

## Background

In April 1994, the Centers for Disease Control and Prevention (CDC), sponsored by the National Center for Immunization and Respiratory Disease and the National Center for Health Statistics, initiated the National Immunization Survey (NIS). The NIS was established to provide a standardized method to monitor progress toward meeting national immunization goals. The NIS for children produces estimates of vaccination coverage levels at selected age milestones for the national, state, and selected local jurisdictions, including Los Angeles County (LAC). The CDC initiated the NIS-Teen in 2006 and the NIS-Adult in 2007 to measure coverage of select teen and adult vaccinations. The NIS is conducted for the CDC by the National Opinion Research Center (NORC). Results of the NIS are summarized and posted annually on the CDC website.

## Objective

The primary objective of the National Immunization Survey is to monitor national progress toward the goal of a 90% vaccine coverage level for preschool aged children and a 90% coverage level of select vaccines for teens by the year 2010.

## Methods

### NIS-Children

Eligibility	<ul style="list-style-type: none"> <li>Households with children 19-35 months of age (i.e. children who were born between February 2005 and May 2007).</li> </ul>
Sample Design	<ul style="list-style-type: none"> <li>Data are collected from quarterly telephone surveys.</li> <li>The sample is identified through randomly generated listed and unlisted telephone numbers.</li> <li>Telephone numbers are linked to geographic areas based on the area code and prefix.</li> </ul>
Collected Data	<ul style="list-style-type: none"> <li>Participants are asked to provide the following information:                             <ul style="list-style-type: none"> <li>Dates of their child's vaccinations from written records. If the record is not available they are asked to recall the number of doses of each vaccine their child has.</li> <li>Names and addresses of their child's vaccination providers.</li> <li>Verbal consent to contact their child's vaccination providers.</li> <li>Demographic information.</li> </ul> </li> <li>Vaccination providers are contacted by mail to obtain and/or verify vaccination dates of their patients participating in the NIS-Children, provided the parent/guardian gives consent.</li> </ul>

### NIS-Teen

#### Sample Design and Data Collection

NIS-Teen, conducted since 2006, is similar to the NIS-Children sample design. NIS-Teen produces estimates of vaccination coverage levels for adolescents aged 13-17 years in the 50 states and selected local areas. Data are collected using a random-digit-dialed sample of household telephone numbers. After parents/guardians grant permission, surveys are mailed to all of the adolescents' vaccination providers identified by the parents/guardians to obtain vaccination histories.

## Results

Results from the 2009 survey are grouped into the following categories:

<b>NIS-Children</b>	
I.	Sampling and Response Rates
II.	Estimated Vaccination Coverage with Individual Vaccines and Selected Vaccination Series – General Summary and Trends
III.	Estimated Vaccination Coverage with Individual Vaccines and Selected Vaccination Series – Stratified Summary
IV.	Estimated Vaccination Coverage with Individual Vaccines by Age Milestone
V.	Healthy People 2010 Objectives and Los Angeles County Status
VI.	Estimated Vaccination Coverage for Influenza
<b>NIS- Teen</b>	
VII.	Vaccination Coverage Among U.S. Teens

### NIS-Children

#### I. Sampling and Response Rates

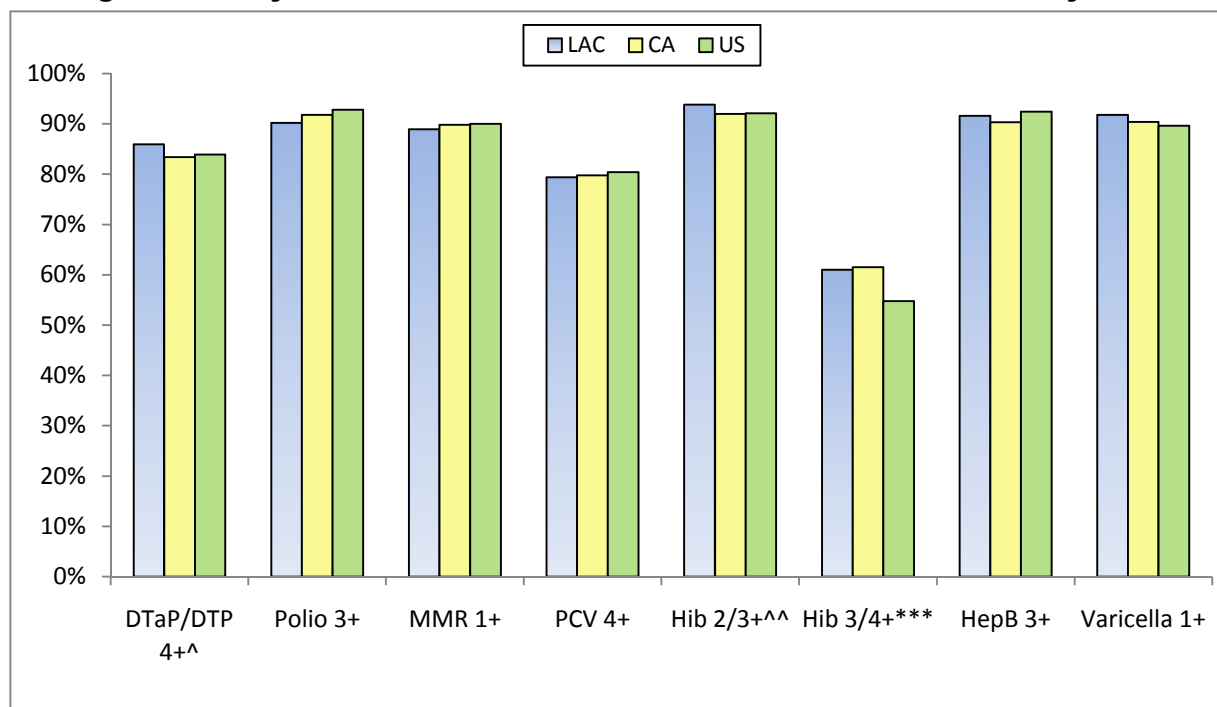
**Table 1. Number of eligible households and children with completed interviews and adequate provider data for the United States (U.S.) and Los Angeles County (LAC), National Immunization Survey – 2009.**

