**Oral Presentations:**
Clinical predictors and management of symptomatic persistent patent ductus arteriosus in extremely low birth weight infants who had received single-dose indomethacin prophylaxis

**Elijah Fox, Ramachandra Bhat**

**Purpose of Study.** A single-dose indomethacin prophylaxis (SGL-IP), when compared to a standard-dose indomethacin prophylaxis (STD-IP) is associated with similar efficacy in preventing symptomatic patent ductus arteriosus (PDA). However, after the initial closure, ductus can re-open in ELBW infants. Predictors of symptomatic PDA among infants who had received STD-IP have been reported in the literature, but no reports on predictors of symptomatic PDA following SGL-IP.

**Methods Used.** In this retrospective cohort study, we evaluated 444 extremely low birth weight (ELBW) infants, born from June 2013 through December 2016, for the study inclusion. 403 infants who had received SGL-IP were included. Standard descriptive statistics were used to compare the baseline characteristics between the infants with or without symptomatic PDA. Using multivariable regression analysis, the independent clinical predictors of symptomatic PDA were identified by backward elimination method. Echocardiographic parameters of symptomatic PDA were compared before and after the treatment with ibuprofen and acetaminophen by using the paired t-test.

**Summary of Results.** One hundred fifteen of 403 ELBW infants who had received SGL-IP (28%), developed symptomatic PDA. Infants with symptomatic PDA were more likely to be born at a lower gestational age (GA), at lower birth weight, with lower 5-min Apgar scores, and more likely needed advanced resuscitation at birth and had higher severity of respiratory distress syndrome. Based on a multivariable logistic regression analysis, GA (odds ratio [OR] 0.71, 95% CI: 0.55-0.93), birth weight (OR: 0.99, 95% CI: 0.90-0.99), percent gestation status (OR: 0.24, 95% CI: 0.10-0.70) and one-minute Apgar score (OR: 1.12, 95% CI: 1.0-1.34) were the independent predictors of symptomatic PDA. PDA closure success rates were similar between ibuprofen and acetaminophen treated groups (table).

**Conclusions.** In this study, among the ELBW infants who had received SGL-IP, higher gestational age, higher birth weight, and SGA status are the important predictors of lower rate of symptomatic PDA. Overall, pharmacological PDA closure success rates were lower, necessitating second course of pharmacological treatment or surgical ligation.

**Local results of a statewide asthma continuous quality improvement collaborative**

**Gwen Minzes, Curtis Turner, Jennifer Cole**

**Purpose of Study**
Asthma is a significant cause of morbidity and mortality in children. Despite new expert guidelines in 2007, studies show asthma control and implementation of these guidelines remains poor. To help with this issue, USA Pediatrics joined a statewide QI project called Breath Alabama. The aim was to increase the percent of patients ages 2 to 19 years with asthma whose severity was documented, whose asthma control was assessed with a validated tool, whose treatment plan was based on the NHLBI Stepwise approach, who have current Asthma Action Plans, those with persistent asthma who are prescribed inhaled corticosteroids (ICS), and those who were recommended appropriate follow up at asthma associated visits to 80%

**Methods Used**
A multidisciplinary team was formed which developed a Key Driver and went through multiple PDSA cycles. Four interventions were implemented: the asthma sandwich, a visual representation of all the components of the QI project accompanied by a folder with all the resources needed during an asthma visit, identification of asthma patients prior to their visit, a lecture series for pediatric residents, and a lecture for the incoming interns. Ten charts were reviewed each cycle along with thirty charts for baseline data. Each of these project AIMs were plotted as a percentage on a run chart and compared to the statewide data.

