2494. Influenza B Hospitalizations Are Associated With Mortality in Children, FluSurv-NET, 2011–2017

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Background. Influenza B viruses (B) co-circulate with influenza A viruses (A) and contribute to influenza-associated hospitalizations each season. We used data from the Influenza Hospitalization Surveillance Network (FluSurv-NET) to determine the association between B virus hospitalizations and mortality among children.

Methods. We included data from children aged 0–17 years, residing in a FluSurv-NET catchment area, and hospitalized with laboratory-confirmed influenza during 2011–2012 through 2016–2017. We abstracted data on underlying conditions, clinical course and outcomes from medical charts. After excluding cases with unknown influenza type or with A/B coinfection, we compared characteristics of children hospitalized with A vs. B using univariate analyses and multivariable logistic regression, to determine the independent association between virus type and in-hospital mortality.

Results. Among 7671 children hospitalized with influenza, 5607 (73%) had A and 2064 (27%) had B. The proportion of B hospitalizations varied by season from 11% during 2013–2014 to 42% during 2012–2013. Among children with B, median age was 4 years (interquartile range 1–8 years), 58% were male and 36% were non-Hispanic white. In univariate analysis, children with B were more likely to be older, have cardiovascular and neurologic disease, to be vaccinated (38 vs. 32%), and to be hospitalized ≥2 days after illness onset, and were less likely to have asthma and receive antivirals (71 vs. 79%) compared with those with A ($P < 0.05$). There were no differences in the proportion with ≥1 underlying condition (59% both groups). Patients with B vs. A were no more likely to require intensive care (19 vs. 20%; p 0.34) or receive mechanical ventilation (6 vs. 5%; p 0.13); however, patients with B were more likely to die in-hospital (1 vs. 0.4%; $P < 0.01$). The unadjusted odds of in-hospital mortality for children with B vs. A was 2.3 (95% confidence interval (CI) 1.3–4.1), which remained elevated at 2.0 (95% CI 1.1–3.7) after adjusting for age, season and underlying conditions.

Conclusion. Influenza B virus infections were associated with severe outcomes among hospitalized children. Although death was uncommon, children with B had twice the odds of dying in-hospital compared with those with A virus infection.

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2495. Real-World Burden of Transmission and Care Seeking Among Family Members With a Primary Influenza Infection

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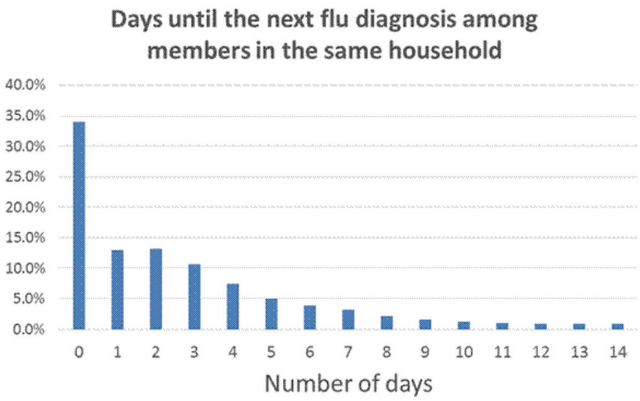
Background. Seasonal influenza is known to be a significant burden to patients and the healthcare system. Understanding how this highly contagious infection is spread, particularly among family members, is important for quantifying the burden of flu and potential impact of upcoming therapeutic agents that limit transmission. This study used real-world US claims data to understand families' medical care seeking behavior for flu infection and the relationship between family size and days families are burdened with flu within their household.

Methods. This was a retrospective analysis of US commercial claims data from the 2014–2016 flu seasons. Patients with enrolled family members and a diagnosis code for flu were identified and required to have continuous coverage during each influenza episode (defined as 14 days from the first flu case in a family).

Results. We identified 1,224,808 primary cases of flu among families of 2 or more members. The median family size was 4 members (25th, 75th percentiles = 3, 4). Of these families with at least one case of flu, 119,883 (9.8%) had additional member(s) who sought care for flu within the same flu episode. 70.8% (84,903) of these cases occurred within 3 days after the first member's claim for influenza (Figure 1).

Increased family size was associated with a higher percentage of families where flu spread to other members of the family beyond the first member diagnosed (6.4% of families of size 2 or 3 vs. 12.6% of families of size 4 or greater, $P < 0.001$). Family size was also positively correlated with the number of days between the first and last flu-related office visit within a family (Spearman coefficient = 0.09, $P < 0.001$). The majority of family members who sought care for flu were children (n = 810,867; 59.5%), followed by employees (n = 323,277; 23.7%) and their spouses (n = 228,775; 16.8%).

Conclusion. In data for the last 3 available flu seasons, we identified a significant number of secondary cases of flu among families with a primary case. Larger families had higher likelihood for subsequent flu infections and more number of days for dealing with flu. Transmission of flu between family members represents a large burden on the healthcare system and reveals an unmet need for treatment options that limit transmission.