	United States	Los Angeles County
<b>Households</b>		
Number eligible	28,913	416
Number with completed interviews (%)	24,068 (83.2)	333 (80.0)
<b>Children</b>		
Number with completed interviews	24,809	356
Completed interviews and adequate provider data (%)	17,053 (68.7)	194 (54.5)

- In 2009, LAC’s NIS-Children household response rate was similar to the national rate.
  - Of the 416 households that were eligible for inclusion, 333 (80.0%) completed interviews, 3.8% below the national level and 2.2% above the 2008 level.
- The percent of completed child interviews with adequate provider data in LAC declined 13.5% from 2008 and remained below the national level.
  - The 333 household interviews resulted in 356 completed interviews on children in the eligible age-range. Of these 356 children, only 194 (54.5%) had adequate provider data. This proportion is 20.7% below the national level.

II. Estimated Vaccination Coverage with Individual Vaccines and Selected Vaccination Series – General Summary and Trends

**Figure 1. Estimated vaccination coverage levels among children 19-35 months of age, Los Angeles County and the United States, National Immunization Survey – 2009.**



	LAC	CA	US
DTaP/DTP 4+^	85.9 ± 5.8###	83.4 ± 4.7	83.9 ± 1.0
Polio 3+	90.2 ± 5.3	91.8 ± 3.5	92.8 ± 0.7
MMR 1+	88.9 ± 5.4	89.8 ± 3.7	90.0 ± 0.8
PCV 4+	79.4 ± 6.7	79.8 ± 5.1	80.4 ± 1.1
Hib 2/3+^^	93.8 ± 4.2	92.0 ± 3.5	92.1 ± 0.8
Hib 3/4+***	61.0 ± 7.9	61.5 ± 6.1	54.8 ± 1.4
HepB 3+	91.6 ± 4.8	90.3 ± 3.7	92.4 ± 0.7
Varicella 1+	91.8 ± 4.6	90.4 ± 3.7	89.6 ± 0.8

^ DTaP/DTP represents doses of any diphtheria and tetanus toxoids and pertussis vaccines including diphtheria and tetanus toxoids, and any pertussis vaccine (DTP/DTaP). DTaP is the vaccine of choice for children 6 weeks through 6 years of age. Pediatric DT is recommended for children with valid contraindications to pertussis vaccine. DTP has not been used in the U.S. since 2002.

^^ ≥2 or ≥3 doses of Hib vaccine for the primary series depending on brand type. Merck requires a 2-dose primary series and Sanofi Pasteur requires a 3-dose primary series. ACIP recommended deferral of the booster dose from December 2007 to September 2009.

