



COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC HEALTH
IMMUNIZATION PROGRAM
NATIONAL IMMUNIZATION SURVEY, 2007
NOVEMBER 2008

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 28 selected local jurisdictions, including Los Angeles County (LAC). The CDC initiated the NIS-Teen in 2006 and the NIS-Adult in 2007 to measure national coverage of select teen and adult vaccinations. The NIS is conducted for the CDC by the National Opinion Research Center (NORC). An addendum to this report presenting the NIS-Teen results will be released later in the year. 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 LAC's progress toward the national 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.

Note: NIS-Adult data are not available at the county level.

Methods

NIS-Children

Eligibility

- Households with children 19-35 months of age (i.e. children who were born between February 2004 and May 2006).

Sample Design

- Data are collected from quarterly telephone surveys.
- The sample is identified through randomly generated listed and unlisted telephone numbers.
- Telephone numbers are linked to geographic areas based on the area code and prefix.

Collected Data

- Participants are asked to provide the following information:
 - 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.
 - Names and addresses of their child's vaccination providers.
 - Verbal consent to contact their child's vaccination providers.
 - Demographic information.
- 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.

NIS-Adult

Sample Design and Data Collection

- NIS-Adult was a landline telephone survey conducted between May and August 2007. The sample was selected at random from two national lists of household telephone numbers. Vaccinations were self-reported. Data was adjusted for non-response, households that do not have a landline telephone or no telephone, and to match the age, gender, and racial/ethnic distribution of the country.

Results

Results from the 2007 survey are grouped into the following categories:

NIS-Children

- 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.

NIS- Adult

- VI. Vaccination Coverage Among U.S. Adults.

NIS-Children

I. Sampling and Response Rates

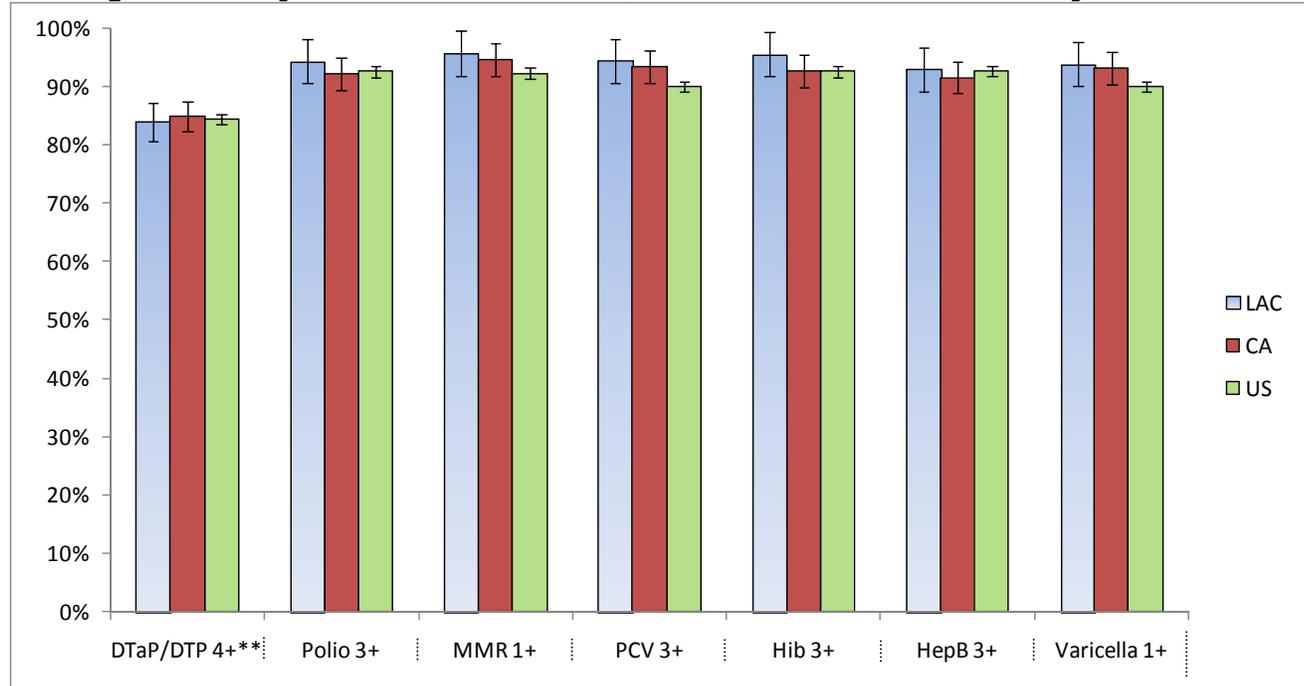
Table 1. Number of eligible households and children with completed interviews and adequate provider data for the United States (U.S.) and Los Angeles County (LAC), National Immunization Survey – 2007.

