(12.5%) patients with disseminated disease died within 30 days from the diagnosis and one of them had a maternal history of previous genital herpetic lesion. There was no mention on maternal history of genital herpes in 10 (63%) patients in the medical records.

**Conclusion.** Although not common, NHSV infection occurs in Korean babies with high 30-day mortality rate of 12.5%. Increased awareness is warranted among Korean pediatricians to take a thorough maternal history of genital herpes infection.

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### 2344. FDA Analysis of CD4+ Cell Count Declines Observed in HIV-Infected Children Treated With Elvitegravir/Cobicistat/Emtricitabine/Tenofovir Alafenamide

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**Session:** 248. Pediatric Viral Infections

**Saturday, October 6, 2018:** 12:30 PM

**Background.** Elvitegravir (EVG)/cobicistat/emtricitabine/tenofovir alafenamide (E/C/F/TAF) is approved for treatment of HIV-1 in children weighing ≥25 kg based on a Gilead sponsored study of safety, pharmacokinetics (PK), and antiviral activity among 23 virologically suppressed (VS) children 6–12 years old who switched from a stable antiretroviral (ARV) regimen to E/C/F/TAF. All subjects were perinatally infected with HIV. Though all subjects maintained HIV viral load < 50 copies/mL, a recent FDA analysis of the labeling for this drug found a mean decline in CD4+ cell count (CD4ct) from Baseline (BL) to Week 24 among various populations. We conducted a retrospective review to determine if there is consistent CD4ct decline in children treated with E/C/F/TAF.

**Methods.** We reviewed the clinical records of 102 subjects treated with E/C/F/TAF for treatment of HIV-1 from 5 sites across the United States (Utah during an 8-week span in 2017. 102 (26%) responded and analysis was limited to those with available CD4ct data from BL to Week 24. We used the BL CD4ct to determine whether observed declines were consistent with the results reported in the FDA labeling to alert providers of this potential risk.

**Results.** Decreased CD4cts were not explained by declines in total leukocyte counts or ALC. There was no association between CD4ct and area under the curve (AUC) of any of the four drugs. Mean CD4ct decline was not driven by a few outliers; CD4ct declined in 21/23 subjects. Prior ARV trials of VS adults and children, including EVG-containing regimens, show no notable sustained decline in CD4ct. Pediatric studies of other integrase inhibitors (INSTI) in this age group did not have comparable VS subjects. The literature describes structural similarity between human recombinant activation gene (RAG)1/2 and HIV integrase, RAG inhibition by INSTIs could potentially interfere with B and T cell development. EVG exposure in mice at supra-therapeutic concentrations, caused significant reductions in mature B lymphocytes. The relevance of this finding to humans is unclear.

**Conclusion.** Decreased CD4ct is a unique finding in this pediatric study of E/C/F/TAF and the etiology remains unclear. Inhibition of RAG1/2 by EVG may play a role, but further research is needed. No subjects had nadir CD4ct < 350 and no opportunistic infections were reported. However, CD4 declines are included in E/C/F/TAF labeling to alert providers of this potential risk.

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### 2345. Knowledge, Practices, and Attitudes of Youth Providers About STI, HIV Testing, and PrEP

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**Session:** 248. Pediatric Viral Infections

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**Background.** In 2015, over half of sexually transmitted infections (STI) and 22% of new HIV infections were among youth aged 15–24. Latest Utah data from 2014 showed this group accounted for 62% of chlamydia, 33% of gonorrhea, and 12% of new HIV infections. HIV testing in Utah is low with 24.2% of adults ever tested. There have been no studies published evaluating Utah HIV testing rates in youth.

**Methods.** An anonymous email-based survey was sent to 396 youth providers in Utah during an 8-week span in 2017. 102 (26%) responded and analysis was limited to 83 (21%) providers who reported caring for patients aged 15–24.

