



THE TURKEYS HAVE BIRD FLU. THE COWS HAVE MAD COW DISEASE. I'M TELLING YOU, BOYS... UNLESS WE WANT TO SEE MORE HAM SERVED ON THANKSGIVING, WE'RE GOING TO HAVE TO GET OUR OWN DISEASE!

Pandemic Influenza

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Historic Pandemics

- **1918 Spanish Flu (-50 million deaths worldwide, 500,000 – 675,000 deaths in the U.S.) .**
- **1957 Asian Flu (1-2 million deaths worldwide, 70,000 in the U.S.) .**
- **1968-69 Hong Kong Flu (700,000 deaths worldwide, 34,000 in the U.S.).**

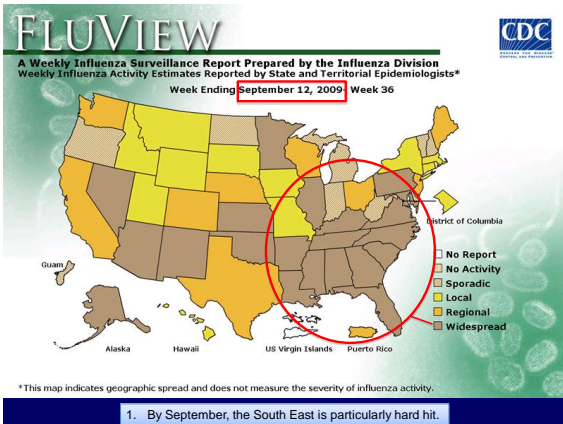


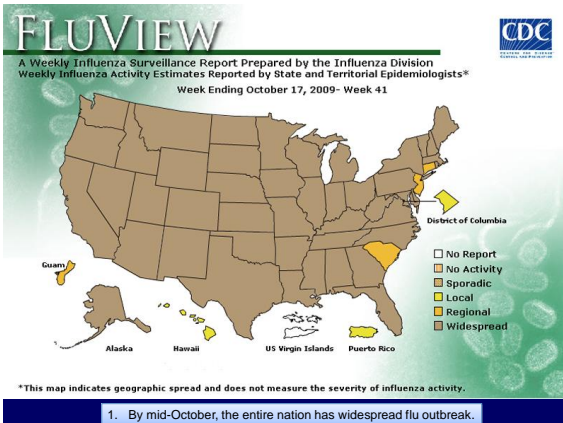
Surveillance systems for influenza in the US and worldwide

Five Categories of Influenza Surveillance

1. **Viral Surveillance** — About 80 U.S. World Health Organization (WHO) Collaborating Laboratories
 - **Surveillance for Novel Influenza A Viruses**- In 2007, human infection with a novel influenza A virus became a nationally notifiable condition.
2. **Outpatient Illness Surveillance** — Information on patient visits to health care providers for influenza-like illness is collected through the US Outpatient Influenza-like Illness Surveillance Network (ILINet).
 - Regional baselines for the 2009-10 influenza season are:
 - **Region 5** — 1.7%
Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin
3. **Mortality Surveillance** — Rapid tracking of influenza-associated deaths is done through two systems:
 - **122 Cities Mortality Reporting System** — Each week, the vital statistics offices of 122 cities report the total number of death certificates received and the number of those for which pneumonia or influenza was listed as the underlying or contributing cause of death by age group. The percentage of all deaths due to pneumonia and influenza (P&I) are compared with a seasonal baseline and epidemic threshold value calculated for each week.

- **Surveillance for Influenza-associated Pediatric Mortality** — Influenza-associated deaths in children (persons less than 18 years) was added as nationally notifiable condition in 2004. Laboratory-confirmed influenza-associated deaths in children are reported through the Influenza-Associated Pediatric Mortality Surveillance System.
- 4. **Hospitalization Surveillance** — Laboratory confirmed influenza infections in children and adults are monitored through the Emerging Infections Program (EIP).
- **Emerging Infections Program (EIP)** —The EIP Influenza Project conducts surveillance for laboratory-confirmed influenza related hospitalizations in children (persons less than 18 years) and adults in 60 counties covering 12 metropolitan areas of 10 states.
- 5. **Summary of the Geographic Spread of Influenza** — State health departments report the estimated level of spread of influenza activity in their states each week through the **State and Territorial Epidemiologists Reports**. States report influenza activity as no activity, sporadic, local, regional, or widespread.