**Summary of Results**
Documentation of asthma severity increased from 86.9% to 100%. Assessment of asthma control using a validated tool increased from 63.3% to 100%. Use of NHLBI stepwise approach increased from 76.5% to 100%. Asthma action plans given and explained during asthma visits increased from 33.3% to 90%. Patients with persistent asthma on ICS who are prescribed inhaled corticosteroids (ICS), have current Asthma Action Plans, those with persistent asthma whose severity was documented, whose asthma control was assessed with a validated tool, whose treatment plan was based on the NHLBI Stepwise approach, who have current Asthma Action Plans, those with persistent asthma who are prescribed inhaled corticosteroids (ICS), and those who were recommended appropriate follow up at asthma associated visits to 80%

**Conclusions**
Implementation of an Asthma QI project as part of a larger statewide collaborative resulted in achievement of 80% or greater success rate for appropriate documentation, assessment of control, prescription of medications, education, and recommended follow up during asthma visits. The greatest improvements were seen after the introduction of the Asthma Sandwich along with resource folder and the identification of asthma patients prior to the visit. Similar strategies could feasibly be used by other clinics to improve asthma control and implementation of asthma guidelines.
Reducing Antibiotic Usage in Hospitalized Culture Negative Young Febrile Infants: A Quality Improvement Project

Jacob Pessia, Anna Foust and Collaborative Antibiotic Stewardship Team

Purpose of Study
A collaborative quality improvement (QI) project among residents, hospitalists, infectious disease physicians, nursing, and pharmacy was developed following recognition of the variability in practice and antibiotic usage. The aim of the QI project was to achieve a 10% reduction in 9 months in the mean antibiotic utilization rate (AUR) for culture negative young febrile infants < 60 days of age. The aim would be achieved without a 5% increase in hospital readmissions and re-initiation of antibiotics within 5 days of discontinuation.

Methods Used
The baseline AUR was calculated from retrospective data obtained using specific admit diagnosis codes for febrile infants aged < 60 days for a period of 5 months prior to implementing an agreed upon algorithm. The evidence-based algorithm centered on discontinuing antibiotics at 24 hours negative culture and withholding antibiotics with confirmed viral infections in low risk groups. Following the introduction of the algorithm in April 2018, multiple Plan-Do-Study-Act cycles were employed and data was collected to track outcome, balancing, and process measures. Patients that required ICU admission or those with confirmed bacterial infections were excluded.

Summary of Results
The mean AUR decreased from 17.6 to 11.9 antibiotic days per 1,000 hospital days over a 9-month period (32.4% decrease). Median length of stay (LOS) decreased from 4 days to 3 days (p < 0.05). Overall algorithm compliance among hospitalists and residents was 57%, which was under the target goal of 80%. Readmission rates decreased from 8% prior to algorithm implementation to 4%. No one was restarted on antibiotics once they were discontinued.

Conclusions
As a result of implementing an evidence-based clinical pathway, we safely decreased our AUR and length of stay. Despite having 57% compliance with the algorithm, a significant decrease in AUR was achieved. Improving compliance will likely lead to even further decrease in AUR. Continued surveillance and algorithm education are needed to ensure sustained reduction in AUR.

Assessing Resident Physicians’ Knowledge & Attitudes towards Lesbian, Gay, Bisexual, Transgender, Queer, Intersexual, and Asexual (LGBTQIA) Healthcare Disparities

Terrance Weeden, Daniel Preudhomme

Purpose of Study
LGBTQIA individuals face health care disparities such as increased risk of mental health illness and STDs, along with physician discomfort and bias. Increasing cultural competency has only been reported in undergraduate medical education. We sought to evaluate post graduate physician trainees’ knowledge of LGBTQIA health care disparities and their experience and comfort with LGBTQIA patients.

Methods Used
We developed an anonymous online survey on current attitudes, perceptions and knowledge of healthcare disparities affecting LGBTQIA persons. All graduate medical trainees in various specialties at USA COM were asked to voluntarily complete the survey (Survey Monkey). Questions consisted of “yes” or “no” answers and a Likert scale focusing on demographics, attitudes, knowledge gaps of risk factors. The survey was reviewed by three unbiased faculty members prior to uploading a link allowing all graduate trainees to have access to the survey. This project was approved by the IRB.

