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Minnesota Chapter

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	Medical Student	
1 **MS** **CV**	**Kia Farnaaz** Kari Roberts, MD; Kiki Sarafoglou, MD; Jane Lewis, MD; Ashajyothi Siddappa, MD	**A Case of Ovotesticular Disorder of Sex Development (OTDSD) presenting in neonatal period** A term neonate was transferred after delivery to the Newborn Intensive Care Unit (NICU) for management of respiratory distress and ambiguous genitalia. Infant was born at 38+4 weeks weighing 3118 grams, to a 32-year-old G1P0 Caucasian women. Prenatal history was significant for late development of moderate polyhydramnios and mild elevation of blood pressure. Infant was delivered vaginally following induction, and needed positive pressure ventilation around five minutes of age for apnea and cyanosis. APGAR scores were four and five at one and five minutes of age. Clinical course following admission as follows: Ambiguous genitalia. Physical exam showed prominent clitoris with labial folds. No palpable masses. Chromosome analysis showed 46XY. SRY probing was positive. Electrolytes were normal, and 17 Hydroxy-progesterone (17-OHP) was within the normal range (218 ng/dL) for age. The newborn metabolic screen was normal. Pelvic ultrasound showed uterine didelphys and abdominal ovotestis. Microarray testing was normal. A right sided intra-pelvic gonad was removed, and pathology showed testicular tissue. Left side structures looked grossly like a normal ovary with fallopian tube. ACTH stimulation test response was appropriate. Beta HCG stimulation test showed elevated testosterone (295 ng/dL) and dihydrotestosterone (663 pg/mL-1140 pg/mL), and low estradiol (18 pg/mL-<11 pg/mL) at baseline and post HCG. Antimullerian hormone level was <0.003 ng/mL. Parents decided to raise the infant as a female child. Respiratory Distress Infant needed respiratory support for respiratory distress soon after birth. She required noninvasive ventilation during her hospital stay and failed weaning multiple times secondary to increased work of breathing, elevated CO2 and oxygen needs. Multiple chest x-rays done showed clear lung fields. During intubation for an inguinal hernia repair, she was noted to have evidence of subglottic swelling, which was treated with steroids. She has been evaluated by ENT with bronchoscopy which showed subglottic narrowing and inflammation without evidence of malacia. The probable cause may be congenital narrowing. Hypotonia Infant was noted to have generalized hypotonia at birth. Her birth history, clinical picture and laboratory evidence were not consistent with hypoxic ischemic encephalopathy. Her tone continued to improve during hospitalization but decreased truncal tone and head lag persisted. The etiology of hypotonia remains unclear. Patient was cared by pediatric endocrinologist, urologist, pediatric surgeon, and ENT during her stay in the NICU. Discussion Ovotesticular DSD (True Hermaphroditism) is a rare form of DSD, representing 3-10% of DSD cases.

		Patients present with ambiguous genitalia with both testicular and ovarian elements. Patients need molecular genetics and DNA analyses. This patient's respiratory distress and hypotonia are likely unrelated to OTDSD. OTDSD can have a major impact on quality of life, and can result in multiple psychological, gynecological and urological problems. Long-term follow-up is important especially with regard to gender identity and quality of life.
2 MS CV	**Lauren Boshnick** Joey Lai-Cheong	**Rare Presentation of Acne Fulminans in a young female** Acne fulminans is a condition with poor photographic documentation that is rarely seen in girls. A 14-year-old girl presented to the ER with a severe ulcerative rash on her face and chest. Her skin was painful and covered with erythematous lumps, small pustules and weepy crusted scabs. She felt unwell with painful joints and had a recorded temperature of 103°F. Her symptoms started suddenly two days earlier and progressively became worse prompting her to seek emergent medical attention. No new medications or topical skin preparations were started recently. The patient had stopped taking an oral contraceptive with anti-androgen properties (cyproterone acetate 2mg/ Ethinylestradiol 35mcg) one week prior to presentation. Since the onset of menstruation 4 years ago the patient suffered from mild to moderate acne that was controlled with oral contraceptives and topical agents. Initially the patient was thought to have widespread impetigo so skin cultures were taken and she was started on intravenous flucloxacillin. Blood work revealed leucocytosis and a significantly elevated CRP. Bacterial cultures were negative. A dermatological review was requested in hospital after the patient continued to spike fevers despite antibiotic therapy. The dermatologist promptly diagnosed her with acne fulminans and she was started on oral prednisolone (0.5 mg/kg). One day after beginning steroid treatment the patient was apyrexial and feeling better. Topical skin care was initiated to help remove the crusts of her skin lesions and prevent secondary bacterial infection. The patient recovered and returned home 11 days post admission. After discharge she was started on oral isotretinoin 10 mg and her steroid dose was decreased by 2.5 mg every week. Eventually the patient's active acne resolved but not without scarring. The aim of this case is to provide excellent photographic illustration leading to earlier recognition of the condition. The condition is rare and can be misdiagnosed as a bacterial infection of the skin such as severe impetigo. With earlier recognition, the appropriate treatment can begin sooner resulting in less scarring for future patients.
3 MS CV	**Danielle Francen** Tori Bahr **Winning Abstract Medical Student-Clinical Vignette**	**Severe Pediatric Thrombocytosis and its Use in Diagnosis of Hepatoblastoma** An 18 month old with history of chronic constipation presented with five weeks of fatigue, irritability, and pale appearance. Mother was concerned by his lack of interest in toys, social interaction, and decreased talking. Progressive abdominal distension, thought to be due to constipation by mother, was also reported despite no change in his gluten and lactose free diet. Initial evaluation found him non-toxic, but pale and fatigued with normal vital signs and a physical exam significant for cervical lymphadenopathy and hepatomegaly. Initial laboratory workup was significant for microcytic anemia with hemoglobin 10.2 g/dl and MCV 72 fl, severe thrombocytosis with platelet 960 k/ul and isolated AST elevation to 333 U/L. Abdominal XR showed hepatomegaly. Abdominal ultrasound

		CVfindings were significant for 11cm vascular appearing hepatic mass. Subsequent workup ultimately lead to a liver biopsy which revealed an epithelial type hepatoblastoma. Further testing eventually revealed alpha fetoprotein (AFP) 546,230 ng/ml and a CT chest showed metastases to bilateral lungs. Hepatoblastoma is the third most common intra-abdominal tumor and the most common liver tumor of childhood. The age of onset is variable, but most cases present before 3 years of age. Hepatoblastoma is generally associated with nonspecific signs and symptoms and is most often diagnosed after incidental imaging. Elevated AFP is a common indicator of hepatoblastoma, however, when severe thrombocytosis is present this should also raise suspicion for hepatic malignancy. In the setting of hepatoblastoma, thrombocytosis develops as a result of abnormally produced thrombopoietin by malignant liver cells. Normally, thrombopoietin is a hormone produced in the liver and kidneys that regulates the production of platelets. This case demonstrates a rare but clinically significant addition to the differential diagnosis for thrombocytosis. We will review the nonspecific presenting symptoms of hepatoblastoma and the association of thrombocytosis to the pathogenesis of this tumor, with the goal of increasing awareness and potentially expediting diagnosis in future cases.
4 MS CV	**Kristina Poss** Anne Schendel, Gloria Swanson	**Encephalitis and pancytopenia in the setting of adenovirus infection in a healthy 2-year-old.** Adenovirus is a common illness, causing 5-10% of febrile illnesses in infants and children. It typically presents with upper respiratory tract symptoms. Much less often, it causes neurologic disease. Case Presentation: A 2-year-old male with Celiac disease presented with 6 days of fever, fatigue, and cough. Four days prior, he visited the emergency department where he was adenovirus positive, found to have a right middle lobe pneumonia, and sent home with a course of cefdinir. On admission he was fussy and ill-appearing, although non-toxic. His exam was notable for mild edema and erythema of his hands and feet, cracked red lips, pinpoint white papules on abdomen, and 4 second capillary refill. Labs were notable for pancytopenia (WBC 5.1, HGB 9.1, PLT 88), dehydration, and hypoglycemia. IV fluids and ceftriaxone were initiated. Etiology of the pancytopenia was unclear, as further labs showed evidence of hemolysis, with elevated LDH (948) and schistocytes on smear. Evaluation for hemophagocytic lymphohistiocytosis (HLH) and human herpesvirus 6 (HHV-6) infection was undertaken. This was unremarkable and showed normal ferritin and negative HHV-6; viral myelosuppression was suspected. On hospital day 2, the patient became more fussy and developed acute mental status changes, including irritability and inability to recognize his parents. His fever persisted, totaling 7 days. Due to concern for acute worsening, head CT was obtained (unremarkable) and azithromycin was added to cover atypical bacterial pneumonia. His irritability improved somewhat with lorazepam. Over the next 6 days his mental status and pancytopenia slowly improved; he was discharged on hospital day 8. Due to the unremarkable work-up and gradual clinical improvement, it is suspected that the presentation was secondary to adenovirus infection. Mental status changes were attributed to adenovirus encephalitis, and pancytopenia to viral suppression. Discussion: Acute viral encephalitis can be caused by a variety of viruses, although less commonly adenovirus. A case series of 7 infants (7-34 months) presenting with transient encephalopathy associated with adenovirus has

