2011 Immunization Schedules for Children 0 Through 18 Years of Age

Cody Meissner, Chair
William Atkinson, CDC lead

ACIP Meeting
October 28, 2010
Harmonized Schedule Work Group 2010

- Cody Meissner (ACIP, chair)
- Susan Lett (ACIP)
- Kris Ehresmann (ACIP)
- Lorry Rubin (AAP)
- Douglas Campos-Outcalt (AAFP)
- Patsy Stinchfield (NAPNAP)
- Julie Morita (ex-officio chair)
- Jeffrey Berg (AIM)
- Joni Reynolds (AIM)
- Amy Middleman (SAM)
- Diane Peterson (IAC)
- Andrew Kroger (CDC)
- Yabo Akinsanya-Beysolow (CDC)
- William Atkinson (CDC)
Approach to the Annual Harmonized Schedule for Children 0 through 18 Years

• The fundamental approach to the annual childhood and adolescent schedules is to accurately and succinctly reflect existing ACIP recommendations

• The schedules should not make new immunization policy, except in unusual circumstances
Activities of the Harmonized Schedule Work Group, 2010

- Monthly conference calls with WG members, liaison members and consultants
- Discussion of WG-originated revisions
- Consultation with CDC subject matter experts
- Additional discussion of CDC SME-originated revisions
- Internal CDC clearance of consolidated document
2011 Schedules

- Basic layout of the schedules is unchanged
- Three schedules
  - 0 through 6 years
  - 7 through 18 years
  - “catch-up”
    - 4 months through 6 years
    - 7 through 18 years
- Each schedule has separate footnotes
General Approach to the 2011 0 Through 18 Year Schedules

- Edits to the 2010 schedule made by *MMWR* were incorporated into the first draft of the 2011 schedules
- Numerous wording changes in all three schedules to improve clarity and readability, and to reduce the number of words
- Redundant footnote text removed (i.e., information presented in grid was removed from footnote)
Incorporation of Recommendations Approved on October 27, 2010

- On October 27, 2010 ACIP approved new recommendations for meningococcal conjugate and Tdap vaccines applicable to the child and adolescent schedule.
- To be included on the schedule these recommendations must also be approved by AAP and AAFP.
- Deadline for submission for January 2011 publication by AAP and AAFP is December 1, 2010.
Proposed Changes to the 2011 Schedule for Children 0 Through 6 Years

- Revision of wording for yellow bar label
- Guidance on the hepatitis B vaccine schedule for children who did not receive a birth dose added (footnote 1)
- Information on use of PCV13 added (footnote 5)
- Guidance on administration of 1 or 2 doses of influenza vaccine based on the child’s history of H1N1 added (footnote 7)
Proposed Changes to the 2011 Schedule for Children 0 Through 6 Years

• Please note that the summary document distributed to ACIP members and liaisons indicates a change in the abbreviation for meningococcal conjugate vaccine in both the 0-6 year and 7-18 year schedules
  – MCV4 to MenACWY

• After additional internal discussion it was decided to leave the abbreviation as MCV4
## Recommended Immunization Schedule for Persons Aged 0 Through 6 Years—United States • 2011