	United States	Los Angeles County
Households		
Number eligible	27,807	434
Number with completed interviews (%)	24,133 (86.8)	365 (84.1)
Children		
Number with completed interviews	24,807	370
Completed interviews and adequate provider data (%)	17,017 (68.6)	236 (63.8)

- In 2007, LAC's NIS-Children household response rate was similar to the national rate.
 - Of the 434 households that were eligible for inclusion, 365 (84.1%) completed interviews, 3.2% below the national level and 1.2% below the 2006 level.
- The percent of completed child interviews with adequate provider data in LAC improved from 2006 (by 5.3%) but remained below the national level.
 - The 434 household interviews resulted in 370 completed interviews on children in the eligible age-range. Of these 370 children, 236 (63.8%) had adequate provider data. This proportion is 7.3% below the national rate.

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 – 2007*.



LAC n=236	84.0±5.3***	94.3±3.2	95.8±2.8	94.5±3.1	95.6±2.9	93.0±3.7	93.9±3.3
CA n=17,017	84.9 ± 4.0	92.3 ± 3.1	94.6±2.4	93.4±2.9	92.7±2.8	91.6±3.2	93.2±2.6
US n=17,017	84.5 ± 0.9	92.6 ± 0.7	92.3±0.7	90.0±0.8	92.6±0.7	92.7±0.7	90.0±0.7

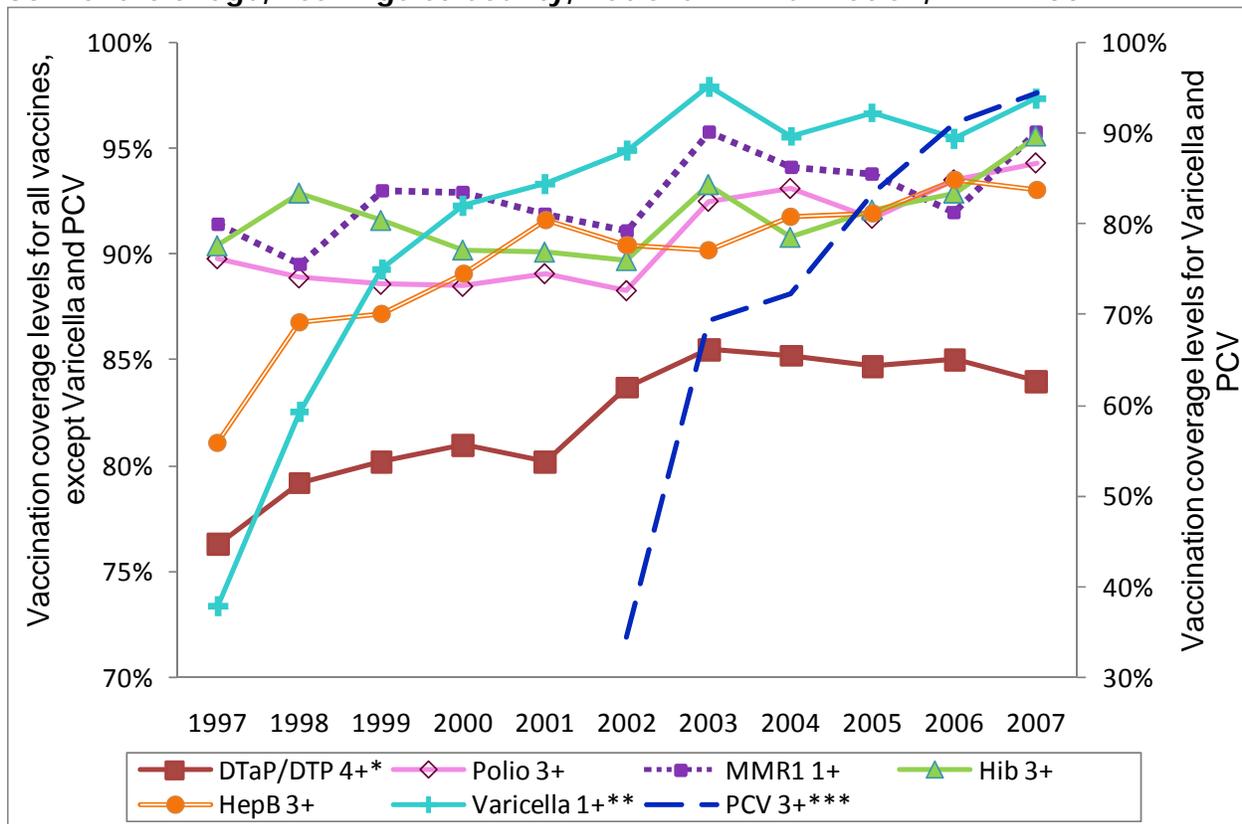
* The lines at the top of each bar represent confidence intervals of the estimated coverage levels.