Seasonal Influenza

- > 36,000 deaths in the U.S. per year.
- > 120,000 hospitalizations per year.
- > Last from November-March

Differences between Seasonal flu and Pandemic flu?

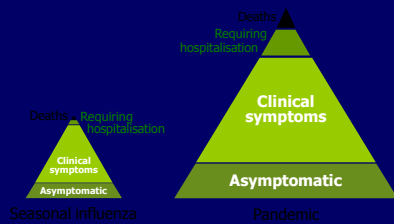
Seasonal influenza

- ✓ Occurs every year
- ✓ The type of flu people are accustomed to so they usually have some immunity built up from previous exposures
- ✓ Healthy adults usually not at risk for serious complications
- ✓ Vaccine available

Pandemic influenza

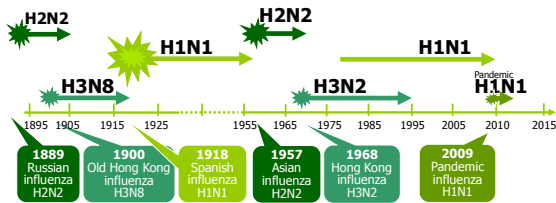
- ✓ Occurs rarely (only 3 in 20th century)
- ✓ Worldwide outbreak of a new human flu virus so people have little or no immunity
- ✓ Healthy people may be at increased risk for serious complications
- ✓ No Vaccine available

Seasonal influenza compared to pandemic — proportions of types of cases

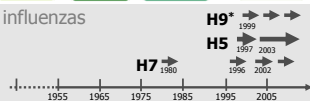


Recorded human pandemic influenza (early sub-types inferred)

Pandemics of influenza



Recorded new avian influenzas



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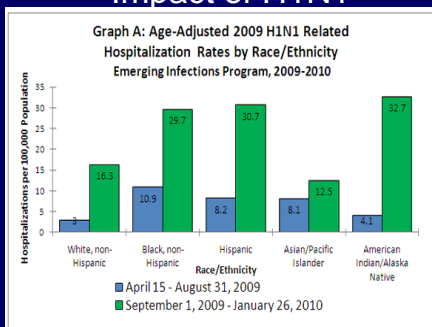
America's deaths from influenza were greater than the number of U.S. servicemen killed in any war

