

Pandemic H1N1-related ICU rates according to race/ethnic groups in Massachusetts

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Objective

(1) Investigate 2009 H1N1-related ICU admissions in Massachusetts (MA) by race/ethnic group; (2) Investigate the association between ICU stay and race/ethnic group adjusted for socioeconomic status (SES).

Introduction

Epidemiological data suggests that there have been disproportionate numbers of non-White persons hospitalized due to 2009 pandemic influenza (H1N1) in MA. Population-based statewide descriptions of H1N1-related hospitalizations according to race/ethnic group and SES have not been described.

Methods

We identified those discharged from any MA hospital during the H1N1 pandemic in the Hospital Discharge Database (HDD) with ICD-9 diagnosis codes correlating highly with positive viral specimens (1). Using five-digit zip codes as an identifier, we linked census data to the HDD population to provide a measure of SES indicator through aggregate levels of affluence. We used random-effects multivariate logistic regression models to explore the above objectives.

Results

9737 individuals met inclusion criteria, and 1529 individuals (16%) were admitted to the ICU. Hispanics had the lowest rates of ICU stay (11% Hispanics in the ICU had the highest length of stay (8.1 days), the youngest mean age (26 years), nearly a third (32%) were <18 years, 52% were from the lowest SES group, and 58% were female (Table 1). Differences between race/ethnic groups and SES exist (Table 1). Results from multivariate regressions

indicate that Hispanics are at 27% lower risk for ICU stay compared to Whites (OR = 0.73, $p < 0.001$ —data not shown).

Conclusions

Hispanics were particularly vulnerable to exposure and susceptibility to H1N1 (2). However, Hispanics had the lowest rates of H1N1-related ICU admission and significantly lower risk of having H1N1-related ICU visits. Logistic regression models indicate that these differences are not explained by the large differences in SES. This is contrary to other reports and could be related to the low mean age of this group. Future work should address how lower age among Hispanics influences H1N1-related ICU stay – especially in young Hispanic women.

Keywords

Pandemic H1N1 influenza; epidemiology; disparity research; race/ethnicity

References

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Table 1. Study population by race/ethnic group and ICU stay

Independent Variables n(%)	White		Hispanic		Black		Other	
	ICU n=1,116	No ICU n=5,648	ICU n=130	No ICU n=1,042	ICU n=174	No ICU n=916	ICU n=109	No ICU n=602
Gender								
Male	631 (57)	2887 (51)	55 (42)	549 (53)	100 (58)	444 (48)	53 (49)	321 (53)
Female	485 (43)	2761 (49)	75 (58)	493 (47)	74 (42)	472 (52)	56 (51)	281 (47)
Age Groups								
Mean (SD)	47 (17.6)	41 (20.8)	31 (21.6)	26 (22.4)	33 (21.0)	31 (22.4)	33 (23.4)	25 (33.0)
<18 years	108 (10)	1053 (19)	42 (32)	450 (43)	48 (28)	292 (32)	39 (36)	288 (48)
18–44 years	239 (21)	1335 (24)	41 (32)	303 (29)	55 (32)	291 (32)	22 (20)	134 (22)
45–64 years	713 (64)	3064 (54)	44 (34)	277 (27)	69 (40)	325 (36)	48 (44)	171 (28)
SES Group by zip code								
0–4.9%	329 (30)	1,728 (31)	3 (2)	52 (5)	15 (9)	79 (9)	28 (25)	142 (24)
5.0–9.9%	388 (35)	2,001 (35)	10 (8)	120 (12)	26 (15)	115 (12)	27 (25)	142 (24)
10.0–19.9%	308 (28)	1,528 (27)	50 (38)	386 (37)	70 (40)	356 (39)	41 (37)	207 (34)
≥20%	92 (8)	390 (7)	68 (52)	483 (46)	62 (36)	367 (40)	14 (13)	110 (18)
No. of deaths	116 (10)	63 (1.1)	8 (6.2)	4 (0.4)	9 (5.2)	2 (0.2)	11 (10)	5 (0.8)
Admitted through ED	690 (62)	3089 (55)	74 (57)	413 (40)	106 (61)	520 (57)	59 (54)	254 (42)
Length of Stay, days mean (SD)	7.7 (8.0)	3.7 (3.6)	8.1 (9.0)	3.3 (3.3)	7.3 (6.2)	3.3 (3.3)	6.5 (6.1)	3.1 (3.5)