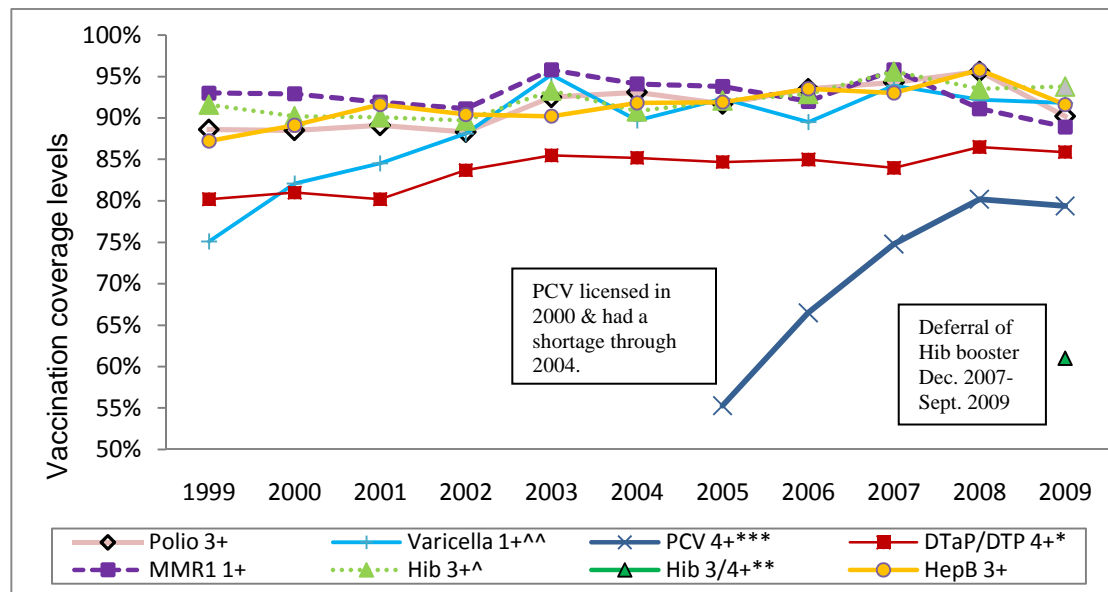
\*\*\* ≥3 or ≥4 doses of Hib vaccine for the primary series plus the booster dose depending on brand type. Merck requires a 2-dose primary series and Sanofi Pasteur requires a 3-dose primary series; plus the booster dose. ACIP recommended deferral of the booster dose from December 2007 to September 2009.

### Coverage level is presented as % ± 95% confidence interval.

- In 2009, LAC had comparable antigen-specific immunization coverage levels to the state and the nation (within 11.3%).
  - LAC coverage levels ranged between 1.7% below the state to 3.0% above the state level. LAC had higher coverage levels than the state for four or more doses of DTaP 4, Hib primary series (Hib 2 or 3 doses depending on brand type), three or more doses of Hep B, and one or more doses of varicella.
  - Compared to the nation, LAC coverage levels ranged between 2.8% below to 11.3% above the national level. LAC had higher coverage levels than the nation for DTaP 4+, Hib primary series (Hib 2 or 3 doses depending on brand type) and primary series plus booster (Hib 3 or 4 doses depending on brand type) and varicella 1+.

Note: ACIP recommended deferral of the Hib booster dose (represented in Hib 3/4+ coverage) from December 2007 to September 2009.

**Figure 2. Estimated vaccination coverage with individual vaccines among children 19-35 months of age, Los Angeles County, National Immunization Survey – 1999-2009.**



\* DTaP/DPT represents doses of any diphtheria and tetanus toxoids and pertussis vaccines including diphtheria and tetanus toxoids, and any pertussis vaccine (DTP/DTaP). DTaP is the vaccine of choice for children 6 weeks through 6 years of age. Pediatric DT is recommended for children with valid contraindications to pertussis vaccine. DTP has not been used in the U.S. since 2002.

^ From 1999-2008  $\geq 3$  doses of Hib vaccine regardless of brand type. Starting in 2009,  $\geq 2$  or  $\geq 3$  doses of Hib vaccine depending on brand type. Merck requires a 2-dose primary series and Sanofi Pasteur requires a 3-dose primary series. Consequently, the series coverage estimates are not comparable.

\*\*  $\geq 3$  or  $\geq 4$  doses of Hib vaccine for the primary series plus the booster dose depending on brand type. Merck requires a 2-dose primary series and Sanofi Pasteur requires a 3-dose primary series; plus the booster dose. ACIP recommended deferral of the booster dose from December 2007 to September 2009.

