

What's New in Childhood Immunization

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2009 Immunization Schedules for Persons 0 Through 18 Years

- **Published in MMWR on January 2, 2009**
- **Same basic format as 2008**
- **Revisions**
 - **new age recommendations for rotavirus vaccines**
 - **revised influenza vaccine recommendations (6 months through 18 years)**
 - **Hib vaccine for persons 5 years and older**
 - **revised minimum intervals for HPV vaccine**

Available at www.cdc.gov/vaccines/recs/schedules/

New (2009) Hib Footnote

- **“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 who have sickle cell disease, leukemia, or HIV infection, or who have had a splenectomy; administering 1 dose of Hib vaccine to these persons* is not contraindicated. “**

***who have not previously received Hib vaccine**

The Sears “Alternative” Immunization Schedule*

- No more than 2 vaccines per visit
- Requires 15 visits over 42 months to complete the series for all recommended childhood vaccines
- Uses single antigen measles, mumps and rubella vaccines
- Completes most vaccine series within age range recommended by ACIP except:
 - HepB vaccine delayed until 30-42 months
 - Measles vaccine delayed until 3 years of age

*Sears R. *The Vaccine Book*. New York: Little Brown and Co, 2007:234-42

See commentary by Offit: *Pediatrics* 2009;123;e164-9

Available on Pediatrics website at <http://pediatrics.aappublications.org/>

Single Antigen MMR

- **Merck is currently not producing single antigen measles, mumps or rubella vaccine for distribution**
- **Only MMR is available**
- **Unknown if single antigen products will be available in the future**
- **MMRV expected to be available later in 2009**

Rotarix[®] Rotavirus Vaccine

- **Approved by FDA in April 2008**
- **Contains one strain of live attenuated human rotavirus (G1P[8])**
- **Two oral doses at 2 and 4 months of age (minimum interval 4 weeks)**
- **Minimum age 6 weeks**
- **Maximum (labeled) age 24 weeks**

Rotavirus Vaccine Recommendations

	Rotarix (RV1)	RotaTeq (RV5)	ACIP Recs
Doses	2	3	--
Min age	6 wks	6 wks	6 wks
Max age- 1st dose	20 wks	12 wks	14 wks 6 days*
Max age- any dose	24 wks	32 wks	8 mos 0 days*

*off-label. See *MMWR* 2009;58(RR-2)

Rotavirus Vaccine Recommendations

- **Provider may not stock or may not know the brand of rotavirus vaccine received for previous dose or doses**
- **If any dose in the series was RV5 (RotaTeq) or the product is unknown for any dose in the series, a total of three doses of rotavirus vaccine should be given**

KINRIX™ Vaccine

- **Contains DTaP (Infanrix) and IPV**
- **Approved ONLY for the 5th dose of DTaP and 4th dose of IPV in children 4 through 6 years of age***
- **Do NOT use for earlier doses in the DTaP or IPV series**
- **Use of KINRIX for any dose other than DTaP5 and IPV4 is off-label, and should be considered a medication error (but dose does not need to be repeated)**

***whose previous doses have been with Infanrix and/or Pediarix for the first 3 doses and Infanrix for the 4th dose**

Pentacel[®] Vaccine

- **Contains DTaP, Hib, and IPV**
- **Approved for doses 1 through 4 among children 6 weeks through 4 years of age**
- **Do NOT use for in children 5 years or older**
- **Package contains lyophilized Hib (ActHib) that is reconstituted with a liquid DTaP (Daptacel)/IPV solution**

Pentacel[®] Vaccine

- **If the DTaP-IPV solution is administered separately there will be no diluent for the Hib component!**
- **You will be unable to use the Hib dose because**
 - **Hib must only be reconstituted with DTaP-IPV or specific ActHib diluent (NOT with MMR/varicella diluent, normal saline or any other vaccine)**

Pentacel[®] Vaccine

- **Do NOT use the Hib (ActHib) and liquid DTaP-IPV solution separately**
- **If Hib reconstituted with an inappropriate diluent* is administered it should NOT be counted as a valid dose and should be repeated as soon as possible**
- **Keep components together in the box to avoid administration errors**
- **Guidance for clinicians for the use of Pentacel**
 - www.cdc.gov/vaccines/pubs/pentacel-guidance.htm

