Massachusetts Department of Public Health
Bureau of Infectious Disease and Laboratory Sciences

Adult Immunization Update

April 27, 2016
Susan M. Lett, MD, MPH
Medical Director, Immunization Program
MA Department of Public Health
I, Susan Lett, have been asked to disclose any significant relationships with commercial entities that are either providing financial support for this program or whose products or services are mentioned during my presentations.

I have no relationships to disclose.

I will discuss the use of vaccines in a manner not approved by the U.S. Food and Drug Administration.

But in accordance with ACIP recommendations.
Outline

• Recent Morbidity: Flu, Mumps, Meningitis
• Adult Immunization Rates
• Vaccine Administration Errors
• Adult Immunization Standards
• Special Initiatives
• MIIS
Recent Morbidity

- Flu
- Mumps
- Meningitis
2015-2016 Influenza Season
National Summary

• Relatively mild season relative to other recent seasons
• Peak in early to mid March
  – One of the later peaks on record
• Influenza A (H1N1) predominated.
• Circulating strains appeared to be a good match with the vaccine
• Vaccine Efficacy Overall: 60%
  – 51%: H1N1 viruses
  – 76%: B viruses
    • 79%: B/Yamagata
• Other respiratory pathogens circulated causing respiratory illness:

[Peak Month of Flu Activity 1982-83 through 2013-14]

*During 2008-2009, flu activity peaked twice because of the 2009 H1N1 pandemic. Activity in the United States peaked once in February due to seasonal influenza activity and then again in the Spring (June), with the first wave of 2009 H1N1 viruses. A second, larger peak of 2009 H1N1 activity occurred in October, the peak of the 2009-2010 season.

Not too late to get vaccinated!

www.cdc.gov/flu
Massachusetts Influenza-like Illness (ILI) as of 4/16/2016

Figure 1: Percentage of ILI visits reported by sentinel provider sites

2015-2016: 60 ILI Clusters (4/22/16)
2013-2014: 100 ILI Clusters as of 4/29/14
2012-2013: 129 ILI Clusters
2011-2012: 52 ILI Clusters

*Influenza-like illness (ILI, defined by fever >100F and cough and/or sore throat), as reported by Massachusetts sentinel surveillance sites
Mumps Outbreak 2016

56 confirmed in MA (as of 4/22/16), all but one by PCR

- 34 confirmed cases at Harvard
- Cases confirmed at seven other Boston-area universities
- Probable cases at two other universities
- 28 M/28 F
- Age range 15-50 – Median age 21
- Majority with two MMR doses

>300 suspect cases investigated since 2/15/2016

Call 617-983-6800 while patient is still in your office, to ensure collection of correct specimens and testing at MA PHL.
Challenges – Mumps Outbreak

- Many causes of parotitis (e.g., influenza)
- Asymptomatic and mildly ill may spread mumps
- Isolation of patients who feel well and/or have negative results – extremely important!
- Testing
  - Buccal swab in VTM for PCR soon after onset
  - False negative PCR results may occur (intermittent shedding)
  - IgM testing of limited value in vaccinated population
  - Acute/convalescent IgG titer comparison can rule in and rule out cases
- Social distancing in a college-age cohort
- Messaging – when 2 doses only 88% effective (at best) in preventing mumps
Invasive Meningococcal Disease

- Five cases in two months among homeless people with ties to Boston – very unusual – 4 males/1 female
- Two deaths
- Antibiotic PEP to close contacts
- Two serogroup C; three serogroup Y
- Large vaccination campaign – over 3,800 received vaccine to date
- Case-control interviews to determine risk factors
Immunization Rates
MA Receives 2015 Vaccination Coverage Awards

Outstanding Progress Towards Healthy People 2020 Goals

🌟 Adolescents Aged 13 – 17 Years
– Based on 2014 NIS-Teen data
  1 Tdap 93%, 1 MenACWY 92%, 1 HPV (females) 69%

🌟 Children Aged 19 – 35 months
– 4 DTaP, 3 Polio, 1 MMR, Hib full series, 3 HepB, 1 Var, 4 PCV, 1 HepA, and Rotavirus full series, based on 2014 NIS data.