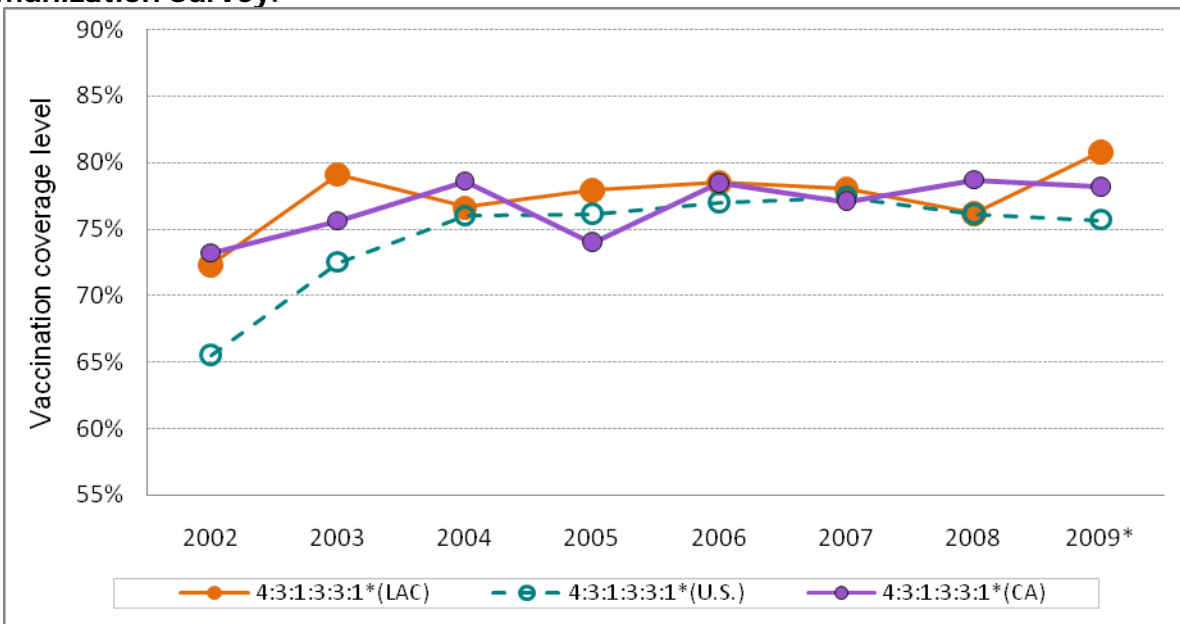
^^ Varicella vaccine was licensed by the Food and Drug Administration in 1995 and was added to the recommended childhood immunization schedule and the VFC Program in 1996.

\*\*\* NIS began reporting PCV 4+ coverage in 2005. Pneumococcal conjugate vaccine (PCV) was first licensed in 2000 and was added to the recommended childhood immunization schedule and the VFC Program that same year.

- In 2009, Hib primary series depending on brand type (Hib 3+), Varicella 1+, and Hep B 3+ ranked as the top three highest coverage levels.
  - Hib 3+ demonstrated the highest coverage level at 93.8%. In 2009, CDC began reporting Hib coverage accounting for brand type (Merck brand requires 2 doses and Sanofi Pasteur brand requires 3 doses for the primary series).
  - Coverage for Varicella 1+ remained stable from 2008 to 2009, decreasing only 0.4% to 91.8% in 2009.
  - After peaking in 2008, Hep B 3+ decreased 4.4% to 91.6% in 2009.
- All antigen-specific coverage levels declined between 2008 and 2009.
  - Polio 3+ demonstrated the largest decline decreasing 5.6% to 90.2%.
  - MMR 1+ fell 2.4% to 88.9%, its lowest coverage level in over ten years.
  - PCV 4+ declined 1.0% to 79.4%.
  - DTaP 4+ has one of the lowest coverage levels over the last 10 years, and DTaP 4+ declined slightly 0.7% to 85.9% in 2009.

Note: In 2009, NIS began reporting Hib accounting for vaccine brand. Consequently, the 2009 Hib coverage estimates are not comparable to previous years.

**Figure 3. Estimated vaccination coverage levels with selected vaccination series among children 19-35 months of age, Los Angeles County and the United States, National Immunization Survey.**



Year	4:3:1:3:3:1 series*	4:3:1:3:3:1:4 series^	4:3:1:3:4:1:4 series**
	% ± 95% CI^^	% ± 95% CI	% ± 95% CI
2002	72.3 ± 6.1 <sup>#</sup>	-	-
2003	79.1 ± 5.5	-	-
2004	76.6 ± 5.8	-	-
2005	77.9 ± 5.9	-	-
2006	78.5 ± 5.9	-	-
2007	78.0 ± 5.9	65.0 ± 6.7 <sup>#</sup>	-
2008	76.2 ± 5.3	67.6 ± 5.9	-
2009 <sup>##</sup>	80.8 ± 6.5	73.5 ± 7.2	50.6 ± 8.0 <sup>#</sup>

\* Four or more doses of DTaP/DTP, three or more doses of poliovirus vaccine, one or more doses of MMR, three or more doses of Hib, three or more doses of hepatitis B vaccine, and one or more doses of varicella vaccine.

^ Four or more doses of DTaP/DTP, three or more doses of poliovirus vaccine, one or more doses of MMR, three or more doses of Hib, three or more doses of hepatitis B vaccine, one or more doses of varicella vaccine, and four or more doses of pneumococcal conjugate vaccine (PCV).

\*\* Four or more doses of DTaP/DTP, three or more doses of poliovirus vaccine, one or more doses of MMR, four or more doses of Hib (depending on brand type), three or more doses of hepatitis B vaccine, one or more doses of varicella vaccine, and four or more doses of pneumococcal conjugate vaccine (PCV).

^^Confidence interval.

# First year series estimates were collected.

## In 2009, NIS began reporting the 4:3:1:3:3:1 accounting for Hib vaccine brand. Merck requires a 2-dose primary series and Sanofi Pasteur requires a 3-dose primary series. Consequently, the series coverage estimates are not comparable to previous years' estimates.

