642. Improving Patient and Employee Safety through Implementation of an Infection Risk Screening Process for International Patients at Boston Children's Hospital—The “AIRSHIP” Protocol
Laila Alavedeh, MBBS,1,2 Ann Murray, MD, MPH1; Kate Humphrey, MD, MPH1,3; Meredith Van Der Velden, M.D.1; Grace Lee, MD, MPH1,4 and Mari Nakamura, MD, PH1,2,3, MSc, Boston Children's Hospital, Boston, MA, 1Harvard Medical School, Boston, MA, 2Critical Care Medicine, Boston Children's Hospital, Boston, MA, 3Population Medicine, Harvard Pilgrim Health Care Institute, Boston, MA
Session: 73. Outbreaks and Public Health Across the Globe
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Background. Vaccine-preventable diseases and multi-drug-resistant organisms (MDROs) are common outside of the US, and multiple infectious outbreaks have been linked to travelers. Boston Children’s Hospital cared for 2796 international patients in 2016 but lacked an infection risk screening process for these patients, placing patients and staff at risk. We developed the Assessing Infection Risks for Safe Healthcare of International Patients (AIRSHIP) protocol to identify risks to guide infection prevention and control (IPC) measures.
Methods. A multidisciplinary team of IPC, infectious diseases, and International Health Services (IHS) experts assessed current IHS intake procedures and stakeholder engagement. We then developed AIRSHIP, devising standardized processes and forms to (1) assess underimmunization, MDRO and tuberculosis history, recent exposures, and current symptoms and (2) triage cases for catch-up immunization, urgent health-care evaluation, and/or IPC intervention (Figure 1). We piloted incorporation of AIRSHIP into existing intake procedures. We tracked process, outcome, and balancing measures to evaluate feasibility, effectiveness, and acceptability to families (Figure 2) and made iterative improvements through Plan-Do-Study-Act (PDSA) cycles.
Results. For our first 13 cases, we completed pre-arrival family and referring provider interviews in 5 cases and on-arrival family interviews in 8 cases (in no cases were both pre-arrival and on-arrival interviews feasible). We were able to assign a risk category in all cases, identifying 5 patients hospital, Boston, MA. “Medicare Part B (Medicare) or Medicare Part D (Medicare Advantage Plan or Private Medicare Plan)”. We reported being “very satisfied” with AIRSHIP.
Conclusion. International patients often present with active infections and are commonly undervaccinated. A feasible and effective strategy for infection risk screening of international patients is review of records pre-arrival, together with on-arrival family history; thorough additional data and identifications of acute symptoms and exposures.
Disclosures. All authors: No reported disclosures.

643. Infectious Complications of Intravenous Drug Use: A Single-Center Review of 234 Patients Over a Multi-Year Period at a Large Tertiary Care Referral Center in Boston, MA
Meredith Van Der Velden, MD, MPH, Ann Murray, MD, MPH, Danielle Fine, MD, MBBS, Tracy Ayers, PhD, MS, Jennifer Chase, MS, Karen Miller, BSN, RN, Lisa Miller, Grace Marx, MD, MPH, Alex Burakoff, MD, MPH, Donna Hite, Disease Intervention Specialist1, Tracy Ayers, PhD, MS2, Jennifer Chase, MS3, Karen Miller, BSN, RN2, Meghan Barnes, MSPh2, Carol McDonald, MSN, RN, Lisa Miller, Grace Marx, MD, MPH, Alex Burakoff, MD, MPH, Donna Hite, Disease Intervention Specialist1, Tracy Ayers, PhD, MS2, Jennifer Chase, MS3, Karen Miller, BSN, RN2, Meghan Barnes, MSPh2, Carol McDonald, MSN, RN, Lisa Miller.
Session: 73. Outbreaks and Public Health Across the Globe
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Background. The national opioid epidemic has been accompanied by precipitous increases in overdose deaths and hospitalizations for infectious complications of injection drug use (IDU). Despite this, there is scant literature addressing the topic. We aimed to describe demographic characteristics, type of infection, healthcare utilization, disposition and outcomes among patients hospitalized for IDU-related infection over a multi-year period at a large tertiary care referral center in Boston, MA.
Methods. We conducted a retrospective chart review of patients hospitalized for IDU-related infection from 1/1/2012-9/30/2015. 901 charts were initially identified using administrative codes; 234 met the following inclusion criteria: 1) hospitalization within the study period for treatment of ≥1 of 6 selected infections and 2) IDU within 6-months preceding qualifying hospitalization. During the study period, 234 patients had 488 cumulative admissions. Admissions for IDU-related infection and ≤30-day readmission, all-cause, underwent detailed abstraction (N = 338, 69%).
