Demographics: 66% Caucasian, 28% African American & 6% Asian (29% Hispanic, 71% Non-Hispanic). Forty-four percent of subjects were overweight or obese (BMI >85%). Overall mean age of subjects 12.6±1, mean BMI 28.5. Mean age of subjects with BMI ≤ 85% (12.6±1) was not different than those with a BMI >85% (12.5 ±1). Correlation analysis shown in tables.
Discussion: In adolescent girls, hyperandrogenism is associated with insulin resistance and increased liver fat. The strong correlation of SHBG with IR and hepatic fat in both normal and overweight adolescents suggests hepatic insulin resistance may develop prior to obesity. However, a correlation with elevation in ALT, which may be associated with hepatocellular injury, and increased hepatic fat is only seen in overweight subjects suggesting that androgens do not play a role in the development of NAFLD in pre-obese adolescents.
Acknowledgements: NIH (RC1 EB010384, R01 DK083380, R01 DK088925, R01 DK096169, & T32 DK077586-01), Wisconsin Alumni Research Foundation Accelerator Program, Genentech Center for Clinical Research, Endocrine Fellows Foundation, and Pediatric Endocrine Society. We thank GE Healthcare for their support.
PAS DATE/TIME/LOCATION May 4, 2014; Session is 3:30-5:30; (4:-4:15); Session: 2865—Obesity & Disordered Eating II , Room: West 214 (Vancouver Convention Centre)

****PAS Oral Presentation**

SIMULATION USE FOR GLOBAL AWAY ROTATIONS (SUGAR): PREPARING RESIDENTS FOR EMOTIONAL CHALLENGES ABROAD, A MULTI-CENTER STUDY

Sabrina Butteris, MD, Sophia Gladding, PhD, Walter Eppich, MD, MEd, Scott Hagen, MD, Amer Al-Nimr, MD, Philip Fischer, MD, Cynthia Howard, MD, Laura Houser, MD, Jacquelyn Kuzminski, MD, Jane Rosenman, MD, Charles Schubert, MD, Tina Slusher, MD

Background: Residents are interested in participating in global health (GH) experiences and while preparation is critical, most is passive. Active preparatory curricula allowing residents to experience and debrief emotional challenges they may encounter abroad is generally lacking.
Objective: Design and evaluate a simulation curriculum to prepare residents for challenges and emotions they may experience abroad.
Design/Methods: Pediatric GH educators from seven institutions agreed on common challenges and emotional reactions residents experience abroad. They developed cases addressing these themes and trained facilitators to lead and debrief the cases. Residents and facilitators completed evaluations that were analyzed using descriptive statistics and thematic analysis of written comments. **Results:** Program size, degree of fidelity, and facilitator simulation experience varied across institutions. Residents and facilitators completed 160 and 52 evaluations respectively. Respondents found the simulations useful in preparing them for their GH elective with a mean resident score of 4.49 (SD 0.82) and facilitator score of 4.85 (SD 0.36) on a 1-5 scale (1=completely useless, 5=very useful). Residents reported strong emotions in 98% of comments with frustration identified as the primary emotion across all case types. The emotions elicited during the case mirrored the types of emotions residents report as challenging while on their GH electives. After the sessions, 96% of comments reflected anticipated changes to GH rotation preparation plans.
Conclusions: Active preparation for GH electives using standardized, simulated cases appears to be a useful tool that can be implemented across a variety of sites with minimal facilitator training or simulation experience. The curriculum successfully elicited powerful emotions which are often experienced while on a GH elective, and most important, provided an opportunity to debrief these emotions before encountering them abroad. After the simulation and debriefing sessions, nearly all residents reported changing their plans for how to prepare for their elective.
PAS DATE/TIME/LOCATION May 4, 2014, TBD

****PAS Poster Presentation**

VISUALIZATION OF OXYTOCIN SIGNALING MECHANISMS IN A SINGLE CELL

Michelle Chiu, Patrick Halbach, Nathan York, De-Ann Pillers, Bikash Pattnaik

Background: Oxytocin (OXT) is expressed in high levels during parturition, at which point it acts as an endocrine and paracrine signaling molecule of myometrial cells to induce contractions and thus, facilitate birth. A rise in intracellular calcium ([Ca2+]i) is

a well characterized result of OXT binding oxytocin receptor (OXTR), most likely through the standard G-protein coupled receptor (GPCR) mediated activation of OXTR.
Objective: We used molecular and live-cell imaging techniques to visualize OXT-OXTR signaling mechanism by real-time fluorescent visualization.
Design/Methods: We generated human embryonic kidney (HEK293) cells stably expressing human OXTR. Intracellular changes in Ca2+, in response to OXT treatment, was measured using the standard FURA-2AM ratiometric assay. We used a live-cell fluorescent marker (plekstrin homology domain fused GFP or pH-GFP) for the detection of membrane phosphatidylinositol 4,5-biphosphate (PIP2). In the predicted GPCR pathway, upon agonist binding, membrane PIP2 is hydrolyzed to inositol 1,4, 5-trisphosphate (IP3) and diacylglycerol (DAG) catalyzed by phospholipase C (PLC). hOXTR stable cells were transiently transfected with pH-GFP using TransIT-LT1 (MirusBio, Madison, WI). GFP positive cells were imaged live within 24-72 hours post transfection. Fluorescent images were acquired every 10 seconds while OXT was applied to activate OXTR.
Results: In response to OXT, cells in the objective field deomonstrated a transietn increase in [Ca2+]i. pH-GFP has a high affinity for PIP2, but when PIP2 hydrolyzes, pH-GFP translocates with IP3 to the cytoplasm. In our live-cell imaging experiments, cells expressing GFP clearly showed translocation of GFP fluorescence from the membrane location to the cytoplasmic location when the cells were exposed to OXT. The time course of GFP translocation were comparable to the increase in [Ca2+]i.
Conclusions: We confirmed viability of our stable HEK-hOXTR cell culture model. Our experiments demonstrate that OXT-OXTR signaling primarily utilize the standard GPCR mechanism to mobilize intracellular Ca2+.
PAS DATE/TIME/LOCATION May 4, 2014; 4:15 PM - 7:30 PM; Exhibit Hall C Board Number: 778

