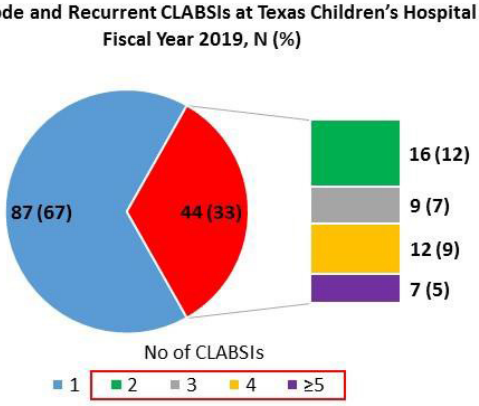
Session: P-62. Pediatric Healthcare-associated Infection Epidemiology and Prevention

Background. Recurrent central line-associated bloodstream infections (CLABSI) in children present a unique challenge to infection prevention efforts but guidelines for management are lacking.

Methods. We reviewed CLABSI data at Texas Children's Hospital (TCH) from fiscal years (FY) 2017-2019. A chart review to characterize clinical features, risk factors, and outcomes of patients with recurrent CLABSIs in FY2019 was performed. Descriptive statistics and Fisher's exact test were used.

Results. Recurrent CLABSIs increased from FY 2017-2019 [20% (26/126) to 33% (44/131)] (P=0.03). In FY2019, 15 patients accounted for 44 CLABSIs (Figure 1). Underlying conditions included aplastic anemia (4), hemophagocytic lymphohistiocytosis (3), malignancy (4), genetic disease (2), congenital heart disease (1) and biliary atresia (1). Two-thirds of the CLABSIs occurred in the setting of severe neutropenia (ANC < 100 cells/mm^3) though only 16 (36%) were classified as mucosal barrier injury. The median time between line insertion and date of infection was 41 days (range 1-105). Line type included central venous catheters (25, 57%), peripherally inserted central catheters (17, 39%) and implantable ports (2, 5%). Most lines (80%) had double lumens. The most common organisms included: Gram-negative bacilli (15), coagulase negative staphylococci (14), viridans group streptococci (6) *Candida* spp. (5), *Enterococcus faecalis* (3) and *Staphylococcus aureus* (3). Four CLABSIs were polymicrobial. Patients with >2 CLABSIs were more likely to have subsequent infections with the same organism as compared to patients with only 2 CLABSIs (P=0.01). Lines were removed promptly (19, 43%), had delayed removal (removal >72 hours from infection date) (10, 23%) or remained in place (15, 34%). Lines were removed for all episodes of fungemia (5/44) and for most Gram-negative infections (10/12). Six of 7 *Escherichia coli* CLABSIs were breakthrough fluoroquinolone-resistant infections in patients on levofloxacin.

Single Episode and Recurrent CLABSIs at Texas Children's Hospital for Fiscal Year 2019



Conclusion. Recurrent CLABSI accounted for a third of CLABSIs in FY2019. Line mismanagement was not a key contributor to recurrent CLABSI. Breakthrough CLABSIs in patients on levofloxacin prophylaxis need further investigation. For patients with CLABSIs due to *Staphylococci* decolonization may be considered.

Disclosures. **All Authors**: No reported disclosures

1376. Oral Vancomycin as Secondary Prophylaxis Against Clostridioides difficile Infection in Pediatric Patients

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Session: P-62. Pediatric Healthcare-associated Infection Epidemiology and Prevention

Background. Secondary oral vancomycin prophylaxis (OVP) has been utilized in adults with a history of *Clostridioides difficile* infection (CDI) while receiving systemic antibiotics to prevent CDI recurrence. However, this practice is poorly described in pediatric patients. Rates of CDI recurrence in pediatric patients range from 10-40% and is associated with morbidity and mortality. This study assessed the efficacy and safety of secondary OVP in pediatric patients with subsequent antibiotic exposure.

Methods. This retrospective study evaluated pediatric patients ≤18 years with any history of clinical CDI and receiving systemic antibiotics in a subsequent encounter during the time period of 2013-2019. Patients who received OVP 10 mg/kg (up to 125 mg per dose) every 12 hours during concomitant antibiotics were compared to those who did not. The primary outcome was CDI recurrence within 8 weeks following antibiotic exposure. Secondary outcomes included time to recurrence, severity of recurrence, and isolation of vancomycin-resistant enterococci (VRE) from any site. Risk factors for CDI recurrence were assessed using logistic regression.