Results. Of 234 patients, over half were male (57%); N = 134), 78% white (N = 183), 17% homeless (N = 37), 88% had public insurance (N = 210); 53% had a history of Hepatitis C infection (N = 124), most with untreated or unknown infection status (86%; N = 107). Average age was 38 (range 18-75). Fifty-eight percent (N = 136) of patients had one admission during the study period, the remainder had 2-13 (mean = 3.6). Sentinel admission infection types were 1) skin and soft tissue (SSTI) N = 111 (42%), 2) endocarditis N = 70 (30%), 3) bone and joint N = 26 (10%), 4) pyogenic spinal N = 39 (15%), 5) isolated bacteremia N = 9 (3%) 6) and acute viral hepatitis N = 8. Of 338 admissions, 57% (N = 192) included primary care admission; 50% resulted in discharge to another facility and 82% (excluding isolated SSTI) required multi-week intravenous antibiotics on discharge. By 15-months following the study period, 12% were deceased (N = 28); 5 died during hospitalization.
Conclusion. Our study describes the characteristics of patients hospitalized with IDU-related infection over a multi-year period in a region highly impacted by the opioid epidemic. High rates of hospital readmission, prolonged antibiotic therapy and out-of-hospital death were common in this young cohort.
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644. A Cloud Based Epidemiology Network to Investigate Geographical Dynamics of Respiratory Disease
Camille Cook, BS PUBLIC HEALTH1, Andrew Wallin, BS CHEMISTRY, MINOR IN BIOENGINEERING2; Amie Faucett, BS MECHANICAL ENGINEERING, MS MECHANICAL ENGINEERING3; Lindsay Meyers, BS BIOLOGY4 and TREND WORKING GROUP, DATA INTEGRATION, BIOFIRE DIAGNOSTICS, SALT LAKE CITY, UT; Biochemistry, BIOFIRE DEFENSE, SALT LAKE CITY, UT; BIOFIRE DIAGNOSTICS, SALT LAKE CITY, UT
Session: 73. Outbreaks and Public Health Across the Globe
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Background. Real-time data collection of respiratory disease is important for understanding the spatiotemporal dynamics of disease transmission in the US. Healthcare professionals use tools such as FluView to help identify local pathogen circulation; however, these tools are limited to syndromic surveillance and a limited set of pathogens. Understanding respiratory disease dynamics requires 1) a large, pathogen-rich data set 2) geographically dispersed data sources, and 3) fine temporal resolution. Here we utilize FilmArray® Trend, a research epidemiology system containing exported data from FilmArray® Respiratory Panel (RP) tests, to investigate geographic patterns of 20 common pathogens.
Methods. Over 6,000,000 individual patient assays from 19 clinical sites were exported to the Trend database from 2013 to present. Trend data were smoothed and normalized to produce the time series of pathogen incidence. A cross-correlation analysis was performed to compare sites to one another and determine offset of pathogen incidence. The results were plotted on a map of the US with visual indicators of correlation strength and directional movement as defined by cross-correlation lag values.
Results. The respiratory pathogens detected by the FilmArray RP test show a diverse set of spatial and temporal behaviors. Most striking was the spread of the virus Coronavirus OC43, and Respiratory Syncytial Virus (RSV), with RSV traveling from east coast sites to west coast sites across the US over 20 days. In contrast Paramyxovirus virus 3 (PIV3) shows a small cross-correlation lag across all of the Trend sites during the regular summer season, indicating near simultaneous onset of detection nationwide. A localized cluster of PIV3 in the winter of 2016 was observed in the Midwest and west, identifying the significance of localized regional trends.
Conclusion. FilmArray Trend shows great promise in deciphering spatiotemporal dynamics of these common respiratory pathogens. This system can identify localized outbreaks and directional movement of pathogens over time. Future work with finer geographic distribution of contributing sites will aide in making conclusions regarding spatial dynamics of all 20 RP pathogens. Other pathogen transmission models may also be explored using this data set.
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645. Mumps Outbreak—Colorado, 2017
Grace Marx, MD, MPH1; Alexis Burakoff, MD, MPH1; Donna Hite, Disease Intervention Specialist1; Tracy Ayers, PhD, MS2; Jennifer Chase, MS3; Karen Miller, BSN, RN2; Meghan Barnes, MSPh2; Carol McDonald, MSN, RN, Lisa Miller.
Session: 73. Outbreaks and Public Health Across the Globe
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Background. Mumps is a viral illness caused by the paramyxovirus virus 2, which is spread through airborne droplets. In the US, mumps is primarily spread through close contact and is seen most often in crowded settings like school, college dormitories, and camps. In 2017, there were 1,947 reported cases of mumps with 11 deaths in the US. The majority of cases were among college students, men aged 20-29, and persons aged 50 years or older.
Methods. A mumps outbreak was identified in a Colorado community in late 2017. Public health investigations included contact tracing and vaccination status surveys. The outbreak was reviewed for vaccine efficacy using the Vaccine Effectiveness Study in Colorado, 2013-2017.
Results. The outbreak began in October 2017 and involved 14 cases in a community of approximately 50,000 people. Fourteen percent of people aged 0-9 years had received one or two doses of MMR vaccine. Vaccine effectiveness against mumps was 89% among those 0-9 years old, 85% in those 10-29 years old, and 100% in those ≥30 years old.
Conclusion. Mumps outbreak investigations and vaccine effectiveness studies can identify vaccine gaps and help guide public health interventions. The Colorado outbreak demonstrated that vaccine effectiveness against mumps is high among older age groups, but greater efforts are needed among younger age groups to improve herd immunity.
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