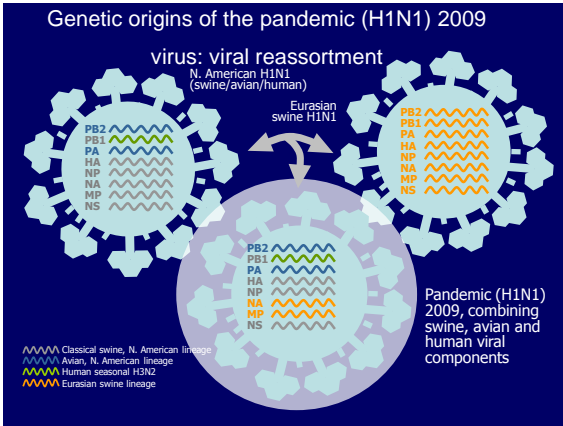


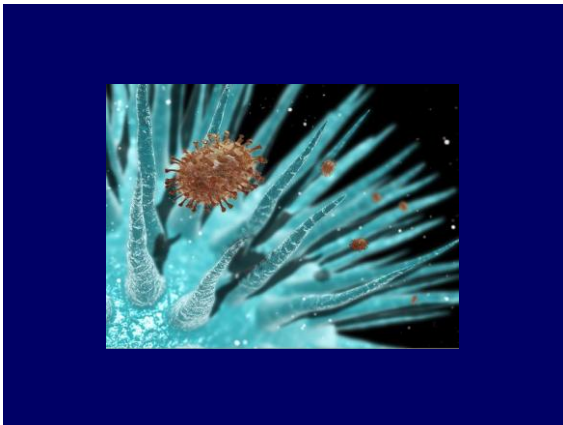
Comparison of mortality with pandemics

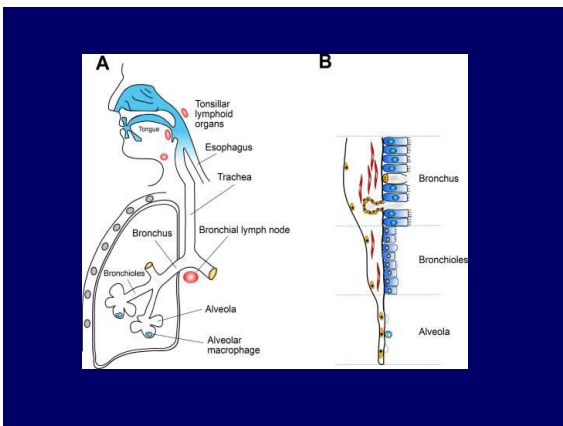
| Year | subtype | deaths | case fatality |
|--------|---------|---------|---------------|
| • 1918 | H1N1 | 500,000 | 2-4 |
| • 1957 | H2N2 | 69800 | < 0.1 |
| • 1968 | H3N3 | 33800 | < 0.1 |
| • 2009 | H1N1 | 12000 | 0.02 |

Impact of H1N1











Treatment

Antiviral medication dosing recommendations for treatment or chemoprophylaxis of novel influenza A (H1N1) infection

| | Treatment | Chemoprophylaxis |
|-----------------------|--------------------------------------------------------------------|---------------------------------------------------------------------|
| Osetamivir (Tamiflu®) | 75-mg capsule <u>twice</u> per day for 5 days* | 75-mg capsule <u>once</u> per day for 10 days* |
| Zanamivir (Relenza®) | Two 5-mg inhalations (10 mg total) <u>twice</u> per day for 5 days | Two 5-mg inhalations (10 mg total) <u>once</u> per day for 10 days* |

*Currently recommended first choice medications.
 CDC: Updated Interim Recommendations for the Use of Antiviral Medications in the Treatment and Prevention of Influenza for the 2009-2010 Season. 10/16/2009

Corticosteroids for treatment

| | Steroid treatment (n= 107) | No steroids (n=138) | P-value |
|----------------------|-------------------------------|------------------------|---------|
| Bacterial | | | |
| pneumonia | 61 (57) | 30 (22) | <0.001 |
| <i>A.baumannii</i> | 28 (26) | 9 (7) | <0.001 |
| <i>K. pneumoniae</i> | 10 (9) | 4 (3) | 0.03 |
| Invasive | | | |
| Aspergillosis | 4 (4) | 0 | 0.04 |

Kim SH et al. Am J Respir Crit Care Med. 2011 Mar 4.

Convalescent Plasma Treatment

Convalescent Plasma Treatment Reduced Mortality in Patients With Severe Pandemic Influenza A (H1N1) 2009 Virus Infection

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Convalescent Plasma Treatment

| Demographic or clinical factors | Convalescent plasma treatment | | P |
|---------------------------------------------------|-------------------------------|------------------|------|
| | Yes (n = 20) | No (n = 73) | |
| Treatment | | | |
| Mechanical ventilation | 18 (90) | 69 (94.5) | .61 |
| BiPAP ventilation | 4 (20) | 6 (8.2) | .11 |
| Application of ECMO | 4 (20) | 8 (11) | .26 |
| Stress steroid treatment | 9 (45) | 22 (30) | .80 |
| Acetylcysteine treatment | 4 (20) | 18 (25) | .77 |
| Antiviral treatment | | | |
| Oseltamivir | 20 (100) | 70 (95.9) | 1.00 |
| Inhaled zanamivir | 6 (30) | 22 (30) | .43 |
| Intravenous zanamivir | 2 (10) | 3 (4.1) | .27 |
| Laboratory parameters upon ICU admission | | | |
| Hemoglobin level, 10 ⁹ L, median (IQR) | 12.4 (11.4-14) | 13.1 (10.6-14.6) | .72 |
| Neutrophil count, 10 ⁹ L, median (IQR) | 5.2 (2.6-10.9) | 6.7 (4.6-11.4) | .12 |
| Lymphocyte count, 10 ⁹ L, median (IQR) | 6 (4-7) | 7 (5-12) | .02 |
| Platelets, 10 ⁹ L, median (IQR) | 133 (108-180) | 162 (118-225) | .15 |
| ALT level, U/L, median (IQR) | 34 (29-48) | 41 (20-76) | .66 |
| Creatinine level, μmol/L, median (IQR) | 88 (58-107) | 97 (71-177) | .08 |
| Outcome | | | |
| Death | 4 (20) | 40 (54.8) | .01 |

Plasma with neutralizing titer of > 1:160

N-acetyl cysteine

High-Dose N-Acetylcysteine Therapy for Novel H1N1 Influenza Pneumonia

Background: High-dose N-acetylcysteine synergizes with oseltamivir to protect mice from fatal influenza infection.