****PAS Poster Presentation**

FYI, CALL, COME: PERCEPTION OF COMMUNICATION BETWEEN NURSES AND PEDIATRIC RESIDENTS AND ADHERENCE TO TEXT PAGING GUIDELINES

Mary Ehlenbach, Jessica McGee, Laura Ahola, Katherine Baker, Thomas Brazelton

Background: Text paging is a relatively new technology that can potentially save time and decrease workflow interruptions by delivering more information than simply a telephone number. However, communication nuances can be “lost in translation” through text paging. Studies have shown dissatisfaction with text paging often surrounds ambiguity of whether or not messages have been received. There is a paucity of evidence on best practices for text paging.
Objective: To assess compliance with text paging guidelines and the perception of adequate communication between nurses and pediatric residents.
Design/Methods: Guidelines were developed for text paging stating all text pages should contain “FYI,” “Call,” or “Come” and the sender's name and number. Nurses and pediatric residents were surveyed about their perception of adequate communication via text paging before and after implementation. Samples of text pages were audited for compliance with text paging guidelines multiple times after implementation.
Results: Audits of text pages were performed to assess compliance with text paging guidelines. Compliance at 2 weeks, 4 months, 9 months, 13 months, 14 months, 15 months, and 18 months was 59%, 59%, 56%, 49%, 79%, 76%, and 92% respectively. Surveys of nurses and residents were completed. After implementation, the nurses' mean response to “When I page an MD/NP, I receive the response I am looking for” increased from 3.60 (n=25) to 3.89 (n=19), for a mean increase of 0.29 (95% CI -.002 to 0.59, p=0.051). The mean response to “When I page an MD/NP, I receive a timely response back” increased from 3.36 (n=25) to 3.88 (n=16), for a mean increase of 0.52 (95% CI -0.11-0.92, p=0.01). The residents' mean response to “I receive pages that adequately communicate the patient's acuity” increased from 3.29 (n=28) to 3.53 (n=32), for a mean increase of 0.25 (95% CI -0.099-0.59, p=0.16). The mean response to “I receive pages that adequately communicate what was wanted from me” increased from 3.43 (n=28) to 3.84 (n=32), for a mean increase of 0.42 (95% CI 0.1-0.73, p=0.01). The mean response to “I receive pages that identify the name and call back number of the sender” increased from 3.46 (n=28) to 4.00 (n=32), for a mean increase of 0.54 (95% CI 0.29-0.78, p=0.0001).
Conclusions: Text paging guidelines improved the perception of adequate communication on all measures. Improved perception was noted even when compliance with guidelines was only ~50%. Compliance improved over the 18 months after guidelines initiation.
PAS DATE/TIME/LOCATION May 4 2014; 4:15 pm- 7:30 pm; Exhibit Hall C. Board number 693.

****PAS Poster Presentation**

UTILITY OF LACTIC ACID LEVELS IN CHILDREN WITH SUSPECTED INTUSSUSCEPTION

Paul T Ishimine, MD, Vanessa L Tamas, MD and P Jamil Madati, MD.

Background: Intussusception is characterized by intermittent abdominal pain, vomiting, and bloody stools. Efforts to risk stratify with history, physical exam and abdominal radiographs can not reliably detect all in need of additional diagnostic testing. Ultrasound is reliable but limited by its availability. Currently, no laboratory screening test exists that can help to define the odds of intussusception. In intussusception, abdominal pain and bloody stools, are postulated to occur from bowel ischemia. Lactic acid is produced when ischemia is present. **Objective:** The main objective of this study is to compare mean lactate acid levels in children with and without intussusception. The secondary objective is to correlate lactic acid levels to

duration of abdominal pain. **Design/Methods:** This was a prospective cohort study of patients, 6 mons to 6 yrs of age, who underwent ultrasound for the diagnosis of intussusception. Subjects were excluded with any of the following disorders: renal disease, metabolic disorder, ventriculoperitoneal shunt placement, seizure disorder, liver disease, history of blunt abdominal trauma, Henoch-Schonlein purpura, and history of abdominal surgery. Serum was obtained as a free flowing sample. A study specific data sheet was given to parents. Lactic acid was analyzed using the VITROS LAC (Ortho Clinical Diagnostics, Rochester, NY) slide method. Student t-test was utilized for continuous variables. Chi square analysis or Fisher's exact test were used for categorical variables.
Results: A total of 42 patients were analyzed:17 with intussusception (15 positive US, 1 BE, 1 seen on plain films), and 25 without. There were no significant differences between the groups. Mean lactic acid levels did not differ significantly in the two groups (intussusception 1.93 SD 1.13, no intussusception 1.70 SD 0.69). Comparison of mean lactic acid levels between patients with abdominal pain < 24 hours (1.8 SD 0.67) to those with pain > 24 hours (2.5 SD 2.51) was significantly different. One child, with frank rectal bleeding, had a lactic acid level of 5.4 mmol/L. **Conclusion:** Lactic acidemia does not appear to be a useful screening test for intussusception; however, it may indicate disease severity.
PAS DATE/TIME/LOCATION May 4, 2014; 4:15-7:30 pm; Exhibit Hall C (Vancouver Convention Centre)

