



COUNTY OF LOS ANGELES DEPARTMENT OF HEALTH SERVICES
IMMUNIZATION PROGRAM
NATIONAL IMMUNIZATION SURVEY, 2002
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Background

The National Immunization Survey (NIS) provides estimates of vaccination coverage levels by vaccine and series among children 19-35 months of age in the United States at selected age milestones. Estimates are also provided for each state and 27 urban areas, including Los Angeles County (LAC). The NIS was initiated by the Centers for Disease Control and Prevention (CDC), sponsored by the National Immunization Program and the National Centers for Health Statistics, in April 1994 as a standardized means to monitor progress in meeting national goals to appropriately vaccinate 90% of preschool aged children by the year 2010. Results of the NIS are summarized and distributed annually on the CDC website.

Methods

NIS Eligibility

- Households with children 19-35 months of age are eligible for inclusion in the survey.

NIS Sample Design

- Quarterly telephone surveys.
- 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:
 - The 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.
 - The 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, provided the parent/guardian gives consent.

Data Analysis

- Vaccination rates are estimated by adjusting the data for non-response of parents and providers and for households that do not have telephones.
- Confidence limits are presented for each estimate. The confidence limits reflect the range within which 95% of the estimates would fall if the survey were repeated over and over. When confidence intervals overlap, the point estimates do not represent statistically significant differences.

Results

The 2002 survey includes children who were born from February 1999 through May 2001, i.e., children who were 19-35 months of age during 2002. In this report, the results are grouped into four categories:

- 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 Vaccine 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.

I. Sampling and Response Rates

Table 1. Number of eligible households and children with completed interviews and adequate provider data for the United States and Los Angeles County, National Immunization Survey – 2002.

	United States	Los Angeles County
Households		
Number eligible	34,201	500
Number with completed interviews (%)	30,974 (90.6)	448 (89.6)
Children		
Number with completed interviews	31,693	459
Completed interviews and adequate provider data (%)	21,317 (67.3)	274 (59.7)

In 2002, LAC had 500 households that were eligible for inclusion in NIS. Nearly 90 percent (448) of these households completed interviews, which is a considerably high response rate. These 448 household interviews resulted in 459 completed interviews on children in the eligible age-range. Of these 459 children, 274 (59.7%) also had adequate provider data. These proportions were over 7 points lower than the proportions for the entire United States. The calculated coverage level estimates in the NIS are derived from the analysis of the collected data from children with completed interviews and adequate provider data (274 for LAC and 21,317 for the U.S.).

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

Table 2. Estimated vaccination coverage levels among children 19-35 months of age for Los Angeles County, the United States, and other urban areas, National Immunization Survey – 2002.