		been reported (Straussberg et al., 2001). The non-CNS symptoms included pneumonia, diarrhea, and conjunctivitis; interestingly, 2 of which were present above. CNS manifestations and disseminated adenovirus is more common in immunocompromised children, and prompts consideration of treatment with cidofovir. However, this case, as well as a recent case report describing pancytopenia and hepatitis secondary to adenovirus infection in a healthy 23-month-old, demonstrate the ability of adenovirus to cause more serious illness in immunocompetent children as well (Matoq et al., 2016). This case presentation highlights an uncommon manifestation of adenovirus. It also stimulated a thorough and interesting differential diagnosis; including intracranial process, Kawasaki disease, HLH, and marrow process. While it is important to work-up for other illnesses, adenovirus can cause this constellation of findings, and is important to include on the differential.
5 MS CV	**Adina Rusakov**	**Recurrent Atypical Stevens-Johnson Syndrome Triggered by Influenza** Stevens-Johnson syndrome (SJS) is a severe mucocutaneous reaction characterized by sloughing of the skin and mucosa. Histologically, SJS is described by extensive necrosis and detachment of the epidermis. It is typically triggered by preceding medication or an infection of the upper respiratory tract. Medications posing the highest risk of SJS include sulfonamide antibiotics, acetaminophen, lamotrigine and other anticonvulsants. Mycoplasma pneumonia is the most commonly associated infection but herpesvirus, HIV, and hepatitis A have been reported as well. Other factors include radiation, autoimmune disease, vaccinations, herbal medicines, and foods. Clinical course begins with fever and influenza-like symptoms followed by mucosal lesions involving the eyes, oropharynx, and urogenital tract. Lastly there is blistering and full-thickness epidermal detachment defined by <10% involvement of the body surface area. Recurrence rates are variable with 18% being the highest reported in a pediatric population. To our knowledge this is the first documented case of recurrent atypical SJS triggered by influenza. Presentation: Our patient is a 16-year-old female with a history of IgA Deficiency and hospitalization two years previously for SJS possibly triggered by influenza infection who presented with mucositis and dysuria. She first noticed a cold sore around her mouth which resolved within a day. The following day she developed influenza-like symptoms and fever. Five days later she was seen in clinic and prescribed amoxicillin to take in the event that her symptoms continued. Given her IgA deficiency this was the usual treatment when she gets sick. Three days later she began her course of amoxicillin with improvement and resolution of the fever. However, two days prior to admission she noted an ulcer on her tonsil. The next day she had lip swelling and multiple new lesions along her lips and inside of her cheeks. She had increasing pain with swallowing, new eye dryness, as well as dysuria. Upon admission she received antibiotics which were discontinued when mycoplasma and viral serology returned negative. She was subsequently found to be positive for influenza B. A lip mucosal biopsy was suggestive of SJS. The patient received a five day steroid course, required PICC placement for TPN, and a dilaudid PCA. She was able to discharge after two weeks with complete resolution of her symptoms within two months. Conclusion: Our patient was diagnosed with recurrent atypical SJS. She had one episode followed by a second two years later, neither presentation had cutaneous involvement, and the only common identifiable trigger was influenza infection. During her first

		presentation she had an elevated Influenza A titer and during the second she was found to be positive for Influenza B. This case illustrates an unusual presentation of a life-threatening illness whose trigger was elusive but important to identify in order to prevent recurrence.
6 **MS** **R/QI**	**Nibras El-Sherif** Thomas Hellmich, Casey Clements, Kalyan Psaupathy, David Nestler, Andy Boggust, Vickie Ernste, Gomathi Marisamy, Kyle Koenig, Susan Hallbeck	**Pertussis Contact Tracing using a Real Time Location System (RTLS)** Background: Children, especially neonates and infants, are the most vulnerable group to pertussis infection with adolescent and adults being the major source of infection. Pertussis may result in hospitalization with significant morbidities like pneumonia and acute respiratory distress. Therefore, the Centers for Disease Control provide extensive guidelines for early identification of potential pertussis exposures with proper contact tracing and subsequent management in healthcare settings. However, conventional contact tracing methods are time and resource consuming especially in a busy emergency department environment with a significant potential for missing exposures; therefore, the purpose of this study is to compare the relative effectiveness of two contact tracing methodologies: Electronic Medical Record (EMR) and Real Time Location Systems (RTLS), to identify contacts of confirmed pertussis cases in a emergency department. Description of work: During a pertussis outbreak in the Midwestern United States, a retrospective case study was conducted between June 14th and August 31st, 2016. The contacts of confirmed pertussis cases were identified using both EMR and RTLS data in the Emergency Department (ED). Traditionally, EMR is used to generate a list of health care workers potentially exposed to a contagious disease. Data from radiofrequency identification hardware was used to generate a RTLS analysis of unique patient and staff interactions with possible disease exposures. We then compared the number and contact type identified by both methodologies. Descriptive statistics and a paired t-test were performed to compare the numbers of cases identified by EMR versus RTLS. Pearson correlation between the Length of Stay (LOS) of pertussis-diagnosed patients and the number of potential contacts was performed. Statistical significance was set to 0.05. Results: Nine consecutive cases of pertussis presented to the ED during the identified time period. RTLS identified significantly more potential contacts than EMR with addition of 45 health care staff contacts that were missed by EMR ($p<0.01$). LOS had significant positive correlation with the total contact number identified by RTLS ($\rho=0.79$, $p=0.01$) but not with total contact number identified by EMR ($\rho=0.43$, $p=0.25$). Reflections: RTLS contact tracing doubled the potential pertussis exposures of ED staff beyond conventional EMR-based contact identification. Due to automation not available in the EMR, RTLS can also accelerate and improve the process of active screening, and may lead to timelier cessation of the chain of disease transmission.
7 **MS** **R/QI**	**Leah Krause** Wenliang Geng, Matthew Thompson, Shane McWhirter, Erin Balay, Patricia Hobday, Shannon Wagner, Theresa Cahill, Lucie	**Febrile Neutropenia in the Emergency Department: Barriers to Timely Antibiotic Administration** Background A central line (CL) is a surgically inserted catheter into a central vein which is commonly placed in children with blood or solid tumors undergoing chemotherapy. These children often present to the ED with fevers and neutropenia. Timely antibiotics within an hour is an Oncology and ED benchmark and has proven to reduce mortality in children in septic shock. In our ED, we initiated a QI project to determine barriers to timely administration of antibiotics. Methods In order to identify barriers, we first administered an electronic survey (Survey

