mutation at TC motifs. This underscores the evolutionary pressure imposed on hPyV by APOBEC to evade host immunity. It is possible that the over-representation of TG motifs in hPyV is due to specific host DNA-repair mechanisms, but this requires further investigation.

#87: Association Between Healthcare-Associated Respiratory Viral Infections and Length of Stay at a Pediatric Hospital

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Background. Healthcare-associated infections (HAI) are major preventable causes of morbidity and mortality. While there are fewer overall HAI in children, there is a greater potential impact in disability-adjusted life years. Healthcare-associated respiratory viral infections (HARVI) are not frequently tracked within institutions, yet the risk for such infections in pediatric hospitals is very high. Recent data demonstrate large inter-hospital variability of HARVI incidence that may depend on various factors including the number of immunocompromised patients in the hospital and the presence of shared rooms. We hypothesize that the burden of healthcare-associated respiratory viral infections and their impact on the length of stay (LOS) is substantial at a large urban pediatric hospital.

Methods. A cohort of all children with any HARVI admitted to a large urban pediatric hospital between July 2017 and June 2018 were included after obtaining IRB approval. We defined a HARVI as a respiratory infection with an onset of symptoms while the patient was hospitalized meeting three criteria: A positive microbiologic test for one of 8 viruses, presence of symptoms of a respiratory infection, and onset of symptoms after admission beyond the minimum incubation period for each virus. Infections with symptom onset after admission beyond the maximum incubation period were considered definite hospital onset whereas others were considered possible hospital onset. The electronic medical record provided data on demographics, underlying medical conditions, hospital length of stay prior to infection and hospital unit of infection, and consequences and outcome of HARVI. The at-risk population for calculation of the incidence of HARVI was all admitted patient-days at the hospital over this time period.

Results. Between July 2017 and June 2018 the incidence of HARVI (definite or possible hospital onset) was 1.2 infections per 1,000 admitted patient-days (60% due to rhinovirus/enterovirus, 12% due to respiratory syncytial virus, and 9% due to influenza). Overall, 48% of patients were under 2 years of age, 18% were between 2 and 5 years of age, and 34% were over 5 years of age. Twenty-one percent were immunocompromised and 35% had underlying lung disease. The median length of stay prior to symptom onset was 11 days (IQR 5–36 days) and the median total length of stay was 30 days (IQR 15–82.5 days). Eight individuals had more than one HARVI over this time period. Nineteen percent were transferred to the intensive care unit and 7% died during their hospital admission

Conclusion. HARVI occurs frequently in a pediatric hospital and often in patients with underlying comorbidities. The risk for HARVI increases substantially with increased length of stay. Such data support the need for tracking HARVI in high-risk institutions.

Global Health

#10: Fever and neutropenia. 10 years surveillance in a pediatric Mexican hospital

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Background. Fever and neutropenia, is a very common complication of chemotherapy in the treatment of cancer. It could happen in 10–50% of patients with solid tumors and more than 80% of patients with blood cancer. During leukemia treatment is very important first defense mechanisms integrity, such as skin, mucous membranes, Tlaxcala Children's Hospital is a pediatric general hospital, located in the center of Mexico and is where the pediatric cancer patients are treated, with almost 30 new cases by year, treatment with chemotherapy and as an adverse event fever and neutropenia, which increases morbidity and mortality

Methods. We conducted an observational, descriptive, and analytic study aiming to identify fever and neutropenic events in ALL patients, their epidemiologic characteristics, antibiotic use, isolation and antibiogram, and outcome.

Results. We reviewed 124 files from ALL patients between 2007–2017, we found 204 cases, 70 (33.8%) at induction, 18.6% consolidation, reinduction 17.6%, maintenance 14.2%. Out of 204 cases, we documented 177 with fever and neutropenia, 15 events of septic shock and 12 with fever and neutropenia with an identifiable source; the first-line antibiotic for fever and neutropenia was ceftazidime/amikacin, and for septic shock cefepime with an aminoglycoside, we found 3.39%, 20%, and 0% deaths from each group. Patients with fever and neutropenia with or without identifiable source had a length-stay average of 9.8 days compared with 30 days in patients with septic shock, CRP average was 12.47 mg/dL in the patients who survived and 8.23 mg/dL in those who did not. We found a very low positivity in cultures, and in most cases, those cultures did not meet criteria for diagnosis, the most common bacteria identified were *E. coli*, *P. aeruginosa*.

Conclusions. This is the first approach to get a better knowledge about infectious complications in patients with ALL, these findings could lead to identifying opportunities to improve diagnosis and treatment which lead to reducing cost, morbidity, healthcare-associated infections.