	4:3:1 series ¹	4:3:1:3 series ²	4:3:1:3:3 series ³
	% ± 95% CI ⁴	% ± 95% CI	% ± 95% CI
Los Angeles County, CA (n=274)	79.6 ± 5.6	77.1 ± 5.8	76.0 ± 5.9
United States (n=21,317)	78.5 ± 1.0	77.5 ± 1.0	74.8 ± 1.0
California State	77.5 ± 3.7	75.8 ± 3.8	73.2 ± 3.8
Jefferson County, AL [Birmingham] ⁵	81.7 ± 5.4	81.7 ± 5.4	77.8 ± 5.9
Maricopa County, AZ [Phoenix]	73.7 ± 6.3	73.1 ± 6.3	71.8 ± 6.4
San Diego County, CA [San Diego]	79.0 ± 5.7	77.7 ± 5.8	74.1 ± 6.1
Santa Clara County, CA [San Jose]	85.0 ± 4.4	83.7 ± 4.5	81.1 ± 4.8
Dade County, FL [Miami]	75.4 ± 6.3	73.3 ± 6.4	70.9 ± 6.5
Duval County, FL [Jacksonville]	78.0 ± 6.9	77.3 ± 6.9	76.1 ± 7.0
Fulton/DeKalb Counties, GA [Atlanta]	79.4 ± 5.6	79.1 ± 5.6	77.5 ± 5.7
Chicago City, IL	72.3 ± 7.4	71.5 ± 7.4	69.1 ± 7.5
Marion County, IN [Indianapolis]	75.6 ± 6.5	75.3 ± 6.5	74.0 ± 6.5
Orleans Parish, LA [New Orleans]	65.0 ± 8.0	63.4 ± 8.1	60.5 ± 8.3
Baltimore, MD	76.2 ± 6.3	74.6 ± 6.3	70.8 ± 6.7
Boston, MA	82.5 ± 5.3	79.9 ± 5.6	76.6 ± 6.3
Detroit, MI	66.7 ± 6.8	65.9 ± 6.8	64.5 ± 6.8
Newark, NJ	61.5 ± 8.2	59.9 ± 8.2	57.5 ± 8.1
New York, NY	81.8 ± 5.8	81.0 ± 5.9	78.1 ± 6.2
Cuyahoga County, OH [Cleveland]	74.6 ± 7.7	74.2 ± 7.8	72.1 ± 7.8
Franklin County, OH [Columbus]	84.5 ± 5.2	83.7 ± 5.2	81.0 ± 5.6
Philadelphia County, PA [Philadelphia]	75.0 ± 6.0	73.5 ± 6.0	72.0 ± 6.1
Davidson County, TN [Nashville]	81.3 ± 5.8	79.8 ± 6.1	79.3 ± 6.2
Shelby County, TN [Memphis]	73.4 ± 6.7	72.6 ± 6.7	72.5 ± 6.7
Bexar County, TX [San Antonio]	76.4 ± 5.8	75.9 ± 5.8	73.9 ± 5.9
Houston, TX	64.2 ± 8.0	63.9 ± 8.1	61.4 ± 8.0
Dallas County, TX [Dallas]	77.3 ± 5.1	75.9 ± 5.2	71.5 ± 5.5
El Paso County, TX [El Paso]	78.6 ± 5.9	77.1 ± 6.0	67.4 ± 7.1
King County, WA [Seattle]	78.3 ± 5.3	76.9 ± 5.4	73.1 ± 5.6
Milwaukee County, WI [Milwaukee]	73.6 ± 7.3	69.8 ± 7.6	67.8 ± 7.7

¹ Four or more doses of DTaP/DT, three or more doses of poliovirus vaccine, one or more doses of MMR.

² Four or more doses of DTaP/DT, three or more doses of poliovirus vaccine, one or more doses of MMR, and three or more doses of Hib.

³ Four or more doses of DTaP/DT, 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.

⁴ Confidence interval.

⁵ Cities in brackets are the primary cities in the county.

Among the 27 urban areas for which coverage levels were estimated, the 4:3:1 series, the 4:3:1:3 series, and the 4:3:1:3:3 estimates were lowest for the city of Newark (61.5%, 59.9%, and 57.5%, respectively) and highest for Santa Clara County, California (85.0%, 83.7%, and 81.1%, respectively). Estimates for LAC were consistent with those for other California counties, the state of California, and most other urban areas throughout the U.S.

Table 3. Estimated vaccination coverage levels among children 19-35 months of age, Los Angeles County and the United States, National Immunization Survey – 2002.

Vaccine(s)	Los Angeles County (n=274)	United States (n=21,317)
	% ± 95% CI ¹	% ± 95% CI
≥ 4 DTaP/DT	83.7 ± 5.3	81.6 ± 0.6
≥ 3 DTaP/DT	93.1 ± 4.2	94.9 ± 0.6
≥ 3 Poliovirus	88.3 ± 4.8	90.2 ± 0.7
≥ 1 MMR ²	91.1 ± 4.0	91.6 ± 0.7
≥ 3 Hib	89.7 ± 4.7	93.1 ± 0.6
≥ 3 Hepatitis B	90.4 ± 3.9	89.9 ± 0.7
≥ 1 Varicella	88.1 ± 4.3	80.6 ± 0.9
≥ 3 PCV	34.5 ± 6.4	40.9 ± 1.1
4:3:1 ³	79.6 ± 5.6	78.5 ± 1.0
4:3:1:3 ⁴	77.1 ± 5.8	77.5 ± 1.0
4:3:1:3:3 ⁵	76.0 ± 5.9	74.8 ± 1.0

¹ Confidence interval.

