to withhold antibiotics for URI than APPs and nonpediatric providers (pediatricians 86.6(81.2, 90.6)%, nonpediatricians 80.8(73.0, 86.8)%, APPs 76.8(68.4, 83.5)%, $P < 0.0001$). Pediatricians were less likely to prescribe antibiotics for pharyngitis without a positive Group A *Streptococcus* test than APPs and nonpediatric providers (pediatricians 15.1(10.4, 21.6)%, nonpediatricians 29.4(20.8, 39.6)%, APPs 27.2(19.3, 36.9)%, $P < 0.0001$). First-line antibiotic prescribing for pharyngitis and AOM did not differ between provider specialties. A trend toward more guideline-concordant prescribing was seen for pharyngitis and sinusitis over the study period.

Conclusion. Pediatricians were more likely to adhere to guidelines for pediatric acute respiratory infections. Pediatric antibiotic stewardship efforts should also target non-pediatricians.

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2569. High Incidence of Enterovirus, HHV6, Parechovirus and Adenovirus Blood Viremia in Children 0 to 3 Years Old Presenting With Fever Without Source

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Background. Fever without source (FWS) is defined as a fever in which an extensive history and clinical examination fail to identify a cause. Although the vast majority of children with FWS have a self-limited viral infection, up to 10–25% have a serious bacterial infection (SBI). Therefore, many children require invasive diagnostic tests, hospital admission, and empirical administration of broad-spectrum antibiotics. The aim of this study was to assess the respective role of Human enterovirus (HEV), human parechovirus (HPeV), adenovirus (ADV) and herpesvirus type 6 (HHV6) viremia in children <3 years old presenting with FWS.

Methods. Prospective monocentric diagnostic study. Between November 2015 to December 2017, children <3 year olds with FWS had, in addition to the standardized institutional work-up for FWS, plasma tested by real-time (reverse-transcription) polymerase chain reaction (PCR) for ADV, HHV6, HEV, and HPeV. Specimens with cycle threshold values <40 were considered positive. Quantification was performed on positive specimens for HEV, ADV, and HHV6 specimens when volume permitted.

Results. One hundred thirty-five patients had plasma PCR for ADV, HHV6, HEV, and HPeV. Male:female ratio was 1.45:1 and median age was 2.4 months (interquartile range 1.3–9.7). Among those, 47/135 (34.8%) had at least 1 virus detected in the plasma. More specifically, HEV was detected in 19 patients (14.1%), HHV6 in 15 (11.1%), HPeV in 8 (5.9%), and ADV in 7 (5.2%). Co-infection with 2 viruses was detected in 2 patients (ADV/HEV and ADV/HPeV). No patient with positive plasma PCR had a positive blood or CSF culture. Two patients with positive plasma PCR fulfilled American Academy of Pediatrics criteria for urinary tract infection. The first was HEV+ in plasma and CSF, midstream urine was positive for leukocytes and grew *E. coli* 10^6 CFU/mL, whereas the second was HHV6+ in plasma and catheter urine was positive leukocytes/nitrites and grew *P. mirabilis* 10^5 CFU/mL.

Conclusion. This epidemiological study highlights the frequent detection of active enteroviral, adenoviral, and HHV6 infections in plasma of children with FWS. Virus–virus and virus–bacteria co-infections are rare. Further studies are needed to establish causality between FWS and viremia.

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2570. HCV Screening Practices Among Adolescents and Young Adults in a National Sample of Federally Qualified Health Centers in the United States

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Background. The opioid crisis has been associated with an increase in hepatitis C virus (HCV) infections among 15–30 year olds. Federally Qualified Health Centers (FQHCs) provide comprehensive healthcare to diverse and underserved communities. However, little is known about HCV screening practices among adolescents and young adults seen at FQHCs across the United States.

Objective. To characterize the continuum of HCV testing and care among adolescents and emerging adults in a large national sample of US FQHCs.

