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Influenza Hospitalizations — Municipality of Anchorage, September 1 – October 21, 2009

Introduction

Since May 2009, laboratory-confirmed 2009 H1N1 influenza infection has been diagnosed in over 1,000 Alaskans, and 10 Alaskans are known to have died from the virus.¹ Staff from the Centers for Disease Control and Prevention's Arctic Investigations Program (CDC/AIP), four Anchorage hospitals, and Section of Epidemiology (SOE) collaborated to describe the clinical and epidemiologic characteristics of Anchorage residents who were hospitalized with laboratory-confirmed influenza infection.

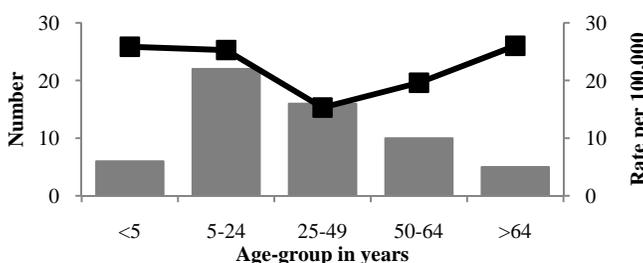
Methods

A case was defined as an acute respiratory illness in a person hospitalized from September 1 through October 21, 2009 in one of four acute care hospitals in the Municipality of Anchorage (MOA; 2008 population, 284,994)², who had lived in the MOA >1 month prior to admission, and tested positive for influenza A by rapid test or for 2009 H1N1 influenza by PCR or culture. Case-patients were identified through review of discharge diagnosis codes (ICD-9CM 487.0, 487.1, 487.8 or 488.1) and lists of patients with influenza-like illness (ILI) kept by hospital infection preventionists. Medical records were abstracted using a form modified from a prior CDC study.³ Race was determined by patients' medical records.

Results

Of the 59 persons identified who met the case definition, 32 (54%) were female; the median age was 27 years (range: 1 month to 81 years). Five (8%) patients were aged <2 years and 3 (5%) were aged <6 months. Hospitalization rates were highest in persons aged <25 years and persons aged >64 years; however, when compared with persons aged 25–64 years, the rate differences were not statistically significant. Most patients had an underlying medical condition (Table); the most common co-morbidities were asthma (29%) and heart disease (17%). Three (5%) patients were pregnant. Of the 25 patients aged ≥18 years for whom a body mass index (BMI) was calculated, 11 (44%) were obese (BMI >30); by comparison, 28% of Alaskan adults surveyed in 2007 reported having a BMI >30.⁴

Figure. Influenza Hospitalizations (N=59) and Rates by Age-Group — Municipality of Anchorage, Sep 1–Oct 21, 2009



(Note: Numbers are represented by the bars; rates are represented by the line graph.)

Table. Rates and Characteristics of Influenza Hospitalizations by Race (N=59) — Municipality of Anchorage, Sep 1–Oct 21, 2009

Race	No. of cases (rate per 100,000)	Underlying disease (%)*	No. (%) in H1N1 vaccine priority group ⁵	ICU care (%)
White	24 (11)	15 (63)	16 (67)	3 (13)
AI/AN	15 (50)**	11 (73)	11 (73)	4 (27)
A/PI	9 (41)**	8 (89)	7 (78)	1 (11)
Black	4 (21)	4 (100)	4 (100)	0
Unknown	7	4 (57)	5 (71)	1 (14)
Total	59 (21)	42 (71)	43 (73)	9 (15)

*Medical conditions associated with a higher risk of influenza complications, e.g., pulmonary, cardiovascular, or metabolic disorders, or immunosuppression.⁵
**p<0.001 for difference between rates using whites as the referent group.

Of the 52 (88%) patients for whom race was determined, 46% were white, 29% were American Indian/Alaska Native (AI/AN), 17% were Asian/Pacific Islander (A/PI), and 8% were black; hospitalization rates were highest for AI/AN and A/PI (Table). A higher proportion of AI/AN and A/PI patients were aged <25

years (14/24, 58%) compared with whites (7/24, 29%; p<0.05). Among AI/AN and A/PI patients, 13/14 (93%) aged <25 years and 8/10 (80%) aged ≥25 met the current criteria for empiric antiviral therapy prior to hospitalization.⁶ Most patients were in a 2009 H1N1 vaccine priority group (Table); none received 2009 H1N1 vaccine prior to hospitalization (the vaccine was first available for priority groups in Alaska in early October). Among persons aged ≥6 months who were *not* in a vaccine priority group (seven white, two AI/AN, two A/PI, and zero black patients), differences in hospitalization rates by race were not statistically significant (data not shown).

The mean length of hospital stay was 3.8 days (range 1–40); the duration of hospitalization did not differ significantly by race or age-group. Oseltamivir was administered to 46 (78%) of hospitalized patients. Eight (15%) patients were admitted to an intensive care unit (ICU; Table); one (3%) person died.

Discussion

Characteristics of MOA residents hospitalized with influenza were similar to those of patients reported in previous North American reviews.^{3,7} Hospitalization rates were high in persons aged <25 years, most cases occurred in persons with pre-existing health conditions, and a higher proportion of adult patients were obese when compared to the general population. One notable difference was the high hospitalization rate among patients aged >64 years; however, this higher rate was not statistically significant when compared to the rate in persons aged 25–49 years.

In this evaluation, the race-specific hospitalization rates were highest for AI/AN and A/PI persons, particularly those aged <25 years. Most AI/AN and A/PI hospitalizations occurred in persons who were in one of the 2009 H1N1 influenza vaccine priority groups (18/24; 75%) and persons for whom empiric antiviral treatment is currently recommended (21/24; 88%).^{5,6} Therefore, these data do not support a need to modify CDC's existing 2009 H1N1 vaccine priority groups or empiric treatment recommendations for Alaska.^{5,6}

This evaluation is subject to several limitations. First, small sample sizes limit the ability to compare rates with a high degree of certainty. Second, we did not assess differences in hospital admission practices by disease severity or influenza testing patterns by facility, both of which could have affected the rate estimates.

Recommendations

1. Vaccinate all persons who are in one of the 2009 H1N1 influenza vaccine priority groups as soon as possible.⁵
2. Provide early empiric antiviral treatment to all patients at higher risk for complications as per current CDC guidelines.⁶
3. Submit nasopharyngeal samples for 2009 H1N1 testing as per the current testing recommendations, which are available at: <http://www.hss.state.ak.us/dph/labs/pdfs/H1N1Sample.pdf>

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