** 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.

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

- In 2007, LAC exceeded the national and state antigen-specific immunization coverage levels with the exception of the fourth dose of DTaP.
 - The largest variation in coverage between LAC and the nation was for PCV 3+; LAC's coverage was 5.0% above the national level, a statistically significant difference.
 - LAC antigen-specific coverage levels ranged between 0.8% and 3.1% above state levels with the exception of DTaP.
- LAC coverage for DTaP 4+ was slightly below the state and national levels. LAC coverage was 0.6% and 1.1% below the national and state levels respectively.
- DTaP 4+ coverage was considerably lower than the other antigen-specific coverage levels for LAC, the state and nationwide. In LAC, DTaP 4+ was 9 percentage points below Hep B 3+, the second lowest antigen-specific coverage level.

Figure 2. Estimated vaccination coverage with individual vaccines among children 19-35 months of age, Los Angeles County, National Immunization, 1997-2007.



* 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.

** 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.

*** 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 2007, one or more doses of MMR, three or more doses of Hib, and three or more doses of PCV ranked as the top three highest coverage levels.
 - Following a 3-year decline, MMR 1+ increased 4.1% from 2006 to 95.8% and ranked as the top coverage level in 2007.
 - Hib 3+ coverage rose for the third consecutive year to 95.6% in 2007.
 - The upward trend in PCV coverage continued in 2007. Coverage increased 3.6% from 2006 to 2007 to 94.5%.
 - The low coverage for PCV in 2002 was most likely due to a vaccine shortage.
- Coverage for Varicella experienced the biggest improvement in antigen-specific coverage between 2006 and 2007. Coverage increased 4.9%, to 93.9% in 2007.
- In 2007, the third dose of Polio attained its highest coverage level, 94.3%.
- Only two antigen specific coverage levels declined between 2006 and 2007, the fourth dose of DTaP/DTP and the third dose of Hep B.
 - Although Hep B 3+ coverage only decreased 0.5%, Hep B 3+ dropped from the 3rd highest coverage level in 2006 to the 2nd lowest coverage level in 2007, at 93.0%.
 - DTaP coverage fell to 84.0% in 2007, a decrease of 1.2% from the previous year.

Table 2. Estimated vaccination coverage levels for children 19-35 months of age, Los Angeles County, National Immunization Survey – 1997-2007.

Year	4:3:1:3 series ¹	4:3:1:3:3 series ²	4:3:1:3:3:1 series ³
	% ± 95% CI ⁴	% ± 95% CI	% ± 95% CI
1997 ⁵	71.6 ± 6.8	64.6 ± 7.2	-
1998	76.0 ± 6.0	70.5 ± 6.3	-
1999	76.0 ± 5.7	71.0 ± 6.0	-
2000	76.5 ± 5.2	72.6 ± 5.4	-
2001	73.3 ± 5.4	71.6 ± 5.5	-
2002	77.1 ± 5.8	76.0 ± 5.9	72.3 ± 6.1 ⁶
2003	83.5 ± 5.0	80.3 ± 5.4	79.1 ± 5.5
2004	81.7 ± 5.3	80.1 ± 5.5	76.6 ± 5.8
2005	81.7 ± 5.6	79.0 ± 5.8	77.9 ± 5.9 ⁶
2006	82.1 ± 5.6	81.3 ± 5.7	78.5 ± 5.9
2007	82.6 ± 5.4	80.3 ± 5.7	78.0 ± 5.9

¹ Four or more doses of DTaP/DTP, three or more doses of poliovirus vaccine, one or more doses of MMR, and three or more doses of Hib.

² 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, and three or more doses of hepatitis B vaccine.

³ 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.