Highest Coverage

🌟 Influenza Vaccination among Children Aged 6 Months – 17 Years
– 1 or more doses for the 2014-15 influenza season
  76.1%

🌟 Highest Pneumococcal Vaccination Coverage among High-Risk Adults 18 – 64 Years
– 36.4%
## Adult Vaccination Rates, MA and US, 2013-14

<table>
<thead>
<tr>
<th>Vaccine/Group</th>
<th>MA 2013(^1)</th>
<th>MA 2014(^1)</th>
<th>US 2014(^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tdap ≥18 y/o</td>
<td>37%</td>
<td>41%</td>
<td>20%</td>
</tr>
<tr>
<td>Zoster ≥60 y/o</td>
<td>30%</td>
<td>39%</td>
<td>28%</td>
</tr>
<tr>
<td>HPV females 18-26 y/o (1+ doses)</td>
<td>61%</td>
<td>64%</td>
<td>40%</td>
</tr>
<tr>
<td>HPV females 18-26 y/o (3+ doses)</td>
<td>76%(^*)</td>
<td>79%(^*)</td>
<td>N/A</td>
</tr>
<tr>
<td>HPV males 18-26 y/o (1+ doses)</td>
<td>23%</td>
<td>38%</td>
<td>8%</td>
</tr>
<tr>
<td>HPV males 18-26 y/o (3+ doses)</td>
<td>30%(^*)</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Pneumococcal vaccine ≥65 y/o</td>
<td>70%</td>
<td>72%</td>
<td>61%</td>
</tr>
</tbody>
</table>

\(^*\)Percent of those who received at least 1 dose.

Source: \(^1\)MA BRFSS includes those ≥18 years, \(^2\)NHIS includes those ≥19 years
Adolescent Vaccination Coverage, Massachusetts, NIS 13-17 year Olds, 2008 – 2014

Note: For the purposes of comparability to 2014 estimates, 2013 estimates were revised by retrospectively applying the revised 2014 provider data definition to the 2013 NIS teen data and as a result, differ from those previously published.

NIS Data, CDC
## MA Flu Vaccination Rates

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Everyone 6 mos+</td>
<td>53%*</td>
<td>#3 55%</td>
<td>47%*</td>
</tr>
<tr>
<td>Children 6 mos – 17 yrs</td>
<td>72%</td>
<td>#2 76%</td>
<td>59%</td>
</tr>
<tr>
<td>Children 6 mos – 4 yrs</td>
<td>87%</td>
<td>81%</td>
<td>70%</td>
</tr>
<tr>
<td>Children 5 – 12 yrs</td>
<td>72%</td>
<td>#3 78%</td>
<td>62%</td>
</tr>
<tr>
<td>Adolescents 13 – 17 yrs</td>
<td>61%</td>
<td>#1 71%</td>
<td>47%</td>
</tr>
<tr>
<td>Adults 18 +</td>
<td>49%*</td>
<td>50%</td>
<td>44%*</td>
</tr>
<tr>
<td>Adults 18 – 64 y/o</td>
<td>45%*</td>
<td>45%*</td>
<td>38%*</td>
</tr>
<tr>
<td>Adults HR 18 – 64 y/o</td>
<td>58%</td>
<td>53%</td>
<td>48%</td>
</tr>
<tr>
<td>Adults 50 – 64 y/o</td>
<td>51%</td>
<td>53%</td>
<td>47%*</td>
</tr>
<tr>
<td>Adults 65+</td>
<td>64%*</td>
<td>67%</td>
<td>67%*</td>
</tr>
</tbody>
</table>

2014-15 National Immunization Survey (NIS) and Behavioral Risk Factor Surveillance System (BRFSS)

*Statistically significant

DPH 2016
# Seasonal Influenza Vaccination Rates, MA and US, ≥6 months of age, by Race/Ethnicity, 2014-2015 Season

<table>
<thead>
<tr>
<th></th>
<th>MA (n=11,895)</th>
<th>US (n=451,358)</th>
<th>MA Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% (CI)</td>
<td>% (CI)</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>55% (±3)</td>
<td>49% (±0.5)</td>
<td>4</td>
</tr>
<tr>
<td>Black</td>
<td>56% (±10)</td>
<td>44% (±1.3)</td>
<td>9</td>
</tr>
<tr>
<td>Hispanic</td>
<td>58% (±7.5)</td>
<td>44% (±1.3)</td>
<td>7</td>
</tr>
<tr>
<td>Other</td>
<td>50% (±8.4)</td>
<td>48% (±1.7)</td>
<td>20</td>
</tr>
</tbody>
</table>

