Background

- The Canadian Immunization Research Network's (CIRN) Serious Outcomes Surveillance (SOS) Network conducts hospital-based laboratory-confirmed influenza surveillance, enrolling adults (≥16 years), in Canada, and participates in the Global Influenza Hospital Surveillance Network (GIHSN).
- The 2018/19 season included adult academic and community hospital sites in Canadian Provinces (Nova Scotia, Ontario, and Quebec) representing >5000 acute care beds.
- Unique focus on measures health relevant for older adults

Methods

- Active surveillance for influenza infection in adults (≥16 years of age) was conducted October 28th, 2018 to June 1st, 2019
- Nasopharyngeal (NP) swabs obtained from all patients with an admitting diagnosis of pneumonia, exacerbation of Chronic Obstructive Pulmonary Disease, asthma, unexplained sepsis, any respiratory diagnosis or symptom
- All NP swabs tested on-site for Influenza A and B by PCR
- Influenza typing and lineage characterization performed at CIRN SOS Network Central Laboratory at the Canadian Center for Vaccinology in Halifax, NS

Results

- Influenza Vaccine Effectiveness (VE) against influenza hospitalization, VE (% 95CI):
  - 42.9 (27.8 – 54.8) overall
  - 50.2 (21.1 – 68.6) for ages <65
  - 30.6 (6.9 – 48.3) for ages 65+
  - 57.6 (43.0 – 68.0) for Influenza A
  - -12.1 (-13.1 – 48.8) for Influenza B
  - 68.1 (51.6 – 79.0) for A/H1N1
  - 19.0 (-34.6 – 51.3) for A/H3N2

Table 2: Characteristics of influenza positive cases and test-negative controls enrolled in the SOS Network, 2018-2019 season (Vaccine Effectiveness Cohort)

Table 3: Outcomes of all influenza, influenza A, influenza B, controls, 2018/2019 season

Table 4: Outcomes of influenza positive cases by frailty, 2018/2019 season

Conclusions

- The 2018/19 influenza season in Canada was a predominantly influenza A season. Among influenza cases, 439 (46.4%) were A/H1N1 and 336 (35.5%) were A/H3N2
- Influenza activity this season started earlier than usual
- Most patients were 50 years or older; over a third were 75+
- Rates of ICU admission and mechanical ventilation were higher among Influenza A vs. B patients
- Outcomes worsened with increasing frailty
- VE was better against Influenza A vs. B, and for those aged <65 vs. older adults

Discussion

- Due to the lack of immunization registries across Canada, the SOS Network actively verifies influenza immunization status for calculation of VE.
- Vaccine registers would contribute to our ability to generate product-specific VE estimates.
- Reinstating subtype/lineage testing allows better description of circulating strains and strain-specific VE.
- The SOS Network continues to investigate key risk factors (e.g. frailty) for serious outcomes among older adults hospitalized with acute respiratory illnesses.
- The Public Health Agency of Canada utilizes SOS data for monitoring influenza activity, including burden of disease evaluation, serious outcomes, and influenza VE in hospitalized adults.
- The SOS Network recognizes the ongoing importance of contributing results to the GIHSN.