****PAS Poster Presentation**

EVALUATING THE IMPLEMENTATION OF A FAMILY-CENTERED ROUNDING CHECKLIST
Kelly MM, Cox ED, Xie A, Li Y, Cartmill R, Carayon, P
Background: Checklists are used to standardize processes and improve patient safety; however, implementation challenges still exist in the context of complex healthcare systems. With a multidisciplinary stakeholder team, we developed a family-centered rounding (FCR) checklist aimed at optimizing best practices for family engagement on rounds. To date, evaluating the implementation an FCR checklist across disciplines has not been performed.
Objective: To evaluate the implementation of an FCR checklist across two different inpatient services.
Design/Methods: As part of a larger institutional quality improvement study to improve family engagement on FCR, hospitalist and hematology/oncology physicians (n=27) at a tertiary children's hospital participated in a 90-minute didactic and role-play training on the use of an 8-item FCR checklist. Research assistants then conducted observations of weekday rounds using an observation protocol that identified rounding service, rounding duration and location (bedside or hallway), family presence, and completion of checklist items. Qualitative data on barriers to item completion was recorded. Differences between services were calculated using Chi-squared or t-tests.
Results: Data was collected from 251 individual patient rounding observations over 29 days. Compared with heme/onc, hospitalist rounds were longer (13.3 vs 11.4 minutes per patient, $p<0.02$), and occurred more frequently with the family present (88 vs 71%, $p<0.005$) and in the patient's room (77 vs 2%, $p<0.001$). Hospitalist teams also completed more checklist items in a single rounding session (82 vs 72%, $p<0.001$), and were more likely to do introductions (84 vs 70%, $p<0.01$) and review discharge goals (70 vs 36%, $p<0.001$). Barriers that were more commonly noted on the heme/onc service included, but were not limited to, hallway distractions and limited checklist visibility.
Conclusions: Despite extensive stakeholder involvement in development, implementation of an FCR checklist can still be challenging across different inpatient services. Each service likely faces unique barriers to checklist adherence. Future plan-do-study-act cycles and dissemination efforts will need to carefully consider the context of checklist use.
PAS DATE/TIME/LOCATION May 4, 2014; 4:15-7:30pm; Exhibit Hall C; Poster 708

****PAS Poster Presentation**

IMPACT OF PRENATAL RISK FACTORS ON IRON STATUS OF PRETERM INFANTS AT BIRTH
Patrick McCarthy, Hannah Zundel, Sharon Blohowiak, Pamela Kling
Background: Iron deficiency (ID) is the most common nutritional disorder globally. Eighty percent of fetal iron is obtained in the third trimester, and deficits in iron stores at birth have been associated with impaired cognitive, social-emotional, and neurophysiological development and function. Multiple prenatal risk factors (RF) impede term infant iron stores, but the effect of these RF on preterm infant iron stores is incompletely understood.
Objective: To determine the impact of prenatal RF on ID in preterm infants and to compare the iron status in low (0-1 RF) and high risk (>2 RF) preterm infants.
Design/Methods: Newborns <35 weeks of gestation weighing <2250g were screened for study eligibility. Seven prenatal RF were examined in eligible infants: socioeconomic status, maternal ethnicity, maternal ID, maternal diabetes, maternal obesity, small for gestational age (SGA) status, and multi-fetal birth. Umbilical cord blood was collected at birth. CBC, zinc protoporphyrin/heme (ZnPP/H), reticulocyte-enriched ZnPP/H (RE-ZnPP/H), and serum ferritin were analyzed to assess red cell iron availability, iron incorporation into hemoglobin (Hgb), and total body iron stores. These parameters were analyzed in context of specific RF and low/high risk of ID.
Results: Analyses were done on 54 preterm infants. These data revealed SGA infants had greater red cell distribution width (RDW) (19.7±0.9 vs. 17.3±0.3%; $p<0.002$, ZnPP/H (255.5±48.3 vs. 162.6±12.0µM/M; $p<0.01$), and Hgb (15.8±0.1 vs.

14.0±0.5g/dL; p<0.056) than non-SGA infants (p<0.03). SGA infants had lower ferritin (39.9±12.9 vs. 114.7±16.4ng/mL; p<0.025) than non-SGA infants. No differences (p>0.05) between low/high risk groups or with specific RF, except SGA status, were noted. **Conclusions:** In contrast to term infants, the effects of prenatal RF in preterm infants are not summative, and SGA status is a dominant RF for ID, indicated by low storage (ferritin) and RBC (ZnPP/H) iron. High RDW and ZnPP/H with increased Hgb in SGA preterm infants may represent iron-deficient erythropoiesis driven by hypoxemia secondary to uteroplacental insufficiency. Preferential iron use for erythropoiesis may impair iron compartmentalization and trafficking to other tissues, increasing risk of poor developmental outcomes in SGA infants. Global nutritional deficiency may also contribute. The impact of other RF may not predominate until later in the third trimester.
PAS DATE/TIME/LOCATION May 4 2014; 4:15 pm- 7:30 pm; Exhibit Hall C. Board number 417.