	Turcotte, Dan Nerheim, Jeff Louie **Winning Abstract Medical Student-Research/QI**	Monkey®) to all ED and Float Pool nurses to determine current perspectives on common barriers to accessing a patient's CL and administering antibiotics. We then developed a Key Driver Diagram to outline our approach. Results A total of 17 of 22 (77%) nurses responded to the survey. Respondents felt a majority of children do receive antibiotics within an hour (74%). Common barriers to administering antibiotics included: only 31% of parents can recall the child's port type, only 25% of parents can recall the needle length, and less than half (45%) of children presenting to the ED have topical anesthetic covering their port site. The respondents felt that the port information can be found in the EMR (electronic medical records) within 10 to 30 minutes. Conclusion Our results found 4 potential barriers to timely administration of antibiotics: lack of parental knowledge of port type and needle length, absence of topical anesthetic covering the port, and delays finding port information in the EMR. Working with the Oncology team, port information is now readily available in the EMR. We have also developed an infographic brochure and wallet card to remind parents of their child's port information, what will happen in the ED, and to place topical anesthetic prior to leaving home.
8 MS R/QI	**Rose Olson** Miriam Spector, Tara Zamora M.D., Asha Siddappa M.D.	**Growth Outcomes in Very Low Birth Weight Infants Receiving Erythropoietin and Aggressive Iron Therapy** Introduction: Very low birth weight (VLBW) infants are at risk for developing symptomatic anemia and iron deficiency anemia. Erythropoietin (EPO) has been used to stimulate erythropoiesis in at risk infants, and more recent literature suggests a possible neuroprotective effect. However, the impact of EPO and more aggressive iron supplementation on overall growth has not been previously described. Aim: Describe how erythropoietin and aggressive iron supplementation affect growth parameters in VLBW infants. Methods: This is a retrospective chart review of infants born <28 weeks gestational age and treated with early EPO and aggressive iron supplementation according to a single institution protocol (n=112). Average iron supplementation during EPO therapy was 6-12 mg/kg and adjusted according to lab monitoring of iron indices during hospitalization. Total iron needs, red blood cell indices, and growth parameters were extracted over the course of hospitalization. Results were then compared to national averages as reported in the 2015 Vermont Oxford Network (VON) of infants born between 22 and 29 weeks gestational age (n=40,846). Results: The proportion of VLBW infants whose weight was less than the tenth percentile on the Fenton growth chart at time of discharge was significantly less in our cohort treated with EPO and aggressive iron therapy than VON averages (p=0.036). Similarly, the proportion of VLBW infants in our cohort whose weight was less than the third percentile on the Fenton growth chart at time of discharge was significantly less than VON averages (p=0.002). However, the overall discharge weights and discharge head circumferences did not differ significantly. Conclusions: In our study, the proportion of infants treated with EPO and aggressive iron therapy who experienced growth failure was significantly less than growth failure reported by VON averages. EPO and aggressive iron therapy may affect the growth trajectory of treated VLBW infants, decreasing the overall rate of growth failure. Further study is warranted into the effect of EPO and aggressive iron supplementation on growth.

9 **MS** **R/QI**	**Jeremie Oliver** Amanda Porter, Benjamin Mundell, Mohamad Bydon	**Prevalence of Post-Injury Psychiatric Diagnoses in Pediatric Patients with and without Pre-Injury Psychiatric Diagnoses after Traumatic Brain Injury: A Multi-Institutional Retrospective Study** Background: Traumatic brain injury (TBI) in the pediatric population remains a major public health issue in the United States, especially as its link to chronic neurocognitive deficits, pre-injury associations and post-injury psychiatric sequelae continues to be elucidated. One study showed that 62% of children with a TBI developed a psychiatric disorder compared to 14% of children who did not experience TBI. Pre-injury ADHD has been diagnosed in up to 20-33% of pediatric TBI cases. Previous research has shown that a pre-injury psychiatric diagnosis increased likelihood of developing a novel post-injury psychiatric diagnosis. A pre-injury anxiety disorder was significantly linked to a diagnosis of a novel post-injury anxiety disorder. Time post-injury may also be a factor in the determination of a novel diagnosis, but it is possibly the weakest area of TBI research currently. Objective: To further investigate the relationship between pre and post-injury psychiatric diagnoses and TBI using a multi-institutional patient cohort. Additionally, through our analysis we aimed to evaluate the time-to-novel-diagnosis, whether the specific pre-TBI psychiatric diagnosis has an effect on the timing, and to elucidate which particular diagnoses, if any, are shown to yield an earlier time-to-novel-diagnosis. Methods: Retrospective chart review of 659 pediatric patients who sustained TBI was conducted. Clinical information including age, gender, date of injury diagnosis, pre-existing psychiatric diagnoses, and post-injury psychiatric diagnoses were recorded from individual chart review. Length from TBI to post-injury psychiatric diagnosis was calculated and novel post-injury diagnoses were noted. A multinomial logistic regression and Cox proportional hazard model were used to look at the association of pre-injury psychiatric diagnosis status and the presence of post-injury novel diagnosis. Results: We found that patients with a pre-injury diagnosis more commonly had anxiety or ADHD and most developed a novel post-TBI psychiatric diagnosis. The most common post-injury diagnoses were also anxiety and ADHD, suggesting a significantly higher likelihood of being diagnosed with such psychiatric disorders following TBI in patients previously diagnosed with any pre-injury psychiatric disorder. Additionally, we found that patients with a pre-injury psychiatric diagnosis had an increased odds of being diagnosed with a novel post-injury diagnosis (OR 4.85, 95% CI 3.09-7.64, $p<0.0001$). Females had an increased odds of being diagnosed with a novel post-injury diagnosis (OR 1.84, 95% CI 1.24-2.72, $p<0.01$). Conclusions: Our analysis confirms a statistically-significant link between pediatric TBI patients with a previously-diagnosed psychiatric disease and likelihood of acquiring a novel post-TBI psychiatric diagnosis, specifically ADHD and anxiety diagnoses. This study emphasizes the impact of pre-injury psychiatric disturbances and the potential for long-term behavioral outcomes following TBI in pediatric patients.
Resident		
10 **R** **CV**	**Joe Woolley, MD** Jeff Louie	**Abnormal Posturing in a Severely Intoxicated Teenager** We describe a 16-year-old male with a history of poorly controlled diabetes who presented to the Emergency Department via ambulance after being found unconscious in the street for an unknown period of time. The mother