² Measles-Mumps-Rubella vaccine; previous reports of vaccination coverage were for measles-containing vaccine (MCV).

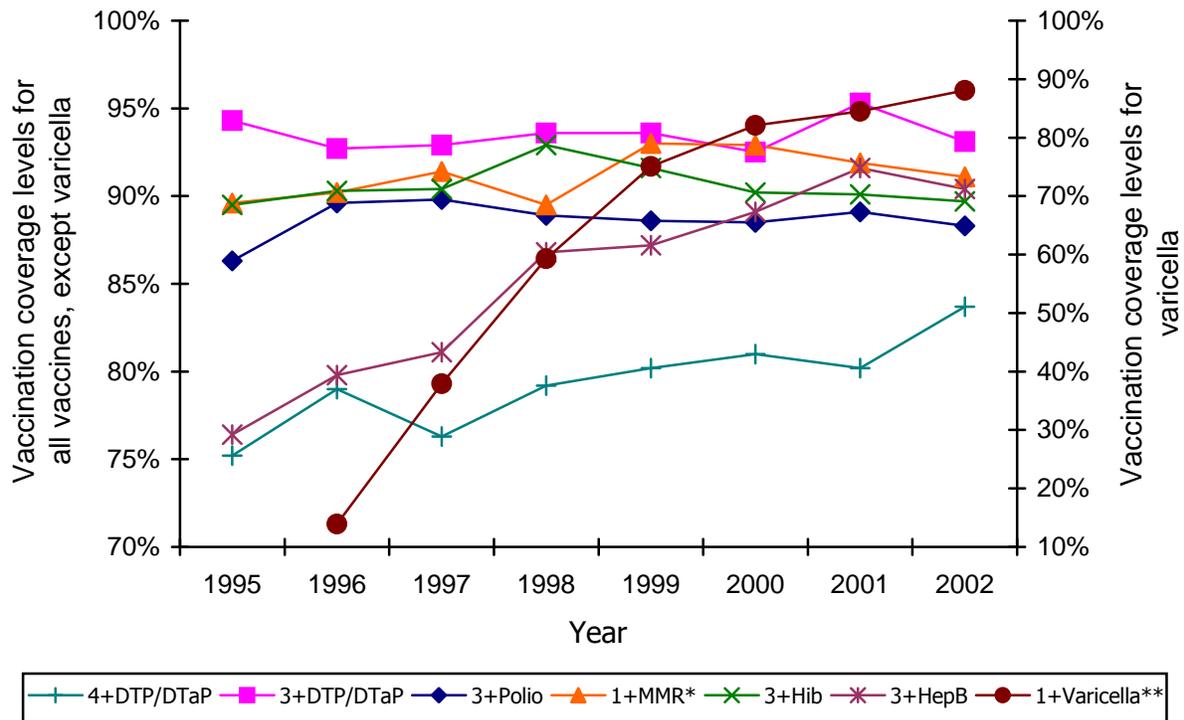
³ Four or more doses of DTaP/DT, three or more doses of poliovirus vaccine, one or more doses of MMR.

⁴ Four or more doses of DTaP/DT, three or more doses of poliovirus vaccine, one or more doses of MMR, and three or more doses of Hib.

⁵ Four or more doses of DTaP/DT, 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.

In LAC, individual vaccine coverage estimates were highest for three or more doses of diphtheria, tetanus toxoids, and pertussis (DTaP/DT) vaccine and lowest for three or more doses of Pneumococcal conjugate vaccine (PCV). When comparing varicella vaccine coverage estimates for LAC and the entire U.S., LAC estimates are significantly higher. For all other vaccines there are no statistically significant differences in coverage level estimates between LAC and the U.S.