May 5, 2014

****PAS Oral Presentation**

RELATIONSHIP BETWEEN MEDICAL HOME AT HOSPITAL ADMISSION AND READMISSION AFTER DISCHARGE

Ryan J. Coller, MD, MPH, Thomas S. Klitzner, MD, PhD, Adrianna Saenz, BA, Carlos Lerner, MD, MPhil, Bergen B. Nelson, MD, MS, Sungmee Park, Paul J. Chung, MD, MS

Background: Hospital readmissions are a widely used quality indicator. Little is known about the degree to which primary care medical homes may reduce the need for hospital readmissions.

Objective: To test the hypothesis that patients with a medical home will be less likely to have a readmission within 30 days of discharge.

Design/Method: Prospective cohort study enrolling randomly selected children admitted for at least 24 hours to a tertiary children's hospital during 2012-2013. Hospitalizations <24 hours, patients >17 years, NICU/nursery hospitalizations, transfers and deaths were excluded. Questionnaires with families were conducted at index admission, 2 and 30 days after discharge. Medical home was assessed using questions from the National Survey for Children with Special Health Care Needs. Readmissions were defined as any parent-reported admission to any hospital within 30 days of discharge. **Results:** Preliminary analyses of the first 442 patients identified 30.7% having a medical home and an overall readmission rate of 13%. Unadjusted readmission odds were 60% lower among those with a medical home (OR=0.40, p=0.012). Having family-centered care and a usual source for sick and well care were the only individual medical home components associated with readmission (OR=0.57, p=0.069, and OR=0.33, p<0.001, respectively). After adjusting for complexity (>2 subspecialists, need for home health and durable medical equipment) and self-efficacy (parent's confidence in avoiding a readmission), patient age, and respondent language, the odds of readmission were still reduced by almost 60% among those with a Maternal and Children Health Bureau-defined medical home on admission (AOR=0.41, p=0.018). **Conclusions:** Patients with a medical home prior to hospitalization may have lower odds of 30-day readmission after discharge. Final adjusted analyses will include additional demographic, clinical and severity of illness covariates.

PAS DATE/TIME/LOCATION May 5, 2014; 8:30 AM; East 11 (Vancouver Convention Centre)

****PAS Poster Presentation**

"THE EFFECTIVENESS OF BEST PRACTICE GUIDELINES IN IMPROVING RESIDENT PROGRESS NOTES IN AN EHR"

Shannon M Dean, MD, Leigh Anne Bakel, MD and Jens C Eickhoff, PhD

Background: Providers nationally have observed a decline in the quality of documentation after implementing an EHR. Concerns include the over-inclusion of data (note clutter), indiscriminate use of copy and paste, and a perceived loss of cognitive processing when notes are written using an EHR. Despite these concerns, few studies address the need to improve note quality. At our two academic centers, we implemented best practice guidelines with the goal of improving progress notes in the EHR. We also developed an audit tool to examine compliance with our guidelines.

Objective: Our objectives were to examine the effectiveness of implementing guidelines in improving resident progress notes and to establish the reliability of the audit tool used to measure compliance with them.

Design/Methods: At site #1, an entirely new note template was developed to comply with the guidelines. At site #2, a pre-existing template underwent minor changes to achieve compliance. We utilized the audit tool to evaluate progress notes written before and after the development and implementation of the guidelines (n=25 in pre- and post-implementation cohorts). Scores were summarized in terms of means and standard deviations. Reliability of the tool was calculated using the intra-class correlation coefficient (ICC) based on multi-level random intercept model. Nonparametric Wilcoxon Rank Sum test was used to compare pre and post-implementation scores. P-values were two sided and considered statistically significant at <0.05.

Results: The ICC was 0.96 and 0.78 at sites #1 and 2 respectively, indicating a good to excellent level of reliability among raters. There was a statistically significant improvement in the total score and in questions related to decreasing note clutter at site #1. At site #2, no single question was significantly different, attributed to a nearly compliant pre-existing template. Interestingly, there was a statistically significant decline in the total score at site #2, likely due to use of copy and paste as shown in a trend toward significance for questions related to copy and paste activity. **Conclusions:** Establishing guidelines can lead to improvements in EHR documentation, specifically in the reduction of note clutter. However, as demonstrated at both sites, this intervention alone does not address copy and paste or the loss of critical thinking and writing in the EHR. Interventions for improving the latter require additional investigation.