***ANY diluent except DTaP-IPV or sanofi ActHib diluent**

PedvaxHib[®] Shortage

- **PedvaxHib is currently not available**
- **Improvement in the supply is expected during the 1st or 2nd quarter of 2009**
- **During the shortage the booster dose of Hib vaccine (including Pentacel) for healthy children 12 months of age and older should be deferred**
- **If you only have Pentacel in stock, and a child needs Hib vaccine you should administer Pentacel even though the child will receive an extra dose of DTaP and IPV**

Invasive Hib Disease – Minnesota, 2008

- **Five children reported with invasive Hib disease in 2008 (3 meningitis, 1 pneumonia, 1 epiglottitis)**
- **Ages 5 months to 3 years**
 - **3 unvaccinated because of parent refusal**
 - **1 (5 months old) received 2 doses**
 - **1 (15 month old) received 2 doses with deferral of 3rd dose per CDC recommendation (subsequent dx with hypogammaglobulinemia)**
- **Believed to reflect increasing carriage and transmission or “weakened” herd immunity**

Pediatric Influenza Deaths– 2007-2008

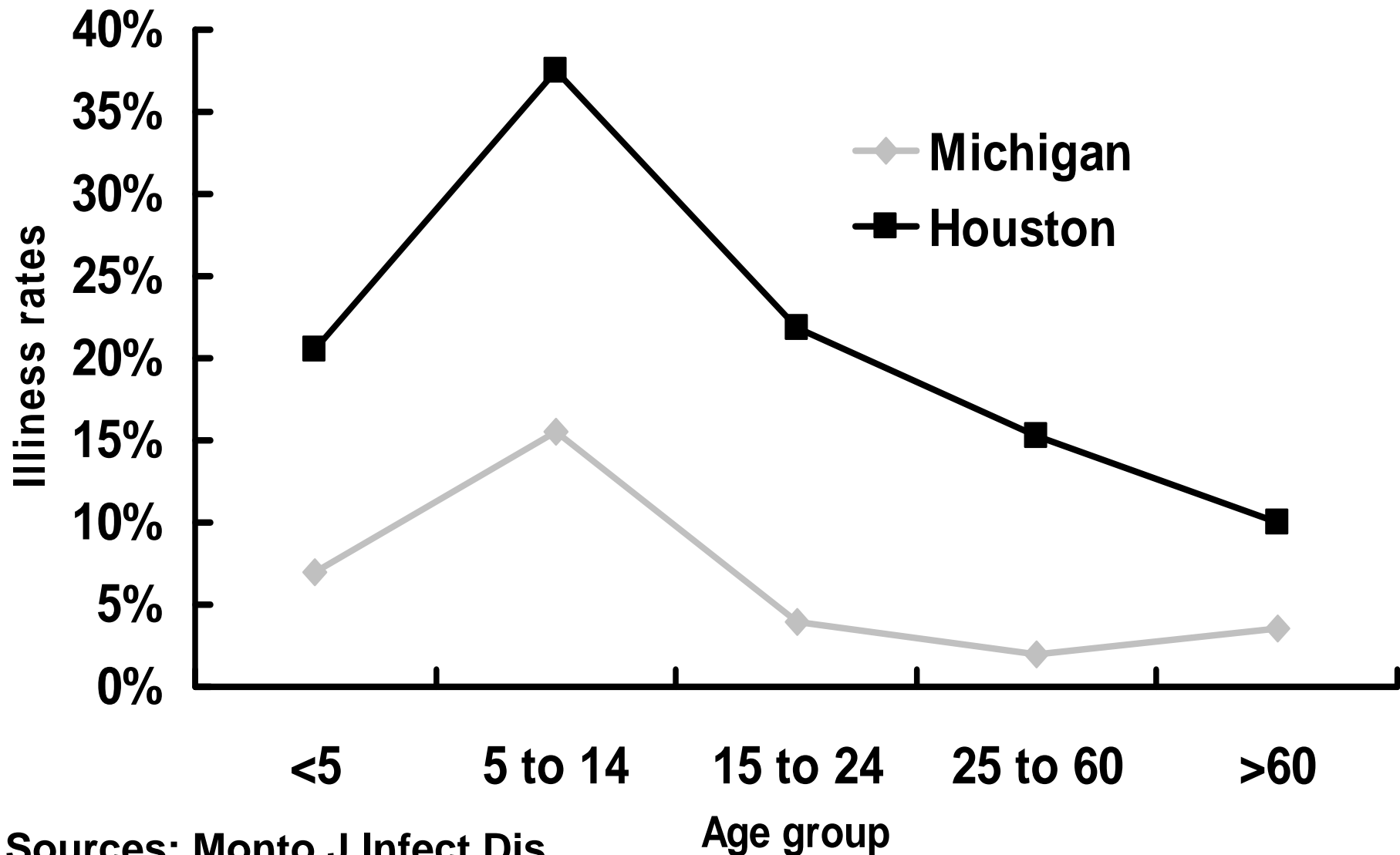
- **85 influenza-related deaths among children 0-17 years of age**
 - **Median age 6.4 years**
 - **23 (27%) younger than 24 months**
 - **44 (52%) 5 through 17 years of age**
- **Only 5 known to have been vaccinated according to 2007-2008 recommendations**