Figure 1. Estimated vaccination coverage with individual vaccines among children 19-35 months of age, Los Angeles County, National Immunization Survey, 1995-2002.



*Measles-Mumps-Rubella vaccine; previous reports of vaccination coverage were for measles-containing vaccine (MCV).
 **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.

In this graph, all vaccines except varicella are graphed using the vertical axis on the left. PCV is not on this graph because 2002 is the first year it was included in the NIS. Since NIS began, vaccine coverage levels in LAC have remained fairly steady. However, there was an increase of more than 5 points in hepatitis B vaccination coverage from 1997 to 1998, which was due to the California law requiring hepatitis B vaccination upon entry into kindergarten. Since NIS began, vaccination coverage levels for 3+DTaP/DT have been 3-8 points higher than vaccination coverage levels for 3+Polio. Until 2002, the difference between 3+DTaP/DT coverage levels and 4+DTaP/DT coverage levels ranged from 12 to 19 points, indicating a need to improve efforts towards getting children immunized with the fourth dose of DTaP/DT. In 2002, there was an increase of 3.5 percentage points since 2001 in the 4+DTaP/DT coverage level, decreasing the difference between the third and fourth doses to nearly 9 percentage points. The varicella vaccine is graphed using the vertical axis on the right. Until 2000, coverage estimates for varicella vaccine have significantly increased each year since its addition to the recommended childhood immunization schedule in 1996. Varicella coverage levels continue to rise following 2000, but the increases are not statistically significant.

Table 4. Estimated vaccination coverage levels for children 19-35 months of age, Los Angeles County, National Immunization Survey – 1995-2002.

Year	4:3:1 series ¹	4:3:1:3 series ²	4:3:1:3:3 series ³
	% ± 95% CI ⁴	% ± 95% CI	% ± 95% CI
1995 ⁵	71.5 ± 8.5	67.7 ± 8.8	60.9 ± 9.0
1996 ⁵	75.6 ± 6.3	74.6 ± 6.4	67.3 ± 6.8
1997 ⁵	74.1 ± 6.6	71.6 ± 6.8	64.6 ± 7.2
1998	76.5 ± 5.9	76.0 ± 6.0	70.5 ± 6.3
1999	78.1 ± 5.6	76.0 ± 5.7	71.0 ± 6.0
2000	78.2 ± 5.1	76.5 ± 5.2	72.6 ± 5.4
2001	76.7 ± 5.2	73.3 ± 5.4	71.6 ± 5.5
2002	79.6 ± 5.6	77.1 ± 5.8	76.0 ± 5.9

¹ Four or more doses of DTaP/DT, three or more doses of poliovirus vaccine, one or more doses of MMR.

² Four or more doses of DTaP/DT, three or more doses of poliovirus vaccine, one or more doses of MMR, and three or more doses of Hib.

