What's New with Flu in 2013-2014

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Disclosures

I have financial relationships with Baxter, Pfizer, and Sanofi Pasteur as a consultant.

I do NOT intend to discuss an unapproved or investigative use of a commercial product/device in my presentation.
Learning Objectives

By the conclusion of this activity, participants will be able to:

• Explain the impact of influenza in the US
• Review 2012-2013 influenza season activity and vaccination coverage rates
• Discuss the importance of annual influenza immunization
• Describe influenza recommendations and vaccines available for 2013-2014 influenza season
Percentage of Visits for Influenza-like Illness (ILI) Reported by the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Weekly National Summary, 2012-13 and Selected Previous Seasons
Impact of the 2012-2013 season

• 158 influenza-associated pediatric deaths reported in the 2012-13 season
  – 52% of children had influenza B infections
  – 64% of children were 5 years of age or older
  – 48% had a high risk condition
  – 90% of children who died were not vaccinated
Impact of the 2012-2013 season: H7N9 influenza in China

- First 3 cases were reported by China on March 31
- Virus is different from other H7 viruses that have infected humans
- Better adapted for infecting mammals than H5N1 but not fully adapted
- Poultry believed to be the source of human infections
- Low pathogenicity in poultry
Impact of the 2012-2013 season:
H7N9 influenza in China

Influenza A (H7N9) Summary — China

<table>
<thead>
<tr>
<th>Cumulative counts through 15 Aug 2013</th>
<th>N</th>
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<tbody>
<tr>
<td>Number of provinces/municipalities/areas with confirmed cases</td>
<td>8 / 2 / 1</td>
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<tr>
<td>Number of confirmed cases*</td>
<td>134</td>
</tr>
<tr>
<td>Number of fatal confirmed cases</td>
<td>44</td>
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</tbody>
</table>

Number of cases being reported has declined significantly since April 2013

- Perhaps it is now under control?
- All eyes on fall 2013...
Latest Estimates of 2012-2013 Vaccine Coverage

• 54.9% of children vaccinated
• 35.1% of adults vaccinated

• Health-Care Personnel
  – 70.5% vaccinated
  – Long-term care facilities had lower coverage than other facility types
  – Non-pharmacist/non-physician/non-nurse had lower coverage than other occupations

• Pregnant Women
  – 53% vaccinated
  – Majority vaccinated during pregnancy

• Results are preliminary
  – Final 2012-13 season results available in fall 2013
Improving coverage for the next season

• Increase influenza vaccination coverage rates among all individuals ≥ 6 months.
  – Among adults in certain racial and ethnic groups.
  – Among health-care personnel, especially those working in long-term care facilities and non-pharmacist/physician/nurses.
  – Among pregnant women by recommending and offering vaccine

• Implement strategies to increase vaccination coverage in upcoming influenza seasons.
  – Enhancing Access to Vaccination Services
  – Increasing Community Demand for Vaccinations
  – Provider- or System-Based Interventions
  – Community-Based Interventions Implemented in Combination
Latest Vaccine Efficacy data (CDC)

• Adjusted VE against influenza A and B was 53% (47-58%)
  – Similar to early unadjusted VE of 62% (51-71%) and mid-season adjusted VE of was 56% (47-63%) against A and B
  – Similar to international interim VE estimates
  – VE was reduced to 27% for influenza A in those over 65 years

• Vaccination reduced the risk of outpatient medical visits:
  – Due to influenza A(H3N2) by half (45%); exceptions for aged 9-17 and 65+ years
  – Due to influenza B by two-thirds (63%); consistent for all ages

• Similar VE against vaccine lineage B (Yamagata) and excluded B (Victoria)
  – Need further research to confirm and understand age differences
  – Need better understanding of cross-protection
Influenza Vaccine for 2013-2014 Season

• New Formulation
  – Introduction of IIV4 (Inactivated Influenza Vaccine – quadrivalent)
  – Vs. IIV3 (Inactivated Influenza Vaccine – trivalent)

• New technology
  – First cell culture based vaccine in the US (ccIIV)
    • Flucelvax®
  – First recombinant vaccine in the US (RIV)
    • Flublok®
2013-2014 Influenza Vaccine Strains

