ISDS 2012 Conference Abstracts

Using Surveillance Data to Identify Risk Factors for Severe H1N1 in First Nations

Kathryn Morrison*[1], Yanyu Xiao[2], Seyed Moghadas[2] and David Buckeridge[1]

[1]Epidemiology & Biostatistics, McGill University, Montreal, QC, Canada; [2]York University, Toronto, ON, Canada

Objective

We sought to measure from surveillance data the effect of proximity to an urban centre (rurality) and other risk factors, (e.g., age, residency on a FN reservation, and pandemic wave) on hospitalization and intensive care unit admission for severe influenza.

Introduction

Research has shown that Canadian First Nation (FN) populations were disproportionately affected by the 2009 H1N1 influenza pandemic. However, the mechanisms for the disproportionate outcomes are not well understood. Possibilities such as healthcare access, infrastructure and housing issues, and pre-existing comorbidities have been suggested. We estimated the odds of hospitalization and intensive care unit admission for cases of H1N1 influenza among FN living in Manitoba, Canada, to determine the effect of location of residency and other factors on disease outcomes during the 2009 H1N1 pandemic.

Methods

We obtained surveillance data on laboratory confirmed cases of pandemic H1N1 influenza from the province of Manitoba. These data described demographic characteristics, residence location, and dates of hospital and ICU admission. We measured the rurality of each case using a pre-exiting scale (Rambeau & Todd, 2000). We tabulated the number of hospitalizations (and ICU admissions) stratified first by reservation residency and second by rurality and calculated unadjusted odds ratios. We then used logistic regression to calculate the odds of hospitalization given infection (and the odds of ICU admission given hospitalization), adjusting for age, reservation residency, rurality, and pandemic wave. We also investigated the effect of rurality and reserve residency on time to hospitalization from infection.

Results

FN individuals diagnosed with influenza and living on-reserve were more likely to be hospitalized than those living off-reserve, even after controlling for the effects of rurality (OR: 2.16, 95% CI: 1.15, 4.05) . FN living in rural areas were hospitalized more frequently and experienced longer delays between infection and hospitalization than FN residing in more urban areas. Rurality and reserve residency had less effect on ICU admissions once an individual was hospitalized.

Conclusions

While it is established that FN individuals had disproportionately high rates of severe outcomes from H1N1, the causal mechanisms at work are not well understood. Reasonable possibilities include barriers to healthcare access, lack of proper housing and infrastructure, and pre-existing comorbidities. This research using surveillance data suggests that geographic location has an effect on healthcare access, including both on vs. off reserve residency as well as rurality.

Keywords

Influenza; First Nations; Severe outcomes

References

Rambeau, Sheila, & Kathleen Todd. January 2000. Census Metropolitan Area and Census Agglomeration Influenced Zone (MIZ) with Census Data. Ottawa: Statistics Canada, Geography Division.

*Kathryn Morrison
E-mail: kt.morrison@mail.mcgill.ca