Disclosures. **All Authors:** Roche: Employee, Salary.

2496. A Comparative Evaluation of the Burden of Disease Caused by Influenza A and Influenza B During the 2011–2012, 2012–2013, and 2013–2014 Influenza Seasons in Canada

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Background. When assessing burden of influenza disease, influenza B has typically been associated with infection in children and young adults, and is considered less prevalent and/or severe in older adults. We sought to assess the burden of influenza type A disease compared with influenza type B disease in Canadian adults admitted to hospital with laboratory-confirmed influenza.

Methods. The Serious Outcomes Surveillance (SOS) Network of the Canadian Immunization Research Network (CIRN) conducted active surveillance for laboratory-confirmed influenza in adults (≥16 years) hospitalized across Canada during the 2011–2014 influenza seasons. Eligible patients who were admitted to hospital with any acute respiratory illness or symptom had a nasopharyngeal swab collected and tested for influenza virus using reverse transcriptase polymerase chain reaction (PCR). Demographic/clinical information, as well as in-hospital outcomes were collected. Frailty Index scores were also recorded at baseline and 30-days after discharge, when possible, in patients ≥65 years. Patients with influenza A and B were compared using descriptive statistics; discrete outcomes were compared using Chi-squared (χ^2) tests; continuous outcomes were compared using student's t-tests.

Results. Overall, there were 3484 influenza A cases and 1375 influenza B cases enrolled in the SOS Network from 2011 to 2014. Mean age was significantly different between influenza A and influenza B cases (mean age of influenza A: 65.8, mean age of influenza B: 71.2, $P < 0.01$). A significantly larger proportion of influenza B patients were admitted from long-term care (A: 5.5%, B: 12.1%, $P < 0.01$). There was no significant difference with respect to length of hospitalization (influenza A: 11.1 days, influenza B: 10.27 days, $P = 0.07$) or mortality (A: 9.01%, B: 9.45%, $P = 0.63$) between influenza A and B. Patients with influenza B were significantly more frail prior to the onset of illness (A: 0.21, B: 0.22, $P < 0.01$).

Conclusion. Current attitudes consider influenza A to be the more significant virus in terms of morbidity and mortality in adults. However, influenza B is responsible for similar duration of hospitalization and similar mortality rates. In addition, influenza B predominantly affected the frail elderly and thus optimizing influenza B protection is important in this population.

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T. F. Hatchette, GSK: Grant Investigator, Research grant. Pfizer: Grant Investigator, Research grant. Abbvie: Consultant, Speaker honorarium. **S. A. McNeil**, GSK: Grant Investigator, Research grant. Pfizer: Grant Investigator, Research grant. Merck: Collaborator and Consultant, Contract clinical trials and Speaker honorarium. Novartis: Collaborator, Contract clinical trials. Sanofi Pasteur: Collaborator, Contract clinical trials.

2497. Acute Flaccid Paralysis: 17-Year's Active Epidemiological Surveillance in a Pediatric Hospital in Argentina

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Background. Argentina, as the same of LATAM countries certifies the elimination of polio in 1990. Acute flaccid paralysis (AFP) surveillance is a key strategy for monitoring the progress of poliomyelitis eradication in the world. The aim of this study was to describe the epidemiological pattern of patients reported with AFP.

Methods. A cross-sectional study was carried out from January 2000 to December 2016 at the "R. Gutierrez" Children`s Hospital. All children aged <15 years who met the WHO definition for AFP were included. Stool samples were sent to the national reference laboratory to be tested for enteroviruses (non-polio enterovirus, poliovirus, Sabin, Sabin-derived)in compliance with the AFP protocol.

Results. A total of 174 cases were included; median age 62 months (IQR: 29–108); 53.5% males. No seasonality pattern was observed; 137(79%) stool samples were tested and no wild poliovirus was isolated. The median time between the onset of the paralysis and the admission was 4 days (IQR 2–9); the most common prodromal symptoms were: fever(39%),respiratory infection (35%), digestive (31%), myalgia (34%) and meningeal (5%). Symmetric paralysis (78%) without progression was the most frequent clinical presentation. The median length of stay at the hospital was 9 days (IQR 1-17). None of the patients was diagnosed as having polio vaccine related paralysis. Guillain-Barre syndrome was the most frequent final diagnosis ($n = 72$) followed by transverse myelitis ($n = 14$), botulism ($n = 12$) and encephalitis ($n = 6$). Between years 2000 and 2016 a total of eight cases of non-polio enterovirus (NPEV) were found: 6 cases of acute myelitis (AFM) associated to D68 enterovirus, clustered in winter 2016. Five of them were detected by PCR in nasopharyngeal aspirates and only one in stool samples. All of them present motor sequels.

