

Supplementary Appendix

This appendix has been provided by the authors to give readers additional information about their work.

Supplement to: Jain S, Kamimoto L, Bramley AM, et al. Hospitalized patients with 2009 H1N1 influenza in the United States, April–June 2009. *N Engl J Med* 2009;361:1935-44. DOI: 10.1056/NEJMoa0906695.

Table 1. Comparison of Clinical Characteristics of All Patients, Children, and Adults Hospitalized with 2009 Pandemic Influenza A (H1N1) Virus Infection - United States, April-June 2009*

	All Hospitalized Patients Total (%) (n=272)	Children <18 years old Total (%) (n=122)	Adults ≥18 years old Total (%) (n=150)
	21 years (21 days-	8 years (21 days -	41 years (18 -
Median age (range)	86 years)	17 years)	86 years)
Median days from illness onset to admission (range) [†]	3 (0 to 18) (n=262)	3 (0 to 17) (n=116)	3 (0 to 18) (n=146)
Median length of stay after illness onset (days, range) [†]	3 (1 to 49) (n=268)	3 (1 to 49) (n=119)	4 (1 to 43) (n=149)
Median days from illness onset to discharge or death (range) [†]	7 (1 to 61) (n=265)	6 (1 to 61) (n=117)	8 (1 to 51) (n=148)
Clinical symptoms at admission			
Fever	258 (95)	115 (94)	143 (95)
Cough	239 (88)	100 (81)	139 (93)
Shortness of breath	162 (60)	52 (43)	110 (73)
Fatigue/weakness	117 (43)	36 (30)	81 (54)
Chills	108 (40)	17 (14)	91 (61)
Rhinorrhea	103 (38)	55 (45)	48 (32)

Myalgias	98 (36)	22 (18)	76 (51)
Headache	92 (34)	24 (20)	68 (45)
Sore throat	84 (31)	38 (31)	46 (31)
Vomiting	78 (29)	39 (32)	39 (26)
Wheezing	72 (26)	31 (25)	41 (27)
Diarrhea	66 (24)	28 (23)	38 (25)
Underlying Medical Conditions[‡]			
Any one condition	198 (73)	73 (60)	125 (83)
Asthma	76 (28)	35 (29)	41 (27)
Chronic obstructive pulmonary disease	22 (8)	0 (0)	22 (15)
Diabetes	40 (15)	3 (3)	37 (25)
Immunocompromised	40 (15)	11 (9)	29 (19)
Chronic cardiovascular disease	35 (13)	5 (4)	30 (20)
Chronic renal disease	25 (9)	7 (6)	18 (12)
Neurocognitive disorder	20 (7)	14 (12)	6 (4)
Neuromuscular disorder	19 (7)	13 (11)	6 (4)
Pregnancy	18 (7)	1 (1)	17 (11)
Seizure disorder	18 (7)	13 (11)	5 (3)
Current Smoker [‡]	34 (15)	2 (2)	32 (24)
Obese [§]	47/161 (29)	18/61 (30)	29/100 (29)
Morbidly Obese [§]	26/100 (26)	NA	26/100 (26)
Influenza vaccination during 2008-2009 season	73/165 (44)	33/75 (44)	40/90 (44)
Hospitalization results			

Chest radiograph consistent with pneumonia at admission	100/249 (40)	44/105 (42)	56/144 (39)
Acute respiratory distress syndrome	25/245 (10)	5/107 (5)	20/138 (15)
Diagnosed with sepsis at admission	23/239 (10)	7/106 (7)	16/133 (12)
Admitted to the intensive care unit	67/272 (25)	24/122 (20)	43/150 (29)
Invasive mechanical ventilation	42/260 (16)	11/116 (10)	31/144 (22)
Treated with antivirals	200/268 (75)	82/119 (69)	118/149 (79)
Within 2 days of illness onset	75/195 (39)	38/78 (49)	37/117 (32)
Treated with antibiotics	206/260 (79)	87/114 (76)	119/146 (82)
Treated with steroids	86/239 (36)	34/104 (33%)	52/135 (39%)
Death	19/272 (7)	5/122 (4)	14/150 (9)
Among those treated with antivirals, days from illness onset to initiation of antivirals	3 days (range, 0 to 29 days) (n=195)	3 days (range, 0 to 24 days) (n=78)	3 days (range, 0 to 29 days) (n=117)

*Overall missing data for different categories varied. For symptoms, there was 4-32% missing data; for underlying conditions, there was 2-13% missing data; for influenza vaccination status, there was 39% missing data; for obesity, there was 30% missing data; and for hospitalization results, there was 1-12% missing data mostly due to data missing on patients who died.

†Day of admission was considered hospital day 0.

‡Patients who are pregnant, immunocompromised (either due to medications or immune disorders including human immunodeficiency syndrome), or have chronic pulmonary (including asthma or chronic obstructive pulmonary disease), cardiovascular (excludes hypertension), renal,

hepatic, hematological, neurological, or metabolic disease (including diabetes) are considered at high-risk for influenza-related complications. Patients who are current smokers are not currently considered a group at high-risk for influenza complications.