- A/California/7/2009 (H1N1)-like virus
- H3N2 virus antigenically like the cell-propagated prototype virus A/Victoria/361/2011
- B/Massachusetts/2/2012-like virus

Quadrivalent influenza vaccines should contain the above three strains and the following additional B strain:

- B/Brisbane/60/2008-like virus
New Influenza Vaccine Formulation - Quadrivalent

- Contains 2 influenza A and 2 influenza B strains
  - Currently approved from MedImmune, GSK, and Sanofi Pasteur.
- Addresses the 50% possibility of a mismatch for the B strain each season
- IIV4 and LAIV quadrivalent likely to have some premium pricing
- No visibility as to how many total doses are available
  - GSK and sanofi will have both IIV3 and IIV4 on the market simultaneously
  - All LAIV will be quadrivalent
  - No preferential use recommendation
New Influenza Vaccine Technology – Cell Culture Vaccine

- **Flucelvax® from Novartis Vaccines**
  - trivalent
  - Uses cultured animal mammalian cells instead of chicken eggs to grow vaccine virus
  - The production process may *not* be totally egg free but rather "functionally" egg free
    - No guidance on use in those with egg allergies
  - Side effects similar to IIV3
  - FDA approved for adults 18 years and older

- **CPT Code: 90661**
New Influenza Vaccine Technology – Cell Culture Vaccine

• Flucelvax® from Novartis Vaccines (CMS payment)
  – Prior to FDA approval, CPT code 90661 was not payable by CMS
  – With FDA approval of Flucelvax®, CMS has revised the ASC payment indicator for CPT code 90661 from “Y5” to “L1” (Influenza vaccine; pneumococcal vaccine. Packaged item/service; no separate payment made.) effective November 20, 2012.
  – CMS can now pay for Flucelvax®.
New Influenza Vaccine Technology – Recombinant DNA

• **Flublok®** from Protein Sciences
  – trivalent
  – HA DNA sequence produced by recombinant technology and expressed in baculovirus that infects an insect cell line.
  – Totally egg-free process
    • ACIP recommends use in those with severe egg allergies
  – Side effects similar to IIV3; no latex in vial stoppers
  – FDA approved for adults 18 – 49
  – 16 week shelf life
  – CPT code: 90673
Other Influenza Vaccines

- **Fluzone ID®**
  - Novel microinjection system for intradermal delivery
  - Ultra-fine needle that is 90% shorter than the typical needle
  - Licensed for use in adults 18-64 years of age
  - Contains 9 mcg of influenza virus hemagglutinin for each strain
  - Similar safety profile as TIV, erythema most common complaint
  - CPT code: 90654
  - CMS payment: $18.981 (2012)
Other Influenza Vaccines

• **Fluzone HD®**
  - Contains 4 times the amount of antigen - 60 mcg of influenza virus hemagglutinin for each strain
  - Indicated for 65 and older; most common complaint is injection site pain and erythema
  - Medicare covers this higher dose formulation
    • CPT code: 90662
    • Payment Rate: $$30.923 (2012)
  - FDA approval based on serological data; effectiveness studies just completed.
    • Trial of 30,000 participants, Fluzone HD was 24.2% more effective in preventing influenza in adults ≥65 years of age than Fluzone vaccine
Q codes (Medicare only)