Objective: To show the potential role of N-acetylcysteine in the treatment of novel H1N1 influenza pneumonia in a dose used to treat acetaminophen overdose.

Case Report: On 15 July 2009, we admitted a previously healthy woman to the intensive care unit in a Hong Kong hospital for novel H1N1 human swine influenza (H1N1) pneumonia with septic shock and type I respiratory failure. She was 48 years of age, was not obese, and was a long-term smoker. She required pressure-controlled ventilation with 100% oxygen, 18-cm H₂O positive end-expiratory pressure, and inhaled nitric oxide at 20 ppm to maintain blood oxygen saturation above 90%. We started treatment with norepinephrine infusion and physiologic doses of hydrocortisone for septic shock. Test results for bacterial co-infection were negative.

Method and Findings: We gave the patient oral oseltamivir, 75 mg twice daily, and intravenous antibiotics (vancomycin, tanzibactam plus piperacillin, and clarithromycin). The next day, we increased the oseltamivir dose to 150 mg twice daily and started high-dose N-acetylcysteine at 100 mg/kg continuous intravenous infusion daily for 3 days with her husband's consent.

Efficacy and economic assessment of conventional ventilatory support versus extracorporeal membrane oxygenation for severe adult respiratory failure (CESAR): a multicentre randomised controlled trial

Giles Peck, Miranda Mogford, Navinranath Thiruvogari, Andrew Wilson, Elizabeth Allen, Mariamma M Thalanany, Corel Hibbert, Ann Trebble, Felicity Clements, Nicola Cooper, Richard K Finner, Diana Elbourne, for the CESAR trial collaboration

Peek et al. Lancet Oct 17 2009

| | ECMO group (n=90 ^a) | Conventional management group (n=90) | Relative risk (95% CI, p value) |
|---------------------------------------------|---------------------------------|--------------------------------------|-------------------------------------|
| Death or severe disability at 6 months | NA | NA | 0.69 (0.45-0.92, 0.03) ^b |
| No | 57 (63%) | 41 (47%) | NA |
| Yes | 33 (37%) | 49 (53%) | NA |
| No information about severe disability | 0 | 3 (3%) | NA |
| Died at 6 months or before discharge | NA | NA | 0.73 (0.52-1.03, 0.07) ^b |
| No | 57 (63%) | 45 (50%) | NA |
| Yes | 33 (37%) | 45 (50%) | NA |
| Severe disability | | | |
| No | 57 (63%) | 41 (46%) | NA |
| Yes | 0 | 1 (1%) | NA |
| Cause of death | | | |
| Respiratory failure | 8 (9%) | 24 (27%) | NA |
| Multiorgan failure | 14 (16%) | 15 (17%) | NA |
| Neurological disorder | 4 (4%) | 2 (2%) | NA |
| Cardiovascular disorder | 1 (1%) | 3 (3%) | NA |
| Related to ECMO | 1 (1%) | 0 | NA |
| Other | 1 (1%) | 0 | NA |
| Unknown | 4 (4%) | 1 (1%) | NA |
| Time between randomisation and death (days) | 15 (3-41) | 5 (2-14) | NA |

Data are number (%) or median (IQR), unless otherwise indicated. ECMO=extracorporeal membrane oxygenation. NA=not applicable. ^aPatients were randomly allocated to consideration for treatment by ECMO, but did not necessarily receive this treatment. ^bBased on 177 patients with known primary outcome. Assuming that the three patients in the conventional management group who had no information about disability had all been severely disabled, or had not been severely disabled, relative risk of the primary outcome would be 0.72 (95% CI 0.48-0.94, p=0.02), and 0.72 (0.51-1.01, p=0.05), respectively. ^cPercentage calculated with denominator of 87 patients to exclude those with no information about severe disability. ^dPatients had been discharged from hospital 1-3 months after randomisation, and were known to be alive at 6 months.