For those who fall behind or start late, see the catch-up schedule

<table>
<thead>
<tr>
<th>Vaccine ▼</th>
<th>Age ▶</th>
<th>Birth</th>
<th>1 month</th>
<th>2 months</th>
<th>4 months</th>
<th>6 months</th>
<th>12 months</th>
<th>15 months</th>
<th>18 months</th>
<th>19–23 months</th>
<th>2–3 years</th>
<th>4–6 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatitis B&lt;sup&gt;1&lt;/sup&gt;</td>
<td>HepB</td>
<td>HepB</td>
<td>HepB</td>
<td>HepB</td>
<td>HepB</td>
<td>HepB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rotavirus&lt;sup&gt;2&lt;/sup&gt;</td>
<td>RV</td>
<td>RV</td>
<td>RV</td>
<td>RV</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diphtheria, Tetanus, Pertussis&lt;sup&gt;3&lt;/sup&gt;</td>
<td>DTaP</td>
<td>DTaP</td>
<td>DTaP</td>
<td>DTaP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haemophilus influenzae type b&lt;sup&gt;4&lt;/sup&gt;</td>
<td>Hib</td>
<td>Hib</td>
<td>Hib</td>
<td>Hib</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pneumococcal&lt;sup&gt;5&lt;/sup&gt;</td>
<td>PCV</td>
<td>PCV</td>
<td>PCV</td>
<td>PCV</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Inactivated Poliovirus&lt;sup&gt;6&lt;/sup&gt;</td>
<td>IPV</td>
<td>IPV</td>
<td>IPV</td>
<td>IPV</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Influenza&lt;sup&gt;7&lt;/sup&gt;</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measles, Mumps, Rubella&lt;sup&gt;8&lt;/sup&gt;</td>
<td>MMR</td>
<td>MMR</td>
<td>see footnote&lt;sup&gt;8&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Varicella&lt;sup&gt;9&lt;/sup&gt;</td>
<td>Varicella</td>
<td>Varicella</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Hepatitis A&lt;sup&gt;10&lt;/sup&gt;</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meningococcal&lt;sup&gt;11&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

This schedule includes recommendations in effect as of December 15, 2009. Any dose not administered at the recommended age should be administered at a subsequent visit, when indicated and feasible. The use of a combination vaccine generally is preferred over separate injections of its equivalent component vaccines. Considerations should include provider assessment, patient preference, and the potential for adverse events. Providers should consult the relevant Advisory Committee on Immunization Practices statement for detailed recommendations: [http://www.cdc.gov/vaccines/pubs/acip-list.htm](http://www.cdc.gov/vaccines/pubs/acip-list.htm). Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS) at [http://www.vaers.hhs.gov](http://www.vaers.hhs.gov) or by telephone, 800-822-7967.
<table>
<thead>
<tr>
<th></th>
<th>19–23 months</th>
<th>2–3 years</th>
<th>4–6 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>DTaP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPSV</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IPV</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Yearly)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>see footnote[^8]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MMR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Varicella</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>see footnote[^9]</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Range of recommended ages for all children except certain high-risk groups.

Range of recommended ages for certain high-risk groups.
2011 Schedule – 0 Through 6 Years
Hepatitis B Footnote (footnote 1)

• New footnote
  – Infants who did not receive a birth dose should receive 3 doses of HepB on a schedule of 0, 1, and 6 months

• Consolidated wording
  – The final (3rd or 4th) dose in the HepB series should be administered no earlier than age 24 weeks
2011 Schedule – 0 Through 6 Years
PCV Footnote (footnote 5)

• New footnotes
  – A PCV series begun with 7-valent PCV (PCV7) should be completed with 13-valent PCV (PCV13)
  – A single supplemental dose of PCV13 is recommended for all children aged 14 through 59 months who have received an age-appropriate series of PCV7
  – A single supplemental dose of PCV13 is recommended for all children aged 60 through 71 months with underlying medical conditions who have received an age-appropriate series of PCV7

See MMWR 2010;59:258-61

The supplemental dose of PCV13 should be administered at least 8 weeks after the previous dose of PCV7

MMWR 2010;59(No. 6):258-61 (September 3, 2010)
2011 Schedule – 0 Through 6 Years
Influenza Footnote (footnote 7)

• New footnote
  – Children aged 6 months through 8 years who received no doses of monovalent 2009 H1N1 vaccine should receive 2 doses of 2010-2011 seasonal influenza vaccine. See *MMWR* 2010;59(RR-8):33-34.
11. Meningococcal conjugate vaccine, quadrivalent (MCV4). (Minimum age: 2 years for Menactra and 11 years for Menevo) meningococcal conjugate vaccine [MCV], and for meningococcal polysaccharide vaccine [MPSV4]

- Administer MCV4 to children aged 2 through 10 years with persistent complement component deficiency, anatomic or functional asplenia, and certain other conditions placing them at high risk and those with increased risk of exposure including travel to countries with highly endemic or epidemic disease and during outbreaks caused by a vaccine serogroup.