Source: 2014-15 NIS-Flu and BRFSS, as analyzed by CDC
## Pneumococcal Vaccination Rates, MA and US Adults 65+ years of age, by Race/Ethnicity, 2014

<table>
<thead>
<tr>
<th></th>
<th>MA (n=4,977)(^1)</th>
<th>US (n=7,748)(^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>73% (±2)</td>
<td>65% (±1.6)</td>
</tr>
<tr>
<td>Black</td>
<td>67% (±11)</td>
<td>50% (±4.4)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>59% (±14.6)</td>
<td>45% (±4.4)</td>
</tr>
</tbody>
</table>

Source: \(^1\)MA BRFSS, \(^2\)NHIS
Immunization Rates in Pregnant Women, MA 2009-2013

Data from MA Pregnancy Risk Assessment Monitoring System (PRAMS)
Influenza Vaccination Rates, MA Pregnant Women, 2009-2013

Percent of Women with a Live Birth

Source: MA PRAMS
Influenza Vaccination by Race/Ethnicity, MA Pregnant Women, 2012 vs. 2013

Source: MA PRAMS

*Statistically significant
Vaccine Administration Errors

- Employee Flu Clinic
- One & Only Campaign
- CDC Resources

CDC’s MMWR: Dec 18, 2015/64(49);1363-64 http://www.cdc.gov/mmwr/pdf/wk/mm6449.pdf
Injection Safety Incident, NJ

- NJ business contracted with a health service company to provide influenza vaccine to its employees
- Plan was to use pre-filled syringes from manufacturer
- Instead nurse brought two 10-dose vials of flu vaccine to vaccinate 67 patients
  - Stored in her home refrigerator, with no temp. monitoring
  - Reported using 2 syringes to vaccinate all patients
  - Between each patient wiped syringe with alcohol and changed to new needle

**Impact**
- Public health and private sector worked together on investigation and notification of employees to:
  - Be screened for hepatitis B, hepatitis C and HIV
  - Receive HepB vaccine if indicated
  - Be revaccinated with influenza vaccine
- Nurse had to surrender her license
- CDC developed new materials
One & Only Campaign: Injection Safety Guidelines

• Follow proper infection control practices and maintain aseptic technique during the preparation and administration of injected medications

• Never administer medications from the same syringe to more than one patient, even if the needle is changed

• Never enter a vial with a used syringe or needle

• Do not use medications packaged as a single-dose or single-use for more than one patient

• Whenever possible and appropriate, limit use of multi-dose vials

CDC & Safe Injection Practices Coalition
http://www.cdc.gov/injectionsafety/1anOnly.html
MAIC Injection Safety Resource Page

CDC Resource Page


http://maic.jsi.com/resources/injection-safety-article-and-related-resources/
CDC At-A-Glance Resource Guide

- Immunization service providers and business retaining their services should ensure staff adhere to CDC guidelines.

- New Guide includes links to info about:
  - Infection prevention
  - Vaccine administration and safety
    - ACIP Gen Imm Recs
    - Skills checklists
  - Standing Orders
  - Vaccine storage and handling practices
  - Reporting to:
    - VAERs
    - Institute for Safe Medication Practices (ISMP)
  - VPD epidemiology

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Standards for Adult Immunization Practice and Other Tools to Improve Coverage

Standards available at:
or
http://www.publichealthreports.org
Adult Immunization Practice Standards

• Call to action for healthcare professionals for evidence-based activities
  • **Assess** immunization status of all patients in every clinical encounter.
  • Strongly **recommend** vaccines that patients need.
  • **Administer** needed vaccines or **refer** to a vaccinating provider and confirm receipt
  • **Document** vaccines received by patients, including entering immunizations into immunization registries.