Methods. We used the OCHIN electronic medical record to create a retrospective cohort of 13 to 21 year olds who had a least 1 outpatient visit at any of 98 participating US FQHCs across 19 states from 2012 to 2017. Primary outcome was HCV testing during this timeframe. We also identified predictors of HCV screening using multivariable logistic regression adjusting for age, sex, race/ethnicity, and substance use.

Results. Among 269,287 youth who met inclusion criteria, 54.7% were female, 37.6% White, 33.5% Hispanic, 17.6% Black, and 11.3% other. Mean [SD] age at first HCV screening was 18.5 [2.2] years. Over the study period, 2.5% (6849/269,287) were tested for HCV and 153 (2.2%) had reactive HCV testing. Of those, 117 (76.5%) had confirmatory RNA testing and 65 (55.6%) had detectable RNA. Thirty-five percent (325/933) with ICD-9 codes for opioid-use disorder (OUD) and 8.9% (2080/23,345) with any ICD-9 code for drug use were tested for HCV. Only 10.6% (728/6,849) of individuals tested for HCV had also been tested for human immunodeficiency virus (HIV). Older age (19–21 vs. 13–15 years old at study end, aOR 5.64, 95% CI 5.13–6.19), Black race (aOR 1.88, 95% CI 1.76–2.00), and ICD-9 codes for substance-use disorder, in particular amphetamine (aOR 5.82, 5.10–6.64), opioids (aOR 3.50, 2.92–4.19), cocaine (aOR 2.90, 2.43–3.47), or cannabis (aOR 2.46, 2.31–2.62) were independently associated with HCV testing in multivariable analysis.

Conclusion. During the current opioid crisis, only a third of adolescents/young adults diagnosed with OUD in a large national sample of FQHCs were tested for HCV. In addition, only 10% of those tested for HCV were also screened for HIV. Initiatives are needed to increase HCV and HIV screening among at-risk youth at FQHCs.

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2571. Higher Rates of Hospitalization and Infection-Related Hospitalization Among HIV-Exposed Uninfected Infants Compared with HIV Unexposed Uninfected Infants in the United States

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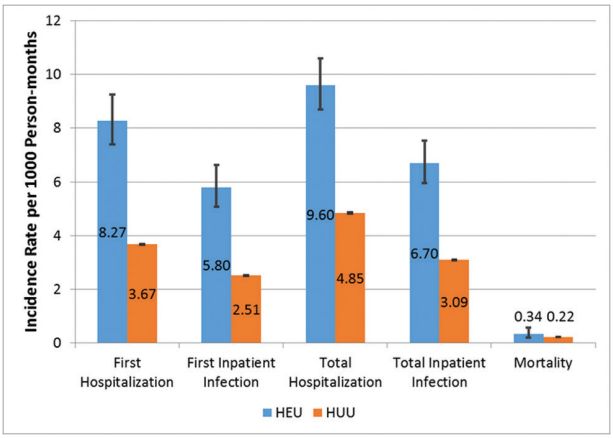
Background. Studies from multiple countries have suggested impaired immunity in perinatally HIV-exposed uninfected (HEU) children, with elevated rates of all-cause hospitalization and infections. We estimated the incidence of all-cause hospitalization and infection-related hospitalization in the first 2 years of life among HEU children and compared this with HIV-unexposed uninfected (HUU) children in the US Among HEU children, we evaluated associations of maternal HIV disease-related factors during pregnancy with risk of infant hospitalization.

Methods. We evaluated HEU children enrolled in the Surveillance Monitoring for ART Toxicities (SMARTT) Study dynamic cohort of the Pediatric HIV/AIDS Cohort Study (PHACS) network who were born 2006–2017 and followed from birth. Data on HUU children were obtained from the Medicaid Analytic Extract database, restricted to states participating in SMARTT. We compared rates of first hospitalization, total hospitalizations, first infection-related hospitalization, total infection-related hospitalizations, and mortality between HEU and HUU children using Poisson regression. Among HEU children, multivariable Poisson regression models were fit to evaluate associations of maternal HIV factors with risk of hospitalization.