PAS DATE/TIME/LOCATION May 5, 2014; 4:15-7:30; Vancouver Convention Centre, Exhibit Hall C, Board 530

****PAS Poster Presentation**

INHIBITING ENDOGENOUS ESTROGEN REDUCES FETAL IRON AND ALTERS FETAL IRON STATUS IN LATE OVINE PREGNANCY

Pamela J Kling, Mary Y Sun, Jason L Austin, Terry M Phernetton, Ronald R Magness.
Background: Estrogen production by the placenta rises dramatically throughout gestation, promoting fetal growth and development. Limited in vitro data show that estrogen modulates iron homeostasis possibly through increasing expression of both endothelial nitric oxide synthase (eNOS) and transporter transferrin receptor (TfR1). Letrozole, a potent clinical aromatase inhibitor, suppresses estrogen production.
Objective: To determine if letrozole which reduces estrogen production also decreases fetal growth rate and fetal iron status.
Design/Methods: Late gestation (120±5d, term=147d) sheep were given prolonged letrozole (20 mg IM loading, then 125 µg/kg/day for 7-8d vs. vehicle control). Fetal and placental morphometrics were measured and TfR1 and eNOS immunoblots performed. We measured maternal and fetal RBC count, hemoglobin, and zinc protopophyrin (ZnPP/H; a measure of incomplete RBC iron incorporation) and tissue iron.
Results: Letrozole reduced total placental weight per fetus. TfR1 expression was reduced ($P<0.05$), but eNOS trended higher ($0.1 > P > 0.05$). Compared to controls, letrozole fetuses were 19% lighter and BMI 12% lower ($P<0.05$). Letrozole also reduced fetal brain, liver, thymus, and spleen weights ($P<0.05$ for all). Letrozole also increased maternal RBC counts and also ZnPP/H, but without elevation of fetal RBC and ZnPP/H. Iron concentration in fetal liver were similar to control, but the letrozole kidneys had higher iron concentration ($P<0.05$) and iron deposition seen.
Conclusions: Inhibiting endogenous estrogen reduced the placental size and produced leaner fetuses. Letrozole also decreased maternal RBC iron incorporation and placental TfR1, but specifically increased fetal kidney iron accretion. These data indicate a role for estrogen in controlling fetoplacental growth and iron metabolism, and fetal body composition. NIH HL49210, HD38843, HL87144. *PAS DATE/TIME/LOCATION May 5, 2014,* 4:15 pm- 7:30 pm
Exhibit Hall C BOARD NUMBER: 33

****PAS Poster Presentation**

GROWTH ATTENUATION THERAPY: PRACTICE & PERSPECTIVES OF PEDIATRIC ENDOCRINOLOGISTS
Allison Pollock, MD, Norman Fost, MD, David Allen MD
Background: Exogenous sex steroid administration before puberty accelerates linear growth and epiphysis closure, decreasing final height. While sex hormones have been used historically to reduce height and improve quality of life in tall-statured girls, treatment of a girl with severe cognitive and physical disabilities in 2006 prompted intense debate. Prescribing growth attenuation therapy (GAT) remains controversial, and there are no reliable data on the prescribing practices and attitudes of today's pediatric endocrinologists.
Objective: This study evaluated the experience, practice and attitudes of pediatric endocrinologists regarding GAT.
Design/Methods: ~1200 Pediatric Endocrine Society members received an email with a study description and a link to an online anonymous questionnaire. Consent was implied by participating in the survey. Anonymity was assured by data collection via Qualtrics software, which de-identified data; demographic information was not elicited.
Results: 185 responses (122 in academic practice) were analyzed. 119 (64%) responders have been asked to prescribe and 47 (25%) have prescribed GAT. Dates of GAT were not provided. 91% of requests for GAT were prompted by a patient's family. Diagnoses prompting GAT requests included severe cognitive and physical disability (57%), tall stature (36%), spinal muscular atrophy (1%) and scoliosis (1%). Of those with experience prescribing GAT, 47% involved children with severe disability and 51% children with tall stature. Ethics consultation for GAT was requested by 24 (50%) prescribers, of whom 21 (88%) were treating children with severe disability. 86 responders elected not to treat precocious puberty in a severely disabled child for the purpose of reducing height; 4 of these consulted an ethicist. 103 (56%) disagreed with the statement, “GAT is always wrong,” while 20 (11%) agreed.
Conclusions: Many pediatric endocrinologists have been asked to offer GAT, most agree that GAT is sometimes appropriate, and 25% of those surveyed have prescribed GAT. Acquiescence to GAT requests appears more common for a diagnosis of tall stature than for severe cognitive and physical disability. Ethics consultation for GAT is most often obtained in cases of severe disability. More data is needed to determine the growth-limiting effectiveness and quality-of-life value of GAT. In addition, more discussion is needed to develop consensus regarding how best to accomplish GAT and when it is in the best interest of the child.

PAS DATE/TIME/LOCATION May 5, 2014; 4:15 pm- 7:30 pm; Exhibit Hall C; Board Number 54; AND PES Presidential Poster Reception Friday night, Sheraton Vancouver Convention Centre Hotel; Grand Ballroom A/B, 7-9pm

****PAS Poster Presentation**

MARFAN SYNDROME AND SOCIAL MEDIA: SYMPTOMS, SUPPORT AND CELEBRITIES
Erin F Kelleher, Philip F Giampietro, MD, PhD and Megan A Moreno, MD, MSEd, MPH
Background: Marfan syndrome (MS) is a connective tissue disorder that affects thousands of US teens. Some teenage patients with MS may use social media to express their experiences and emotions, but little is known about what patients choose to share online.