Goal is to decrease missed opportunities!

http://www.publichealthreports.org
Immunization Information Systems (IIS) (Immunization Registries)

- Increased use important for many reasons, including
  - Consolidates immunization records
  - Coordination and communication among patients’ multiple providers
  - Ensuring patients get the right vaccines at the right time
  - Potential for use in quality measures and coverage tracking
  - Increase preparedness for a pandemic vaccine response

- Clinical decision support

3. Adult non-influenza vaccine coverage:  www.cdc.gov/mmwr/preview/mmwrhtml/mm6305a4.htm.
ADULT IMMUNIZATION PRACTICE STANDARDS


Immunizing Adult Patients: New Standards for Practice

Vaccine Needs Assessment A Series on Standards for Adult Immunization Practice

Assessment is the critical step patients get the vaccines they need and are appropriate vaccines. All patients have the potential to benefit from vaccines. Assessing your practice's immunization needs and determining the vaccines they need is critical to ensure public health. Your practice may need to do the following:

1. Assess patient vaccination status with a registry or other vaccination history
2. Evaluate the potential for each patient to benefit from vaccines
3. Determine the vaccines that are needed
4. Plan for the delivery of vaccines
5. Establish a system to document the administration of vaccines

Vaccine Recommendation A Series on Standards for Adult Immunization Practice

Your recommendation for the vaccines your patients need is critical. Your recommendations should be based on the latest evidence and best practices. Your recommendations can be used by your patients, their families, and healthcare providers to make informed decisions about immunization.

Vaccine Administration A Series on Standards for Adult Immunization Practice

Take steps to improve vaccine administration and improve patient outcomes. Your vaccine administration practices can impact the effectiveness of vaccines and the public health benefits they provide.

Vaccine Referral A Series on Standards for Adult Immunization Practice

Referral is an essential step in ensuring patients receive the vaccines they need. Your practice can use referral to ensure that patients receive the vaccines they need and are appropriate vaccines.

Vaccine Documentation A Series on Standards for Adult Immunization Practice

Your documentation of vaccines is critical to ensuring that patients receive the vaccines they need and are appropriate vaccines. Your documentation should be accurate and complete.

U.S. vaccination rates for adults are extremely low. For example:

- Only 48% of adults who were born in the United States
- Only 28% of adults who were born in other countries

Keep an up-to-date record of the vaccines your patients receive and track their immunization status to prevent unnecessary vaccinations.

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MA Special Initiatives
Tools that Help Improve Immunization Rates

- Partnerships
- Tools to address vaccine confidence
- National Vaccine Injury Compensation Program
- Evidence-based clinical guidance
- More vaccinators in more venues
  - Immunization Neighborhood
- Health care reform
  - Improves patient access and provider reimbursement
- Information technology
  - Consolidates records and shares information
  - Clinical decision support
  - MIIS
Immunization Neighborhood

Collaboration, Coordination, and Communication:
Among immunization stakeholders dedicated to meeting the immunization needs of the patient and protecting the community from vaccine-preventable diseases.
Collaboration with the Office of Health Equity (OHE)

Immunization Program has a long history of collaboration with OHE and the Office of Emergency Preparedness to offer assistance and resources to public health agencies to help reduce immunization disparities in their communities.

HPV Communication Strategies

• Talk about HPV vaccination as cancer prevention! Cancer prevention is important to parents so remind them that certain HPV types cause not only cervical cancer but anal, penile, vaginal, vulvar, and oropharyngeal cancers as well.

• Recommend the HPV vaccine the same way and on the same day as other vaccines.

• Example:
  • “Now that your child is 11, they are due for three shots that are really important for all kids their age: HPV, meningococcal, and Tdap. I recommend giving these at the end of the visit today.”

New MDPH resource found at http://mcaap.org/immunization-hpv/
Innovative Opportunity for OB-GYNs to Improve Their Immunization Programs

• American College of Obstetricians and Gynecologists (ACOG) 3 year grant to increase immunization rates for all women in CA and MA

• MA Chapter of ACOG is looking for practices to participate:
  – Learn about innovative ways to improve immunization rates
  – Be recognized as leader on the state and national level

• Eligibility requirements for participation includes the following:
  – ACOG membership
  – EHR system that can be used to track data requirements such as immunization rates
  – Serve both adult obstetrical and adult gynecology patients
  – Willingness to participate in state health department’s immunization registry

• For more information, visit www.immunizationforwomen.org/projects
“Born with Protection”
MATERNAL Tdap CAMPAIGN

Tdap is recommended with every pregnancy during the 3rd trimester

An infant’s 1st dose of Tdap is the one you give his/her mother during pregnancy

Fact Sheets:


www.cdc.gov/pertussis/pregnant
Standing Orders

- Protocol enabling assessment of vaccination status and vaccine administration w/o direct physician order
  - Provider offices
  - Health departments
  - Schools & their health centers
  - Pharmacies
  - Commercial vaccinators