- In 2009, NIS began reporting the 4:3:1:3:3:1 accounting for Hib vaccine brand. Merck requires a 2-dose primary series and Sanofi Pasteur requires a 3-dose primary series. Consequently, the series coverage estimates are not comparable to previous years' estimates.
- The 2009 LAC 4:3:1:3:3:1 series coverage (80.8%) was 3.3% above the state level (78.2%) and 6.7% above the national level (75.7%).
- Because ACIP recommended deferral of the Hib booster dose from December 2007 to September 2009, LAC's coverage estimate for the 4:3:1:3:3:1:4 series was only 50.6%.

### III. Estimated Vaccination Coverage with Individual Vaccines and Selected Vaccination Series – Stratified Summary

#### IIIa. Race/Ethnicity

- There were no statistically significant differences between Non-Hispanic White and Hispanic vaccine coverage estimates (Data not available for other race/ethnicities due to insufficient sample size). However, with the exception of the first dose of varicella, Non-Hispanic Whites had higher antigen-specific coverage levels than Hispanics (data not shown).

#### IIIb. Poverty Level

- With the exception of the first dose of varicella, antigen-specific coverage estimates were lower for children living below the poverty level compared with children living at or above the poverty level in LAC. However none of the differences in coverage were statistically significant (data not shown).

### IV. Estimated Vaccination Coverage with Individual Vaccines by Age Milestone

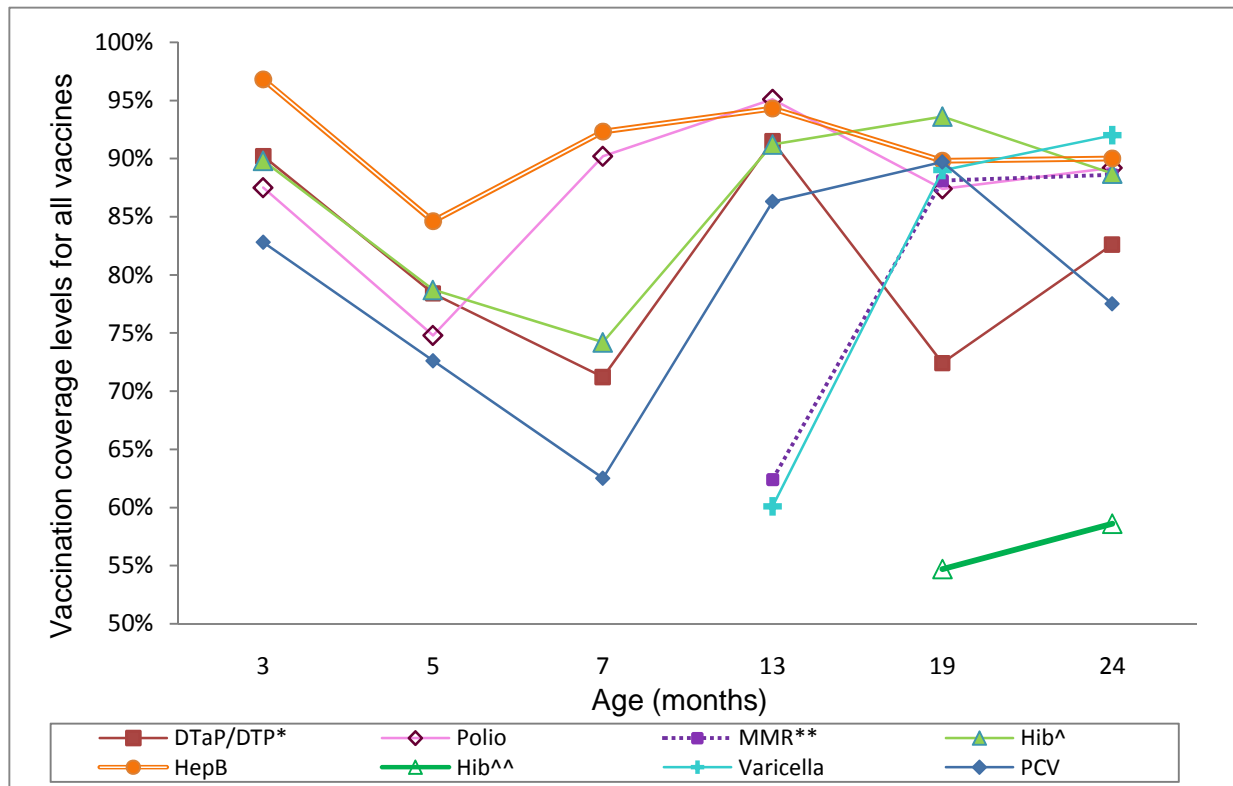
**Table 2. Required number of doses of individual vaccines at 3, 5, 7, 13, 19 and 24 months of age.**

Age (months)	DTaP/DTP	Polio	MMR	Hib	Hep B	Varicella	PCV
3	1	1	0	1	1	0	1
5	2	2	0	2	2	0	2
7	3	2	0	2 or 3	2	0	3
13	3	2	1	3 or 4	2	1	4
19	4	3	1	3 or 4	3	1	4
24	4	3	1	3 or 4	3	1	4

Coverage was estimated at 3, 5, 7, 13, 19, and 24 months of age. The required number of doses of individual vaccines at each age milestone for which coverage was estimated is shown in the table above.