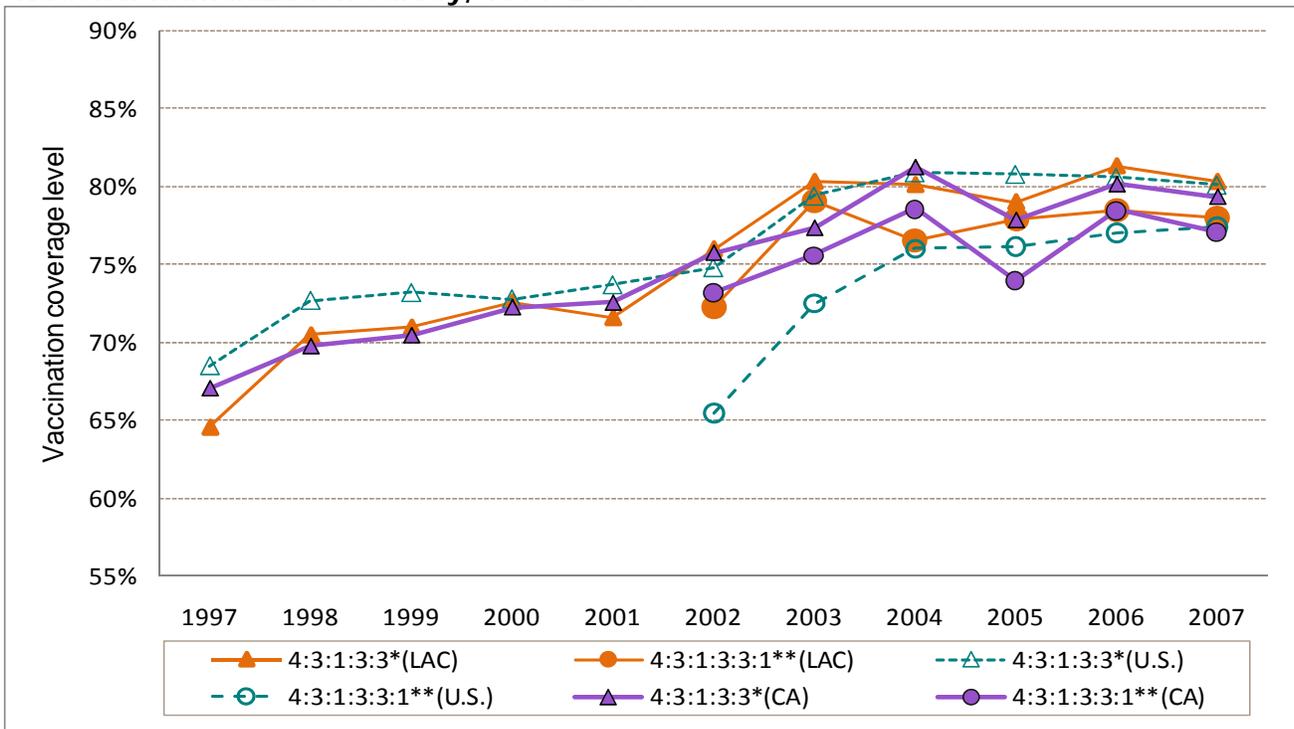
⁴ Confidence interval.

⁵ Estimates from previous reports differ because they were obtained from different reporting sources. Currently, all estimates are obtained from NIS tables.

⁶ 2002 is the first year estimates for the 4:3:1:3:3:1 series were collected.

- LAC’s series coverage estimates have stabilized over the last few years.
 - The 4:3:1:3 series coverage increased 0.6% from 2006 to 2007. The 4:3:1:3 coverage has fluctuated within 1% since 2004.
 - While the 4:3:1:3:3 series coverage has increased almost 25% over the last decade, LAC has maintained a coverage level near 80% for the last 5 years. In 2007, the series coverage dropped slightly, 1.2% from 2006, to 80.3%.
 - The 4:3:1:3:3:1 series coverage decreased slightly, 0.6%, from 2006 to 2007. Between 2005 and 2007, the series coverage increased 0.1%.

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, 1997-2007.



* 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, and 3 or more doses of hepatitis B 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, 3 or more doses of hepatitis B vaccine, and one or more doses or varicella vaccine.

- Since 2004, LAC has matched national and state vaccination series coverage levels.
 - From 2004 to 2007, LAC levels were within 2.4% of national coverage levels and 5.3% of state levels.
- In 2007, LAC's series coverage levels surpassed both state and national levels.
 - The LAC's 4:3:1:3:3 series coverage was 80.3% in 2007, 1.1% above the state level and 0.2% above the national level.
 - The LAC's 4:3:1:3:3:1 series coverage reached 78.0%, approximately 1% above the state and national levels.
- Estimated coverage levels for each series are typically lower than the estimated coverage levels for the individual vaccines. Delaying the fourth dose of DTaP is the primary reason for the low vaccine coverage levels for the 4:3:1:3:3 and 4:3:1:3:3:1 series.