Summary of Results
210 links to the survey were sent. 40 residents responded so far. 85% felt comfortable taking sexual histories on transgender patients. 65% of residents are willing to prescribe PrEP to a patient but only 60% of residents routinely assess for patients’ risk factors for HIV exposure. Residents scored 91% and 96 % on comfort level of queer physicians and patients respectively. 55% of residents heard bias regarding patients’ sexuality or gender preferences. 96% of residents know of health issues of LGBTQIA individuals. 61% of the responders received sensitivity training before residency yet 70% of residents do not feel adequately educated about LGBTQIA healthcare disparities.

Conclusions
The increasing acceptance of queer individuals within society is evident in residents’ comfort with sexual minorities as patients and professionals. Knowledge gaps persist, from inadequate cultural competency training in undergraduate and graduate medical education, as well as physician bias and homophobia. Trainees are knowledgeable of barriers facing queer patients, yet bias still exists. Trainees do not feel sufficiently prepared to provide care to LGBTQIA patients, supporting the need for increasing cultural competency in graduate medical education.
Using Media to Enhance Breastfeeding Education

Joshua Cummock, Tammy Doherty, Richard Whitehurst

Purpose of Study
Breastfeeding is known to be beneficial in growth and development. Many studies have been performed on how breastfeeding affects brain development and improves the connections in the white matter of developing brains. America spends more money on formula for infants and less on education for breastfeeding. Very little time is spent educating mothers on the benefits of breastfeeding so we hypothesize that using audio/video aids to educate mothers on the benefits of breastfeeding would increase the percentage of those that plan to breastfeed after watching the video compared to those that currently are breastfeeding before the video.

Methods Used
This study used one of the videos from the U.S. Department of Human and Health Resources, an organization that produces videos to support breastfeeding, as the intervention between a pre and post video survey to gauge the response of mothers to these videos. Mothers would complete the survey within the first two days at the hospital by filling out the first survey containing various information as well as the desire to breastfeed or currently breastfeeding, then they would watch the short video and be given a second survey identifying if they plan now to breastfeed and if they felt the video had an impact on their decision.

Summary of Results
The survey found that the video did not significantly change the plan to breastfeed after discharge overall (67% from 64% currently breastfeeding and 71% with a desire to breastfeed before the video). However, the survey found that all primigravida (100%) desired to breastfeed their child before the video, but this did not correlate with the amount that had started breastfeeding before the video (73%) and planned to (82%) after the video. The survey also showed that mothers who breastfed in previous pregnancies correlated with a greater percentage breastfeeding currently and planning to after discharge. Multigravida that had never breastfed were the least likely to breastfeed.

Conclusions
The response to the video was favorable but did not appear to significantly impact the decisions that may have already been made prior to admission due to the number currently breastfeeding and the number leaving with breastfeeding being near the same. The video may have more of an impact if it is presented prenatally particularly to those that are primigravida as part of prenatal counseling rather than during admission after birth of the newborn.
The impact of multidaily injection versus insulin pumps on hemoglobin A1C in pediatric patients with Type 1 Diabetes

Jacqueline Garavito, Anne-Marie Kaulfers

Purpose of Study
To assess whether hemoglobin A1c is affected by the use of Multi-daily injections vs. insulin pumps in a pediatric clinic

Methods Used
A retrospective chart review was performed using electronic health records of USA Children’s and Women’s patients’ ages 1 to 18 years old with established T1D, who were seen at the Endocrinology clinic from January 2017 to December 2017. Age, sex, type of insulin treatment (pump, shots) and HbA1c at time of clinic visit were collected and analyzed for frequency distribution. Of all the encounters during this time (n=619), Type 2 diabetics, New onset type 1 diabetics and patients with no definitive clinic visits were excluded (n=230)

Summary of Results
Of the subjects with T1D (n=389), those on pump (n=212) were found to have a lower mean HbA1c (9.1) when compared to those on Multi-Daily injection (n=177) who’s mean HbA1c is 10.0. Patients were also subsequently divided into shots and pumps by age. 21 patients were 0-6 years old, 135 patients were 7-13 years old and 233 patients were 13-18 years old.