- Administer MCV4 to children at continued risk of meningococcal disease who were previously vaccinated with MCV4 or MPSV4 or meningococcal polysaccharide vaccine after 3 years if first dose administered at age 2 through 6 years. See MMWR 2009; 58:1042–3.
Proposed Changes to the 2011 Schedule for Children 7 Through 18 Years

- Revision of wording for yellow bar label
- Reference to a specified interval between Td and Tdap removed (footnote 1)
- “Females” added to HPV in grid and HPV footnotes condensed (footnote 2)
- Guidance on administration of 1 or 2 doses of influenza vaccine based on the child’s history of H1N1 added (footnote 4) (same as 0-6 schedule)
- Information on use of PCV13 added (footnote 5) (same as 0-6 schedule)
### Recommended Immunization Schedule for Persons Aged 7 Through 18 Years—United States • 2011

For those who fall behind or start late, see the schedule below and the catch-up schedule.

<table>
<thead>
<tr>
<th>Vaccine ▼</th>
<th>Age ▶</th>
<th>7–10 years</th>
<th>11–12 years</th>
<th>13–18 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetanus, Diphtheria, Pertussis¹</td>
<td></td>
<td></td>
<td>Tdap</td>
<td>Tdap</td>
</tr>
<tr>
<td>Human Papillomavirus²</td>
<td>see footnote 2</td>
<td></td>
<td></td>
<td>HPV series</td>
</tr>
<tr>
<td>Meningococcal³</td>
<td></td>
<td>MCV</td>
<td>MCV</td>
<td>MCV</td>
</tr>
<tr>
<td>Influenza⁴</td>
<td></td>
<td></td>
<td>Influenza (Yearly)</td>
<td></td>
</tr>
<tr>
<td>Pneumococcal⁵</td>
<td></td>
<td></td>
<td>Pneumococcal</td>
<td></td>
</tr>
<tr>
<td>Hepatitis A⁶</td>
<td></td>
<td></td>
<td>Hep A Series</td>
<td></td>
</tr>
<tr>
<td>Hepatitis B⁷</td>
<td></td>
<td></td>
<td>Hep B Series</td>
<td></td>
</tr>
<tr>
<td>Inactivated Poliovirus⁸</td>
<td></td>
<td></td>
<td>IPV Series</td>
<td></td>
</tr>
<tr>
<td>Measles, Mumps, Rubella⁹</td>
<td></td>
<td></td>
<td>MMR Series</td>
<td></td>
</tr>
<tr>
<td>Varicella¹⁰</td>
<td></td>
<td></td>
<td>Varicella Series</td>
<td></td>
</tr>
</tbody>
</table>

**Range of recommended ages for all children except certain high-risk groups**

**Range of recommended ages for catch-up immunization**

**Range of recommended ages for certain high-risk groups**

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This schedule includes recommendations in effect as of December 15, 2010. Any dose not administered at the recommended age should be administered at a subsequent visit, when indicated and feasible. The use of a combination vaccine generally is preferred over separate injections of its equivalent component vaccines. Considerations should include provider assessment, patient preference, and the potential for adverse events. Providers should consult the relevant Advisory Committee on Immunization Practices statement for detailed recommendations: [http://www.cdc.gov/vaccines/pubs/acip-list.htm](http://www.cdc.gov/vaccines/pubs/acip-list.htm). Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS) at [http://www.vaers.hhs.gov](http://www.vaers.hhs.gov) or by telephone, 800-822-7967.
Schedule for Persons Aged 7 Through 18 Years

start late, see the schedule below and the catch-up

<table>
<thead>
<tr>
<th>9 years</th>
<th>11–12 years</th>
<th>13–18 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tdap</td>
<td>HPV (females, 3 doses)</td>
<td></td>
</tr>
<tr>
<td>MCV</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Influenza (Yearly)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pneumococcal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HepA Series</td>
<td></td>
</tr>
</tbody>
</table>
2011 Schedule – 7 Through 18 Years  
Tdap Footnote (footnote 1)