- Q2033: Influenza Vaccine, Recombinant Hemagglutinin Antigens, For Intramuscular Use (Flublok).
- Q2034: Influenza virus vaccine, split virus, for intramuscular use (Agriflu)
- Q2035: Influenza virus vaccine, split virus, when administered to individuals 3 years of age and older, for intramuscular use (Afluria)
- Q2036: Influenza virus vaccine, split virus, when administered to individuals 3 years of age and older, for intramuscular use (Flulaval)
- Q2037: Influenza virus vaccine, split virus, when administered to individuals 3 years of age and older, for intramuscular use (Fluvirin)
- Q2038: Influenza virus vaccine, split virus, when administered to individuals 3 years of age and older, for intramuscular use (Fluzone)
- Q2039: Influenza virus vaccine, split virus, when administered to individuals 3 years of age and older, for intramuscular use (Not Otherwise Specified)
<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Trade Name</th>
<th>How Supplied</th>
<th>Mercury Content (µg Hg/0.5mL)</th>
<th>Age Group</th>
<th>Product Code</th>
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<tr>
<td>CSL Limited</td>
<td>Afluria (IIV3)</td>
<td>0.5 mL (single-dose syringe)</td>
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<td></td>
<td></td>
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<td>GlaxoSmithKline</td>
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<td>Fluarix (IIV4)</td>
<td>0.5 mL (single-dose syringe)</td>
<td>0</td>
<td>3 years &amp; older</td>
<td>90686</td>
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<td>ID Biomedical Corp. of Quebec, a</td>
<td>FluLaval (IIV3)</td>
<td>5.0 mL (multi-dose vial)</td>
<td>&lt;25</td>
<td>18 years &amp; older</td>
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<td>subsidiary of GlaxoSmithKline</td>
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<td>MedImmune</td>
<td>FluMist (LAIV4)</td>
<td>0.2 mL (single-use nasal spray)</td>
<td>0</td>
<td>2 through 49 years</td>
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<td>Novartis</td>
<td>Fluvirin (IIV3)</td>
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<td>6 through 35 months</td>
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<td>0.5 mL (single-dose vial)</td>
<td>0</td>
<td>3 years &amp; older</td>
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<td>Fluzone High-Dose (IIV3)</td>
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<td>Fluzone Intradermal (IIV3)</td>
<td>0.1 mL (single-dose microinjection system)</td>
<td>0</td>
<td>18 through 64 years</td>
<td>90654</td>
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</table>
Manufacturer Production Estimates

• Sanofi Pasteur
  – Anticipates delivering same number of doses of IIV3 (in multiple formulations) as previous season (60M doses)

• Protein Sciences
  – Anticipate delivering 250,000 doses of RIV3

• Novartis Vaccines
  – Anticipate delivering 30M doses of IIV3 and ccIIV3

• Merck Vaccines
  – Anticipates delivering 10M doses of IIV3
  – CSL Biotherapies will resume distribution of Afluria® in the United States for the 2014–2015 season by initiating the prebooking of the vaccine late 2013

• MedImmune
  – Anticipates delivering 12 - 15M doses of LAIV4 (no LAIV3 in market)

• GSK Vaccines
  – Anticipates delivering 22 - 24M doses, with up to 10M doses of IIV4
ACIP Influenza Recommendations

• All persons 6 months of age or older should receive influenza immunization.

• Immunization should begin as soon as vaccine is available and continue throughout the entire influenza season

• September 20th issue of the MMWR will have the final published recommendations
ACIP recommendations

• RIV recommended for vaccination of persons 18 through 49 years of age with egg allergy of any severity
  – individuals with a severe egg allergy consult with a physician about their allergic conditions prior to vaccination if RIV is not available

• For individuals who have no known history of exposure to egg, but who are suspected of being egg-allergic on the basis of previously performed allergy testing, consultation with a physician with expertise in the management of allergic conditions should be obtained prior to vaccination
Algorithm for those with egg allergies

Can the individual eat lightly cooked egg (e.g., scrambled egg) without reaction?*

No

After eating eggs or egg-containing foods, does the individual experience ONLY hives?

No

After eating eggs of egg-containing foods, does the individual experience other symptoms such as:
- Cardiovascular changes (e.g., hypotension)
- Respiratory distress (e.g., wheezing)
- Gastrointestinal (e.g., nausea/vomiting)
- Reaction requiring epinephrine
- Reaction requiring emergency medical attention

Yes

Administer RIV, if patient aged 18 through 49 yrs.;
OR
Administer IIV
Observe for reaction for at least 30 minutes following vaccination

Yes

Administer RIV, if patient aged 18 through 49 yrs.;
OR
Refer to a physician with expertise in management of allergic conditions for further evaluation

*+

immunization action coalition
immunize.org
The pediatric algorithm has not changed from last season

• If child 6 months to 8 years received 2 or more doses of seasonal vaccine since July 1, 2010, then administer one dose of 2013-2014 vaccine. Otherwise administer two doses of 2013-2014 vaccine.

• However, if you know child’s influenza vaccination history prior to 2010 season, then:
  – If child 6 months to 8 years received at least 2 doses of seasonal influenza vaccine during any prior season, and at least 1 dose of a 2009(H1N1)-containing vaccine, then give 1 dose of 2013-2013 vaccine. Otherwise give two doses.
Has the child ever received influenza vaccine?