#16: Use of a Multiplex PCR Panel for Diagnosis of Complicated Pneumonia in Pediatrics

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Background. Pleural fluid cultures performed in the period from April 2015 to April 2017 (prior to having the test) were reviewed, 120 cultures were found, of which 7.5% were positive.

Methods. Descriptive study in patients from 0 to 12 years old, from April 2017 to April 2019, at Roosevelt Hospital, Guatemala City, June 2019

Results. In the period from April 2017 to April 2019, pleural fluids were evaluated in which multiplex PCR was performed, obtaining 41 results, 24 positive PCR for pneumonia producing bacteria in the community, of which only 1 positive culture was found, which, if correlated, which means 25 times more detection capacity, than the Gold standard of culture. Forty-one cultures of pleural fluids were evaluated, of which 58% were detected by FilmArray® The most frequently isolated microorganisms were *Streptococcus pneumoniae* 42%, *Streptococcus* sp. 3% *Haemophilus influenzae* 13% and *Pseudomonas aeruginosa* 3%

Conclusion. The use of Multiplex PCR in pleural fluid allowed the identification of a high percentage of microorganisms in the pleural fluid. Although the test is not valid for this use, its use could mean a great advantage for the etiological diagnosis.

#22: Trends in Bacterial Meningitis in a Tertiary-Level Children´s Hospital in Mexico, Following *Haemophilus influenzae* and *Streptococcus pneumoniae* Vaccination (1990–2018)

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Background. Bacterial meningitis (BM) remains a significant global health problem in pediatric care, with substantial morbidity and mortality. The epidemiology of BM has changed over the last 20 years. The ongoing introduction of conjugate vaccines for the most common meningeal pathogens has reduced the global incidence. However, there is limited epidemiologic and microbiologic data of BM in children before and after the widespread use of these vaccines in Mexico.

Methods. We conducted a retrospective, observational, analytical study. Pediatric patients (from 1 month to 18 years of age) presenting with BM and hospitalized at the Instituto Nacional de Pediatria in Mexico City, from 1990 to 2018, were included. Meningitis from invasive procedures or complicated head trauma were excluded. BM was classified according to the World Health Organization (WHO) criteria. The cases were analyzed in three periods: period A (1990–1999), period B (2000–2008), and period C (2009–2018). Period A corresponds to the time before the conjugate *Haemophilus influenzae* type b (Hib vaccine) was introduced in Mexico, while periods B and C correspond to the time after the Hib vaccine was routinely applied. Periods A and B correspond to the period before the pneumococcal conjugate vaccine (PCV7) was administrated in Mexico, while period C is after PCV7 and PCV13 were routinely administrated. The proportion of cases between periods was compared with Chi-square or Fisher exact test; $P < 0.05$ was considered significant. Binomial logistic regression analysis was used to determine the association between potential risk factors and death due to BM.

Results. A total of 226 cases with BM were included, 180 (79.6%) confirmed cases, and 46 (20.4%) probable cases. The median age at diagnosis was 10 months. There were 126 (55.8%) cases in Period A, 62 (27.4%) cases in Period B, and 38 (16.8%) cases in Period C, with a statistically significant reduction between periods ($P = 0.0001$). Hib was the most commonly isolated pathogen, found in 38 (50%) cases. However, its proportion declined significantly after the introduction of the Hib conjugate vaccine ($P < 0.0001$). *S. pneumoniae* followed as the second most commonly isolated bacterial pathogen. There was a significant reduction in neurological complications after the Hib conjugate vaccine ($P = 0.003$) and the *S. pneumoniae* conjugate vaccine ($P = 0.05$) were introduced. Independent risk factors associated with mortality were coma (OR 15, $P = 0.0001$), intracerebral bleeding (OR 3.5, $P = 0.046$), and pneumococcal meningitis (OR 9.4, $P = 0.002$).

Conclusions. BM remains a cause of morbidity and mortality in pediatric patients in this hospital, with a dramatic change in the epidemiology since the introduction of the Hib conjugate vaccine to the national immunization schedule. Routine use of childhood conjugate vaccines against the most frequent etiological agents reduced the number of cases globally, mainly those caused by Hib. Additionally, conjugate vaccines reduced neurological complications and sequelae caused by this disease.

#31: Risk Factors Associated with Mortality due to Multidrug-Resistant Organisms in Pediatric Oncology Patients with Febrile Neutropenia

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Background. Infectious processes are frequent complications presented in pediatric patients with cancer. Currently, the indiscriminate use of antibiotics induces resistance to available treatments, creating the emergence of multi-drug-resistant organisms (MDROs). Due to the impact in morbidity and mortality secondary to MDRO infection, we aimed to identify risk factors associated with mortality in infections due to MDROs in pediatric patients with cancer.