Table 3: Death and severe disability

Patient Outcomes

Table 3. Patient Outcomes^a

| Outcome Measure | 2009 Influenza A(H1N1) | | All Infections (n = 60) |
|---------------------------------------------------------------------|------------------------------|------------------------------|-------------------------|
| | Confirmed Infection (n = 53) | Suspected Infection (n = 15) | |
| Length of stay, median (IQR), d | | | |
| ICU | 26 (16-35) | 31 (18-38) | 27 (16-37) |
| Hospital | 35 (24-45) | 40 (27-54) | 39 (23-47) |
| Duration, median (IQR), d | | | |
| Mechanical ventilation | 24 (13-31) | 28 (13-34) | 26 (13-34) |
| ECMO support | 10 (7-14) | 11 (10-16) | 10 (7-15) |
| Survival at ICU discharge | 38 (72) | 10 (67) | 48 (71) |
| SB in ICU | 4 (8) | 2 (13) | 6 (9) |
| Survival at hospital discharge | 22 (42) | 10 (67) | 32 (47) |
| SB in hospital ^b | 14 (26) | 2 (13) | 16 (24) |
| Ambulant at hospital discharge ^c | 21 (39) | 10 (100) | 31 (47) |
| SB, on room air at hospital discharge, median (IQR), % ^d | 97 (95-98) | 97 (95-98) | 97 (95-98) |
| Discharge destination | | | |
| Died | 11 (21) | 3 (20) | 14 (21) |
| Home | 18 (34) | 4 (27) | 22 (32) |
| Other hospital | 0 | 1 (7) | 1 (1) |
| Rehabilitation facility | 4 (8) | 5 (33) | 9 (13) |
| Cause of death ^e | | | |
| Hemorrhage | 3 (27) | 1 (33) | 4 (29) |
| Intracranial hemorrhage | 4 (36) | 2 (66) | 6 (43) |
| Infection | 1 (9) | 0 | 1 (7) |
| Intractable respiratory failure | 3 (27) | 1 (33) | 4 (29) |

Abbreviations: ECMO, extracorporeal membrane oxygenation; ICU, intensive care unit; IQR, interquartile range; SB, arterial oxygen saturation. ^aData are presented as No. (%) unless otherwise specified. ^bNot including patients still in the ICU. ^cFor survivors only. ^dData are shown as No. (% of deaths) and patients could have more than 1 cause contributing to death.

The Australia and New Zealand Extracorporeal Membrane Oxygenation (ANZ ECMO) Influenza Investigators. JAMA 2009;0:2009.1535-8. **JAMA**

Novel treatments for H1N1

Effect of intranasal administration of *Lactobacillus pentosus* S-PT84 on influenza virus infection in mice

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ABSTRACT

Lactobacillus pentosus strain S-PT84 isolated from Kyoto pickles enhances splenic natural killer (NK) cell activity and exhibit anti-allergic effects by modulating the Th1/Th2 (T-helper1/T-helper2) balance. In the present study, we investigated whether the immune response could be activated by intranasal administration of S-PT84 in the respiratory immune system and protected against influenza virus infection in mice. When BALB/c mice received intranasal administration of S-PT84 once daily for 3 consecutive days, S-PT84 strongly induced interleukin-12 (IL-12) and gamma interferon (IFN- γ) production in mediastinal lymph node (MLN) cells. At intranasal infection with influenza virus PR8 (a mouse-adapted H1N1 strain) after S-PT84 treatment, the survival rates of mice improved in a dose-dependent manner, and the titer of influenza virus in bronchoalveolar lavage fluids (BALF) was significantly decreased by S-PT84 administration. Production of IL-12 and alpha-interferon (IFN- α) in BALF were significantly higher in mice treated with S-PT84 compared to the control mice. *In vivo* activity was also significantly augmented in S-PT84-treated

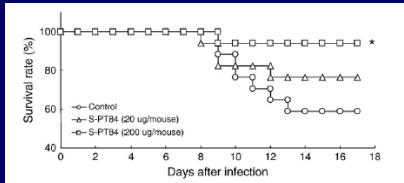


Fig. 2. Survival rate of S-PT84-treated mice subjected to PR8 inoculation. BALB/c mice were pretreated intranasally with 20 μ g/mouse S-PT84 (triangle), 200 μ g/mouse S-PT84 (square), or PBS (circle) for 3 consecutive days before PR8 infection. The mice were subsequently infected with PR8. Survival of each animal was monitored every day. Each group consists of 17 mice. *Statistically significant difference between the control group and the 200 μ g/mouse S-PT84 group ($P < 0.05$).