		relayed her son's past medical history consisting of diabetes and previous alcohol abuse. Upon arrival, he was breathing spontaneously, although unresponsive to painful stimuli. He was hypothermic to 34.8°C, otherwise hemodynamically stable. There were no external signs of significant trauma, but was noted to be displaying unprovoked decerebrate and decorticate posturing, raising concern for an intracranial process. Pupils were equal at 5mm and equally reactive to light. He subsequently received a loading dose of fosphenytoin to address possible seizure activity. Routine labs revealed significant hyperglycemia (524 mg/dl), blood gas consistent with a mixed respiratory and lactic acidosis, and unremarkable biochemistry and hematology. His diminished gag reflex and abnormal posturing prompted decision to intubate the trachea, which was performed without complication. Subsequent CT imaging of the brain revealed no intracranial pathology. Urine drug screen was positive for cannabinoids and ethanol, and blood alcohol level was ultimately found to be significantly elevated at 0.32 g/dL. He was transferred to the PICU where he was managed with an intravenous insulin drip and fluids. He was weaned from the ventilator to be extubated within 24 hours with complete return to normal conscious level. Reflex posturing can occur in disorders that cause significant increases in intracranial pressure such as masses, traumatic brain injuries, hemorrhages, or encephalopathies. The adult literature supports a rare, alternative cause: severe alcohol intoxications mimicking metabolic encephalopathies. Based on our patient's rapid and complete recovery, a normal head CT and absence of other possible metabolic etiologies, we believe we have described the first pediatric case of abnormal posturing secondary to severe ethanol intoxication.
11 RCV	**Ashley Phimister, MD** Jacquelyn Campbell, Zachary Kaltenborn	**Don't miss a Strep! Uncommon cause of a common diagnosis** An otherwise healthy 13-year-old boy presented with 3 weeks of persistent chest pain along with new onset of shortness of breath and fever for one day. His past medical history is significant for an uncomplicated tonsillectomy and adenoidectomy one month prior to presentation. Three days prior to admission, he was seen in an outside ED for his chest pain and was found to have a normal physical exam with an unremarkable chest x-ray. He was diagnosed with costochondritis and sent home with symptomatic treatment. Over the next three days, he developed worsening pain and shortness of breath, so he presented to the ED again the day of admission. He was febrile, tachypneic, and in mild respiratory distress requiring supplemental oxygen. His exam was significant for diminished breath sounds over the right middle and lower lobes. His labs were remarkable for an elevated CRP and leukocytosis with a left shift. A chest x-ray and chest CT were performed and demonstrated a moderate to marked right sided pleural effusion. He was started on broad spectrum IV antibiotics with ceftriaxone and azithromycin and admitted to the hospital for further treatment. On hospital day 2, he underwent video-assisted thoracoscopic surgery (VATS) with washout, decortication, and drainage. He had two chest tubes placed and pleural fluid was collected. The pleural fluid was found to be exudative and grew Streptococcus intermedius, Eikenella corrodens, and Fusobacterium nucleatum. He was transitioned to Augmentin to complete a total of 14 days of antibiotics. Our patient's recent tonsillectomy and adenoidectomy put him at risk for invasive pneumonia because these organisms can spread hematogenously from the oral cavity. In addition, our

		patient initially had no cough or fever, making pneumonia a difficult diagnosis upon his initial presentation. This case highlights the importance of considering the Streptococcus milleri group of bacteria as a rare, but significant cause of pulmonary abscess and empyema in immunocompetent pediatric patients.
12 RCV	**Ariel Stein, MD** Helena Molero, MD Donavon Hess, MD Mark Luquette, MD, Michael Pitt, MD **Winning Abstract Resident- Clinical Vignette**	**Under Pressure: Tension Pneumothorax with Evolving Cysts in an Infant with RSV** The inpatient management of infants with bronchiolitis secondary to respiratory syncytial virus (RSV) tends to be uneventful. Atypical presentations of infants with RSV can present diagnostic and therapeutic challenges. Case: A month old term male infant was transferred from an outside hospital for further management of a persistent air leak after chest tube placement. He was admitted 12 days prior to transfer for mild respiratory distress. Chest X-ray (CXR) on admission revealed patchy infiltrates consistent with viral pneumonitis. Over the following days he remained well appearing, afebrile, without respiratory distress. On hospital day 3 he became tachypneic with desaturations not relieved with supplemental oxygen. On further evaluation, he was found to have elevated RSV titers. CXR showed a large pneumothorax with mediastinal shift. A chest tube was placed leading to resolution of the pneumothorax, however, persistent air leak led to reaccumulation of the pneumothorax. At this point the infant was referred to our institution for evaluation for surgical intervention. Evaluation after transfer revealed a well-appearing infant, not requiring supplemental oxygen, with a persistent air leak. CXR revealed a small pneumothorax and a moderate cystic lucency in the right upper lobe, not seen on prior images. A chest CT showed a moderate right sided pneumothorax and two large cystic lesions in the right upper lobe. The acute appearance of new cystic lesions was difficult to explain given the clinical course. We considered a congenital pulmonary airway malformation (CPAM) exacerbated by illness leading to air leak, though we thought this unlikely, given the absence of lesions on prenatal ultrasound. Lack of evidence for bacterial pneumonia and the short temporal course of the illness argued against a post-infectious pneumatocele. Barotrauma, leading to the expansion of previously undetected cystic lesions was considered, but altitude of helicopter transport and walled features argued against this. On day 17 of his hospitalization, he underwent segmental resection of his right upper lobe. Pathologic examination showed air-filled cystic areas lined by chronic inflammatory tissue with foamy giant cells, suggesting a post-obstructive expansion of a mucous plug, which resorbed, leaving cystic lesions that ruptured into the pleural space, leading to a pneumothorax with tension physiology. Discussion: Secondary air leaks and cyst evolution as sequelae of RSV are exceedingly rare. This case highlights the potential for cystic changes in the lung secondary to accumulation of an intrapulmonary mucocele. RSV is a frequent cause of pneumonitis in infants, and rarely results in complications, but it is important to recognize the possibility of such complications, which may occur even as the primary infection is resolving.
13 RCV	**Tori Bahr, MD** Margot Zarin-Pass, Gloria Swanson	**Intermittent self-catheterization, oral flora, and an unusual case of UTI** A 13 month-old girl with history of myelomeningocele, spina bifida, hydrocephalus and resultant neurogenic bladder requiring frequent intermittent self-catheterization presented with one day of fussiness,

		vomiting, and poor oral intake in the setting of recurrent urinary tract infections. Initial evaluation found her nontoxic appearing with normal vital signs and nonfocal exam. Initial work-up was significant for an elevated CRP to 5.61 mg/dL (reference range: 0.0 - 0.3 mg/dL) with a normal leukocyte count of 15.7 k/uL (28% neutrophils, 62% lymphocytes, 9% monocytes, and 1% eosinophils). A catheterized urine specimen was significant for positive leukocyte esterase and nitrites with small blood, 5-10 erythrocytes and >100 leukocytes per HPF. She was admitted for intravenous fluids with broad spectrum antibiotics given her extensive antibiotic use and multiple previously positive urine cultures growing increasingly resistant organisms. Cultures grew out Neisseria sicca on hospital day two and antibiotics were adjusted to cefdinir based on resistance profiles. Neisseria sicca is a gram-negative diploccus which is typically a commensal organism of the upper respiratory tract. Several case reports of N.sicca endocarditis exist in the literature, but to our knowledge there is only one other case report of N.sicca UTI. While searching the literature for more information the patient's care team was contacted by the bedside nurse who had observed the patient's mother's straight intermittent catheterization technique. After preparing the perineum for catheterization she then opened the package of lubricant with her teeth before applying to the catheter. It is our hypothesis this is the most likely source of the Neisseria which caused her infection. This case demonstrates the importance of education regarding appropriate straight intermittent catheterization technique. We will review the current best self-catheterization practices to minimize risk of infection and suggest patients with recurrent urinary tract infections be observed for proper technique while hospitalized as a way to prevent infections in the future.
14 RCV	**William Sveen, MD** Judith Eckerle	**Differentiating developmental delay: Adoption, prenatal exposures, and a delayed diagnosis of neurofibromatosis type 1** An 8-year-old female presented with her adoptive parents to the Adoption Medicine Clinic for evaluation of prenatal alcohol and substance exposures, multiple early home transitions, and ongoing behavior and learning difficulties. Her medical history included prenatal exposure to alcohol, methamphetamines, and cocaine; posttraumatic stress disorder from abuse and neglect prior to placement with adoptive family; and a learning disorder. A limited biological family history included a birthmother with an unspecified brain tumor and "psychiatric illness" and eight full- and half-siblings all with developmental delay and learning disorders and two with severe psychiatric disorders. Her physical examination was notable for thin upper lip and smooth philtrum, normal height and weight, multiple café-au-lait macules (CALMs) with six larger than 5 mm. Neuropsychological testing demonstrated significant neurocognitive deficits. Given the history of prenatal alcohol exposure, facial characteristics, and significant cognitive delays without growth problems, she met criteria for partial fetal alcohol syndrome (pFAS). However, it is important to screen children with fetal alcohol spectrum disorder (FASD) for concurrent genetic syndromes and medical issues since other conditions have overlapping features similar to FASD. FASD did not explain the CALMs, and further genetic testing for multiple conditions revealed a mutation in NF1 consistent with the diagnosis of neurofibromatosis type 1 (NF1). The diagnosis of NF1 can be difficult because expression of NF1 mutations is variable and changes with age. Delays in diagnosis are common despite 97% of patients meeting clinical