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

IIIa. Comparison of series vaccination coverage levels for Los Angeles County and other urban areas.

- LAC's 4:3:1:3:3:1 series coverage, at 78.0% (95% Confidence Interval(CI): 83.9% to 72.1%), exceeded the average coverage level for urban areas, at 75.4% (95% CI: 77.8% to 73.0%), by 3.4%.
- LAC surpassed the other NIS sampled California counties coverage levels in 2007.
 - For the 4:3:1:3:3 series, LAC's coverage was 80.3% (95% CI: 86.0% to 74.6%) while Alameda County coverage was 78.6% (95% CI: 84.3% to 72.9%) and San Bernardino County was 71.1% (95% CI: 77.5% to 64.7%).
 - At 78.0%, LAC 4:3:1:3:3:1 series coverage was above Alameda's (76.3%; 95% CI: 82.1% to 70.5%) and San Bernardino's (69.6%; 95% CI: 76.1% to 63.1%) coverage level.

IIIb. Race/Ethnicity

There were no significant differences in any of the vaccine coverage estimates for non-Hispanic whites compared with Hispanics (data not shown). Race-specific estimates for other racial/ethnic groups were not calculated because of insufficient sample size.

IIIc. Poverty Level

Table 3. Estimated vaccination coverage levels among children 19-35 months of age, overall and by poverty level, Los Angeles County, National Immunization Survey – 2007.

Vaccine(s)	Children 19-35 months of age	Above poverty level	Below poverty level
	% ± 95% CI ¹	% ± 95% CI	% ± 95% CI
DTaP/DTP 4+ ²	84.0 ± 5.3	84.4 ± 6.9	85.1 ± 8.5
Poliovirus 3+	94.3 ± 3.2	92.2 ± 4.9	98.8 ± 2.4
MMR 1+	95.8 ± 2.8	95.2 ± 4.1	97.3 ± 3.2
Hib 3+	95.6 ± 2.9	94.6 ± 4.3	98.8 ± 2.4
Hepatitis B 3+	93.0 ± 3.7	92.1 ± 5.2	95.5 ± 5.0
Varicella 1+	93.9 ± 3.3	93.0 ± 5.0	95.3 ± 4.2
PCV 3+	94.5 ± 3.1	96.4 ± 2.9	93.5 ± 5.7
4:3:1:3 ³	82.6 ± 5.4	82.8 ± 7.0	85.1 ± 8.5
4:3:1:3:3 ⁴	80.3 ± 5.7	80.7 ± 7.4	81.8 ± 9.1
4:3:1:3:3:1 ⁵	78.0 ± 5.9	77.4 ± 7.9	80.6 ± 9.3

¹ Confidence interval.

² 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.

³ Four or more doses of DTaP/DTP, three or more doses of poliovirus vaccine, one or more doses of MMR, and three or more doses of Hib.

⁴ 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, and three or more doses of hepatitis B vaccine.

⁵ 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.

- Interestingly, vaccine coverage levels for children living below poverty were higher than the coverage levels of children living at or above the poverty level (between 0.8% and 6.7% higher) with the exception of PCV 3+ coverage. However, the differences in coverage were not statistically significant.
- PCV 3+ was the only antigen-specific coverage level that was higher (3%) among children living at or above the poverty level than among children living below the poverty.