MMWR 2008;57(No. 25):692-7 and CDC unpublished data

The Evolution of Influenza Vaccination Recommendations

- For 50 years annual vaccination has been recommended for persons at increased risk of death or complications from influenza**
- Healthy children 6-23 months were included for routine vaccination in 2004-2005**
- Healthy children 24-59 months were included for routine vaccination in 2007-2008**
- Healthy school-aged children are included for routine vaccination in 2008-2009**
- In 3-5 years annual influenza vaccination will be recommended for the entire U.S. population**

Average Influenza-Associated Illness Rates by Age Group*



Sources: Monto J Infect Dis
Glezen N Engl J Med

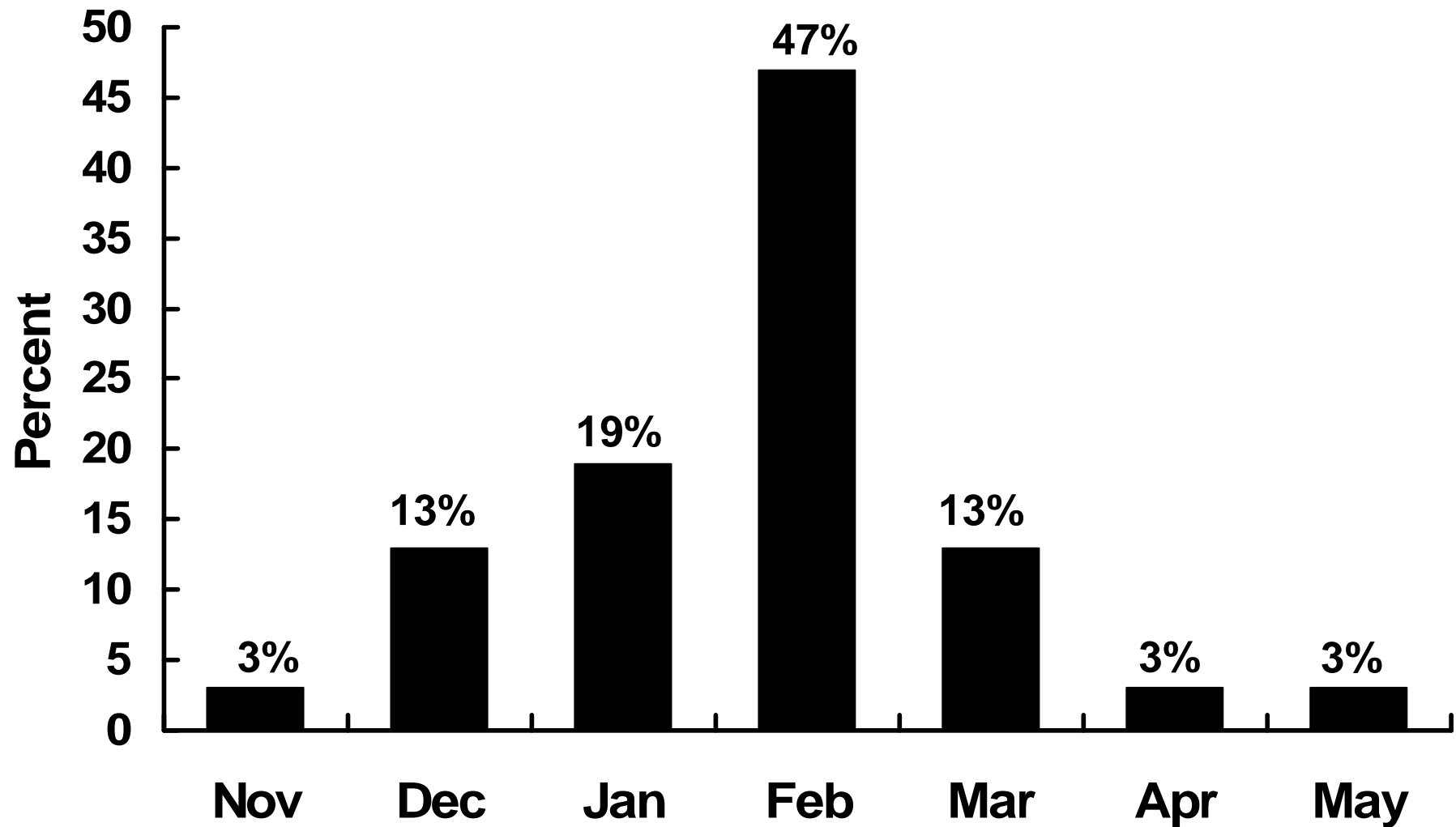
Influenza Among School-Aged Children

- **Influenza outbreaks in schools are very disruptive and amplify the disease in the community**
- **Students with influenza expose household and other contacts to the infection**

ACIP Recommendations for Influenza Vaccine, 2008-2009

- **All children aged 6 months through 18 years should receive annual influenza vaccination, beginning in 2008 if feasible, and beginning no later than during the 2009-2010 influenza season**

Month of Peak Influenza Activity United States, 1976-2008



Influenza Vaccination 2008-2009

- **If you still have influenza vaccine in stock continue to administer it, particularly to children (through age 8 years) being vaccinated for the first time this season who have only received one dose**
 - **These children will need 2 doses next season if they do not receive their second dose this season**

Elements Needed To Assess Causation of Vaccine Adverse Events

	<u>Disease</u>	<u>No disease</u>