Objective: The purpose of this study was to investigate displayed social media content related to Marfan syndrome across six different social media sites. **Design/Methods:** The key words "Marfan syndrome" and "Marfans" were searched on six different social media sites including: Instagram, Pinterest, Reddit, Tumblr, Twitter and YouTube. The top five recent and popular posts and related comments for each site were collected and coded weekly for five weeks. A codebook was developed using an iterative process to categorize posts and comments. Posts were excluded if they were reshared content or not in English.
Results: Out of 300 posts collected, 141 were reshared and 4 were in another language, leaving 145 posts (48.3%) to analyze for content. Only 3 (2.1%) posts specified age, gender and location in their profiles. Categories of displayed content included experiences (31.0% of posts) including going to the doctor or having heart surgery. Posts included symptoms (13.8%), most commonly pain and fatigue. A large number of posts (13.7%) referenced Austin Carlile, a celebrity singer with MS as a role model. Posts also included supportive text including offering advice or support to others (9.7%). Examples of supportive posts include #nevergiveup or "Don't let anything stop you from being you either."
Conclusions: Participants post about and often reshare content on social media related to many aspects of living with MS. While little demographic information about individuals was available, physicians and healthcare providers may consider using social media information to understand common concerns and consider new online venues to place health education materials. The frequent posts about a celebrity illustrated the impact that one celebrity patient can have on recognition of a rare disease. It was noteworthy that there were multiple posts about being tired or loss of energy. Future studies aimed at analyzing Facebook profiles in patients with MS may provide additional insight into etiologies for pain and fatigue in patients with MS.
PAS DATE/TIME/LOCATION May 5, 2014; 4:14 PM-7:30 PM; Exhibit Hall C, Board number 305

****PAS Poster Presentation**

SIMULATION USE FOR GLOBAL AWAY ROTATIONS (SUGAR): RESIDENT PERCEPTIONS OF THE MOST DIFFICULT AND MOST VALUABLE ASPECTS OF SIMULATED GLOBAL HEALTH EXPERIENCES AT A MULTI-INSTITUTIONAL CURRICULUM STUDY
Michael B Pitt, MD, Sophia P Gladding, PhD and Sabrina M Butteris, MD.
Background: As more residents participate in global health (GH) experiences, educators struggle with how to best prepare them for the challenges of practicing medicine in resource-limited countries. To address this need, pediatric GH educators from 7 institutions collaborated to develop a standardized, peer-reviewed, medical simulation curriculum, which addressed both medical management and emotional challenges often encountered on GH experiences. Over one year, residents across 7 sites participated in 162 simulation cases with 94.4% of evaluation responses indicating the sessions were useful or very useful in preparing them for their GH experience.
Objective: Determine common themes identified by residents regarding the most difficult and valuable aspects of the simulation of GH experiences.
Design/Methods: We conducted a thematic analysis of written responses to the evaluation questions asking what they found to be the most difficult and most valuable parts of the session. Two authors independently coded the written comments using themes initially identified by one author. The two authors compared their coding, discussing areas of disagreement until consensus was reached. We then calculated the frequency of each theme.
Results: For the most difficult part of the session, we identified two dominant themes: working with limited resources (69/161; 43% of comments) and lack of medical knowledge/patient care skills (40%) with additional themes related to cultural context and specific aspects of the cases. For the most valuable part of the session, we identified two dominant themes: learning to work with limited resources (55%) and expansion of medical knowledge (34%) with additional themes related to the debriefing process and specifics of the case.
Conclusions: After participating in the curriculum, residents identified several themes that mirror challenges commonly encountered on GH experiences. Many residents found working with limited resources to be both the most difficult and valuable part of the sessions with the difficulty experienced due to lack of knowledge transformed into a valued expansion of knowledge through the sessions. By having the opportunity to experience and debrief the challenges they may encounter prior to going abroad, residents may have less difficulty navigating them while abroad.
PAS DATE/TIME/LOCATION May 5, 2014; TBD

****PAS Poster Presentation**

SIMULATION USE FOR GLOBAL AWAY ROTATIONS (SUGAR): DESCRIPTION AND FACILITATOR FEEDBACK OF A STANDARDIZED SIMULATION CURRICULUM TO PREPARE RESIDENTS FOR GLOBAL HEALTH EXPERIENCES
Michael B Pitt, MD, Scott Hagen, MD, Walter Eppich, MD, MEd and Sabrina M Butteris, MD.
Background: With increasing numbers of residents participating in GH electives, the need for preparation is crucial. Active preparatory curricula allowing residents to experience and debrief potential emotional challenges are lacking.
Objective: To design a standardized simulation curriculum to prepare residents for possible emotional challenges encountered abroad and solicit facilitator feedback of the case design and efficacy.
Design/Methods: GH educators from a consortium of 7 institutions agreed on the 4 most common challenges residents encounter on GH experiences and developed cases addressing each. Each challenge was paired with a desired adaptive

characteristic which would ideally be enhanced after working through the case. Two-page simulation guides and a debriefing script were created and facilitators were trained in their use. Facilitators completed evaluation forms after each case.
Results: Of 52 facilitator evaluations, 100% rated the sessions as useful or very useful in preparing their residents for GH electives. All indicated that the cases elicited the intended challenges, and the simulation guide provided enough information to lead the case effectively.
Conclusions: Facilitators indicated that the simulation guide provided sufficient information to lead the case and that the desired challenge was attained during the session. By encountering and debriefing these challenges prior to their GH experiences, residents may better navigate these obstacles while abroad.
PAS DATE/TIME/LOCATION 5/5/2014; TBD