Results. A total of 153 patients were screened for inclusion, of which 32 and 47 patients were assigned to the OVP and no OVP group, respectively. Median age was 8.6 years and the most common comorbidities were malignancy (47%) and immunosuppression (46%). Median time since last CDI to study inclusion was 64.5 days in the OVP group and 90 days in the no OVP group, P=0.320. Compared to the no OVP group, OVP patients had longer hospital stays (5 vs 14 days, P=0.001) and more concomitant antibiotic exposure (8 vs 12.5 days, P=0.001). Median duration of OVP was 12 days. CDI recurrence occurred in 12 patients and was significantly lower in the OVP vs no OVP group (3.1% vs 23.4%; odds ratio, 0.106; 95% confidence interval, 0.013-0.864; P=0.022). VRE was not isolated in any patients. After adjustment in a multivariate analysis, only secondary OVP remained as a protective factor against recurrence (odds ratio, 0.082; 95% confidence interval, 0.009-0.748; P=0.027).

Conclusion. Secondary OVP effectively reduces the risk of recurrent CDI in pediatric patients with a history of CDI while receiving systemic antibiotics. Future prospective studies should validate these findings.

Disclosures. Cristian Merchan, PharMD, BCCCP, abbive (Speaker's Bureau)

1377. Perinatal Transmission Dynamics of Antimicrobial Resistance

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Session: P-62. Pediatric Healthcare-associated Infection Epidemiology and Prevention

Background. Antimicrobial resistance (AMR) is a global health threat that disproportionately affects low- and middle-income countries. An ongoing study of childhood mortality in Bangladesh revealed a common cause of death among neonates is sepsis from Gram-negative multi-drug-resistant organisms.

Methods. To ascertain factors leading to neonatal exposure, we enrolled 100 women presenting for delivery to Faridpur Hospital during February-March 2020. We collected vaginal and rectal swabs from mothers on presentation and at least 24 hours after delivery as well as rectal swabs from newborns. Swabs were plated on chromogenic agars selective for extended-spectrum-beta-lactamase-(ESBL) producing organisms and carbapenem-resistant Enterobacteriaceae (CRE).

Results. Eight-five percent of women underwent C-section. Prior to delivery, ESBL organisms were isolated from 15% of vaginal and 63% of rectal swabs. CRE was detected in 2% of vaginal and 8% of rectal swabs. Following delivery, colonization exceeded 90% (ESBL) and 70% (CRE) in both swab sets. Similarly, among newborns, 85% were colonized with ESBL and 67% with CRE. Maternal AMR colonization on admission did not correlate with income, education, parity, prenatal care, or prior antibiotic use, but was associated with hospitalization during pregnancy (rectal CRE OR 11.9, p< 0.01). Maternal colonization at discharge was positively associated with membrane stripping (vaginal ESBL OR 9.0, p< 0.01; rectal CRE OR 5.0, p=0.03), C-section (OR 4.0-15.4, p< 0.05), and administration of third-generation cephalosporins (OR 5.0-10.1, p< 0.05). Newborn colonization correlated with maternal colonization on discharge (p< 0.005) but not on admission. Among newborns delivered by C-section, there was an 8-9-fold increased risk of ESBL and CRE colonization (p< 0.01).

Conclusion. These results demonstrate that AMR is driven by nosocomial factors in the perinatal setting, and invasive procedures and perinatal antibiotic use increase risk of AMR colonization. These findings emphasize the urgent need for enhanced antibiotic stewardship and infection prevention and control practices to preserve the benefits of hospital-based deliveries.

Disclosures. **All Authors**: No reported disclosures

1378. Reservoirs of Transmission of Resistant Gram-negative Pathogens Responsible for Neonatal Sepsis among Hospitalized Neonates in Pune, India

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Session: P-62. Pediatric Healthcare-associated Infection Epidemiology and Prevention

Background. Neonatal infections with resistant Gram-negative (GN) organisms are associated with high rates of mortality, with limited antibiotic treatment options. The role of maternal colonization and environmental GN organisms as reservoirs for transmission to neonates has not been well described.