- Facilitates adolescents and adults beginning vaccination in one venue and finishing in another

Strong evidence from over 34 studies with a median increase in immunization coverage from **24-27** percentage points.
Standing Orders in MA

• Licensed registered and practical nurses and can administer vaccines using standing orders (BORN Advisory Ruling No. 9804, updated 9-9-15)

• Pharmacists (and interns under supervision of a pharmacist) can administer vaccines to adults using standing orders written by a physician (105 CMR 700.004(B)(6)(c)1)

IAC model standing orders available at:

MDPH model standing orders available at:
[www.mass.gov/dph/imm](http://www.mass.gov/dph/imm)
Project to Increase the Use of Standing Orders

✓ This workshop is a one-stop shop to help you easily implement standing orders in your practice.

✓ Using standing orders for adult immunizations can help your practice be a leader in quality adult care.

Interactive workshop led by nationally recognized expert speakers

L.J Tan, MS, PhD, Chief Strategy Officer, Immunization Action Coalition

William Atkinson, MD, MPH, Associate Director for Immunization Education, Immunization Action Coalition

Alexandra Stewart, JD, Associate Professor, George Washington University

The Westin Copley Place
June 6, 2016
10:00 am – 2:30 pm
Lunch included

REGISTER ONLINE TODAY!
Don’t delay. Space is limited.

www.StandingOrders.org
HealthMap Vaccine Finder

- HealthMap Vaccine Finder assists the public with locating influenza and other adult vaccination services in their communities.

HealthMap Vaccine Finder:

http://flushot.healthmap.org/

To register Your Clinic with HealthMap Go To:
https://flushot.healthmap.org/admin/signup/

Flu Clinic Website
MA Health Officers Association

MyLocalClinic.com

Planning a Clinic? MyLocalClinic can help Become an Organizer
Affordable Care Act & Clinical Preventive Services

• Under the ACA, ‘nongrandfathered’ private health plans must provide coverage for a range of preventive services without cost-sharing
  • those services rated as “A” (strongly recommended) and “B” (recommended) by the U.S. Preventive Services Task Force;
  • vaccinations recommended by ACIP;
  • services recommended under the Bright Futures guidelines developed by HRSA and the American Academy of Pediatrics for children from birth to age 21; and
  • women’s preventive services recommended by HRSA based on an Institute of Medicine study committee
MA Public Clinic Billing Project

- For 10% fee, CHCF at Commonwealth Medicine electronically bills the participating plans and distributes payments to public providers
  - 10 private health plans and MassHealth participate
- Cities and towns can bill contracted plans for the:
  - Administration of state-supplied flu vaccine to individuals ages 6 months and older
  - Cost of purchasing and administering all recommended vaccines to adults
  - 178 public sector providers across the state participate, representing 214 out of 351 towns in MA
- > $2 million reimbursed to communities last flu season

Submit Insurance Form  CHCF  Health Plans
Submit Claim After Date Entry

Distributes payments  Send payment explanation

http://commed.umassmed.edu/flureimbursement
Vaccinations Across the Lifespan

MIIS
RAPID EXPANSION OF THE MIIS SINCE 2011!

2011
• Total Sites: 9
• Total Patients: 3,902
• Total Shots: 69,505

2012
• Total Sites: 55
• Total Patients: 815,928
• Total Shots: 3,371,434

2013
• Total Sites: 341
• Total Patients: 1,539,629
• Total Shots: 7,303,293

2014
• Total Sites: 532
• Total Patients: 2,370,194
• Total Shots: 13,597,285

2015
• Total Sites: 1121
• Total Patients: 4,427,623
• Total Shots: 33,334,571

2016
• Total Sites: 1649
• Total Patients: 4,819,805
• Total Shots: 33,996,056

DPIH 2016
Number of Sites by Practice Type, MIIS

<table>
<thead>
<tr>
<th>Practice Type</th>
<th># of Sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Board of Health/VNAS</td>
<td>114</td>
</tr>
<tr>
<td>Pediatric</td>
<td>805</td>
</tr>
<tr>
<td>Internal Medicine</td>
<td>113</td>
</tr>
<tr>
<td>Family Practice</td>
<td>108</td>
</tr>
<tr>
<td>Community Health Center</td>
<td>96</td>
</tr>
<tr>
<td>Multi-Specialty</td>
<td></td>
</tr>
<tr>
<td>Specialty Practice</td>
<td></td>
</tr>
<tr>
<td>OB/GYN</td>
<td></td>
</tr>
<tr>
<td>Hospital (Public and Private)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>
MIIS Enhancements to Come…