**Results.** The median age of providers was 35.5; median years out of residency 8.5; most were female (54%); self-identified as Caucasian (86%); attending level physicians (70%) and many (61%) practiced in urban settings. Over half identified as moderately, very, or extremely comfortable screening for HIV. Approximately 75% were familiar with CDC HIV testing guidelines. However, only 16% report always or often testing youth for HIV. Providers were more likely to screen for HIV in older patients: 19% always or often screening patients age 17–24 and 10% of patients age 13–16. Factors that increased the likelihood of offering an HIV test included: patient request, men who report sex with men, prior STI or a history of injection drug use (Figure 1). Common reasons for rarely or never offering testing included: belief the patient panel is not sexually active, low prevalence of HIV and provider discomfort in discussing sexual behaviors (Figure 2). Less than one-third of providers reported familiarity with the CDC’s PrEP guidelines, but most (91%) expressed interest in more information. Provider discomfort in offering PrEP was highest in the younger patients (Figure 3). The same factors that increased the likelihood of testing for HIV held true for prescribing PrEP.

**Conclusion.** In Utah, the majority of providers are familiar with CDC HIV testing guidelines; however, testing remains low. This may be due to misconceptions around HIV risk and provider comfort. This is a missed opportunity for early detection of HIV in a population with known high rates of other STIs. Youth providers are not familiar with PrEP but they would like further education.

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### 2346. Severe Head and Neck Infections Following Influenza Virus Infection in Children

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**Background.** Seasonal influenza infection is associated with secondary bacterial complications involving the upper and lower respiratory tract. However, the association of influenza infection with secondary severe or complicated head and neck infections is not appreciated.

**Methods.** We performed a retrospective review of pediatric patients hospitalized at Texas Children’s Hospital with bacterial head or neck infections following influenza infection from October 2017 to March 2018. We queried the infectious diseases consult database using the search terms: orbital cellulitis, mastoiditis, retropharyngeal abscess,
periostitis abscess, deep neck abscess, subdural empyema, Lemitier’s syndrome, and Pott’s pyogenic tumor. Based upon medical records review and ICD-10 codes, patients were included in this study if they had a head or neck infection and reported a positive rapid influenza diagnostic test within 30 days preceding hospital admission.

**Results.** We identified 44 patients with head or neck infections, of which 6 patients met inclusion criteria (Table). The male-to-female ratio was 5:1 and the median age was 11.6 years (range 1.7–13.9 years). Most patients were diagnosed with influenza during a period of high influenza activity and the median time from influenza diagnosis to hospital admission was 4.5 days (range 1–6 days). One patient had received seasonal influenza vaccination. Patients had a wide range of infections, including orbit cellulitis (3), retropharyngeal abscess (2), and 1 of each of the following: Lemitier’s syndrome, periostitis abscess, Pott’s pyogenic tumor, and subdural empyema; 4 also had sinusitis. A causative pathogen was established in four cases: methicillin-resistant Staphylococcus aureus, Streptococci anginosus group, S. pyogenes, and S. aureus methicillin-resistant.

The median duration of hospitalization was 22 days (range 5–35 days) and treatment duration ranged from 3.5 to 6 weeks. All patients completed antibiotic treatment successfully and had favorable outcomes.

**Conclusion.** We suggest that complicated bacterial head and neck infections may represent an under recognized co-infection or secondary complication of infection with influenza virus, further stressing the importance of prevention and treatment of influenza infection.

### Table 1. Clinical Characteristics of Patients with Head and Neck Infections Following Influenza Virus Infection

| Case | Age (Yrs) | Diagnosis | Antiviral Treatment | Treatment Duration (Days) |
|------|-----------|-----------|---------------------|--------------------------|
| 1    | 2         | Sinusitis, Orbital cellulitis | Yes | 10 |
| 2    | 5         | Retropharyngeal abscess | No | 7 |
| 3    | 10        | Pott’s pyogenic tumor | Yes | 14 |
| 4    | 12        | Streptococci anginosus group | Yes | 11 |
| 5    | 15        | S. pyogenes | Yes | 8 |
| 6    | 18        | S. aureus methicillin-resistant | Yes | 12 |

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**2438. Influenza Complications Amongst Pediatric Inpatients in Singapore, a Tropical Country**

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**Session:** 248. Pediatric Viral Infections

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**Background.** Influenza is a common cause of morbidity and mortality in children. This was a retrospective study of hospitalized children with influenza at KKHH admitted from January 2013 to December 2014 to compare the type of complications by age and underlying medical conditions.