Results. Our analysis included 2,404 HEU and 3,605,864 HUU children. HEU children had approximately 2 times greater rates of first hospitalization, total hospitalizations, first infection-related hospitalization, and total infection-related hospitalizations compared with HUU children (figure). There was no significant difference in mortality. Among HEU children, maternal HIV disease factors, including viral load, CD4 count, antiretroviral regimen, and mode of HIV acquisition, were not associated with hospitalization rates.

Conclusion. Compared with HUU, HEU children in the United States have nearly twice the rate of hospitalization and infection-related hospitalization in the first 2 years of life, consistent with studies in other countries. Closer monitoring of HEU infants for infection and further elucidation of immune mechanisms is needed.

Figure: Rates of Hospitalization and Mortality in First 2 Years of Life (95% CI) among SMARTT HEU versus Medicaid HUU in the United States, 2007–2016



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2572. Decreased T-Cell Response, but Appropriate Antibody Production to Tetanus Vaccine Among HIV-Exposed Uninfected Infants in Botswana

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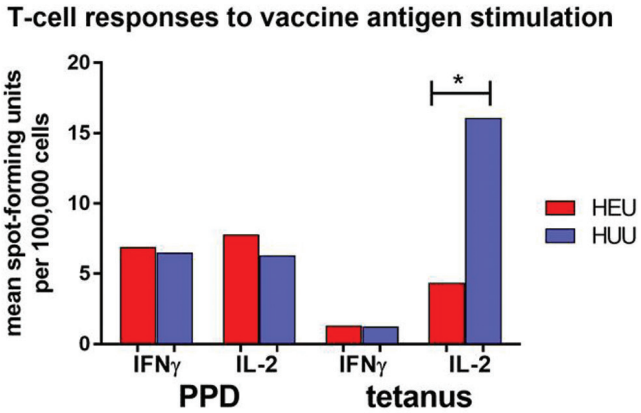
Background. In Botswana, more than 10% of HIV-exposed, uninfected infants (HEU) are hospitalized or die in the first 6 months of life, largely due to infectious causes. Vaccine responses can act as a marker of the immune response to infectious antigens. Previous studies of vaccine responses in HEU have had conflicting results. We compared T-cell responses to tetanus and purified protein derivative (PPD), and antibody titers to tetanus, between HEU and HIV-unexposed infants (HUU).

Methods. A total of 443 HIV-infected and 451 HIV-uninfected mothers and their 453 HEU/457 HUU live-born infants were followed from pregnancy/delivery through 24 months postpartum in a prospective observational study in Botswana ("Tshipidi"). T-cell expression of interferon (IFN)-γ and interleukin (IL)-2 were measured at 6 months using FluoroSpot after stimulation with tetanus toxoid or PPD. Quantitative tetanus toxoid IgG was measured in plasma at 18 months using ELISA. Mean spot-forming units (sfu) per 10^5 cells and geometric mean antibody titers were compared between HEU and HUU infants who had received 3 doses of tetanus and 1 dose of Bacille Calmette–Guérin (BCG) vaccines by 6 months, and 3 or 4 doses of tetanus vaccine by 18 months.

Results. Peripheral blood mononuclear cells were available at 6 months for 63 HEU and 18 HUU. Plasma was available at 18 months for 39 HEU and 42 HUU. HEU infants had significantly lower IL-2 expression after tetanus stimulation than HUU infants (4.4 vs. 16.1 sfu/10^5 cells, $P = 0.004$; figure), but no difference in IFNγ expression. There were no differences in T-cell responses to PPD between HEU and HUU. There were no differences in tetanus geometric mean antibody titers between HEU and HUU.

Conclusion. In this cohort of infants from Botswana, we found decreased T-cell responses, but not antibody responses, to tetanus toxoid and no differences in T-cell responses to PPD. Cell-mediated immune defects may play a greater role than humoral immune defects in the increased susceptibility to infection among HEU. BCG vaccine produces robust T-helper 1 responses, which may overcome cell-mediated immune defects in HEU.



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