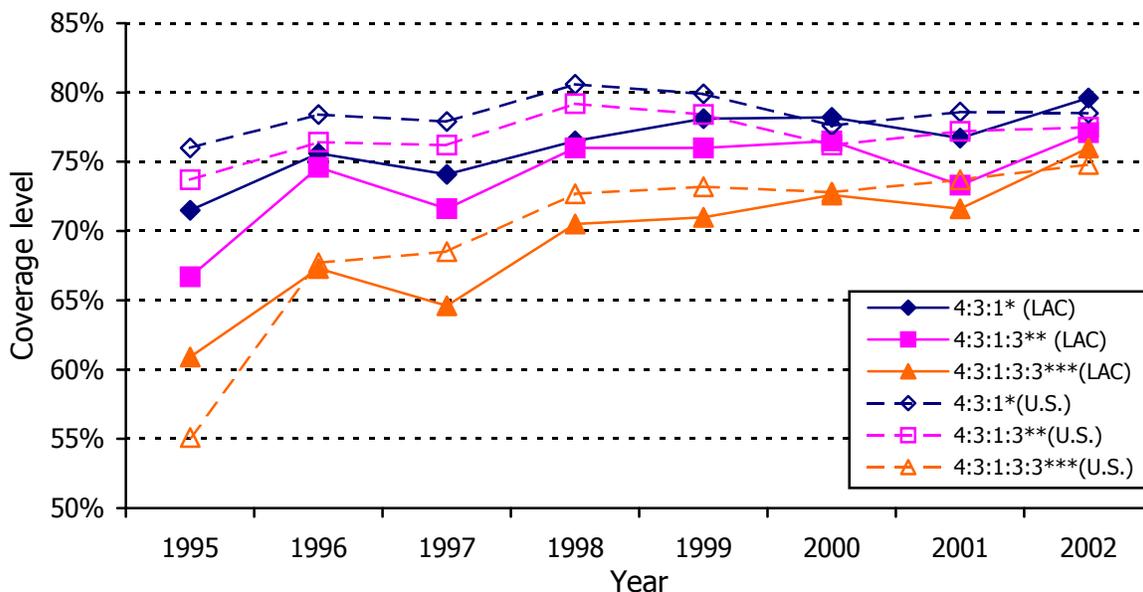
³ Four or more doses of DTaP/DT, three or more doses of poliovirus vaccine, one or more doses of MMR, three or more doses of Hib, and three or more doses of hepatitis B vaccine.

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.

All three vaccine series experienced an increase in coverage levels between 1995 and 1996. There were small decreases between 1996 and 1997 and small increases between 1998 and 2000 for all three vaccine series. Between 2000 and 2001 there were slight decreases for all three vaccine series. However, the estimates increased in 2002. The changes from 2001 to 2002 were not statistically significant. These results are also displayed graphically in Figure 2.

Figure 2. Estimated vaccination coverage levels with selected vaccination series among children 19-35 months of age, Los Angeles County (LAC) and the United States (U.S.), National Immunization Survey, 1995-2002.



*Four or more doses of DTaP/DT, three or more doses of poliovirus vaccine, one or more doses of Measles-Mumps-Rubella vaccine (MMR).

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

***Four or more doses of DTaP/DT, 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.

Comparing LAC and U.S. vaccination coverage estimates, coverage levels for the 4:3:1 series and the 4:3:1:3 series have followed similar trends from 1995 to 2000. For the 4:3:1:3:3 series, estimated coverage levels for the U.S. and LAC have followed similar trends from 1997 to 2000. Coverage levels for all three series have remained about the same for both LAC and U.S. since 1999. Although U.S. estimates have been generally higher than LAC estimates, the differences were not statistically significant and the gap has been closing since 2000. In 2002, there is a one point or less difference between the LAC and U.S. estimates.

Estimated coverage levels for the different series are usually lower than the estimated coverage levels for the individual vaccines. Delaying the fourth dose of DTaP is the primary reason why vaccine coverage levels for the 4:3:1, 4:3:1:3, and 4:3:1:3:3 series are not higher.

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

IIIa. 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.

IIIb. Poverty Level

Table 5. Estimated vaccination coverage levels among children 19-35 months of age, overall and by poverty level, Los Angeles County, National Immunization Survey – 2002.