		criteria by age 8 years of age and are correlated with increased complications and delayed treatment. This case presented a challenge because the patient presented with a suspected diagnosis of FASD that had accounted for the majority of her symptoms and had previously been attributed to her early life adversity. This was further complicated by the child moving through the foster system without a primary provider, lack of a complete family history, and not clearly meeting clinical criteria for NF1 diagnosis. However the CALMs, although reported to be present for a number of years, were never addressed. This highlights the importance of cognitive diagnostic errors such as anchoring, fully examining patients, maintaining continuity of care especially in high risk populations such as children in and from the adoption system, and formulating a differential diagnosis around new information instead of accepting the previously assigned presumed diagnoses.
15 RCV	**Nasreen Quadri, MD**	**From Leprosarium to Living with Leprosy: Diagnosis of Hansen's Disease in an 11-Year-Old Bhutanese Boy from Nepal and Investigation of Current M. leprae Disease Trends** An eleven-year old Bhutanese-Nepali boy, who immigrated to the U.S. two years prior, presented to his primary physician with six months of an enlarging hypopigmented, hypoesthetic plaque of his left arm noted after removal of cast for humeral fracture. When the rash failed to improve on several anti-fungal topical agents, he underwent skin biopsy. Histopathology demonstrated sarcoidal and tuberculoid granulomatous dermatitis diagnostic of the paucibacillary form of Hansen's Disease (tuberculoid leprosy). In consultation with the National Hansen's Disease Program, he was started on two-drug therapy of Dapsone and Rifampin for one-year duration to treat the disease and prevent permanent nerve damage. The disease affects cooler tissues including nerves, skin, eyes and nasal mucosa by the slow growing acid-fast bacillus Mycobacterium leprae. While skin findings are a hallmark of Hansen's disease, the suspected mode of transmission is through respiratory droplets via prolonged close contact with an affected person. We investigated the current epidemiology of Hansen's disease in the U.S. In 2015, cases from 31 states and Puerto Rico were reported; 72% of cases (129/178) were in FL/CA/TX/LA/HI/NY, following prior trends. In several southern states, zoonotic transmission from wild armadillos is the principle source of infection. In 2015, 57% of affected individuals were born outside the U.S. in 26 different countries, predominately in the South Pacific region. Globally, the WHO reports a decline of 60% in annual new cases from 2001 to 2014, most notable in countries within Southeast Asia. Among children, typical presentation is paucibacillary forms between ages 10 and 14 years. In 2015, there were 178 new cases reported in the U.S. (ages 7-95) with a 2:1 male to female predominance and 13,950 cases registered in the U.S. since 1894. Index of suspicion for Hansen's Disease should remain high for patients from endemic regions and the southern U.S.
16 RCV	**Lan Luu, MD**	**"Aging Out" of Pediatrics: The Inconvenience of Adulthood & Transitional Care** There are approximately 18 million adolescents from the age of 18-21, and amongst these individuals, about one-fourth suffers from a chronic illness. Transition from pediatrics to adult health services is often a vulnerable time for patients with a chronic illness, and without adequate transition support,

		there is evidence that these patients will suffer from health deterioration, accumulate more health care expenses, and experience poorer quality of care. This clinical vignette describes a 19 year old female with past medical history of Tyrosinemia Type 1 who presented to a local hospital with agitation and altered mental status. Providers were unable to obtain a thorough history, but learned from her mom that she recently took cyclobenzaprine for back pain and became "different". She was admitted to the psychiatric unit for further assessment with concerns of potential drug toxicity. Her vitals were significant for mild hypertension and CBC, thyroid function, CMP, urinalysis and drug screens were all within normal limits. On day 3 of hospitalization, she had increased psychomotor activity, visual hallucinations, and stiffness, which initially improved with administration of Haldol, but she developed difficulty moving her extremities that evolved into progressive ascending paralysis. Given these neurological changes, she was transferred to a more specialized hospital for further care. Prior to transfer, patient's metabolic physician was contacted for further background information on her underlying disorder of Tyrosinemia Type 1. It was revealed that patient has a long standing history of medication non-adherence and has been lost to follow up for a period of time. Patient's primary physician felt that her current presentation was likely secondary to a neurologic crisis provoked by poorly controlled tyrosinemia, which was confirmed with lab work. Her course was complicated by autonomic dysfunction, profound neuromuscular weakness leading to respiratory failure requiring intubation, swallowing dysfunction, multiple infections, immobility from paralysis, severe neuropathic pain, neurogenic bowel/bladder, and psychological/emotional stress from her prolonged hospital stay. She was seen by Neurology, Pulmonology, Genetics/Metabolism, Gastroenterology, Nephrology, Psychiatry, PM&R, Pain Medicine, Integrative Medicine, Surgery, and Urology due to her multisystem issues. Her symptoms slowly improved from treatment with Orfadin (nitisinone), which is a tyrosine metabolism inhibitor, and a controlled diet. However, it is unclear how much function she will regain and the time course of her recovery. She was discharged to a rehabilitation facility for further aggressive therapies and ventilator weaning and will require close follow up with many speciality providers with the coordination of a new primary care provider. This case illustrates the adverse outcomes that may occur during the critical transition period for adolescent patients with a chronic illness. Therefore, it is essential for pediatrics and adult providers to be prepared to assist patients in effective, supportive transition.
17 RR	**Garrett Jones, MD, Emma Schempf, MD**	**Improving Resident Communication with Vaccine-Hesitant Families through Simulation** Background: Childhood immunizations are the cornerstone of pediatric preventive care, yet vaccine hesitancy remains a challenge. Provider communication is a significant factor in immunization delivery and acceptance. Conversations about vaccine hesitancy are challenging, and simulation provides a unique opportunity for resident education. We hypothesize that participating in conversations with vaccine-hesitant families will improve communication skills and provide a framework for these discussions. Objective: To enrich resident learning through a standardized simulation curriculum on vaccine hesitancy. Methods: We designed 4 scenarios, including influenza vaccine refusal, MMR denial in a Somali