<table>
<thead>
<tr>
<th>Age (yrs)</th>
<th>HbA1c pump</th>
<th>HbA1c shots</th>
</tr>
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<tbody>
<tr>
<td>0-6</td>
<td>8.1+/-1.1</td>
<td>9.4+/-1.2</td>
</tr>
<tr>
<td>7-12</td>
<td>8.7+/-1.8</td>
<td>9.4+/-2.8</td>
</tr>
<tr>
<td>13-18</td>
<td>9.4+/-2.9</td>
<td>10.4+/-5.2</td>
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</tbody>
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Conclusions
In the outpatient endocrinology clinic Pediatric type 1 diabetes patients on pumps have a lower HbA1C when compared to those on multi daily injections. HbA1c of those on pumps was noted to be lower in all three ages. This implies patients have better glycemic control while on pumps which is consistent with previously published studies. Encouraging patients to transition from injections to pumps may help improve glycemic control.

Impact of CSF Multiplex PCR on Management of Meningitis in a Pediatric Population

Nicholas Geagan, Kamal Sharma, Supatida Tengsupakul

Purpose of Study
Analysis of cerebrospinal fluid (CSF) via polymerase chain reaction (PCR) allows for the rapid identification of causative organisms responsible for meningitis.

Methods Used
A retrospective analysis was conducted of a pediatric population with a positive CSF multiplex PCR panel admitted at Children’s and Women’s Hospital, Mobile, AL from 6/1/16 to 8/31/18. Patients with positive findings on CSF multiplex PCR were identified and data was collected via chart review. Patients were grouped by age (less than 30 days old, 30 to 90 days old, and greater than 90 days old). Patients who had multiple CSF multiplex PCR studies performed had only their first encounter included.

Summary of Results
Of the 79 individuals that met the inclusion criteria, the median age was 38 days old (range: 1 day old to 12 years old). 58 patients (73%) were positive for a viral organism with the majority having Enterovirus (64%) followed by HHV6 (19%). A bacteria was identified as a causative agent in 21 patients (27%), with the most common pathogens being S. agalactiae (29%) and E. coli K1 (29%). Cryptococcus neoformans/gattii was not identified in this study. Significant differences were noted between the viral and bacterial groups in CSF protein (p = 0.007), CSF glucose (p = 0.01), and serum CRP (p = 0.0007). There were no significant differences noted between the two groups in regards to CSF WBC (p = 0.04) and serum WBC (p = 0.11). CSF PCR was able to identify 11 bacteria in patients with negative CSF cultures, 3 of which had no antibiotic pretreatment. Twenty-six of 53 patients (49%) with identified viral pathogens had no CSF pleocytosis in contrast to 9 of 20 patients (45%) with bacterial etiologies. Of these 9 patients, 2 had negative CSF cultures. In patients started on empiric antibiotic therapy, antibiotics were discontinued within 24hrs in 14 of 40 patients (35%) with viral meningitis and de-escalated in 10 of 21 patients (48%) with bacterial meningitis. No patients with a positive viral etiology on CSF PCR were later diagnosed with bacterial meningitis on CSF culture.

Conclusions
CSF multiplex PCR has demonstrated utility in identifying the etiology of meningitis in children allowing for early discontinuation or de-escalation of empiric antibiotics within 24 hours of PCR results.
Review of Unusual Pathogens Causing Neonatal Sepsis in Neonatal Intensive Care Unit

Meaghan Hongo, Supatida Tengsupakul with contribution from Fabian Eyal

Purpose of Study
From 2008-2018 2,544 blood cultures were obtained in the USA Children’s and Women’s NICU. Of these cultures 1,488 (58%) were positive. Most of the positive cultures were due to well-known organisms, however in the neonatal population it is observed that typically benign organisms can become pathogenic.