H1N1 and Pregnancy

Seasonal and 2009 pandemic influenza A (H1N1) virus infection during pregnancy: a population-based study of hospitalized cases

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The emergence of 2009 pandemic influenza A (H1N1) virus (2009 H1N1) resulted in the first influenza pandemic in over 40 years. The Centers for Disease Control and Prevention (CDC) estimated that about 61 million people were infected, 274,000 were hospitalized, and about 12,740 died due to

We sought to describe characteristics of hospitalized reproductive-aged (15-44 years) women with seasonal (2005/2006 through 2008/2009) and 2009 pandemic influenza A (H1N1) virus infection. We used population-based data from the Emerging Infections Program in 10 US states, and compared characteristics of pregnant (n = 150) and nonpregnant (n = 489) seasonal, and pregnant (n = 409) and nonpregnant (n = 1088) pandemic influenza cases using χ^2 and Fisher's exact tests. Pregnant women represented 23.5% and 31.0% of all reproductive-aged women hospitalized for seasonal and pan-

H1N1 and Pregnancy

| Characteristics | Seasonal influenza | | | 2009 H1N1 | | |
|-------------------------------------------------------|---------------------------|---------------------------------|---------|---------------------------|----------------------------------|---------|
| | No. (%) | | P value | No. (%) | | P value |
| | Pregnant women n = 150 | Nonpregnant women n = 489 | | Pregnant women n = 489 | Nonpregnant women n = 1088 | |
| Pregnancy trimester at admission | | | | | | |
| First (1-13 wk' gestation) | 9 (6.0) | NA | NA | 27 (5.5) | NA | |
| Second (14-28 wk' gestation) | 40 (26.7) | | | 144 (29.4) | | |
| Third (>29 wk' gestation) | 69 (46.0) | | | 280 (57.3) | | |
| Unknown | 32 (21.3) | | | 38 (7.8) | | |
| Underlying medical conditions^a | | | | | | |
| At least one recorded | 54 (36.0) | 348 (71.2) | < .001 | 156 (31.8) | 758 (69.7) | |
| None recorded | 96 (64.0) | 141 (28.8) | | 333 (68.1) | 330 (30.3) | |
| Preexisting respiratory conditions^b | | | | | | |
| Yes | 38 (25.3) | 220 (45.0) | < .001 | 122 (24.9) | 500 (46.0) | |
| No | 112 (74.7) | 269 (55.0) | | 367 (75.1) | 588 (54.0) | |

H1N1 and Pregnancy

| Characteristics | Seasonal influenza | | | 2009 H1N1 | | |
|-------------------------------------|---------------------------|---------------------------------|---------|---------------------------|----------------------------------|---------|
| | No. (%) | | P value | No. (%) | | P value |
| | Pregnant women n = 150 | Nonpregnant women n = 489 | | Pregnant women n = 489 | Nonpregnant women n = 1088 | |
| Charteristics | | | | | | |
| mechanical ventilation | | | | | | |
| Yes | 5 (3.3) | 39 (8.0) | .048 | 27 (5.5) | 137 (12.6) | |
| No | 145 (96.7) | 448 (91.6) | | 462 (94.5) | 949 (87.2) | |
| Unknown | 0 (0.0) | 2 (0.4) | | 0 (0.0) | 2 (0.2) | |
| Pneumonia Dx at discharge | | | | | | |
| Recorded | 27 (18.0) | 127 (26.0) | .046 | 77 (15.8) | 443 (40.7) | |
| Not recorded | 123 (82.0) | 362 (74.0) | | 412 (84.3) | 645 (59.3) | |
| Received antiviral treatment | | | | | | |
| Yes | 36 (24.0) | 270 (55.2) | < .001 | 423 (86.5) | 892 (82.0) | |
| No | 113 (75.3) | 217 (44.4) | | 66 (13.5) | 195 (17.9) | |
| Unknown | 1 (0.7) | 2 (0.4) | | 0 (0.0) | 1 (0.1) | |
| Death | | | | | | |
| Yes | 0 (0.0) | 8 (1.6) | .208 | 5 (1.0) | 31 (2.9) | |
| No | 150 (100.0) | 479 (98.2) | | 484 (99.0) | 1056 (97.1) | |
| Unknown | 0 (0.0) | 2 (0.4) | | 0 (0.0) | 1 (0.1) | |

