

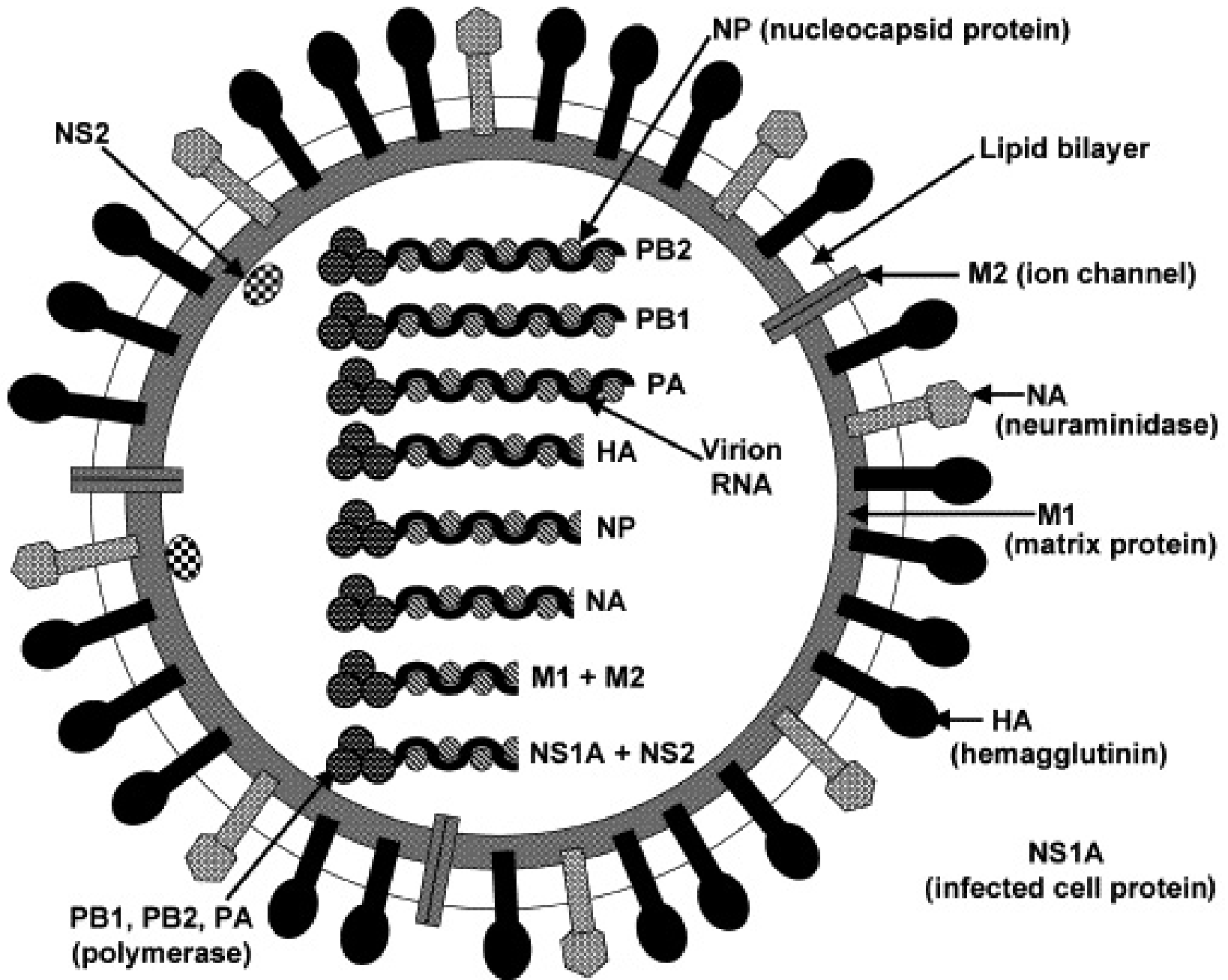
H1N1 and Pregnancy
Ziad R. Hubayter, MD



Calvert Memorial Hospital
Tradition. Quality. Progress

Influenza

- Influenza is classified into 3 distinct genera: Influenza A, B, and C
- Influenza A can be divided into a number of subtypes according to the expression pattern of 2 viral antigens:
 - hemagglutinin (which mediates viral attachment) (16 types)
 - neuraminidase (which mediates viral release) (9 types)
- Both influenza A and B strains cause seasonal infections of viral influenza (flu) and the dominant strains are included in each year's influenza vaccination



Background

- 1918: pandemic Spanish flu:
 - 1/3 of the world's population became ill
 - 2.5% of infected persons died (compared with 0.1% for a typical flu outbreak)
 - 100 million deaths worldwide
- 1957: Swine H1N1 strains largely disappeared
- 1976: outbreak of swine H1N1 influenza among soldiers at Fort Dix, New Jersey, resulting in 230 confirmed cases and one death