Note: Four Hib conjugate vaccines are licensed for use in infants 6 weeks of age and older. The lower dose requirement for each age milestone is based on the Merck vaccine which requires a 2-dose primary series and the higher dose requirement is based on the Sanofi Pasteur vaccine which requires a 3-dose primary series, for children immunized before 7 months of age. Unvaccinated children 7 months of age and older may not require a full series. The number of doses a child needs to complete the series depends on the child’s current age. The 2-dose primary series vaccine is also the Hib component in the combination Hib and hepatitis B vaccine, which is widely used in Los Angeles County.

**Figure 4. Estimated vaccination coverage with individual vaccines by age, Los Angeles County, National Immunization Survey – 2009.**



\* DTaP/DTP represents doses of any diphtheria and tetanus toxoids and pertussis vaccines including diphtheria and tetanus toxoids, and any pertussis vaccine (DTP/DTaP). DTaP is the vaccine of choice for children 6 weeks through 6 years of age. Pediatric DT is recommended for children with valid contraindications to pertussis vaccine. DTP has not been used in the U.S. since 2002.

\*\* Measles-Mumps-Rubella vaccine; previous reports of vaccination coverage were for measles-containing vaccine (MCV).  
 ^ For 7 - 24 months age milestones,  $\geq 2$  or  $\geq 3$  doses of Hib vaccine depending on brand type. Merck requires a 2-doses primary series and Sanofi Pasteur requires a 3-dose primary series.

^^  $\geq 3$  or  $\geq 4$  doses of Hib vaccine depending on brand type. Merck requires a 2-doses primary series and Sanofi Pasteur requires a 3-dose primary series; plus the booster dose. ACIP recommended deferral of the booster dose from December 2007 to September 2009 and will be excluded from analysis.

- Coverage levels by age milestone for antigen-specific vaccines varied. However, by the 24-month milestone, many antigen-specific vaccines achieved similar coverage estimates (range: 92.0% -88.6%).
  - The exceptions were PCV and DTaP which had considerably lower coverage levels at 77.5% and 82.6% respectively. PCV and DTaP are the only antigen-specific vaccines that require four doses by age 24 months. In addition, PCV is a relatively new vaccine and has experienced periodic shortages since its licensure in 2000 attributing to its low coverage level.
- Trends in coverage levels by age milestone may reflect the variation in the dose schedule of each antigen-specific vaccine.
  - Drops in coverage levels occur when an additional dose for the antigen-specific vaccine is required.

Note: In 2009, NIS began reporting Hib accounting for vaccine brand. Merck requires a 2-dose primary series and Sanofi Pasteur requires a 3-dose primary series. ACIP recommended deferral of the booster dose from December 2007 to September 2009. Consequently, Hib primary plus booster (Hib^^) is excluded from analysis.

## V. Healthy People 2010 Objectives and Los Angeles County Status

**Table 3. Immunization objectives for *Healthy People 2010*, target coverage levels vs. Los Angeles County coverage estimates from different data sources.**

	<i>Healthy People 2010 Target (%)</i>	NIS LAC Estimate 2009 (%)	NIS previous 5-Year Average 2004-2008 (%)	Clinic Audits 2009 DHS <sup>1</sup> Facilities (%)	Clinic Audits 2009 CHC <sup>2</sup> Facilities (%)	Fall Assessment 2009 (%)
Age of Enrollees		19-35 months	19-35 months	24-35 months	24-35 months	24-59 months
<b><i>Healthy People 2010</i> Objective #1: Increase in and Maintenance of Vaccination Coverage Levels for Among Enrollees Aged 19 to 35 Months</b>						
4 doses DTaP	<b>90</b>	85.9	85.1	54.4	74.0	94.4
3 doses HiB	<b>90</b>	90.0	--	74.0	85.7	--
3 doses Hep B	<b>90</b>	91.6	93.2	80.0	90.1	95.3
1 dose MMR	<b>90</b>	88.9	93.4	75.5	87.9	95.9
3 doses Polio	<b>90</b>	90.2	93.6	80.0	90.9	96.1
1 dose Varicella	<b>90</b>	91.8	91.5	73.4	86.4	95.6
<b><i>Healthy People 2010</i> Objective #2: Increase in Coverage Levels of Universally Recommended Vaccines Among Children Aged 19 to 35 Months</b>						
4:3:1:3:3 <sup>3</sup>	<b>80</b>	79.2	79.2	49.9	69.7	--

<sup>1</sup> LAC Department of Health Services health centers and hospitals.