IV. Estimated Vaccination Coverage with Individual Vaccines by Age Milestone

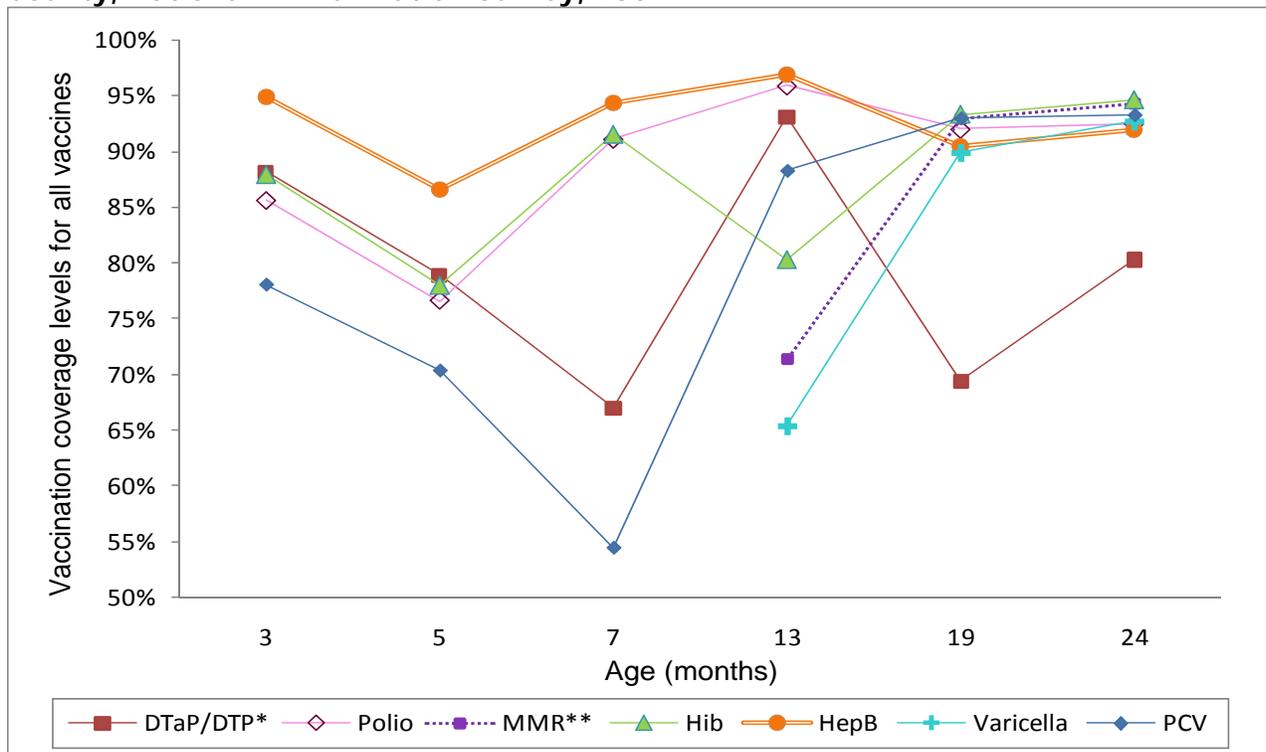
Table 4. Required number of doses of individual vaccines at 3, 5, 7, 13, 19 and 24 months of age.

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	2	0	3
13	3	2	1	3	2	1	3
19	4	3	1	3	3	1	3
24	4	3	1	3	3	1	3

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. One of these requires only two primary doses, as opposed to three primary doses, for children immunized before 7 months of age. This particular vaccine is also the Hib component in the combination Hib and hepatitis B vaccine, which is widely used in Los Angeles County. For this reason, the assessment of Hib coverage levels at 7, 13, 19, and 24 months is based upon the schedule for the vaccine requiring two primary doses.

Figure 4. Estimated vaccination coverage with individual vaccines by age, Los Angeles County, National Immunization Survey, 2007.



* 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).

- Coverage levels by age milestone for antigen-specific vaccines varied. However, by the 24-month milestone, most antigen-specific vaccines achieved similar coverage estimates (range: 92.0%-94.6%). The exception was DTaP which had a considerably lower coverage level at 80.3%.
- Trends in coverage levels by age milestone may reflect the variation in the dose schedule of each antigen-specific vaccine.
 - MMR and Varicella, which require only 1 dose at 12 months of age, steadily increased from the 13-month to 24-month age milestone.
 - Polio and Hep B vaccines have the same dose schedule and similar age-milestone coverage trends. Both dropped at 5 and 19 months when additional doses were required and peaked at 13 months.
- Both DTaP/DTP and PCV have consistently low coverage levels.
 - PCV had the lowest coverage at the 3, 5 and 7 months but caught up to most other antigen specific coverage levels by 19 months. PCV is a relatively new vaccine and has experienced periodic shortages since its licensure in 2000 attributing to its low coverage rate.
 - DTaP had the lowest coverage levels at the 19 month and 24 month milestones when the fourth dose is required.
 - The increase in DTaP/DTP coverage levels from 66% at 7 months to 90% at 13 months implies a delay in children receiving the third dose of the vaccine. Similarly, the increase from 19 months to 24 months implies that children are also late in receiving their fourth dose of DTaP/DTP vaccine.

