Influenza: Disease and Vaccine in 2013

Meg Fisher, M.D.
Medical Director,
The Children’s Hospital at Monmouth Medical Center
An affiliate of the Saint Barnabas Health Care System
Objectives

• Discuss epidemiology of influenza in New Jersey in 2013
• Diagnose influenza and prescribe antiviral agents for children
• Counsel regarding influenza vaccination
“I had a little bird.
His name was Enza.
I opened the window.
And in flew Enza.”

A chant popular during the influenza pandemic of 1918
Influenza Viruses

Orthomyxovirus
Types A, B and C
Yearly winter outbreaks of A and B
Hemagglutinin (H)
Neuraminidase (N)
Antigenic Changes

Shift: Major change in surface

Pandemics
To date with A only

Drift: Minor change in surface

Yearly outbreaks
Influenza Pandemics

1918: H1
1957: H2
1968: H3
1977: H1
2009: H1N1
Animal strains

Birds: virus in the gut
Pigs
2009 H1N1: pig, avian and human influenza genes - novel
H5N1: avian strain
Influenza: The Illness

Symptoms: fever, chills, aches, malaise, myalgia, gastrointestinal in younger

Signs: fever, pharyngitis, rhinitis, cough
Epidemiology

Usually winter outbreaks
Cruise ship outbreaks - Alaska in summer
Children - major role as transmitters
Droplet and contact spread
Contagious 1 day before to 7 days after
Incubation 1 to 3 days
Children and Influenza

Highest attack rates: 15-42% yearly

Highest hospitalization rates

Major transmitters: shed higher titers for longer times, poor hygiene and less control of nasal excretions
Influenza Positive Tests Reported to CDC by U.S. WHO/NREVSS Collaborating Laboratories, National Summary, 2012-13
Weekly Influenza Activity Estimates Reported by State & Territorial Epidemiologists*
Week ending January 26, 2013 - Week 4

* This map indicates geographic spread & does not measure the severity of influenza activity
Complications of Influenza

- Bacterial superinfection
- Reye syndrome
- Triggers asthma
- Myositis
- Encephalitis
Influenza Diagnosis

Clinical: generally sufficient
Culture: throat gargle or nasal wash
Antigen detection: rapid but lack sensitivity (40-70%)
Serology not clinically useful
Management of Influenza

Symptomatic:

Antipyretics may prolong viral shedding
Aspirin contraindicated
Complementary therapies abound
Antivirals: two available and useful
Antivirals for Influenza

Shorten the course and decrease virus
Start early for maximal effect
Opinions vary as to who should receive antiviral therapy
My opinion: yes for most
Children at Risk

Underlying diseases: the usual suspects
Neuromuscular and developmental
Obese
Age under 5 but especially under 2 years
Oseltamivir (Tamiflu)

Neuraminidase inhibitor, prevents viral entry
Effective for influenza A and B
Dose varies by age and weight
Side effects mild, gastrointestinal
Zanamivir (Relenza)

Neuraminidase inhibitor, prevents viral entry
Effective for influenza A and B
Dose: 10 mg bid, inhaled
Precaution in patients with bronchospasm
Prevention of Influenza

Infection control
Hand washing and hand hygiene
Isolation
Limit visitors
Respiratory hygiene: tissues and sleeves
Inactivated Influenza Vaccine

Composition altered yearly

Trivalent: 2 A and 1 B

Split product

No adjuvants

Quadravalent planned
Indications

Everyone 6 months and older
High risk, especially important
Healthcare providers: mandates suggested
Immunize pregnant women to protect them and their infants
Vaccine Schedule

Yearly, as soon as you get it
Child 8 and under: two doses, first season
Age 9 and above: one dose
Contraindicated in persons with anaphylaxis to chicken or eggs
Live Attenuated Vaccine

Cold adapted virus
Won’t survive body temperature

Immunogenic

Safe, rarely transmitted
Approved in 2003
Live Attenuated Vaccine

Healthy people 2 to 50 years of age
Nasal spray
Not for use in at risk people
OK for healthcare providers and family members, unless their contacts are severely immunosuppressed
Vaccine Efficacy

- Depends on the match of vaccine strains to circulating strains
- Age related
- Less in young and elderly
- Generally 40 to 60%
Chemoprophylaxis

Oseltamivir approved for age 1 + yr
Zanamivir approved for age 5 + yr
When: unable to vaccinate or unlikely to respond to vaccine or while waiting
High risk when vaccine mismatch
Outbreak in long term care facility
Consider for close contacts
Smiling is a contagious condition!
Resources

www.cdc.gov/flu/
www.aap.org/immunization
www.cdc.gov/vaccinesafety/
www.aapnj.org
www.state.nj.us/health/flu/
www.healthychildren.org