Current H1N1

- Late March - early April 2009:
 - Outbreak of H1N1 influenza A virus infection was detected in Mexico
- On June 11, 2009:
 - The World Health Organization (WHO) - pandemic alert level phase 6

Statistics

- As of October 11, 2009
 - over 399,000 laboratory-confirmed cases had been reported
 - The rate of infection highest among individuals ≤ 24 years of age

Statistics

- The rates of reported cases per 100,000 population in various age groups were:
 - 0 to 4 years — 22.9
 - 5 to 24 years — 26.7
 - 25 to 49 years — 6.97
 - 50 to 64 years — 3.9
 - ≥ 65 years — 1.3

Statistics

- Hospitalization rates per 100,000 population in various age groups were (total 4738):
 - 0 to 4 years — 4.5
 - 5 to 24 years — 2.1
 - 25 to 49 years — 1.1
 - 50 to 64 years — 1.2
 - ≥ 65 years — 1.7

Statistics

- The number of deaths among 302 patients hospitalized for pandemic H1N1 influenza A in the US
 - 0 to 4 years — 7 (2 %)
 - 5 to 24 years — 48 (16 %)
 - 25 to 49 years — 124 (41 %)
 - 50 to 64 years — 71 (24 %)
 - ≥ 65 years — 26 (9 %)
 - Not reported — 26 (9 %)

WHO vs. CDC

- Transmissibility appears substantially higher compared with seasonal influenza
 - attack rate of up to 33 % (vs. 5–15 % for seasonal influenza)
 - An infected school child was estimated to infect 2.4 other children within the school
- In contrast, CDC reported that the attack rate is similar to that in seasonal influenza

Prevention

- Infection control (esp. health care workers)
 - Don't report to work sick
 - Hand hygiene
 - Respiratory etiquette
 - Tissue
 - Sleeve
- Antiviral prophylaxis: use judiciously

Incubation period

- 1-7 days
- Most likely 1-4 days

Shedding of virus

- From one day before the development of symptoms until the resolution of fever

New H1N1: clinical description



- Fever 94%
- Cough 90%
- SOB 54%
- Fatigue or weakness 40%
- Chills, myalgia, runny nose 37%
- Sore throat 35%
- Headache 31%
- Vomiting 25%*
- Diarrhea 25%*

* Unlike seasonal influenza

Diagnostic testing

- Rapid enzyme immunoassay
 - Type A: seasonal *or* 2009 H1N1
 - Sensitivity for new H1N1 ~50%.
- PCR diagnostic kit available
 - High-risk for complications
 - Severe or hospitalized cases

Use personal protective equipment when swabbing.

CDC swab kit available
Method: horizontal, away from nasal septum



Hospitalization

- 0.3 % of cases in the US had to be admitted
 - Pneumonia
 - Dehydration
- 25 % were admitted to intensive care unit
- 7 % died