Table 5. Estimated vaccination coverage levels for children at the 24-month age milestone, Los Angeles County, National Immunization Survey – 1997-2007.

Year	4:3:1:3 series ¹	4:3:1:3:3 series ²	4:3:1:3:3:1 series ³
	% ± 95% CI ⁴	% ± 95% CI	% ± 95% CI
1997 ⁵	68.7±8.4	60.6±8.8	-
1998	74.2±7.0	67.6±7.5	-
1999	78.3±6.3	72.3±6.8	-
2000	81.3±5.4	77.3±5.9	-
2001	73.7±6.5	72.2±6.7	-
2002	75.9±7.7	74.0±7.8	71.8±7.8 ⁶
2003	81.5±6.4	77.5±7.0	75.8±7.1
2004	77.2±7.2	76.4±7.3	74.7±7.4
2005	81.1±6.8	78.5±7.2	76.5±7.5
2006	79.7±5.8	78.9±5.8	77.2±5.9
2007	78.2±5.9	77.1±6.0	76.7±6.1

¹ Four or more doses of DTaP/DTP, three or more doses of poliovirus vaccine, one or more doses of MMR, and three or more doses of Hib.

² 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, and three or more doses of hepatitis B vaccine.

³ 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.

⁴ Confidence interval.

⁵ Estimates from previous reports differ because they were obtained from different reporting sources. Currently, all estimates are obtained from NIS tables.

⁶ 2002 is the first year estimates for the 4:3:1:3:3:1 series were collected.

- Unlike the series coverage levels for the total NIS sample (children aged 19-35 months) in which only the 4:3:1:3:3:1 coverage decreased, all series coverage levels for the 24-month age milestone declined slightly from 2006 to 2007.
 - The 2007 4:3:1:3, 4:3:1:3:3, and 4:3:1:3:3:1 series coverage levels decreased 1.9%, 2.3%, and 0.6% respectively from 2006.
 - The 24-month age milestone series coverage levels were between 1.7% and 5.0% below coverage for children aged 19-35 months reflecting the older age group included in the total NIS sample.

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

Table 6. 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 2007 (%)	NIS previous 5-Year Average 2002-2006 (%)	Clinic Audits 2007 DHS ¹ Facilities (%)	Clinic Audits 2007 CHC ² Facilities (%)	Fall Assessment 2007 (%)
Age of Enrollees		19-35 months	19-35 months	24-35 months	24-35 months	24-59 months
<i>Healthy People 2010 Objective #1:</i>						
Increase in and Maintenance of Vaccination Coverage Levels for Among Enrollees Aged 19 to 35 Months						
4 doses DTaP	90	84.0	84.8	45.6	64.8	96.2
3 doses HiB	90	95.6	91.8	77.7	85.1	--
3 doses Hep B	90	93.0	91.6	75.9	82.6	97.0
1 dose MMR	90	95.8	93.4	69.7	80.3	97.7
3 doses polio	90	94.3	91.8	76.3	84.9	97.4
1 dose varicella	90	93.9	91.0	65.7	76.7	97.1
<i>Healthy People 2010 Objective #2:</i>						
Increase in Coverage Levels of Universally Recommended Vaccines Among Children Aged 19 to 35 Months						
4:3:1:3:3 ³	80	80.3	79.3	43.3	60.3	--

¹ LAC Department of Health Services health centers and hospitals.

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

³ 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 2007 NIS estimates, LAC has achieved most of the *Healthy People 2010* targets. Coverage ranged between 3.3% and 6.4% above the antigen-specific target level and was 0.4% above the series target level.
 - The exception was the DTaP 4+ coverage which was 6.1% below the target level and 0.4% below the NIS previous 5-year average.
- NIS demonstrated higher coverage levels than the clinics, but placed below the Fall Assessment 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.

NIS-Adult

VI. Vaccination Coverage Among U.S. Adults

Table 7. Self-Reported vaccination coverage among U.S. adults. National Immunization Survey 2007.

	NIS 2007 National Coverage (<i>Healthy People 2010 Target</i>)		
	18-49	50-64	65+
Influenza ¹	37.3% (<i>60%</i>)	42.2% (<i>60%</i>)	68.8% (<i>90%</i>)
Pneumococcal ²	32.8% (<i>60%</i>) ³		65.6% (<i>90%</i>)
Tetanus ⁴	57.2%	57.2%	44.1%
Tdap ⁵	2.1%	-- ⁶	-- ⁶
Tdap /Tetanus ⁷	20.7%	-- ⁶	-- ⁶
Hep A 2+ doses ²	12.1%	-- ⁶	-- ⁶
Hep B 3+ doses ²	23.4%	-- ⁶	-- ⁶

¹ For the 2006-2007 season.