		immigrant family, HPV concerns and an alternative vaccine schedule request. We conducted the simulation sessions at Hennepin County Medical Center with trained simulated caregivers. All first-year residents in the University of Minnesota Pediatric Residency Program participate as part of an outpatient rotation. Each session begins with a short presentation on effective communication strategies, including the C.A.S.E. method and presumptive vs participatory approach to vaccine discussions. Pre- and post-simulation data were gathered about resident comfort with these difficult conversations (Likert scale 1 – 5, with 1 being least comfortable, 5 being most comfortable). Results: After simulation training, residents report higher levels of comfort regarding conversations with vaccine-hesitant families (pre: 3.0 vs post: 4.2). Residents also felt they had more strategies for talking to vaccine-hesitant families (2.8 vs 4.0) and were more confident utilizing reliable vaccine resources (2.8 vs 4.4). 91% of residents reported they planned to change their approach to vaccine-hesitant families following the training. Conclusions: Pediatric residents who participated in these simulations acquired strategies and gained confidence in effective communication with vaccine-hesitant families. By improving communication skills, we anticipate residents will engage in more effective discussions with vaccine-hesitant families.
18 RR	**Vishal Naik, MD** Manu Madhok, MD, Jing Jin, MS	**Sedation and analgesia use in lumbar punctures at a pediatric tertiary care center** Background: Sedation and analgesia are frequently used when performing pediatric lumbar punctures (LP). However, there is significant variation in the use of these medications when performing LPs. Objective: To assess whether different methods of sedation and analgesia affect pediatric lumbar puncture outcome Methods: A retrospective review was conducted on the records of patients that had LPs from January 1, 2012 to December 31, 2016 at a pediatric tertiary care center. Data abstracted included patient age, race, procedure location, medications used in procedure, resident performance of procedure, and procedure outcome. Outcome of LP was defined as unsuccessful if the record included a subjective description of unsuccessful attempt by performer, a CSF red blood cell count of >400 cells/microliter, or the need of a second LP within 24 hours. Patients with LPs performed in hematology/oncology clinic, as a therapeutic procedure, and records with missing information were excluded. Data was analyzed via chi-square analysis and logistic regression. Results: 8463 patients were reviewed and 4489 (53%) were included in the study after exclusion criteria. Three thousand seventeen patients (67%) were less than 2 years old, 1014 (23%) were 2-12 years old, 416 (9%) were 12-21 years old, and 42 (1%) were greater than 21 years old. There were 1273 (29%) unsuccessful LP attempts. 2032 (45%) patients received some form of sedation or analgesia. Of these patients, 702 (15%) received fentanyl, 686 (15%) received midazolam, 544 (11%) received morphine, 344 (8%) received propofol, 329 (7%) received nitrous, and 82 (2%) received ketamine. In chi-square analysis, patients who received midazolam (RR 0.66, CI 0.60-0.74) and fentanyl (RR 0.80, CI 0.71-0.89) were less likely to have a successful LP. Ketamine (RR 3.50, CI 1.72-7.12), propofol (RR 2.54, CI 1.90-3.38) and nitrous (RR 1.76, CI 1.38-2.24) were associated with success. Morphine was not significant in the chi-square analysis. In the multivariate regression, fentanyl (OR 0.76, CI 0.62-0.97), nitrous (OR 0.62 CI 0.41-0.94), and ketamine (OR 0.30, CI 0.14-0.67) were associated with higher chances of success. Morphine,

		propofol, and midazolam were not significant in the regression. As age increased, the chance of success increased(OR 0.97, CI 0.94-0.98). Resident attempt under supervision was associated with unsuccessful LP (OR 1.59, CI 1.34-1.90). Conclusion: A significant variance existed in analgesia and sedation. The use of sedation decreased the likelihood of unsuccessful LP attempts with nitrous and ketamine being better options. Of the most common analgesic medications, fentanyl was the best associated with success. These data suggest the need for a standardized LP analgesia/sedation protocol.
19 RR	**Christopher Kobe, MD** Lucie Turcotte, MD, MPH, MS. Karim Thomas Sadak, MD, MPH, MSE.	**SELF-MANAGEMENT EDUCATION PROGRAMS FOR ADOLESCENT AND YOUNG ADULT SURVIVORS OF CHILDHOOD CANCER: AN ENVIRONMENTAL SCAN & SYSTEMATIC REVIEW** Purpose: Self-management education programs (SMEP) have demonstrated a measurable benefit in enhancing self-efficacy, increasing health knowledge, and improving both health behaviors and physical symptoms associated with underlying conditions in multiple adult chronic disease populations. Childhood cancer survivors are at high risk for adverse health outcomes due to late-complications from previous cancer treatments and have demonstrated knowledge deficits of their risks. The purpose of this environmental scan is to identify existing SMEP for childhood cancer survivors and opportunities for their development. Project Description: An environmental scan and systematic review were both conducted to provide a general overview followed by a more comprehensive literature review on SMEP for childhood cancer survivors. The systematic review was performed by information specialists to identify relevant SMEP published in the medical literature. The study team then performed the environmental scan to systematically survey and interpret relevant SMEP to identify opportunities for their development specific to childhood cancer survivors. Results: While a great deal of qualitative data exists on the importance of self-management and general educational messages for childhood cancer survivors, very few evidence-based interventions have been developed. Most SMEP are geared towards adult cancer survivors and interventions that are directed at childhood cancer survivors are specific to individual health behaviors that contribute to overall self-management, e.g. physical exercise, nutrition, medical knowledge, or self-efficacy). Conclusion: There is a need for SMEP for childhood cancer survivors. Content must be developed with the appropriate expertise, and a rigorous evaluation of SMEP will be necessary to ensure evidence-based application and outcomes. Ultimately, all SMEP must be easily disseminated by clinicians and similarly accessible for survivors.
20 RR	**Claire Ives, MD** Uyen Truong, Ashish Shah M.D., Emily Borman-Shoap M.D	**Residents Teach Pre-Clerkship Medical Students "Delivering Bad News" Using a Modified SPIKES Protocol** Delivering Bad News is a responsibility for which most resident physicians and medical students have had minimal training. Integrating "Delivering Bad News" case simulations into medical education can be difficult, particularly with pre-clerkship students who lack clinical experience as a foundation when disclosing bad news. The aim of this project was to investigate if integrating a straightforward protocol into case simulations using resident actors would improve the confidence of pre-clerkship medical students when it comes to delivering bad news. Description of work: First and second year medical students volunteered to participate in a case simulation workshop. A brief didactic session was held by pediatric residents, discussing personal experiences delivering bad

		news and teaching the SPIKES protocol. The SPIKES protocol is a 6 step method for delivering bad news that enables physicians to gather and transmit information in a supportive manner, while also collaborating with the patient to develop a strategy for treatment. A printed SPIKES pocket card was provided to each medical student to use during their simulation. Groups of 2-3 students were assigned to one pediatric resident who acted as the "parent" or "adolescent" receiving the bad news. Cases were designed by the pediatric residents. Immediate feedback was provided by the pediatric resident following each student's simulation. Students completed pre- and post-surveys that analyzed comfort on the steps of the SPIKES protocol, level of experience practicing delivering bad news, and satisfaction of the workshop. Providing pre-clerkship students the modified SPIKES protocol for reference while practicing delivering bad news significantly increased their confidence in several areas. Reflection: Medical students receive minimal training on breaking bad news, and pre-clerkship students do not feel comfortable in this task. This workshop was replicable for pediatric residents hoping to integrate themselves into medical student education by enabling students to practice a skill that is difficult to attain. It also provided a valuable opportunity for residents to expand their skills in designing and implementing an educational intervention.
21 RR	**Lauren Carlson MD** Christy Illig, Michael Cullen PhD, Patricia Hobday MD	**Early clinical exposure for medical students considering careers in pediatrics** The University of Minnesota is one of four medical schools in the nation piloting the EPAC project (Education in Pediatrics Across the Continuum). EPAC is designed to test the feasibility of advancing learners through clinical training years based on demonstrated ability rather than time. EPAC students participate in a specially designed curriculum in the undergraduate realm, including a pediatrics-focused longitudinal integrated clerkship (LIC) that encompasses the traditional 3rd-year clerkships. They progress to Pediatrics Residency at the University of Minnesota in a time-variable fashion when they have demonstrated competency at the level of an intern and completed the graduation requirements of the University of Minnesota. Because students apply for EPAC during the second year of medical school, it is important for interested students to have opportunities for early exposure to clinical pediatrics. Program Description: Summer Internship in Pediatrics (SIP) is a two-week, zero-credit elective offered during the summer hiatus between the first and second years of medical school to provide early exposure to pediatrics for students considering EPAC. Participants are paired with a pediatrician who volunteers to precept for 4-8 half-days in clinic over a span of two weeks. Students complete a pre- and post-participation survey and a post-completion reflective paragraph. Survey Data: The SIP elective has been offered for three years to date (2014-2016), with 15-16 participants per year and a 100% survey response rate (n=46). Participants were asked to rate their level of knowledge regarding various aspects of life as a pediatrician pre-and post- SIP experience. Survey responses were pooled and the differences in pre- and post- participation responses measured. This quantitative data was reviewed alongside the qualitative responses written by SIP participants. We identified two major takeaways from our review of the SIP data: Participants reported that the SIP program was effective for increasing knowledge about the rewards of being a pediatrician (t-score 4.76, $p < .05$), working with a family unit (t-score 6.42, $p<0.05$) and day-to-day clinical life as a pediatrician (t-score 9.22, $p<.05$). SIP participation did not increase overall interest in Pediatrics or