Pregnancy and H1N1

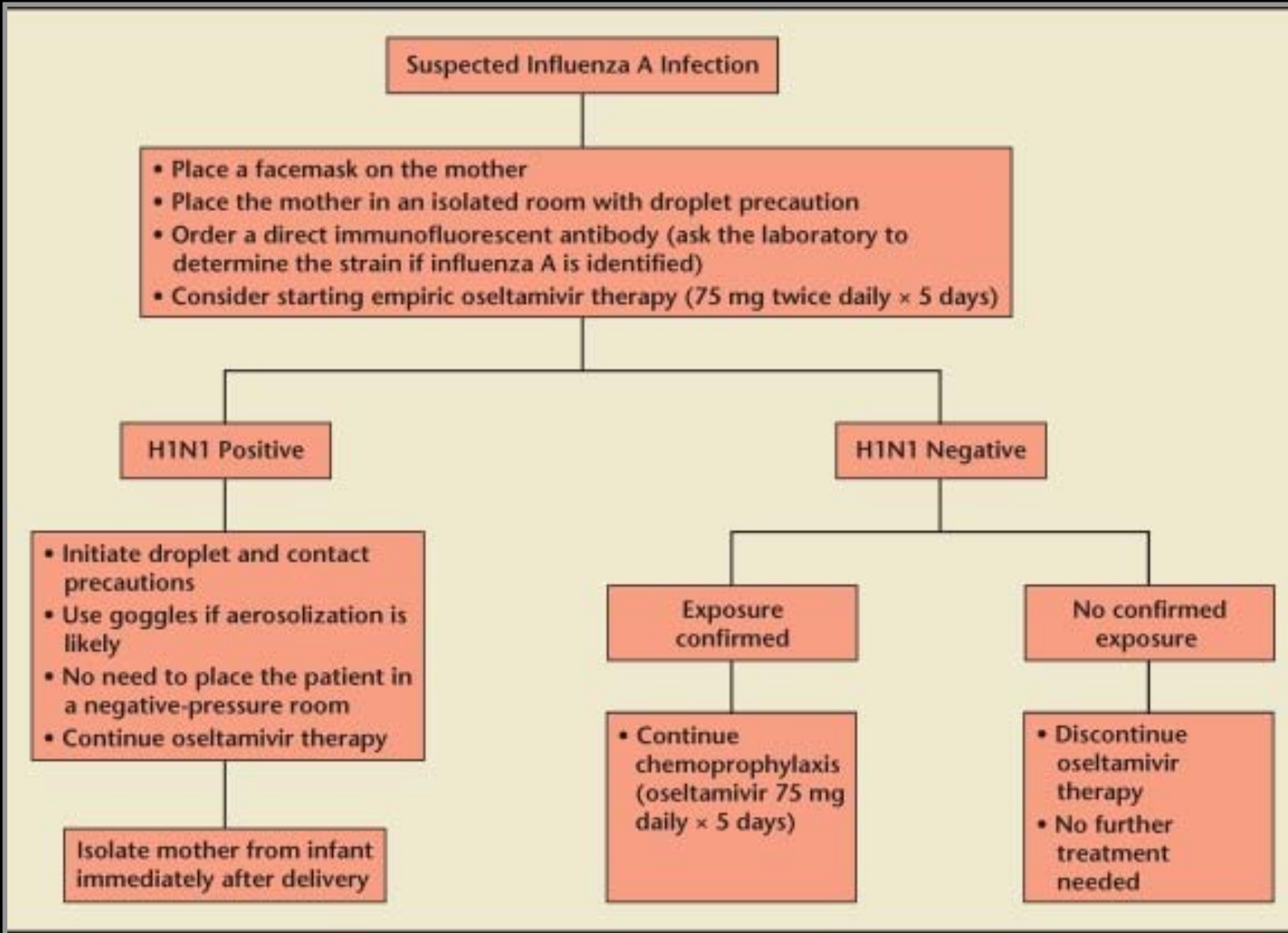
- By June 16, there were a total of 45 reported deaths from H1N1-related complications, of which 6 (13%) were pregnant women:
 - 1 in the first trimester
 - 1 in the second trimester
 - 4 in the third trimester
 - All 6 women were healthy; No evidence of secondary bacterial pneumonia; each had received treatment with the antiviral meds
 - Five of the 6 women had viable pregnancies and underwent cesarean delivery; none of the infants had evidence of influenza infection

Pregnancy and H1N1

- As of late August 2009, 100 pregnant women in the US have required intensive care unit admission and 28 have died

Pregnancy-related complications with H1N1

- nonreassuring fetal testing (most commonly fetal tachycardia)
- febrile morbidity
 - First trimester → neural tube defects and other congenital anomalies
 - During labor and birth → risk factor for neonatal seizures, newborn encephalopathy, cerebral palsy, and death
- spontaneous abortion
- premature rupture of membranes



Treatment

- oseltamivir (75 mg twice daily for 5 days)
- zanamivir (2 5-mg inhalations twice daily for 5 days)
- Pregnancy category C drugs, but no adverse events have been reported to date among women who received these agents during pregnancy

Treatment

- Treatment should ideally be started as soon as possible after the onset of symptoms because the benefit of antiviral medications is greatest if started within 48 hours of symptom onset
- Acetaminophen (tylenol) should be given if the patient is febrile

Isolation

- Patients should wear a facemask and be placed in an isolated room
- If a pregnant patient delivers while infected with H1N1:
 - Should be separated from her infant immediately after delivery
 - Avoid close contact until:
 - on antiviral medications for at least 48 hours
 - her fever has resolved
 - controlled coughing and secretions

Breastfeeding

- Risk of transmission through breast milk is unknown, but unlikely that virus will cross into breast milk
- Breastfeeding → strengthens the neonatal immune response
- Use of antiviral meds is not a contraindication to breastfeeding
- If the infant needs to be isolated from its infected mother → use bottle feedings of expressed breast milk

Vaccination

- The WHO recommends that priority for the vaccine be given to:
 - health care workers
 - pregnant women
 - individuals with certain chronic medical conditions
 - healthy individuals between 15 and 49 years of age
 - healthy children
 - healthy individuals between 50 and 64 years of age
- A seasonal influenza vaccine will be available as usual and should be offered to all pregnant women during flu season (November–March)

Vaccine

- Simultaneous administration of inactivated vaccines against seasonal and novel influenza A (H1N1) viruses is permissible if different anatomic sites are used

Vaccine contraindication

- People who have had an anaphylactic reaction to a previous dose
- Persons with allergies to eggs
- Persons with serious acute febrile illness usually should not be vaccinated until their symptoms have abated

NIH safety study for H1N1 vaccine

- So far, the NIH has vaccinated more than 60 pregnant women as part of a study to see whether the H1N1 vaccine is safe and effective. There have been no reports of serious side effects.
- The NIH plans on vaccinating a total of 120 women in its study.