² Participants were asked if they have ever been vaccinated.

³ Includes ages 18-64.

⁴ Participants were asked if they were vaccinated in past 10 years.

⁵ Participants were asked if they were vaccinated with Tdap in the past 2 years.

⁶ Data not available.

⁷ Participants were asked if they had the Tdap proportion of tetanus vaccinations in the past 2 years.

- In 2007, national levels were well below the *Healthy People 2010* targets for both influenza and pneumococcal.
 - The national coverage for influenza vaccination was 38% below target for adults aged 18-49, 30% below target for adults aged 50-64, and 24% below the target for adults 65 and older.
 - Only 32.8% of adults aged 18-64 received pneumococcal vaccination in 2007, 45% below the healthy People 2010 target. Approximately 65.6% of seniors 65 and older received the vaccination, 27% below target.
- Only 57.2% of adults 18-64 and less than half of adults (44.1%) 65 and older are up-to-date for tetanus.

Discussion

NIS-Child

The National Immunization Survey provides an essential tool for LAC in monitoring immunization trends and detecting changes in coverage levels. According to the NIS 2007 statistics, LAC has met or exceeded most of the *Healthy People 2010* targets and most national levels. The exceptions were coverage for the fourth dose of DTaP which, at 94.0%, was 7% below target and approximately 1% below the state and national levels and coverage for the 4:3:1:3:3:1 series which, at 78.0%, exceeded the state and national levels but failed to reach the 80% target.

Following recent declines in coverage, most NIS estimated coverage levels increased from 2006 to 2007. Despite a shortage, the third dose of Hib coverage is at a record high, 95.6%. The third dose of Polio and the third dose of PCV also reached record highs, 94.3% and 94.5% respectively. Varicella increased considerably 4.9% to 93.9%. MMR increased 4.1% and now has the highest antigen-specific coverage level for 2007 at 95.8%. The increase in coverage may reflect a shift in parents' vaccination behaviors triggered by the growing number of studies that did not find a causal relationship between the MMR vaccine and autism.¹⁻⁴ The proportion of parents who believe that the MMR vaccine is more harmful than the diseases it protects against decreased from 24% in 2002 to 14% in 2006.⁵ Additionally, in 2007 Dr. Andrew Wakefield, the doctor who first presented a link between MMR and autism, was under investigation by the British General Medical Council. The case is expected to continue through late 2008 or early 2009.⁶⁻⁷ An increase in the number of cases of mumps which occurred nationwide as well as the number of confirmed case(s) of measles, mumps, pertussis, and varicella that occurred locally in 2006 may have also contributed to parents change in vaccine behavior. LACIP has made efforts to educate parents of the importance of vaccinations to change their vaccine beliefs and behavior. Because of the affect of parent beliefs on coverage levels, beginning in 2008, NIS will be collecting information on parent vaccine safety concerns to assess parent attitudes, beliefs, and behavior about vaccines.

Slightly different vaccine coverage trends were observed in the 2007 Fall Assessment. The Fall Assessment, which evaluated immunization coverage from the population of children enrolled in licensed preschools and kindergartens, found mixed results. Similar to the 2007 NIS, most of the coverage levels for preschool enrollees increased from 2006 to 2007. However, unlike the 2007 NIS in which DTaP and Hep B vaccine coverage decreased, both increased slightly while Hib and Varicella coverage levels decreased. Additionally, none of the Fall Assessment antigen specific vaccine coverage levels reached record highs. In contrast, all antigen-specific coverage levels for kindergarten enrollees in the Fall Assessment decreased between 2006 and 2007 with the exception of Hep B which remained stable. The difference in coverage may reflect the similar age groups of preschool enrollees in the Fall Assessment (24-59 months) and the NIS participants (19-35 months) versus the older age group of kindergarten enrollees. Nonetheless, DTaP consistently had the lowest coverage levels for all age groups.

NIS-Adult

National coverage levels for adult recommended immunizations ranged between 24% and 45% below the *Healthy People 2010* targets. These low coverage levels may reflect cost and health insurance issues, the lack of regular care, and the low priority level placed on adult immunizations. In response to low coverage levels, LAC has initiated several programs to improve adult and adolescent coverage.

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 2007 NIS are available at www.cdc.gov/vaccines/stats-surv/default.htm.

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