Late Spring
- Vaccine Recall
- Returns/Storage & Handling
- Flu ceiling/Flu Ordering
- Temperature Log Work List
- Transfer Vaccines Report
- System Usage Dashboard

Late Summer
- School Module
- Coverage Reports
- Roster Entry
MDPH Immunization Program

Contact Information

Immunization Program Main Number
For questions about immunization recommendations, disease reporting, etc.
• Phone: 617-983-6800
• Fax: 617-983-6840
• Website: www.mass.gov/dph/imm

MIIS Help Desk
• Phone: 617-983-4335
• Fax: 617-983-4301
• Email: miishelpdesk@state.ma.us
• Websites: www.contactmiis.info | www.mass.gov/dph/miis

MDPH Vaccine Unit
• Phone: 617-983-6828
• Fax: 617-983-6924
• Email: dph-vaccine-management@state.ma.us
• Website: www.mass.gov/dph/imm (click on Vaccine Management)
EXTRAS
Vaccine Strain Selection for 2016-2017 Seasons

For 2016-17, WHO recommended a new H3N2 component.

The B components switched places, from IIV3 to IIV4, compared to the 2015-16 Northern Hemisphere vaccine:

<table>
<thead>
<tr>
<th>2015-2016</th>
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</thead>
<tbody>
<tr>
<td>• A/California/7/2009 (H1N1)pdm09-like virus</td>
</tr>
<tr>
<td>• A/Switzerland/9715293/2013 (H3N2)-like virus</td>
</tr>
<tr>
<td>• B/Phuket/3073/2013-like virus (Yamagata lineage)</td>
</tr>
<tr>
<td>• for quadrivalent vaccines, B/Brisbane/60/2008-like virus (Victoria lineage)</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>2016-2017</th>
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<tbody>
<tr>
<td>• A/California/7/2009 (H1N1)pdm09-like virus</td>
</tr>
<tr>
<td>• A/Hong Kong/4801/2014 (H3N2)-like virus</td>
</tr>
<tr>
<td>• B/Brisbane/60/2008-like virus (Victoria lineage)</td>
</tr>
<tr>
<td>• for quadrivalent vaccines, B/Phuket/3073/2013-like virus (Yamagata lineage)</td>
</tr>
</tbody>
</table>

MDPH Vaccine Safety and Confidence Website

- Identifies the most helpful and reliable sources of information.

- Sections:
  - Information for Providers
  - Information for Parents
  - Vaccine Approval and Monitoring
  - Vaccine Information Statements
  - Vaccine Adverse Events Reporting System
  - Vaccine Administration Error Reporting


MDPH 2015
Menveo Administration Errors

CDC. MMWR 2016;65:161-162.

http://www.cdc.gov/mmwr/volumes/65/wr/pdfs/mm6506.pdf

FIGURE. Labels for the two components of Menveo conjugate meningococcal vaccine, liquid MenCYW-135 (A) and lyophilized MenA (B), both indicating that neither component is to be used alone.
Menveo Administration Errors
March 2010 – September 2015

- Menveo is supplied in two vials that must be combined before administration.
- The MenA lyophilized (freeze-dried) component must be reconstituted with the MenCYW-135 liquid component.
- To administer, the liquid component is drawn into a syringe, and used to reconstitute the lyophilized component.
- The resulting solution is administered by intramuscular injection.

VAERS REPORTS (3/1/2010 – 9/22/2015)
390 reports of only one component administered to 407 recipients (which is twice as high as expected)
- 66% received only the liquid MenCYW-135 portion
- 34% received only the lyophilized MenA component reconstituted a variety of ways (including with other liquid vaccines)
- No adverse events were identified
Recommendations to Avoid Menveo Administration Errors

- Providers should follow instructions that come with Menveo (including vaccine labeling, packaging, and product insert) regarding proper administration.