****PAS Poster Presentation**

HEMATOPOIETIC ALTERATIONS IN GESTATIONAL IRON DEFICIENCY
Zachary R Smith, Mary Y Sun, Hannah R Zundel, Sharon E Blohowiak, Pamela J Kling
Background: Iron is vital for cell proliferation; therefore, severe gestational iron deficiency (ID) can impair fetal erythropoiesis. In older children, ID increases erythropoietin production, stimulating both erythrocytes and platelets. However, little is known about whether fetal non-erythropoietic hematopoietic cell lineages are susceptible to ID. Additionally, gestational ID may permanently alter the production of hematopoietic cell profiles, leading to clinical implications in adult life. Rats are good models of the hematopoietic lineages.
Objective: To examine the effect of gestational ID on adaptations in newborn rat hematopoietic cell lineages.
Design/Methods: From gestational day 2 to postnatal day (P) 7, dams were fed either iron sufficient (IS) diet (198mg Fe/kg) or ID rat diet (<6mg Fe/kg diet) with the biological lactating dam nursing the pups. At P7, the IS diet was fed to all dams. At P20, pups were weaned to the IS diet. Blood was collected between P2-P10 and again from P30-P45 and analyzed for hemoglobin levels, zinc protoporphyrin/heme (ZnPP/H), reticulocyte counts, WBC counts, platelet counts, and mean platelet volume.
Results: From P2 to P10, hemoglobin levels were ID were 20-25% lower than IS ($P<0.01$ in ID). Erythrocyte iron incorporation was worse in ID, as measured by 2-3 fold higher ZnPP/H in ID ($P<0.01$). At birth, reticulocytes in ID were suppressed ($P<0.004$) but equalized by P7. In the first 10 days, reticulocytes were indirectly related to ZnPP/H ($R2=-0.09$, $P<0.005$). At birth, WBC was 28% and platelet counts 25% lower in ID; while platelets were 80% larger, ($P<0.005$ for all). Platelet counts were directly related to reticulocytes in the first 10 days ($R2=0.23$, $P<0.0001$). After weaning, the reticulocytes, WBC and platelets in ID remained lower, while platelet size was larger than in IS ($P<0.003$).
Conclusions: Gestational ID caused short-term and long-term hematopoietic programming alterations in red, white and platelet cell lineages, despite correction of ID and potentially altering function. Because pregnancy complications commonly impair fetal iron delivery, a better understanding of how fetal iron status impacts production and function of all hematopoietic cell lineages is needed.
PAS DATE/TIME/LOCATION May 5, 2014; 4:15 pm- 7:30 pm
Exhibit Hall C SESSION**: 2927—Neonatology BOARD NUMBER: 416

May 6, 2014

****PAS Poster Symposium**

NTF3 AS A MODIFIER FOR BRACING IN ADOLESCENT IDIOPATHIC SCOLIOSIS

Philip Giampietro, MD, PhD, Alex Stoddard, MSc, MA, Sijian Wang, PhD, Kandice Swindle, BS, Cathleen Raggio, MD, Nancy Hadley Miller, MD, MS, Robert Blank, MD, PhD, Sarah Sund, BS, Praful Aggarwal, MSc and Ulrich Broeckel, MD.

Background: Approximately one in ten patients diagnosed with idiopathic scoliosis (IS) will require active intervention i.e. bracing or surgery. The cost of bracing is approximately $2000 per brace, which includes adjustment. Identification of a sub group of patients with IS for whom bracing will not be successful would be cost effective and potentially offer patients and their providers a more personalized approach to their treatment.

Objective: To identify genomic region(s) associated with bracing efficacy for IS. **Design/Methods:** Fine mapping of 7 families in which affected members were treated with bracing, with previously demonstrated linkage to 12p13 performed by our group, was performed using the Affymetrix Genome-wide Human SNP Array 6.0, containing >906,600 SNPs. A total of 19 affected subjects were sequenced from families 1, 2, 3, 4, 5, 6 and 7 using Agilent SureSelect whole exome capture with semiconductor sequencing methodology. DNA sequence results from these members were compared with GRCh37 Reference Genome.

Results: Neurotrophin 3 (NTF3) was identified as a candidate gene within the 12p13 region with significant p values in a dominant (.008), continuous (.0091) and recessive mode (.0213). /rs # A freq B freq AB or BB AA>Ab>BB Model free Recessive Model Nearest gene(s) / rs10492095 0.8192 0.1809 0.008 0.0091 0.0024 0.011517609 NTF3 / rs7488279 0.8404 0.1596 0.0165 0.0187 0.0093 0.023363416 NTF3 / rs11063692 0.8404 0.1596 0.0165 0.0187 0.0093 0.023363416 NTF3 / rs7398674 0.8511 0.1489 0.0213 0.0213 0.0226 0.021270698 ANO2

NTF3 (AB or BB associated with scoliosis; AA>AB>BB continuous distribution for scoliosis)

Conclusions: The promoter polymorphism (rs11063714) NTF3 has previously been associated with curve severity for IS in the Chinese Han population. NTF3 is hypothesized to affect proprioception, which may be altered in patients with IS.Our findings, in a separate population provide validation of these results which need to be tested in prospective bracing studies among patients with IS. We anticipate these results will assist with identifying patients with IS who will not be responsive to bracing based on their NTF3 genotype, and provide a rationale for treatment of IS through neurophysiological approaches targeting postural control mechanisms.