<sup>2</sup> Community Health Centers (non-profit healthcare providers that receive immunization subvention contract funds).

<sup>3</sup> Four doses of DtaP/DTP, three doses of poliovirus vaccine, one dose of MMR, three doses of Hib, and three doses of hepatitis B vaccine.

- Based on the 2009 NIS estimates, LAC has achieved the majority of the *Healthy People 2010* targets.
  - The exceptions were the DTaP 4+ and MMR 1+ antigen-specific coverage, which was 4.6% and 1.2% respectively below the 90% target level, and the 4:3:1:3:3 series coverage (not accounting for brand) which was 1.0% below the 80% target level.
- NIS demonstrated higher coverage levels than the clinics, but placed below the Fall Assessment levels for most coverage levels.
  - High Fall Assessment coverage levels may reflect the older age group of the sample. The Fall Assessment includes children between 24-59 months of age whereas NIS includes children between 19-35 months.
  - The disparity in coverage between NIS and CHC may be the product of variations in healthcare providers. NIS encompasses all households and provider types while CHC only includes enrollees whose care is given by non-profit healthcare providers that receive immunization contract funds.



## VI. Estimated Vaccine Coverage for Seasonal Influenza

**Table 4. Seasonal influenza vaccination coverage levels for September-December 2008 among children aged 6-23 months, Los Angeles County and the United States, National Immunization Survey.<sup>1</sup>**

	Seasonal Influenza Vaccination Coverage Levels			
	≥ 1 dose(s)		Fully Vaccinated <sup>2</sup>	
	2008	2009	2008	2009
U.S. National ( <i>n=11,023</i> ) <sup>3</sup>	40.7%	41.5%	23.4%	24.7%
California ( <i>n=238</i> )	44.5%	33.6%	21.9%	14.9%
Los Angeles County ( <i>n=116</i> )	40.8%	28.0%	21.6%	9.0%
Northern Counties	20.8%	-- <sup>4</sup>	9.6%	-- <sup>4</sup>
Santa Clara County	51.6% <sup>5</sup>	-- <sup>4</sup>	40.9%	-- <sup>4</sup>
Rest of State ( <i>n=122</i> )	45.8%	35.6%	21.1%	17.0%

<sup>1</sup> *n*=11,023 (unweighted). The influenza vaccination-coverage measures are based upon a subset of children included in the 2009 NIS. Only those children who were aged 6-23 months during the entire period of September-December 2008 and who had provider-reported immunization records are included.

<sup>2</sup> Fully vaccinated is defined as: 1) receipt of 2 doses from September 1, 2008, through the date of interview or January 31, 2009 (whichever was earlier) among influenza vaccine naïve children and children who received 1 dose for the first time in the previous influenza season, or 2) received 1 dose of influenza vaccine from September 1, 2008 through December 31, 2008 among all other children.

<sup>3</sup> Sample size.

<sup>4</sup> Data not available.

<sup>5</sup> Estimate might not be reliable; confidence interval width >20.0.

- While the national influenza immunization levels increased between 2008 and 2009, immunization levels declined at both the state and local levels.
  - LAC immunization level for one or more doses of influenza vaccination declined 31.4% to 28.0% and the level of fully vaccinated declined 58.3%, to 9.0%.
- LAC had lower seasonal influenza vaccine coverage levels to the national and state levels.
  - For one or more doses of influenza vaccination, LAC, at 28.0%, was 32.5% and 16.7% below the national and state levels, respectively. LAC coverage was also 21.3% below the rest of the state.
  - LAC's coverage for fully vaccinated against influenza (9.00%) was below the national, state, and the rest of the state by 63.6%, 39.6% and 47.1%, respectively.

## NIS-Teen

### VII. Vaccination Coverage Among U.S. Teens

**Table 5. Estimated vaccination coverage among adolescents aged 13-17 years.<sup>1</sup> National Immunization Survey – 2009.**

	NIS 2009 National Coverage ( <i>Healthy People 2010 Target<sup>2</sup></i> )							
	MMR 2+	HepB 3+	Td or Tdap 1+ <sup>3</sup>	Tdap 1+ <sup>4</sup>	Var 1+	MenACWY 1+ <sup>5</sup>	HPV 1+ <sup>6</sup>	HPV 3+
U.S. National	89.1 (90%)	89.9 (90%)	76.2 (90%)	55.6	87.0 (90%)	53.6	44.3	26.7
California	87.2 (90%)	89.6 (90%)	76.7 (90%)	53.1	88.0 (90%)	58.4	49.2	21.8
Los Angeles	84.0 (90%)	87.2 (90%)	78.9 (90%)	55.1	82.8 (90%)	58.3	63.5	30.9
Rest of State	88.5 (90%)	90.6 (90%)	75.8 (90%)	52.4	89.6 (90%)	58.5	43.6	18.3

<sup>1</sup> Adolescents in the 2009 NIS-Teen were born during January 1990 - February 1996. Vaccination coverage estimates include only adolescents who had adequately complete provider-reported immunization records.