Methods. We performed a prospective cohort study from October 12, 2018, until October 31, 2019, to describe the role of maternal and environmental GN colonization in BSI among neonates admitted to the neonatal intensive care unit (NICU) at a tertiary care center in Pune, India. Women admitted to Labor & Delivery

with risk factors for neonatal sepsis who provided consent were enrolled and their neonates were followed until hospital discharge. For neonates who developed bloodstream infection (BSI), colonization with resistant GN organisms was assessed in their mothers from frozen vaginal and rectal swabs collected at enrollment and at delivery and in the neonates from frozen skin swabs and peri-rectal swabs collected at day of life (DOL) 0, 3, 7, and weekly until discharge. Environmental colonization was assessed with weekly sampling of unit sinks and the immediate neonatal care environment. Colonization samples were processed to identify organisms that matched neonatal blood culture isolates.

Results. 953 women were enrolled, of whom 741 (78%) received antepartum antibiotics. Among 987 live born neonates, 12 (1%) died in the delivery room and 257 (26%) required NICU admission. Among neonates admitted to the NICU, 143 (56%) had at least one blood culture, of which 28 (20%) were positive; 21 (75%) had a GN BSI. The most common cause of neonatal BSI was *Klebsiella pneumoniae*, and 8 (38%) GN BSI were due to a carbapenem-resistant organism. No organism isolated from maternal samples matched organism and resistance pattern from neonatal blood culture. Matching strains were found in unit sinks and neonatal rectal and skin samples (Figure 1).

Organism recovery from swabs and match to bloodstream isolate by sample source and time of collection from birth

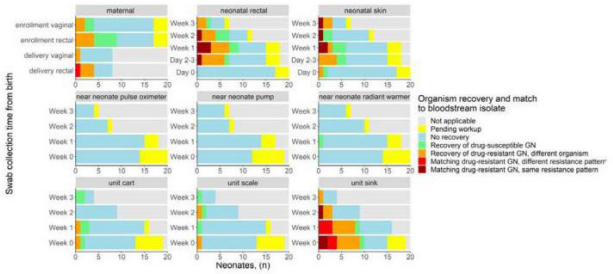

Figure 1. Organism recovery from swabs and match to bloodstream isolate by sample source and time of collection from birth. Each tile represents a single time point and swab sample source for an individual neonate. Samples collected one week or more after the onset of bloodstream infection were considered as not applicable as potential sources for neonatal bloodstream infection. Abbreviations: GN – Gram negative.

Conclusion. Among neonates born to mothers with risk factors for neonatal sepsis, GN organisms were the most common cause of neonatal BSI. Environmental and neonatal colonization may represent important reservoirs of transmission for these pathogens among neonates hospitalized in a tertiary care NICU in Pune, India.

Disclosures. **All Authors**: No reported disclosures

1379. Caregiver Burden related to Rotavirus Gastroenteritis: a systematic literature review

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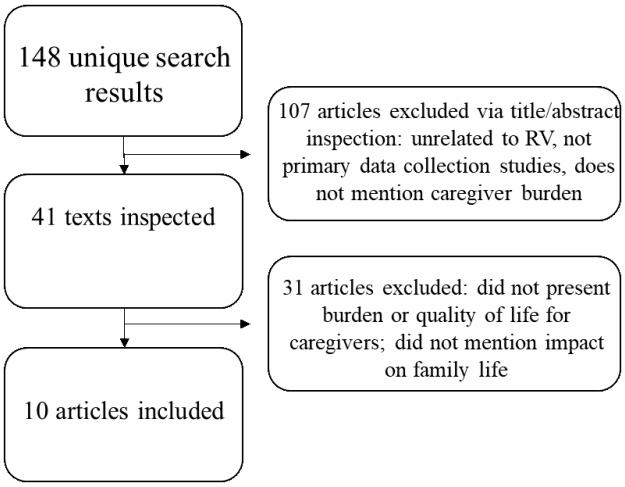
Session: P-63. Pediatric Vaccines

Background. The health and economic impact of rotavirus gastroenteritis (RGE) is well researched, but the burden of RGE on caregivers and remaining family spillover effects has only been recognized recently. Efforts to quantify caregiver burden allow for a more holistic understanding of RGE's disease burden; such an understanding is relevant when evaluating interventions to diminish RGE. In this review, we identified the methods used to quantify caregiver burden of RGE and summarize the findings.