- Vaccines requiring reconstitution should **only** be reconstituted with the specific diluent supplied by the manufacturer for that vaccine.

- A recipient who receives an improperly prepared dose of Menveo should receive a repeat dose of MCV prepared according to manufacturer instructions; this repeat dose can be administered at any time.

- However, because serogroup A meningococcal disease is rare in the United States, patients only receiving the liquid MenCYW-135 component of Menveo might not need revaccination, unless international travel is anticipated (especially travel to Africa).
# Vaccines with Diluents: How to Use Them

Be sure to reconstitute the following vaccines correctly before administering them! Reconstitution means that the lyophilized (freeze-dried) vaccine powder or wafer in one vial must be reconstituted (mixed) with the diluent (liquid) in another.

- Only use the diluent provided by the manufacturer for that vaccine as indicated on the chart.
- ALWAYS check the expiration date on the diluent and vaccine. NEVER use expired diluent or vaccine.

<table>
<thead>
<tr>
<th>Vaccine product name</th>
<th>Manufacturer</th>
<th>Lyophilized vaccine (powder)</th>
<th>Liquid diluent (may contain vaccine)</th>
<th>Time allowed between reconstitution and use, as stated in package insert†</th>
<th>Diluent storage environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>ActHIB (Hib)</td>
<td>Sanofi Pasteur</td>
<td>Hib</td>
<td>0.4% sodium chloride</td>
<td>24 hrs</td>
<td>Refrigerator</td>
</tr>
<tr>
<td>Hiberix (Hib)</td>
<td>GlaxoSmithKline</td>
<td>Hib</td>
<td>0.9% sodium chloride</td>
<td>24 hrs</td>
<td>Refrigerator or room temp</td>
</tr>
<tr>
<td>Imovax (RAB&lt;sub&gt;HDCV&lt;/sub&gt;)</td>
<td>Sanofi Pasteur</td>
<td>Rabies virus</td>
<td>Sterile water</td>
<td>Immediately†</td>
<td>Refrigerator</td>
</tr>
<tr>
<td>M-M-R II (MMR)</td>
<td>Merck</td>
<td>MMR</td>
<td>Sterile water</td>
<td>8 hrs</td>
<td>Refrigerator or room temp</td>
</tr>
<tr>
<td>MenHibrix (Hib-MenCY)</td>
<td>GlaxoSmithKline</td>
<td>Hib-MenCY</td>
<td>0.9% sodium chloride</td>
<td>Immediately†</td>
<td>Refrigerator or room temp</td>
</tr>
<tr>
<td>Menomune (MPSV4)</td>
<td>Sanofi Pasteur</td>
<td>MPSV4</td>
<td>Distilled water</td>
<td>Single-dose vial: Immediately†</td>
<td>Refrigerator</td>
</tr>
<tr>
<td>Menevo (MCV4)</td>
<td>Novartis</td>
<td>MenA</td>
<td>MenCWY</td>
<td>8 hrs</td>
<td>Refrigerator</td>
</tr>
<tr>
<td>Pentacel (DTaP-IPV/Hib)</td>
<td>Sanofi Pasteur</td>
<td>Hib</td>
<td>DTaP-IPV</td>
<td>Immediately†</td>
<td>Refrigerator</td>
</tr>
<tr>
<td>ProQuad (MMRV)</td>
<td>Merck</td>
<td>MMRV</td>
<td>Sterile water</td>
<td>30 min</td>
<td>Refrigerator or room temp</td>
</tr>
<tr>
<td>RabAvert (RAB&lt;sub&gt;PCCCV&lt;/sub&gt;)</td>
<td>Novartis</td>
<td>Rabies virus</td>
<td>Sterile water</td>
<td>Immediately†</td>
<td>Refrigerator</td>
</tr>
<tr>
<td>Rotarix (RV1)</td>
<td>GlaxoSmithKline</td>
<td>RV1</td>
<td>Sterile water, calcium carbonate, and xanthan</td>
<td>24 hrs</td>
<td>Refrigerator or room temp</td>
</tr>
<tr>
<td>Varivax (VAR)</td>
<td>Merck</td>
<td>VAR</td>
<td>Sterile water</td>
<td>30 min</td>
<td>Refrigerator or room temp</td>
</tr>
</tbody>
</table>