The handshake

- Fist bump
- handshake
- hug
- kiss

Saluting is good. Bowing is perfectly acceptable.
So too, I think, is just saying hi."





- ❖ Infection control:
- ❖ Hand hygiene
- ❖ PPE
- ❖ Vaccination
- ❖ Chemoprophylaxis
- ❖ Surveillance
- ❖ Evaluation of ill HCW
- ❖ Limited visitation

How does Influenza spread

- Possible routes
 - Droplet
 - Airborne
 - Contact
 - Combinations of the above

Infection control

Surgical Mask vs N95 Respirator for Preventing Influenza Among Health Care Workers A Randomized Trial

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Context Data about the effectiveness of the surgical mask compared with the N95 respirator for protecting health care workers against influenza are sparse. Given the likelihood that N95 respirators will be in short supply during a pandemic and not available in many countries, knowing the effectiveness of the surgical mask is of public health importance.

Objective To compare the surgical mask with the N95 respirator in protecting health care workers against influenza.

Design, Setting, and Participants Noninferiority randomized controlled trial of 446 nurses in emergency departments, medical units, and pediatric units in 8 tertiary care Ontario hospitals.

Intervention Assignment to either a fit-tested N95 respirator or a surgical mask when providing care to patients with febrile respiratory illness during the 2008-2009 influenza season.

JAMA. 2009;302(17):1865-1871

Infection control

Table 1. Characteristics of 446 Nurse Participants in the Surgical Mask and N95 Respirator Groups

| Characteristic | No. (%) | |
|----------------------------------|-------------------------|--------------------------|
| | Surgical Mask (n = 225) | N95 Respirator (n = 221) |
| Age, mean (SD) [range], y | 36.5 (10.6) [21-62] | 35.8 (10.6) [21-62] |
| Female sex | 212 (94.2) | 209 (94.1) |
| Vaccinated against influenza | 66 (29.3) | 62 (28.1) |
| ^a Comorbid conditions | 22 (9.8) | 26 (11.8) |
| Asthma | 10 (4.4) | 12 (5.4) |
| Diabetes | 3 (1.3) | 6 (2.7) |
| Metabolic | 2 (1.0) | 4 (1.8) |
| Immunocompromised ^b | 3 (1.3) | 3 (1.3) |
| Pregnancy | 5 (2.2) | 2 (0.9) |
| Other ^c | 6 (2.7) | 3 (1.3) |
| Distribution by hospital unit | | |
| Medical | 55 (24.4) | 52 (23.5) |
| Pediatric | 58 (25.8) | 62 (28.1) |
| Emergency | 112 (49.8) | 107 (48.4) |

^aImmunosuppressive medications for transplantation (n=1), rheumatoid arthritis (n=3), asthma (n=1), and Crohn disease (n=1).
^bIncludes chronic renal failure (n=1), coronary artery disease (n=1), liver disease (n=2), seizure/brain disorder (n=2), and connective tissue disease (n=4).

Infection control

Table 2. Comparison of Laboratory-Confirmed Influenza Between the Surgical Mask and N95 Respirator Groups