§Body-mass index (BMI) was calculated for a subset of patients for whom height and weight were available to determine obesity (BMI 30-39.9 in adults ≥ 18 years or BMI percentile 95-100 in children 2 to 18 years old) and morbid obesity (BMI ≥ 40 in adults only); pregnant women were excluded from this calculation.

Table 2. Comparison of Clinical Characteristics of Hospitalized Non-Intensive Care Unit Patients and Survivors with Hospitalized Intensive Care Unit Patients and Patients who Died with 2009 Pandemic Influenza A (H1N1) Virus Infection - United States, April-June 2009*

Clinical Characteristics	Hospitalized Non-Intensive Care Unit Patients and Survivors Total (%) (n=205)	Hospitalized Intensive Care Unit Patients and Deaths Total (%) (n=67)
	Median age (range) [†]	19 years (21 days-80 years)
Number (%) < 18 years old	98 (48%)	24 (36%)
Median days from illness onset to admission (range) ^{†, ‡}	3 (0 to 18) (n=199)	4 (0 to 15) (n=63)
Median length of stay after illness onset (days, range) ^{†, ‡}	3 (1 to 23) (n=204)	8 (1 to 49) (n=64)
Median days from illness onset to discharge or death (range) ^{†, ‡}	6 (1 to 30) (n=201)	12 (3 to 61) (n=64)
Clinical symptoms at admission		
Fever	193 (94)	65 (97)
Cough	177 (86)	62 (93)
Shortness of breath [†]	104 (51)	58 (87)
Fatigue/weakness	86 (42)	31 (46)
Chills [†]	74 (36)	34 (51)

Rhinorrhea	75 (37)	28 (42)
Myalgias	74 (36)	24 (36)
Sore throat	64 (31)	20 (30)
Headache	72 (35)	20 (30)
Vomiting	61 (30)	17 (25)
Wheezing	52 (25)	20 (30)
Diarrhea	50 (24)	16 (24)
Underlying Medical Conditions [§]		
Any one condition	153 (75)	45 (67)
Asthma or COPD	70 (34)	19 (28)
Diabetes	33 (16)	7 (10)
Chronic cardiovascular disease	27 (13)	8 (12)
Immunocompromised	28 (14)	12 (18)
Chronic renal disease	19 (9)	6 (9)
Neurocognitive disorder [†]	11 (5)	9 (13)
Neuromuscular disorder [†]	10 (5)	9 (13)
Pregnancy	12 (6)	6 (9)
Seizure disorder	12 (6)	6 (9)
Current Smoker [§]	24 (12)	10 (15)
Obese [¶]	40/122 (33)	7/39 (18)
Morbidly Obese [¶]	17/72 (24)	9/28 (32)
Influenza vaccination during 2008-2009 season [†]	61/123 (50)	12/42 (29)
Hospitalization results		

Chest radiograph consistent with pneumonia at admission [†]	51/182 (28)	49/67 (73)
Acute respiratory distress syndrome [†]	1/192 (1)	24/53 (45)
Diagnosed with sepsis at admission [†]	2/186 (1)	21/53 (40)
Invasive mechanical ventilation [†]	0/195 (0)	42/65 (65)
Treated with antivirals [†]	144/203 (71)	56/65 (86)
Within 2 days of illness onset [†]	62/139 (45)	13/56 (23)
Treated with antibiotics [†]	134/195 (74)	62/65 (95)
Treated with steroids [†]	57/183 (31)	29/56 (52)
Among those treated with antivirals, days from illness onset to initiation of antivirals [†]	3 days (range, 0 to 29 days) (n=139)	5 days (range, 0 to 24 days) (n=56)

*Overall missing data for different categories varied. For symptoms, there was 4-32% missing data; for underlying conditions, there was 2-13% missing data; for influenza vaccination status, there was 39% missing data; for obesity, there was 30% missing data; and for hospitalization results, there was 1-12% missing data mostly due to data missing on patients who died.

[†]Variables found to be significant (p value < 0.05) on bivariate analysis when comparing hospitalized patients (non-ICU and non-death) with ICU patients and patients who died. The chi-square test was used to compare categorical variables and the Wilcoxon rank sum test was used to compare continuous variables.

[‡]Day of admission was considered hospital day 0.

[§]Patients who are pregnant, immunocompromised (either due to medications or immune disorders including human immunodeficiency syndrome), or have chronic pulmonary (including

asthma or chronic obstructive pulmonary disease), cardiovascular (excludes hypertension), renal, hepatic, hematological, neurological, or metabolic disease (including diabetes) are considered at high-risk for influenza-related complications. Patients who are current smokers are not currently considered a group at high-risk for influenza complications.

^fBody-mass index (BMI) was calculated for a subset of patients for whom height and weight were available to determine obesity (BMI 30-39.9 in adults ≥ 18 years or BMI percentile 95-100 in children 2 to 18 years old) and morbid obesity (BMI ≥ 40 in adults only); pregnant women were excluded from this calculation.