<sup>2</sup> Target for adolescents aged 13-15 years.

<sup>3</sup> Includes ≥ 1 dose of tetanus toxoid-diphtheria vaccine (Td) or tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap) since the age of ten years.

<sup>4</sup> Tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap) since the age of ten years.

<sup>5</sup> Includes percentages receiving meningococcal conjugate vaccine (MCV4) and meningococcal -unknown type vaccine.

<sup>6</sup> Human papillomavirus vaccine either quadrivalent or bivalent. Percentages reported among females only (n=8,607).

- In 2009, vaccine coverage among adolescents aged 13-17 years varied across national, state, and local levels.
  - LAC coverage for HPV and one or more doses of Td or Tdap exceeded both the state and national levels.
  - LAC coverage for two or more doses of MMR, three or more doses of HepB, and one or more dose of varicella was below the state and national levels.
  - LAC coverage for one dose of Tdap (since age ten) was 55.1%, slightly higher than the state coverage level (3.8% higher) and similar to the national level (0.9% below).
  - LAC coverage for one dose of MenACWY was similar to the state level (0.2% below) and higher than the national level (8.8% higher).
- The top three coverage levels for adolescents in LAC were HepB 3+ (87.2%), MMR 2+ (84.0%), and Varicella 1+ (82.8%). None of LAC coverage levels met the Healthy People 2010 target of 90%.
- There were no statistically significant differences between adolescents living at or above the poverty level compared to those living below the poverty level. However, those living at or above the poverty line had higher levels for Td/Tdap 1+ and Tdap 1+, similar levels for MenACWY 1+ and HepB 3+, and a lower level for MMR 2+.
- There were no statistically significant differences between Hispanics and Non-Hispanic Whites (Data not available for other race/ethnicities due to insufficient sample size). Whites had similar levels for MMR 2+ and varicella 1+, a slightly lower level for HepB3+, and slightly higher levels for Td/Tdap 1+, Tdap 1+, and MenACWY 1+.

## Discussion

### NIS-Child

#### Key Findings:

The National Immunization Survey provides an essential tool for LAC in monitoring immunization trends and detecting changes in coverage levels.

- In 2009, antigen-specific coverage levels declined (range: -0.4% to -5.6%). However, LAC met or exceeded most of the *Healthy People 2010* targets. The exceptions were the DTaP 4+ and MMR 1+ coverage, which was 4.6% and 1.2% respectively below the 90% target level. Please Note: Due to the changes in Hib estimate methodology, coverage levels are not comparable to previous years.
- LAC had a higher series coverage level than the state and the nation. LAC 4:3:1:3:3:1 coverage level (80.8%) was above the state and national level, 3.3% and 6.7% respectively.
- The 2009 NIS had similar coverage level trends as the 2009 Fall Assessment. The Fall Assessment, which evaluated immunization coverage from the population of children enrolled in licensed preschools and kindergartens, also found declines in coverage levels. In the Fall Assessment, all antigen-specific coverage for preschools and kindergartens declined between 0.1% and 1.1%. NIS also showed declines in antigen-specific coverage levels between 0.4% and 5.6%.
- Because of the slight declines in coverage, public health efforts continue to focus on maintaining and improving coverage levels, especially as the number of vaccine preventable disease (VPD) cases continued to persist in 2009. Although national and international VPD outbreaks have been increasing in frequency in recent years, 2009 marked a peak year in the resurgence of VPD incidence internationally. Increased measles and pertussis incidence was noted in nearly every continent. Mumps outbreaks were noted in multiple countries, particularly in a religious group that quickly led to an on-going large scales outbreak on the east coast of the United States. Locally, a number of confirmed case(s) of measles, mumps, pertusis, and varicella occurred in 2009. In addition, the number of pertussis cases reported to LAC almost doubled between 2008 (80 cases) and 2009 (156 cases). This occurrence is most likely due to the cyclical epidemiology of pertussis, in which increased pertussis morbidity occurs every 3-5 years. In LAC, high incidence rate years are followed by significantly high peak incidence years. Consequently, it is anticipated that 2010 may be another significantly high peak incidence year in LAC due to the increased pertussis incidence rate in 2009.

#### Limitations

The NIS provides overall vaccination coverage estimates for Los Angeles County. Because of the sample size and survey methodology, the data cannot be analyzed for smaller geographic regions or specific communities. The NIS is useful for monitoring overall trends in the county but is limited in its ability to assist communities in assessing their immunization needs.

#### Further Information

Complete results of the 2009 NIS are available at [www.cdc.gov/vaccines/stats-surv/default.htm](http://www.cdc.gov/vaccines/stats-surv/default.htm).

#### References:

1. Centers for Disease Control and Prevention. Epidemiology and Prevention of Vaccine-Preventable Diseases. 11th ed. Washington DC: Public Health Foundation, 2009.