Results. Of 958 patients with NPA specimens, 591 (61.7%) were positive for ≥1 pathogens; human rhinovirus (HRV) was the most prevalent (29.4%). No HRV infection (RD -12.9%; 95% CI -19.5; -6.3), human metapneumovirus (RD -13.6%; 95% CI -23.0%; -4.3%) and parainfluenza virus (PIV) (RD -31.7%; 95% CI -44.5%; -18.9%) were negatively associated with severity; no association was found between severity and the presence of respiratory pathogens, co-infection, or the specific viruses HRV-A, HRV-B, HRV-C, respiratory syncytial virus, influenza (INF), enterovirus serotype D68, adenovirus or coronavirus. The risk of treatment failure in the absence of a pathogen was 12.5% (95% CI 9.0%; 16.0%). The presence of any pathogen (RD 8.2%; 95% CI 3.3%; 13.1%) did not decrease the risk for UTI as a group (RD 13.1%; 95% CI 6.4%; 19.8%), and of INF and PIV specifically (RD 24.9%; 95% CI 4.7%; 45.1% and RD 34.1%; 95% CI 7.5%; 60.7%) were positively associated with treatment failure.

Conclusion. In this large cohort of children with moderate or severe exacerbation, no single respiratory pathogen was associated with higher severity on presentation. However, in addition to any pathogen and non-HVR infection, INF and PIV were specifically associated with higher treatment failure in the ED, supporting the need for influenza prevention, pathogen identification at presentation and exploration of pathogen-therapy interaction.

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2339. Human Rhinovirus Detection by PCR in Febrile Infants and Risk of Concomitant Bacterial Infection

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Background. Studies have shown that well-appearing febrile infants (FI) with viral respiratory infections have a reduced risk of bacterial infections (BI; urinary tract infection, bloodstream infection, meningitis). Respiratory testing by PCR allows detection of human rhinovirus (HRV), but few data exist on the risk of concomitant BI in HRV-positive FI.

Methods. We identified well-appearing FI 1–90 days old within Intermountain Healthcare evaluated in the ED or inpatient setting (IP) with viral respiratory testing by PCR (RVPCR) from August 2007 to August 2016. Respiratory viruses detected by RVPCR included: adenovirus, coronavirus, human metapneumovirus, influenza A/B, parainfluenza 1–4, RSV and HRV. We used relative risk (RR) to compare the risk of BI for infants with HRV vs. non-HRV viruses detected. Similarly, we used RR to compare risk of UTI and invasive bacterial infection (IBI; bacteremia and meningitis) for infants with HRV detected compared with those who were virus negative.

Results. 10,964 FI were evaluated in the ED/IP during the study period. 4037 (37%) had RVPCR and were included. 2212 (55%) FI were positive for a respiratory virus and 73% were 29–90 days old. HRV was detected alone in 1392 (34%) and non-HRV viruses were detected in 820 (20%). The overall frequency of BI in the cohort was 9.5%, with no significant difference in BI between those with non-HRV viruses [7.8% vs 3.7% P < 0.0001; RR 2.12 (95% CI 1.43–3.15)]. When compared with virus-negative HRV, HRV detection in infants 1–28 days did not decrease the risk for UTI [RR 0.87 (95% CI 0.58–1.29)]; risk of IBI was statistically decreased [RR 0.52 (95% CI 0.34–0.80)] with possible clinical relevance.

Conclusion. HRV detection was common in young febrile infants. Infants with HRV were at higher risk of BI than infants without non-HRV infection. Detection of HRV did not meaningfully change risk for UTI at any age or meaningfully impact risk of IBI in infants aged 1–28 days. The detection of any virus may be associated with a decreased risk for IBI in infants 29–90 days.

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2340. A Varicella Outbreak Among Preschool Children Despite One-dose Vaccination

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Background. In Turkey, a single-dose varicella vaccine was introduced into the National Immunization Program in 2013. Before this implementation, varicella vaccine had been available in the private sector since 2000. However, varicella outbreaks continued to occur in preschools and elementary schools. We investigated a varicella outbreak to estimate the effectiveness of 1-dose varicella vaccine and to evaluate potential risk factors for breakthrough disease.

Methods. This study was carried out during a varicella outbreak in 3 preschools in Izmir, Turkey, in April 2016. Using questionnaires, data including children’s medical and vaccination history were collected from their parents. Vaccination status of children was also verified with immunization records. Attack rates in vaccinated and unvaccinated children were calculated and the analysis of vaccine effectiveness and of risk factors for breakthrough disease were conducted. Vaccine effectiveness was calculated using the equation: (attack rates in vaccinated children-attack rates in unvaccinated children) x 100%.

Results. A total of 124 children were enrolled in the study. Of the 124 children, 77 (62%) had received 1-dose varicella vaccine before the outbreak. Varicella developed in 34 of 124 children during the outbreak, and 18 of them (53%) had breakthrough varicella. The attack rate was 23.4% among vaccinated children and 34% among unvaccinated children. The effectiveness of single-dose varicella vaccine was 33.6% against varicella disease of any severity and 82.3% against moderate or severe varicella. Children vaccinated 5 or more years before the outbreak had 3.5 times the risk of disease than those who had been vaccinated more recently (OR 3.5 [95% CI 1.08–11.5]; P = 0.046). Age at vaccination (<15 months vs. ≥15 months) and the brands of varicella vaccine were not associated with the increased risk of breakthrough varicella.

One-dose varicella vaccine is not sufficient to prevent school outbreaks. For this reason, varicella outbreaks continued to occur in schools and kindergarten among healthy vaccinated children in Turkey. A 2-dose varicella vaccination program may help to prevent varicella outbreaks and achieve effective control of the disease.

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2341. Congenital Zika Syndrome (CZS) Phenotype Seen in Older Children

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Background. Zika virus (ZIKV) has been documented in Africa since 1947 and Asia since 1969. However, the association of congenital ZIKV infection with microcephaly and serious brain defects was not recognized until a large ZIKV outbreak began in Brazil in 2015. A similar association was retrospectively identified in a 2013–2014 French Polynesian outbreak. In this report, we describe two children, ages 6 (Case 1) and 7 years (Case 2), who display a phenotype consistent with CZS. In both cases, the mothers were residing in Cambodia during their pregnancies (2011 and 2010, respectively; Cambodia has reported ZIKV infections since 2007.

Methods. We review epidemiologic, clinical and laboratory data, and the neurodevelopmental status of these two children.

Results. Both mothers reported low-grade fever and erythematous rash during their early second trimesters. The infants were born with severe microcephaly (>3 SD below the mean) with central hypotonia and peripheral spasticity (Figure 1). Both had normal karyotypes, negative TORCH results, and neuroimaging suggestive of CZS with microcephaly, ventriculomegaly, and reduced white matter (Figure 2). Case 1 had overlapping cranial sutures and redundant scalp (Figure 3). In 2016, serology immunofluorescence assay, immunoglobulin G, and plaque reduction neutralization test for the mother of Case 1 was negative. The moth...