		EPAC (d-scores -0.15 and -0.26). However, participation in SIP did impact individual participants' level of interest, as evidenced by review of post-participation reflective paragraphs. Conclusions: SIP achieved its primary goal of improving students' overall understanding of general pediatrics as a career. The internship has been a useful tool for helping students considering participation in EPAC to decide whether or not a career in pediatrics is a good fit.
22 RR	**Saki Ikeda, MD** Stephanie M. Lauden, Julie Ansbaugh, Muna Sunni, Emily Borman-Shoap, Michael B. Pitt, Maren Olson	**Resident Resilience: University of Minnesota Residents' Burnout and Resilience Compared to a National Sample** Background Residents often experience burnout and depressive symptoms during training. Emotional exhaustion (EE), depersonalization (DP), and loss of personal accomplishment (PA) are key factors in burnout. Understanding prevalence and risk factors associated with burnout is an important step in addressing trainee wellness. Objective To compare the prevalence of burnout among University of Minnesota (UMN) Pediatric (PED) and Medicine Pediatrics (MEDPED) residents with national data and characterize risk and protective factors for burnout. Method The Pediatric Residency Burnout & Resilience Consortium (PRBRC) conducted an anonymous online survey of 34 residency programs in 2016. The survey tool included demographics, debt, training year, recent experiences, as well as 17 standardized measures of burnout, stress, mindfulness, self-compassion, empathy, sleepiness, and resilience. Three measures were used to look at burnout prevalence, with burnout defined as a resident who scored high on the EE and/or DP scale. The study analyzed national and program-specific trends in burnout, wellness, and predictive factors and reported data along each standardized metric. Results Sixty-eight percent of UMN residents responded (66% nationally). Data from the 17 measures was reported. Burnout was identified in 36% of UMN residents compared to 55% nationally. Burnout prevalence was higher in the MEDPED cohort (44% UMN, 62% nationally) compared to PED (33% UMN, 54% nationally). UMN residents reported lower rates of PA compared to national data. Conclusion This study represents an important look at prevalence and protective factors surrounding resilience. Fewer UMN PED and MEDPED residents were found to have burnout compared to the national average. While these residents experienced lower rates of EE and DP, two factors related to burnout, they had less of the PA protective factor. Longitudinal data can be used in the future to assess trends and best timing for interventions to address and prevent burnout.
23 RR	**Andrew Wu, MD** Ashish Shah, Tara Haelle, Scott Lunos, Michael Pitt	**Choosing the Perfect Shot – The Loaded Narrative within Imagery in Online News Coverage of Vaccines** The images chosen to accompany online vaccine news coverage may play a role in either undermining or reinforcing public health initiatives about vaccination. Objective: Determine the frequency of images used in online news coverage of vaccines that may convey positive or negative sentiments about vaccination. Methods: To capture a breadth of news stories around vaccination, we searched the following terms in Google News Archives: "autism and vaccine", "flu and vaccine", and "measles and Disneyland". We developed a coding tool that classified images as negative, positive, neutral, or irrelevant based on features displayed in the image (eg, screaming/distressed child coded as negative). All images included in news reports on the first ten search pages were coded independently by two researchers, after which they discussed the discrepancies until consensus was reached. Results: We analyzed 734 images similar numbers of images identified per search term. The majority of

		images were coded as irrelevant (56%); of the remaining images, 28% had negative features compared to 30% with positive features. There was no statistically significant difference between the proportions of negative and positive imagery for each search term, with 57% of images with potential bias coded as negative from the measles/Disneyland search, 46% of the autism/vaccine, and 45% of the flu/vaccine images (p = 0.41). Conclusion: Many images accompanying online news coverage of vaccines contain features which may promote negative connotations about vaccination. Editors seeking to support public health initiatives should give careful consideration to their choice of photographs accompanying their vaccine news coverage.
24 RR	**Ifelayo P. Ojo MBBS, MPH** Eta Q. Obeya MD, Daniel A. Gabdero MBBS, Tina M. Slusher MD **Winning Abstract Resident Research/QI**	Evaluation of ThermoSpot™ for measurement of body temperatures in Nigerian infants exposed to outdoor temperature and validation of caregiver ThermoSpot™ temperature reading Severe neonatal jaundice is a major cause of death/disability among newborns in resource-limited settings. Conventional phototherapy (PT) is not often unavailable. Filtered sunlight phototherapy (FSPT) is efficacious in jaundice treatment, but neonates under FSPT are prone to both hypothermia and hyperthermia. ThermoSpot™ (Providence, RI), a liquid crystal display thermometer, designed as a non-invasive hypothermia indicator, changes color when the neonates core body temperature changes. It has been proven to accurately detect hypothermia. However, no studies have been performed on neonates outdoors. We designed a cross sectional study to determine whether ThermoSpot accurately displays temperature range in Nigerian neonates. Methods: Baby-caregiver dyads receiving phototherapy at Bowen University Teaching Hospital, Ogbomoso, Nigeria were recruited after obtaining informed consent. A brief education was provided to caregivers about ThermoSpot™ color markers which was applied to skin over the liver, in armpit, or neck. Data was recorded hourly indicating position and disc color, axillary temperature, caregiver and healthcare worker action. Data analysis was performed using Microsoft Excel. Findings: 32 neonates (40 patient days), had ~5 valid temperatures/day for each patient. In the majority (97%) of the 216 observations, the neonates were normothermic (36.0-37.7°C) and the ThermoSpot™ was green. Six infants had temperature >38°C and ThermoSpot™ was blue; one infant was hypothermic at 35.7°C and ThermoSpot™ was red. Caregivers and healthcare workers treated temperature deviations appropriately. No neonate had hyper or hypothermia without appropriate changes in the ThermoSpot™ noted. Conclusion: ThermoSpot™ accurately displays temperatures for neonates receiving PT/FSPT. Caregivers identified appropriate action(s). Challenges included insufficient variability in temperatures, high temperature cut point was too high and stickiness of ThermoSpot™ disc decreased after 2-3 uses. Future research will include development of a new disc with improved hyperthermia cutoffs. These revisions could dramatically improve the ThermoSpot™ usefulness in neonates under FSPT and those in nurseries in low-resource settings.