| | No. (%) | | Absolute Risk Difference, % (95% CI) | P Value |
|----------------------------------------------------------------------|-------------------------|--------------------------|--------------------------------------|---------|
| | Surgical Mask (n = 212) | N95 Respirator (n = 210) | | |
| Laboratory-confirmed influenza ^a | 50 (23.6) | 46 (22.0) | -0.73 (-1.6 to 0.3) | .86 |
| RT-PCR influenza A | 5 (2.4) | 1 (0.5) | -1.96 (-4.13 to 0.20) | .22 |
| RT-PCR influenza B | 1 (0.5) | 3 (1.4) | 0.96 (-0.89 to 2.81) | .37 |
| ≥4-Fold rise in serum titers A/Indonesia/05/2007 (H1N1) ^b | 25 (11.8) | 21 (10) | -1.79 (-7.73 to 4.15) | .55 |
| ≥4-Fold rise in serum titers A/England/10/2007 (H3N2) ^b | 42 (19.8) | 49 (23.3) | 3.52 (-4.32 to 11.30) | .38 |
| ≥4-Fold rise in serum titers B/Florida/4/2009 ^b | 15 (7.1) | 19 (9.0) | 2.0 (-3.0 to 7.1) | .46 |
| ≥4-Fold rise in serum titers A/Ohio/03/2009 (H1N1) ^b | 17 (8.0) | 25 (11.9) | 3.89 (-1.82 to 9.58) | .18 |

Abbreviations: CI, confidence interval; RT-PCR, reverse transcriptase polymerase chain reaction.
^aInfluenza detected by 1 or more of the following RT-PCR: A/05/2007 (H1N1), A/10/2007 (H1N1), A/England/10/2007 (H3N2), and B/Florida/4/2009.
^bIncludes both vaccinated and nonvaccinated nurses. Two hundred thirty-four nurses were not vaccinated (147 in each group).

Infection control

Table 3. Comparison of RT-PCR Results for Other Respiratory Viruses Between the Surgical Mask and N95 Respirator Groups

| | No. (%) | | Absolute Risk Difference, % (95% CI) | P Value |
|------------------------------------------|-------------------------|--------------------------|--------------------------------------|---------|
| | Surgical Mask (n = 212) | N95 Respirator (n = 210) | | |
| Respiratory syncytial virus ^a | 2 (0.9) | 1 (0.5) | -0.47 (-2.07 to 1.13) | >.99 |
| Metapneumovirus | 4 (1.9) | 3 (1.4) | -0.46 (-1.98 to 2.89) | >.99 |
| Parainfluenza virus ^b | 1 (0.5) | 2 (1.0) | 0.48 (-1.12 to 2.09) | .62 |
| Rhinovirus-enterovirus | 8 (3.8) | 10 (4.8) | 0.99 (-2.87 to 4.85) | .62 |
| Coronavirus ^c | 9 (4.3) | 12 (5.7) | 1.47 (-2.28 to 5.62) | .49 |
| Total ^d | 20 (9.4) | 22 (10.5) | 1.04 (-4.67 to 6.76) | .72 |

Abbreviations: CI, confidence interval; RT-PCR, reverse transcriptase polymerase chain reaction.
^aRefers to respiratory syncytial virus type B only because no type A was detected.
^bRefers to parainfluenza 3 only because no parainfluenza 1, 2, or 4 was detected.
^cRefers to coronavirus OC-42, NL63, and HKU1.
^dTotals are less than sums because more than 1 virus was detected in some participants.

Infection control

| Outcome | Surgical mask | N-95 | P-value |
|------------------|---------------|---------|---------|
| Physician Visits | 13 (6) | 13 (6) | 0.98 |
| ILI | 9 (4) | 2 (1) | 0.06 |
| Absenteeism | 42 (19) | 39 (18) | 0.75 |

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Flu vaccine recommendations: everyone 6 months and older

The screenshot shows the CDC website page titled "Seasonal Influenza (Flu) People at High Risk of Developing Flu-Related Complications". The page lists several groups of people at high risk, including children younger than 5, adults 65 and older, pregnant women, and people with certain medical conditions like asthma, heart disease, and chronic lung disease. It also includes contact information for the Centers for Disease Control and Prevention.

The Johns Hopkins H1N1 glossary for students

- **Piglet:** a sick freshman.
- **Pig in a blanket:** A sick student complying with doctor's advice to stay home, drink fluids and get plenty of rest.
- **Glazed ham:** A student with fever sweats.
- **Pig pen:** A sick student's room, where he or she stays until 24 hours without fever, off of fever medication.
- **Pig sty:** A sick student's room before he or she properly disposes of used tissues and cleans doorknobs, desktops, keyboards and other surfaces with virus-killing wipes.
- **The Farm:** Mom and Dad's house, where pigs who live near campus go to recover rather than sit in the pig pen day after day.

Influenza vaccination

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NEWS

Key players agree to share viruses and vaccines to expedite response to future pandemic influenza

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