Methods. We performed a systematic literature review on caregiver and family burden of RGE using PubMed and Scopus, combining MESH and free-range terms. We selected studies that estimated or conveyed the impact of RGE on the family via interviews, and administration of surveys or instruments. We focused on the caregiver and family's subjective experience and included studies that quantified caregiver associated disutility weights, reports, stress, or emotional outcomes.

Results. After compiling the results of our search, we selected 10 publications (Figure 1). Four studies used the EQ-5D and the VAS to measure caregiver burden (Table 1). Caregiver utility at time of illness varied between 0.61 (caregivers of hospitalized children, Thailand), and 0.88 (caregivers of children enrolled at outpatient clinics, Canada). Caregiver burden was also measured in Spain (2 studies), Italy (3 studies), Belgium, France, Germany, Latvia, Poland, United States, Sweden, Taiwan and Vietnam, via stress scales (2 studies), especially designed questionnaires (2 studies), and interviews (2 studies). Using a questionnaire, RGE was found to disrupt family activities, cause stress and worry on caregivers; a 10-point stress scale revealed high levels of stress among caregivers in other countries. Using different instruments, the impact of RGE was found to increase with the severity of RGE.

Results of the systematic literature review on caregiver burden.



Caregiver utility for caring for patients with Rotavirus Gastroenteritis (RGE) obtained using the EQ-5D and the Visual Analogue Scale (VAS).

Study	Country	Place of recruitment	Baseline utility	Utility at time of RGE episode
Brisson, 2010[a]	Canada	Outpatient clinics	Via 5Q-5D: 0.95 (n=186) Via VAS: 0.81 (n=186)	Via 5Q-5D: 0.88 (n=186) Via VAS: 0.73 (n=186)
Hoffman, 2011	Denmark	General Physician clinics and one Hospital	Not reported	Via 5Q-5D-5L: 0.818 (n=225) Via VAS: 0.785 (n=225)
Marlow, 2015[b]	United Kingdom	Emergency Department	Via 5Q-5D-5L: 0.86 (n=48) Via VAS: 0.84 (n=48)	Via 5Q-5D-5L: 0.68 (n=77) Via VAS: 0.70 (n=77)
Rochanathimoke, 2018	Thailand	Hospital	Via 5Q-5D-3L: 0.96 (n=460) Via VAS: 0.97 (n=460)	Via 5Q-5D-3L: 0.61 (n=460) Via VAS: 0.63 (n=460)

a) Authors report caregiver utility 1 week and 2 weeks after the initial encounter. We considered the baseline utility to be the utility two weeks after the outpatient encounter.
b) Authors present results for both primary and secondary caregiver. For comparison with other studies, we present results for the primary caregiver only.

Conclusion. RGE in infants was found to significantly disrupt the quality of life of caregivers, and to impact family activities and routine. Methods to quantify caregiver burden vary often without a validated disease-specific instrument which hinders comparison between different countries and incorporating the results in economic models.

Disclosures. **Cristina Carias, PhD**, **Merck** (Employee, Shareholder) **Tianyan Hu, PhD**, **Merck** (Employee, Shareholder) **Ya-Ting Chen, PhD**, **Merck & Co., Inc.** (Employee, Shareholder)

1380. Current status of the legal landscape regarding Rotavirus Vaccination in the United States

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Session: P-63. Pediatric Vaccines

Background. In the US, the Advisory Committee on Immunization Practices recommended routine rotavirus vaccination for all infants in 2006. Since then, rotavirus (RV) vaccination coverage (VC) has increased; however, RV VC is still below that of other routine childhood vaccines. All states require children to be vaccinated against certain communicable diseases as a condition for childcare attendance; other states require that children with diarrhea are excluded from childcare. Given the potential impact of these policies on VC, we sought to understand the legal landscape affecting rotavirus (RV) vaccination.

Methods. Legal epidemiological methods using Westlaw NEXT database were used to complete a systematic assessment of RV vaccination requirements for childcare entry and evaluate the ease at which non-medical exemptions are attained. These methods were also used to evaluate state diarrhea childcare exclusion policies.

Results. Six states require RV vaccination for childcare attendance: Wyoming (2018); Ohio and Rhode Island (2015); Idaho (2011); North Dakota (2008); and Pennsylvania (2002) (Figure 1). All 6 states permit non-medical exemption that allow children to be exempt from vaccination. Ohio, North Dakota, and Pennsylvania are the