Methods Used
We reviewed cultures from the USA NICU from 2008-2018 for pathogens composing <10% of positive cultures. Duplicate cultures (drawn from different sites on the same day with the same result) were reduced to one data point. This totaled 69 cultures from 56 patients. Of these 34 patients have clinical data available. A retrospective chart review was conducted. After chart review 6 patient were excluded as treating physician considered the positive culture to be due to a contaminant.

Summary of Results
Of 28 patients 88% were preterm (24 preterm, 3 term, range 22+6 to 40+3 wks). Most cases (70%) represent late onset sepsis occurring more than 3 days after birth. The most common symptoms were respiratory distress (50%) and increasing apnea/bradycardia (9%), followed by lethargy, reduced urine output, jitteriness, hypoglycemia, hyperglycemia, hyperbilirubinemia, and metabolic acidosis (0.3% each). The most common risk factors were the presence of central line (63%), mechanical ventilation (40%) and prolonged rupture of membranes (15%). Mean c-reactive protein is 11.3mg/dL (0.3 - >24.0) and mean white blood cell count is 20.9 x 10^6 cells/µL (0.2-89.7). The following organisms were identified Acinetobacter baumannii/haemolyticus (5), Klebsiella oxytoca (4), Enterococcus faecium (3), Candida albicans (3), Haemophilus influenzae (2), Serratia liquefaciens (2), Candida tropicalis (2), Staphylococcus lugdunensis (1), Pantoa agglomerans (1), Capnocytophaga species (1), Citrobacter koseri (1), Citrobacter freundii (1), Citrobacter amalonaticus (1), Rhodotorula species (1), Proteus mirabilis (1), Streptococcus bovis (1), Streptococcus salivarius (1), Staphylococcus auricularis (1), Staphylococcus capitis (1).

Conclusions
Our data shows the pathogenicity of rare organism, however due to small sample size a common presentation is difficult to ascertain for each organism. Any organism can be pathogenic in neonates and treatment decisions should be based on clinical correlation.

Screen Time and Parent-Child Interactions

Blaire Smith, Stephanie Anderson

Purpose of Study
To analyze whether screen time affects parent-child interactions, as assessed by the Parenting Interactions with Children Checklist of Observations Linked to Outcomes (PICCOLO).

Methods Used
I reviewed data collected from mother-child dyads who were administered the PICCOLO during routine follow-up in a high-risk developmental clinic. PICCOLO is an observation-based tool that allows practitioners to provide feedback on parenting to foster a child’s development through a checklist of 29 supportive parenting interactions in 4 domains: affection, responsiveness, encouragement, and teaching. The PICCOLO was administered to families who were being screened for developmental delays secondary to high-risk neonatal period. Eighteen subjects were included in the study, with ages ranging from 11 to 21 months chronological age. Inclusion criteria included mother’s presence for PICCOLO administration and ability to speak and understand English. PICCOLO data was analyzed utilizing total score, as well as scores in each of the 4 domains. Pearson's correlation coefficient was used to analyze the relationship between the two variables along with analyzing the P-value to look at validity of the measurements.

Summary of Results
Screen time reported ranged from 0 to 4 hours per day, with mean screen time of 1.83 hours per day (SD: 1.59). There was no correlation between screen time and scores in any of the PICCOLO domains, with P-value greater than 0.05. Screen time reported did not correlate with total PICCOLO score, with P-value of 0.697.

Conclusions
Based on limited data, screen time did not correlate with parent-child interactions. Further investigation is needed due to limited number of data. Weaknesses in our study included limited number of subjects, self-reported screen time, and screen time reported at an earlier date than PICCOLO administration. Despite the lack of correlation observed in this study, other researchers have found an association between higher levels of screen time and poor performance on developmental screening. Therefore, it is important for pediatricians to continue to educate families on screen time recommendations and family media plans.
Provider confidence with an electronic health record: An educational intervention

*Trevor Smith*, Riley Trimm

**Purpose of Study**
To assess the efficacy of clinical location-specific PowerPoint guides developed to increase providers’ confidence with a newly implemented Electronic Health Record (EHR) at the University of South Alabama (USA). Initial training for the EHR was in the form of online modules. Previous research has looked at teaching an EHR system to medical students. Others have looked at ways to improve providers’ use of EHR long after initial implementation. To our knowledge, evaluating ways to improve use of EHR as an extended part of implementation has not been studied.