<u>Vaccine</u>	a	b
<u>No vaccine</u>	c	d

$$\frac{\text{Risk in "vaccine" group}}{\text{Risk in "no vaccine" group}} = \frac{a / a + b}{c / c + d}$$

If the rate in "vaccine" group is higher than the rate in the "no vaccine" group then vaccines may be the cause

Autism and Vaccines

- **Multiple studies have examined the rate of autism among vaccinated and unvaccinated children**
- **Available evidence does not indicate that autism is more common among children who receive MMR or thimerosal-containing vaccines than among children who do not receive vaccines**
- **On February 12, 2009 U.S. Court of Federal Claims ruled that the measles-mumps-rubella vaccine, whether administered alone or in conjunction with thimerosal-containing vaccines, were not causal factors in the development of autism or autism spectrum disorders. See www.uscfc.uscourts.gov/node/5026**

Information about Autism

- **Centers for Disease Control and Prevention
Autism Information Center**
 - www.cdc.gov/ncbddd/autism/index.htm
- **American Academy of Pediatrics**
 - www.aap.org/healthtopics/autism.cfm
- **Vaccine Education Center at the Children's
Hospital of Philadelphia**
 - www.chop.edu/consumer/your_child/index.jsp
- ***Autism's False Prophets*, by Dr. Paul Offit
(Columbia University Press, 2008)**
- **Gerber JS and Offit PA. Vaccines and Autism: A
Tale of Shifting Hypotheses. *Clinical Infect Dis*
2009;48:456-61 (Feb 15, 2009)**

CDC Vaccines and Immunization Contact Information

- **Telephone** **800.CDC.INFO**
(for patients and parents)
- **Email** **nipinfo@cdc.gov**
(for providers)
- **Website** **www.cdc.gov/vaccines/**
- **Vaccine Safety**
www.cdc.gov/od/science/iso/