PAS DATE/TIME/LOCATION May 6, 2014; 9:45-AM; 4545.689

****PAS Poster Presentation**

CHARACTERIZING UNIQUE SUBPOPULATIONS OF CHILDREN WITH SPECIAL HEALTH CARE NEEDS

Ryan J. Coller, MD, MPH, Jens Eickhoff, PhD, Thomas S. Klitzner, MD, PhD, Carlos F. Lerner, MD, MPhil, Mary Ehlenbach, MD, and Paul J. Chung, MD, MS

Background: Children with special health care needs (CSHCN) are a heterogeneous population. It is unclear how different dimensions of medical complexity impact their outcomes.

Objective: To identify complexity subgroups of CSHCN within the US population, and characterize key outcomes.

Design/Methods: Data from the 2009-2010 National Survey of CSHCN were examined to define substantively meaningful subgroups within the CSHCN population. Following the conceptual frameworks of medical complexity developed by van der Lee and Cohen, multiple indicators in three domains (functional limitations, health care use and characteristic needs) were identified. Latent class analysis was then used to group individuals into otherwise unobservable classes based on these indicators. Outcomes were compared among different latent classes with weighted logistic or negative binomial regression.

Results: Among 40,242 CSHCN, four latent classes emerged according to different combinations of condition impact (broad, across multiple functional domains vs. narrow) and service intensity (high vs. low). Classes with broad impact had significantly worse clinical outcomes and social characteristics. Those with broad impact / high intensity had the highest ED visit rates (RR 3.34, p<0.001) and hospitalizations (AOR 11.97, p<0.001), but only a 20% predicted probability of having a medical home. Those in the narrow impact / high intensity class had the second highest ED visit rates (RR 2.12, p<0.001) despite having the highest overall likelihood of a usual source of care and better social and clinical characteristics (e.g. shared decision making, medical home, family income, insurance status) compared to broadly impacted children.

Conclusions: Complexity of CSHCN can be characterized by different combinations of the extent of the condition's impact and intensity of services, correlating with significantly different outcomes. By understanding the scope of the condition's impact and service intensity, needs and outcomes may be forecasted, irrespective of specific diagnoses. Developing improvement strategies based on class rather than diagnosis could strengthen population management of rare but complex conditions.

PAS DATE/TIME/LOCATION May 6, 2014; 7:00 AM - 11:00 AM; Exhibit Hall C (Vancouver Convention Centre), BOARD NUMBER 509

COMPETENCY-BASED, MULTIMODAL ASSESSMENT OF PEDIATRIC OTOSCOPY SKILLS: A MULTI-INSTITUTIONAL, CROSS-SPECIALTY STUDY

Caroline R Paul, MD, Meg G Keeley, MD, Gregory S Rebella, MD[3].

Background: The significant sequelae from inaccurate diagnosis of acute otitis media and that competency in otoscopy skills is essential to an accurate diagnosis are well described. Yet, standardized curricula with longitudinal competency standards and rigorous outcome measures, particularly involving direct observation of skills, have not been described.
Objective: We identified learning gaps among pediatric (PED) and emergency medicine (EM) interns, instituted a standardized otoscopy curriculum based on deficiencies, and assessed for improvement in otoscopy proficiency following the curriculum.
Design/Methods: 30 interns of an intervention group (IG) from two institutions (UW-EM=6, UW-PED=13, UVA-PED=11) received the curriculum. In the prior year, 16 interns (UW-EM=3, UW-PED=13) of a non-intervention group (NIG) did not receive the curriculum. Both groups were assessed at beginning and end of internship with the same outcome measures: 1) written test with validated images (WT) 2) simulation including use of a validated pneumatic otoscopy trainer (OSCE) and 3) direct observation of skills in patient care using a checklist with established reliability and validity (DO). Two-sample t-tests were used to compare mean percentage gain (MPG) and percentage achieving pre-determined minimum passing levels (MPL) for both groups.
Results: IG had significant increase in MPL between beginning and end of internship for WT (12% vs. 97%, p<0.001), OSCE (3% vs. 80%, p<0.001) and DO (0% vs. 28%, p=0.008). IG had significantly higher MPL than NIG at end of internship for WT (97% vs. 56%, p=0.002) and OSCE (69% vs. 0%, p=0.001). IG had significant MPG for WT (21%, p<0.001), OSCE (28%, p<0.001), and DO (52%, p=0.008) with no significant differences (p=0.06-0.26) between groups of residents. NIG had no significant MPG in WT (2.7%, p=0.30) and DO (6.7%, p=0.61) and significant regression in OSCE (MPG=-5.2%, p=0.03). IG had significantly higher MPG (p= 0.008-0.0001) than NIG in all outcome measures.
Conclusions: A standardized curriculum with multi-modal measures was successfully implemented across different specialties in multiple institutions. Assessment detected gaps in the pre-and post-internship periods which may not have otherwise been identified. Routine immersion learning is insufficient. Formal longitudinal curricula with competency-based benchmarks including translation of skills in patient care settings is needed to ensure standardized, comprehensive learning.
PAS DATE/TIME/LOCATION May 6, 2014; 7:00 AM - 11:00 AM; Exhibit Hall C (Vancouver Convention Centre)