• Deleted text (in anticipation of October ACIP vote)
  – A 5-year interval from the last Td dose is encouraged when Tdap is used as a booster dose; however, a shorter interval may be used if pertussis immunity is needed
3. Meningococcal conjugate vaccine, **quadrivalent** (MCV4). (Minimum age: 2 years for Menactra and 11 years for Menveo)
   - Administer at age 11 or 12 years, or at age 13 through 18 years if not previously vaccinated.
   - Administer to previously unvaccinated college freshmen living in a dormitory.
   - Administer MCV4 to children aged 2 through 10 years with persistent complement component deficiency, anatomic or functional asplenia, or certain other conditions placing them at high risk and those with increased risk of exposure including travel to countries with highly endemic or epidemic disease and during outbreaks caused by a vaccine serogroup.
   - Administer to children previously vaccinated with MCV4 or meningococcal polysaccharide vaccine (MPSV4) who remain at increased risk after 3 years (if first dose administered at age 2 through 6 years) or after 5 years (if first dose administered at age 7 years or older). Persons whose only risk factor is living in on-campus housing are not recommended to receive an additional dose. See MMWR 2009;58:1042–3.
### Persons Aged 4 Months Through 6 Years

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Minimum Age for Dose 1</th>
<th>Dose 1 to Dose 2</th>
<th>Minimum Interval Between Doses</th>
<th>Dose 2 to Dose 3</th>
<th>Dose 3 to Dose 4</th>
<th>Dose 4 to Dose 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatitis B</td>
<td>Birth</td>
<td>4 weeks</td>
<td>(and at least 16 weeks after first dose)</td>
<td>8 weeks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rotavirus</td>
<td>6 wks</td>
<td>4 weeks</td>
<td></td>
<td>4 weeks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diphtheria, Tetanus, Pertussis</td>
<td>6 wks</td>
<td>4 weeks</td>
<td></td>
<td>4 weeks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haemophilus influenza type B</td>
<td>6 wks</td>
<td>4 weeks</td>
<td></td>
<td>4 weeks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pneumococcal</td>
<td>6 wks</td>
<td>4 weeks</td>
<td></td>
<td>4 weeks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inactivated Poliovirus</td>
<td>6 wks</td>
<td>4 weeks</td>
<td></td>
<td>4 weeks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measles, Mumps, Rubella</td>
<td>12 mos</td>
<td>3 months</td>
<td></td>
<td>6 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hepatitis A</td>
<td>12 mos</td>
<td>6 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Persons Aged 7 Through 18 Years

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Minimum Age for Dose 1</th>
<th>Dose 1 to Dose 2</th>
<th>Minimum Interval Between Doses</th>
<th>Dose 2 to Dose 3</th>
<th>Dose 3 to Dose 4</th>
<th>Dose 4 to Dose 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetanus, Diphtheria/</td>
<td>7 yrs</td>
<td>4 weeks</td>
<td></td>
<td>4 weeks</td>
<td>6 months</td>
<td></td>
</tr>
<tr>
<td>Tetanus, Diphtheria, Pertussis</td>
<td></td>
<td>4 weeks</td>
<td></td>
<td>6 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human Papillomavirus</td>
<td>9 yrs</td>
<td></td>
<td>Routine dosing intervals are recommended**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hepatitis A</td>
<td>12 mos</td>
<td>6 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>Birth</td>
<td>4 weeks</td>
<td>(and at least 16 weeks after first dose)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measles, Mumps, Rubella</td>
<td>12 mos</td>
<td>4 weeks</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Varicella</td>
<td>12 mos</td>
<td>3 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Routine dosing intervals are recommended for individuals who receive 3 doses before age 12 months or for high-risk children who received 3 doses at any age.
Proposed Changes to the 2011 “Catch-up” Schedule

• Minimum age for HepB dose 3 added (footnote 1)

• Guidance for use of Hib vaccine in persons 5 years and older condensed (footnote 4)

• Information on use of PCV13 added (footnote 5)
4. *Haemophilus influenzae* type b conjugate vaccine (Hib).

- 1 dose of Hib vaccine should be considered for Hib vaccine is not generally recommended for persons aged 5 years or older. No efficacy data are available on which to base a recommendation concerning use of Hib vaccine for older children and adults. However, studies suggest good immunogenicity in persons aged 5 years or older who have sickle cell disease, leukemia, or HIV infection, or who have had a splenectomy. Administering 1 dose of Hib vaccine to these persons who have not previously received Hib vaccine is not contraindicated.
4. *Haemophilus influenzae* type b conjugate vaccine (Hib).