Conclusion. Epidemiological surveillance of AFP allows ruling out poliovirus infection and detect other flaccid paralysis etiologies. In 2016 D-68 enterovirus AFM outbreak was detected in Argentina when conducting AFP routine surveillance. Nasopharyngeal aspirates, in AFM suspected cases, must be part of the study AFP protocol.

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

2498. Association of Increasing Age With Hospitalization Rates, Clinical Presentation, and Outcomes Among Older Adults Hospitalized With Influenza—US Influenza Hospitalization Surveillance Network (FluSurv-NET)

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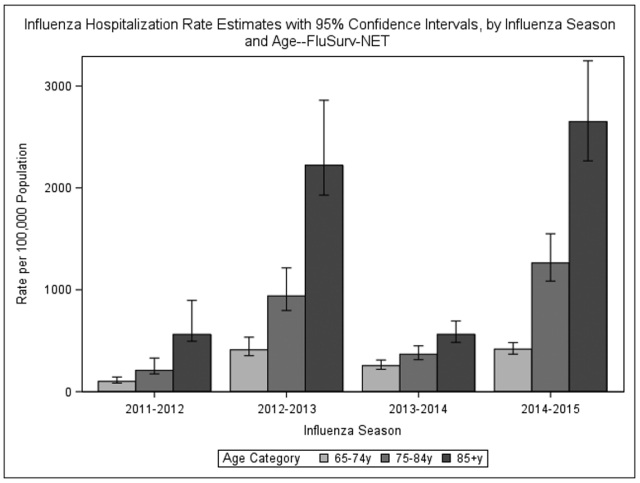
Background. Few data describe the epidemiology of influenza among adults ≥65 years old according to age strata. We evaluated age-related differences in influenza-associated hospitalization rates, clinical presentation, and outcomes among older adults at 14 FluSurv-NET sites during the 2011–2012 through 2014-2015 influenza seasons.

Methods. Study patients were hospitalized ≤14 days after and ≤3 days before a positive influenza test. Age strata were 65–74, 75–84, and ≥85 years old. We adjusted hospitalization rates for under detection and assessed for age-related trends in risk factors and symptoms. We used logistic regression to calculate odds ratios (OR) for pneumonia and in-hospital death adjusted for season, sex, nursing home residence, smoking, medical comorbidities, influenza vaccination, and study site.

Results. There were 19,760 patients, including 5,956 aged 65–74 years, 6,998 aged 75–84 years, and 6,806 aged ≥85 years. There was a stepwise increase in hospitalization rates with age (figure). Increasing age was positively associated with female sex, nursing home residence, neurologic disorder, cardiovascular and renal disease, and vaccination, and inversely associated with morbid obesity, smoking, asthma, chronic metabolic disease, and immunosuppression ($P < 0.01$). Among 10,548 (53.3%) patients with symptom data from 2014 to 2015, increasing age was associated with a higher prevalence of altered mental status and lower prevalence of fever, myalgias, respiratory or gastrointestinal symptoms, and headache ($P \leq 0.01$). Compared with 65–74 year olds, older patients had a higher risk of pneumonia (≥85 year-olds: OR 1.2, 95% CI 1.0, 1.3, $P = 0.01$) and death (75–84 year olds: OR 1.4, 95% CI 1.2, 1.7, $P < 0.01$; ≥85 year-olds: OR 2.1, 95% CI 1.7, 2.6, $P < 0.01$).

Conclusion. There are age-related differences in the epidemiology, clinical presentation, and outcomes of older adults hospitalized with influenza. These may reflect differences in health status and healthcare provider practice patterns. Public health epidemiologists should consider using additional age strata in ≥65 year-olds when analyzing influenza surveillance data. Clinicians should be aware that influenza among the oldest adults may present atypically and that mortality is increased.



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2499. Burden of Influenza Like Illness (ILI) Among Congregate Military Populations

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Background. Influenza-like illnesses (ILI) have placed a significant health burden on the United States Armed Forces for decades. Up to 300,000–400,000 of new cases of ILI result in clinical encounters in the US military annually. In congregate populations such as trainees, the impact is far greater due to crowding and stressors such as physical stress from training. Clinic-based surveillance may under-estimate the true ILI burden because trainees with ILI may not seek healthcare for fear of missing training, facilitating the spread of respiratory pathogens. To undercover the true ILI burden we estimated the attack rate of ILI in trainees irrespective of whether they sought care.

Methods. A prospective cohort study was conducted among US Army recruits in a 9-week basic combat training course at Ft. Benning, GA, in January-March 2017. Symptom diary cards were available to the trainees to record each day whether they had fever/chills/feverish feeling, cough, and/or sore throat, the symptoms of ILI. Attack rate was calculated as number of trainees with ILI divided by number of participants in the study.