Post-Resident		
25 PR R	**Leslie Kummer, MD** Laurel Davis, PhD; Naomi Duke, MD, MPH; Iris Borowsky, MD, PhD **Winning Abstract Post-Resident**	**Context Matters: Interpersonal and Community Influences on U.S. Breastfeeding Outcomes** BACKGROUND: Human breast milk is the optimal form of nutrition for most infants and provides numerous health benefits to the mother-baby dyad. Yet, U.S. breastfeeding initiation and six-month exclusivity rates remain below the Healthy People 2020 goals of 81.9% and 25.5%, respectively. Breastfeeding is a health behavior that is influenced by a complex web of individual, interpersonal, community and policy factors. The Social Ecological Model (SEM) of Health Promotion provides a framework for conceptualizing these factors. The objective of this study was to determine whether the interpersonal and community contexts within which mother-infant dyads live are associated with breastfeeding behavior, independent of previously established individual-level predictive factors. METHODS: We analyzed data from the 2011/2012 National Survey of Children's Health (NSCH), a cross-sectional, nationally-representative survey. Analyses were limited to mothers of children aged 6 months to 5 years, for whom breastfeeding data were available (N=27,511). Logistic regression models were estimated for associations between independent variables representing the interpersonal and community levels of the SEM and the dependent variables of breastfeeding initiation and exclusive breastfeeding (EBF) for six months. All models were adjusted for individual-level socioeconomic (SES) factors including maternal age, maternal education level, child's race/ethnicity, generational (U.S. or foreign-born) status of the parent, and poverty level. RESULTS: Overall, 78% of children in the sample had ever been breastfed and 21% were breastfed exclusively for six months. After controlling for individual-level SES factors, several statistically significant associations were found at the $p<0.05$ level. Children of single mothers had a 46% lower odds of ever being breastfed, and a 30% lower odds of being breastfed exclusively for six months, compared to children living in two parent (biological/adoptive) households. Parental perception of increased neighborhood amenities (e.g. parks, playgrounds, libraries) was associated with increased odds of breastfeeding initiation. Increased neighborhood social support and safety were associated with increased odds of exclusive breastfeeding to six months. Children with a primary care provider (PCP) had 1.14 times the odds of any breastfeeding, but 19% decreased odds of being exclusively breastfed to six months, compared to those without an identified PCP. CONCLUSIONS: Addressing the barriers to successful breastfeeding requires a holistic understanding of the relationship between individual mother-baby dyads and the environments in which they live. These results suggest that neighborhood context, family structure, social support, and use of a primary care provider have varying effects on the odds of breastfeeding initiation and six-month exclusivity, and that these effects are independent of individual-level socioeconomic factors. Our findings highlight potential opportunities to promote and protect breastfeeding through interventions targeting the social and built environments within which mothers live.
26 PR R	**Saydi Chahla, MD** Alicia Zagel Ph.D., M.P.H., Gretchen Cutler Ph.D., M.P.H., Henry Ortega M.D.	**Distinguishing Abusive Head Trauma among Children with Long Bone Fractures in the Emergency Department** Background Abuse, including abusive head trauma (AHT) is difficult to unmask, especially in young children. This study is the first to identify clinical features in long bone fractures (LBF) that may be associated with abuse and

		AHT in children with LBF who present to trauma centers. Methods This is a retrospective study of children less than 3 years with diagnosis of LBF from the National Trauma Data Bank (NTDB) from 2009 to 2014. Children were included if they had ICD 9 codes for any fracture of radius, ulnar, humerus, fibula, tibia and femur and ICD 9 codes for abuse or assault. Chi-square tests were used to compare abuse victims with LBF (ALBF) to patients with non-abuse related LBF (nLBF) and logistic regression was used to identify risk factors for abuse and AHT. Results There were 4615 ALBF patients in the NTDB and 1027 with AHT. The most common ALBF was femur fracture (52%). The rate of AHT was significantly different between each ALBF type. Most AHT had subdural hemorrhage (64.3%) and were under 1 year (85.6%). Rib fracture, retinal hemorrhage, need for supplemental oxygen, and head or neck bruising were significantly more common in AHT compared to ALBF alone (all $p<0.001$). The greatest risk of AHT was associated with retinal hemorrhage (OR 36.51, 95% CI: 8.06-165.38). There was a longer median hospital length of stay for AHT (7 days, IQR 4-14) compared to the no AHT group (3 days, IQR 2-4). There were significantly increased risk of AHT among radius (OR 1.88; 95% CI: 1.57-2.25), ulna (OR 1.73; 95% CI: 1.42-2.12), tibia (OR 1.86; 95% CI: 1.61-2.16) and fibula fractures (OR 1.43; 95% CI: 1.12-1.82). The presence of rib fracture (OR 2.86; 95% CI: 2.86-3.33), need for supplemental O2 (OR 11.12; 95% CI: 8.56-14.44), intubation (OR 18.63; 95% CI: 13.56-25.58), retinal hemorrhage (OR 33.60; 95% CI: 13.32-84.79) and head or neck bruising (OR 2.12; 95% CI: 1.78-2.53) among ALBF patients carried an increased risk for AHT. Conclusion Among children under 3 years old classified with abuse using ICD 9 codes in the NTDB (2009-2014), 1 in 5 with ALBF had AHT. The majority of AHT patients were under 1 year old. Radius, ulnar, tibia, and fibula fractures were associated with a risk of AHT. Evaluation for AHT may be warranted in children under 1 year old who present with ALBF. In children under 3 years old with ALBF, the additional presence of rib fracture, need for supplemental oxygen, intubation, retinal hemorrhage, or head and/or neck bruising should prompt evaluation for AHT.
27 PR R	**David Piechota, MD** Molly Raske, Ernest Krause, Patricia Valusek, Anupam B. Kharbanda	**Refinement of Appendix Ultrasound Interpretation to Limit Equivocal Results** Background: In children with acute abdominal pain, equivocal ultrasound (US) interpretations of the appendix provide a diagnostic dilemma for clinicians. The use of a standardized US interpretation may improve the utility of US and reduce equivocal interpretation. Objective: To determine if a standardized appendix US interpretation could reduce the number of equivocal US results and to determine which secondary findings on US were most useful. Design/Methods: We implemented a standardized appendix US assessment tool in July 2015. To assess utility, we performed a pre/post implementation study of children aged 3-18 who underwent an appendix US in our emergency department (ED) for possible appendicitis. Patients were excluded based on pre-defined criteria. Ultrasound reports were abstracted and coded as positive, negative or equivocal. For patients with an equivocal US, we further abstracted demographic, historical and physical exam findings. We used descriptive statistics to compare our cohort. Primary outcome was the presence or absence of appendicitis. Results: Data abstraction is on-going. 528 patients were included between 01/2014 and 07/2016; 318 preimplementation and 210 post. Age, gender, and rate of non-visualized appendix were similar pre/post implementation. Among

		those with a non-visualized appendix US, rate of appendicitis was lower in the post period (11.9% vs 21.1% p=0.004). Among patients with appendicitis and a non/partially visualized appendix on US, the most common secondary signs noted were: non-compressible appendix (4/21), echogenic fat (5/21), and RLQ tenderness (13/21). If > 1 secondary sign was present, the rate of appendicitis was 30.2% vs 6.5% if no secondary signs seen (p < 0.001). Using our structured US format, we classified an equivocal appendix US as low risk, indeterminate or high risk for appendicitis. Conclusion(s): Non-visualization of the appendix remained unchanged through our study period. Application of a standardized appendix US interpretation allowed for more nuanced interpretation. Increasing number of secondary signs on US correlated with greater risk for appendicitis.