**Methods.** Influenza patients were identified by a positive polymerase chain reaction (PCR) or immunofluorescence antigen from nasopharyngeal swabs. Patients were grouped into neurologic, respiratory, other and no complication. Multinomial regression was used to compare age and complications with underlying disease.

**Results.** There were a total of 2,172 patients with a median age of 37 months (IQR 13–76 months). Influenza A constituted 76.3% with serotype H3N2 (54.5%), H1N1 (18.2%), unknown (5.4%). Influenza B constituted 22.9% with serotypes: Yamagata (16.3%), Victoria (5.7%). Only 4 patients (0.3%) had sequelae or death. 28% of influenza admissions had complications. The most common being neurologic 44% (n = 156) followed by respiratory 31% (n = 110). The most common clinical complications were fever (94%), seizures (34.1%), bronchitis/bronchiolitis (9.9%), pneumonia (7.3%). There was a significant difference between complications by male gender (P < 0.001), community acquisition (P = 0.007), influenza type, other positive viruses, comorbidity, asthma/ lung disease, neurologic disease, history of seizures, ICU/High Dependency admissions (all P < 0.001), developmental delay (P = 0.002), Kawasaki disease on aspirin (P = 0.026), gastro-oesophageal reflux (P = 0.034) and prescription of oseltamivir (P = 0.003). Neurologic complications occurred especially in the 2–< 5 year age group (37.2%), respiratory complications in the 6–23 month age group (39.1%). Age ≥5 years was more likely to have neurologic complication if they had a history of seizures (OR 14.2, P < 0.001). Age ≥2 years was more likely to have respiratory complications if they had asthma/ lung disease (OR 3.5, P < 0.001).

**Conclusion.** Although influenza mortality was low, 28% of influenza admissions in children had significant complications. Children with underlying medical problems should routinely receive influenza vaccinations to avoid complicated influenza illness.

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

**2439. Long-Term Neurological Outcome and Neutralizing Antibody Titers Against Paracoxabovirus-A3 (PeV-A3) in Children Who Developed PeV-A3-Related Diseases in Neonatal and Infantile Periods**

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**Background.** PeV-A3 is a newly described member of the Picornaviridae family that has a worldwide distribution. It may cause asymptomatic or symptomatic infections in adults and is associated with severe disease in neonates and infants. The long-term neurological outcome and neutralizing antibody titers against PeV-A3 in children who developed PeV-A3-related diseases in the neonatal and infantile periods are unknown.

**Methods.** We conducted a prospective cohort study from January 2015 to December 2017 in Niigata, Japan. Neonates and infants admitted to the hospital with signs and symptoms suggestive of PeV-A3 infection were enrolled. The clinical characteristics of the patients, laboratory data, and outcome were collected. The long-term neurological outcome was assessed at 5 years after the onset of the disease. Neutralizing antibody titers against PeV-A3 were measured using a plaque reduction neutralization test. Statistical analysis was performed using descriptive statistics and the Mann-Whitney U test.

**Results.** A total of 22 children were enrolled in the study. The median age at onset was 14 days (IQR 7–22 days). The median duration of hospitalization was 22 days (IQR 15–29 days). The most common clinical manifestations were fever (95.5%), respiratory symptoms (81.8%), meningitis (40.9%), and encephalitis (27.3%). The long-term neurological outcome was assessed in 19 children at 5 years after the onset of the disease. The most common neurological sequelae were developmental delay (31.6%), speech delay (26.3%), and visual impairment (15.8%). The neutralizing antibody titers against PeV-A3 were positive in all children. The median neutralizing antibody titer was 1:128 (IQR 1:64–1:256).

**Conclusion.** PeV-A3 is a newly described member of the Picornaviridae family that has a worldwide distribution. It may cause asymptomatic or symptomatic infections in adults and is associated with severe disease in neonates and infants. The long-term neurological outcome and neutralizing antibody titers against PeV-A3 in children who developed PeV-A3-related diseases in the neonatal and infantile periods are unknown.

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