- Yes
  - Did the child receive a total of 2 or more doses of seasonal influenza vaccine since July 1, 2010?
    - Yes: 1 dose
    - No/Don’t know: 2 doses

Pediatric Algorithm

*Doses should be administered at least 4 weeks apart.*
†This algorithm takes into consideration only doses of seasonal influenza vaccine received since July 1, 2010. If a child 6 months through 8 years of age is known to have received at least 2 seasonal influenza vaccines during any prior season, and at least 1 dose of a 2009(H1N1)-containing vaccine, i.e., either 2010-2013 seasonal vaccine or the monovalent 2009(H1N1) vaccine--then the child needs only 1 dose for 2013-2014.
More on the ACIP

• Other New items:
  – New abbreviations (IIV [3 or 4]; RIV; ccIIV)
  – Four new vaccine products available for 2013-14
    • RIV; ccIIV3; LAIV4; IIV4
  – No preferential recommendations other than for RIV

• Some questions to consider:
  – Preferential use for:
    • Elderly – Fluzone HD®??
    • Those with egg allergies – What about Flucelvax®??
    • Children – Better Efficacy – LAIV??
    • Those who fear needles – LAIV or Fluzone ID®??
  – When do we start vaccinating?
    • Is waning immunity through season truly a problem?
Web-based Vaccine Locator

• Second year for the web-based Influenza Vaccine Locator!
  – Powered by HealthMap from Harvard University
  – Search by address, zip, city/state, or pharmacy name
  – Results display in order of proximity from search criteria
  – Advanced search- 5-50 mile radius

• Also includes all adult vaccines!
HealthMap Vaccine Finder

What Vaccines Do I Need?

Location
530 Broadway, San Diego, CA 92101, USA
Enter a new address or zipcode

Vaccines
- Flu
- Hepatitis A
- Hepatitis B
- HPV
- MMR
- Shingles
- Tdap
-Td
- Meningococcal

1. CVS/pharmacy
510 C Street, San Diego, CA 92101
619-615-0263

Hours: M: 08:00 AM - 07:00 PM; T: 08:00 AM - 07:00 PM; W: 08:00 AM - 07:00 PM; Th: 08:00 AM - 07:00 PM; F: 08:00 AM - 07:00 PM; Sa: 09:00 AM - 06:00 PM; Su: 10:00 AM - 04:00 PM

Vaccines: Varicella, Tdap, Td, Pneumococcal, MMR, Meningococcal, HPV, Hepatitis B, Hepatitis A, High-Dose Flu Shot, Trivalent Flu Shot

2. Rite Aid #5643
427 C Street Suite 100, San Diego, CA 92101
Web-based Vaccine Locator

• 700+ provider accounts registered with 65,000+ locations
  – More than 20,000 have already included information on all adult vaccines
• Simple provider registration process – batch upload or manual entry (for small sized providers)
• Physician practices are welcome to sign up
• Go to: flushot.healthmap.org
Continuing issue of attention for providers

- Complementary providers and partners have increasing interest and role in influenza immunization
  - Includes pharmacy, community immunizers, occupational health immunizers, and obstetrical providers
  - Pharmacy business model does not want to intrude on the pediatric medical home
  - Anytime, anywhere concept may be reducing some of market share for traditional appointment-based vaccination clinics
  - Anecdotally, large marketing campaigns by retail pharmacies appeared to have driven increased vaccination in physician offices
  - Involve more partners to further help communications among diverse provider types
    - Opportunity to bring together disparate providers to iron out differences of opinion
CDC communication plans for the 2013-2014 season

• CDC June 2013 public focus groups revealed*
  – Varying recollection of the 2012-13 season
    • Most recalled it was a “bad” year via media coverage of lines for vaccination, spot shortages, pediatric deaths
  – Varying opinions on the amount and quality of media coverage
    • Too much? Just enough?
  – Varying impact on behaviors

CDC communication plans – Implications from focus groups

• Recalling the 2012-13 season in upcoming communications may be helpful
  – Seasonal influenza viruses can cause a lot of illness.
  – Influenza can be serious and we cannot predict when.
  – The timing and duration of influenza seasons varies and is unpredictable.
  – Critical that people be protected before significant influenza activity begins.