**Methods Used**
Guides were created and disseminated to healthcare providers. Providers were then asked via email to complete an online survey assessing competence in using the EHR before and after reviewing the guide with a Likert scale self-assessment. After six months for completion, responses were analyzed. Providers were required to state that they had viewed the guide. Surveys that did not include pre- or post-survey confidence on any one question were considered incomplete. Excluding incomplete surveys, the remainder were analyzed as both continuous and dichotomous data using the paired t test with unequal variance. For continuous assessment, answers were assigned a value from 1 to 5 with neutral = 3. For dichotomous assessment, answers deemed “confident” (somewhat/very confident) were assigned a value of 1; answers deemed “not confident” (very uncomfortable - neutral) were assigned a value of 0. These values were averaged and assessed for USA C&W in total.

**Summary of Results**
Of 34 surveys, 21 were incomplete and excluded. 1 respondent had not viewed the guide. The remainder failed to answer 1 or more questions on the survey. Of 13 complete and valid surveys, 12 participants stated that they would be comfortable teaching others to use the EHR. There was a significant increase in confidence for USA C&W overall after introduction of the EHR guides when analyzed as dichotomous responses, t(7) = 2.36, p = 0.0000004 and as continuous responses, t(11) = 2.2, p = 0.65.

**Conclusions**
Clinical location-specific PowerPoint guides as used for increasing providers’ confidence with using a new EHR were proven efficacious at USA C&W.

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Standardization of the evaluation and medical treatment for children with suspected urinary tract infections

*Lauren Thai*, Sophia Goslings, Collaborative Antibiotic Stewardship Team (CAST)

**Purpose of Study**
By 7 years old, about 8% of females and 2% of males will have a urinary tract infection (UTI). Inappropriate or partial treatment of UTIs can lead to long-term complications, including recurrent infection and antibiotic resistance. Currently, lack of consensus and standardization among physicians about how to medically manage children with suspected UTIs can lead to several initial treatment approaches and prolonged hospital length of stay.

**Objective:**
Decrease the antibiotic utilization rate by 10% from the mean and decrease the average length of stay by creating and implementing a guidance algorithm.

**Methods Used**
A retrospective chart review to compare empiric antibiotic initiation, duration of treatment, and length of stay was collected from October 2017 to April 2018 for baseline date. The inclusion criteria included children ≤ 2 years old admitted to Children’s and Women’s Hospital and diagnosed with an ICD 10 code of UTI. Our QI initiative included the development and application of a guidance algorithm for the evaluation and management of suspected UTI in these children. From October 2017, multiple Plan-Do-Study-Act cycles were implemented, with the objective to decrease the antibiotic utilization rate by 10% by December 2018. The processing measure was a minimum of 75% adherence to the algorithm. The balancing measure was to have less than 5% of patients readmitted to the hospital within 30 days. Data was collected prospectively after the implementation of the algorithm.

**Summary of Results**
The data shows that after implementation of the algorithm, the utilization of antibiotics per 1000 patients decreased from 23.71 to 12.38 (47.7% decrease). However, there are currently not enough data points to definitively claim sustainability. For the process measure, the adherence rate increased from 40% to greater than 90% after implementation, over the 15-month period. No patients were readmitted during a 30-day period. In addition, the average length of stay was decreased from 5 days to 4 days (p < 0.05).

**Conclusions**
By implementing a standardized guidance algorithm, we were able to decrease the utilization rate of antibiotics and the average length of stay for children with a suspected UTI.