- 1 dose of Hib vaccine should be considered for persons aged 5 years or older who have sickle cell disease, leukemia, or HIV infection, or who have had a splenectomy.
5. Pneumococcal vaccine.
   • Administer 1 dose of 13-valent pneumococcal conjugate vaccine (PCV13) to all healthy children aged 24 through 59 months with any incomplete PCV schedule (PCV7 or PCV13) who have not received at least 1 dose of PCV on or after age 12 months.

   • For children aged 24 through 59 71 months with underlying medical conditions, administer 1 dose of PCV13 if 3 doses of PCV were received previously or administer 2 doses of PCV13 at least 8 weeks apart if fewer than 3 doses of PCV were received previously.

   • A single dose of PCV13 is recommended for certain children with underlying medical conditions through 18 years of age. See age-specific schedules for details.

   • Administer pneumococcal polysaccharide vaccine (PPSV) to children aged 2 years or older with certain underlying medical conditions, including a cochlear implant, at least 8 weeks after the last dose of PCV. A single revaccination should be administered after 5 years to children with functional or anatomic asplenia or an immunocompromising condition. See MMWR 1997;46(No. RR-8).
Discussion

Vote
Decision by ACIP, October 28, 2010

• ACIP voted to include new recommendations for Tdap and quadrivalent meningococcal conjugate vaccine (MCV4) on the 2011 schedules

• Publication of the 2011 schedules will be delayed until February 2011 to allow time for approval of the new footnotes by CDC Subject Matter Experts, the Harmonized Schedule Work Group, CDC management, and partner organizations (AAP and AAFP)
Decision by ACIP, October 28, 2010

- New Tdap recommendations to be included on the 2011 schedule
  - Persons aged 7 through 10 years who are not fully immunized against pertussis (including those never vaccinated or with unknown pertussis vaccination status) should receive a single dose of Tdap. Refer to the catch-up schedule if additional doses of tetanus and diphtheria toxoid-containing vaccine are needed.
  - Tdap can be administered regardless of the interval since the last tetanus and diphtheria containing vaccine.
Decision by ACIP, October 28, 2010

- New MCV4 recommendations to be included on the 2011 schedule
  - Administer MCV4 at age 11 through 12 years with a booster dose at age 16 years.
  - For persons vaccinated at age 13 through 15 years administer a 1-time booster dose 5 years after the first dose
  - Administer 2 doses of MCV4 at least 8 weeks apart to children aged 2 through 10 years with persistent complement component deficiency and anatomic or functional asplenia, and 1 dose every 5 years thereafter
  - Persons with Human Immunodeficiency Virus (HIV) infection who are vaccinated with MCV4 should receive 2 doses at least 8 weeks apart
2011 Immunization Schedules
Next Steps

• Revisions as necessary
• Submission to \textit{MMWR} for editing during the first week in December
• Submission of edited copy to AAP and AAFP by January 1, 2011
• Publication in \textit{MMWR} on February 11, 2011
• Publication in \textit{Pediatrics} and \textit{American Family Physician} in February 2011
Thank you
Harmonized Schedule Subject Matter Experts

• Division of Bacterial Diseases
  – Gina Mootrey (ADS)
  – Thomas Clark
  – Amanda Cohn
  – Pekka Nuorti

• Division of Viral Diseases
  – Susan Goldstein (ADS)
  – Margaret Cortese
  – Greg Wallace
  – Kathy Gallagher
  – Mona Marin

• Influenza Division
  – Carolyn Bridges (ADS)
  – Timothy Uyeki

• Division of Viral Hepatitis, NCHHSTP
  – Deborah Holtzman (ADS)
  – Trudy Murphy

• Division of STD Prevention, NCHHSTP
  – Sevgi Aral (ADS)
  – Fred Bloom (ADS)
  – Lauri Markowitz

• NCIRD OD
  – Jay Wenger (Acting ADS)

• NCIRD, ISD
  – Abigail Shefer (ADS)