• Opportunity to reinforce the growing social norm around annual flu vaccination
CDC communication plans for the 2013-2014 season

• Continue to be transparent regarding flu VE
• Use caution when discussing “match”
• Utilizing insights from message testing, CDC will finalize and distribute flu VE messages
• Use impact data and data over multiple years to provide perspective on vaccine benefits
• Revise/distribute matte article about flu and seniors to partners like CMS and National Council on Aging
• At all opportunities, continue to educate providers, partners and the public on the reasons people may get sick with ILI following flu vaccination.

–http://www.cdc.gov/flu/about/qa/misconceptions.htm
CDC key messages for the 2013-2014 season

• With a good match, flu vaccine can reduce the risk of having to go to the doctor for flu by about 60% among the overall population.

• This number may be higher for some groups of people and lower for others (e.g., older people with weaker immune systems)

• Unlike the 2012-13 season, during other seasons, studies have measured a reduced risk among vaccinated people 65 and older of having to go to the physician or hospital from flu.
CDC key messages for the 2013-2014 season

• Vaccination also can reduce the risk of hospitalizations and deaths.
  – vaccine preventable disability

• Important benefits can be gained by increasing vaccination rates across all age groups with currently available vaccines.

• One CDC study* concluded that flu vaccination prevented an estimated 13.6 million flu cases, 5.8 million medical visit & nearly 113,000 flu-related hospitalizations in the United States over a 6-year period (2005-2011).

Continuing influenza messaging...

- Key communication messages will continue to evolve
  - Note that there needs to be focus on tailoring message to specific target populations
    - Pregnant women
    - Healthcare professionals
    - Adults over 65 years of age
    - Adults with chronic conditions
Continuing influenza messaging...

• We have a routine universal recommendation – that part is simple

• But now, we have multiple vaccine types that are indicated for different populations! Will need to have clear and unified guidance and messaging. Eg.
  – Should IIV4 be preferred over IIV3? ACIP has not made a preferential recommendation but what about providers on the ground?
  – What about Fluzone HD®?
  – Should ccIIV (less than 50 femtograms of ovalbumin) be considered for those with confirmed severe egg allergies?
With regards to multiple vaccine options, CDC states*

- When it comes to vaccines, “new” is not a selling point
- General public have limited knowledge of, and interest in, the composition of flu vaccines
  - Trust their providers to tell them which vaccine is right for them
  - They have greater interest in mode of vaccination
- In CDC research, quadrivalent vaccine information well-received, but raised concerns about: safety, effectiveness, cost, and availability
  - The term “quadrivalent” was not well-received

Keep messaging on multiple vaccine options at high level!

• Let patients know that there are different options, including mode (intramuscular, intradermal, nasal spray).

• Inform seniors about high dose vaccine.
  – Recent press may drive questions but ACIP has not yet considered the new data.

• Discuss the egg-free option and this season’s limitations.

• Be as simple as possible in explaining quadrivalent vaccines, and be cognizant of supply.

• Encourage people to talk to their provider or visit CDC website if they want to learn more.

• CDC expresses no preference (except RIV). The most important thing is that people get an annual flu vaccine.
Communications challenges remain

- Questions about efficacy and duration abound
  - Do not base efficacy or duration of immunity discussions on one season but look collectively at multiple seasons
  - Vaccine in the patient is 50%-60% effective; vaccine on the shelf is 0% effective.
- And where will we will with regard to H7N9? Or H3N2v?
  - Multiple virus strains can create messaging challenges to the public
- NIVW announced: December 8 -14, 2013
• IAC Influenza Resources: [www.immunize.org/influenza](http://www.immunize.org/influenza/)

• Summit Web site: [www.preventinfluenza.org](http://www.preventinfluenza.org)

• Thank You for your kind attention!

• Any questions?
Why do we immunize against influenza?

Amanda, died at age 4½ yrs from influenza

Lucio, died at age 8 yrs from influenza complications

Alana, died at age 5½ yrs from influenza

Breanne, died at age 15 mos from influenza complications

Barry, a veteran fire-fighter, died at age 44 yrs from influenza

Slide Courtesy of Families Fighting Flu