Vaccine(s)	Children 19-35 months of age	Above poverty level	Below poverty level
	% ± 95% CI ¹	% ± 95% CI	% ± 95% CI
≥ 4 DTaP/DT	83.7 ± 5.3	84.2 ± 6.5	NA ²
≥ 3 DTaP/DT	93.1 ± 4.2	96.2 ± 3.0	NA
≥ 3 Poliovirus	88.3 ± 4.8	87.4 ± 5.9	NA
≥ 1 MMR ³	91.1 ± 4.0	90.7 ± 4.9	91.0 ± 9.0
≥ 3 Hib	89.7 ± 4.7	91.4 ± 4.8	NA
≥ 3 Hepatitis B	90.4 ± 3.9	88.6 ± 5.1	89.4 ± 8.7
≥ 1 Varicella	88.1 ± 4.3	88.5 ± 5.0	88.5 ± 9.4
≥ 3 PCV	34.5 ± 6.4	41.5 ± 7.9	NA
4:3:1 ⁴	79.6 ± 5.6	77.4 ± 7.5	NA
4:3:1:3 ⁵	77.1 ± 5.8	74.2 ± 7.8	NA
4:3:1:3:3 ⁶	76.0 ± 5.9	73.0 ± 7.9	NA

¹ Confidence interval.

² Estimate Not Available (NA) if the unweighted sample size for the numerator was <30 or (CI half width)/Estimate >0.5 or (CI half width)>10.

³ Measles-Mumps-Rubella vaccine; previous reports of vaccination coverage were for measles-containing vaccine (MCV).

⁴ Four or more doses of DTaP/DT, three or more doses of poliovirus vaccine, one or more doses of MMR.

⁵ Four or more doses of DTaP/DT, three or more doses of poliovirus vaccine, one or more doses of MMR, and three or more doses of Hib.

⁶ Four or more doses of DTaP/DT, 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.

For MMR, hepatitis B, and varicella, estimates for the 32% of children living below the poverty level were not significantly different from the estimates for children living at or above the poverty level or from the overall estimates. Coverage levels for the other vaccines could not be estimated due to insufficient data.

IIIc. VFC Provider Status

Table 6. Estimated vaccination coverage levels among children 19-35 months of age by provider participation in the Vaccines for Children (VFC) Program, Los Angeles County, National Immunization Survey – 2002.

Vaccine(s)	Children whose providers participated in the VFC program	Children whose providers did not participate in the VFC program
	% ± 95% CI ¹	% ± 95% CI
≥ 4 DTaP/DT	87.8 ± 4.7	NA ²
≥ 3 Poliovirus	93.4 ± 3.5	NA
≥ 1 MMR ³	93.3 ± 3.6	NA
≥ 3 Hib	93.4 ± 3.7	NA
≥ 3 Hepatitis B	92.5 ± 3.8	94.5 ± 6.3
≥ 1 Varicella	90.2 ± 4.1	NA
≥ 3 PCV	33.0 ± 7.1	NA
4:3:1 ⁴	83.4 ± 5.4	NA
4:3:1:3 ⁵	80.5 ± 5.9	NA
4:3:1:3:3 ⁶	79.5 ± 6.1	NA

¹ Confidence interval.

² Estimate Not Available (NA) if the unweighted sample size for the numerator was <30 or (CI half width)/Estimate >0.5 or (CI half width)>10.

³ Measles-Mumps-Rubella vaccine; previous reports of vaccination coverage were for measles-containing vaccine (MCV).

⁴ Four or more doses of DTaP/DT, three or more doses of poliovirus vaccine, one or more doses of MCV.

⁵ Four or more doses of DTaP/DT, three or more doses of poliovirus vaccine, one or more doses of MCV, and three or more doses of Hib.

⁶ Four or more doses of DTaP/DT, three or more doses of poliovirus vaccine, one or more doses of MCV, three or more doses of Hib, and three or more doses of hepatitis B vaccine.

The Vaccines for Children (VFC) Program is federally funded and, through state and local health departments, provides free vaccines to participating health care providers. These providers administer vaccines to children who are eligible for Medi-Cal and the Child Health and Disability Prevention (CHDP) Program, are American Indian or Alaskan Native, or do not have health insurance. Additionally, children whose health insurance does not cover vaccinations may go to federally qualified health centers and rural health clinics to receive vaccine provided by the VFC Program. Due to insufficient data, only the hepatitis B coverage level could be estimated for children whose provider did not participate in the VFC program. This estimate was not significantly different from the hepatitis B estimate for children whose providers participated in the VFC Program.

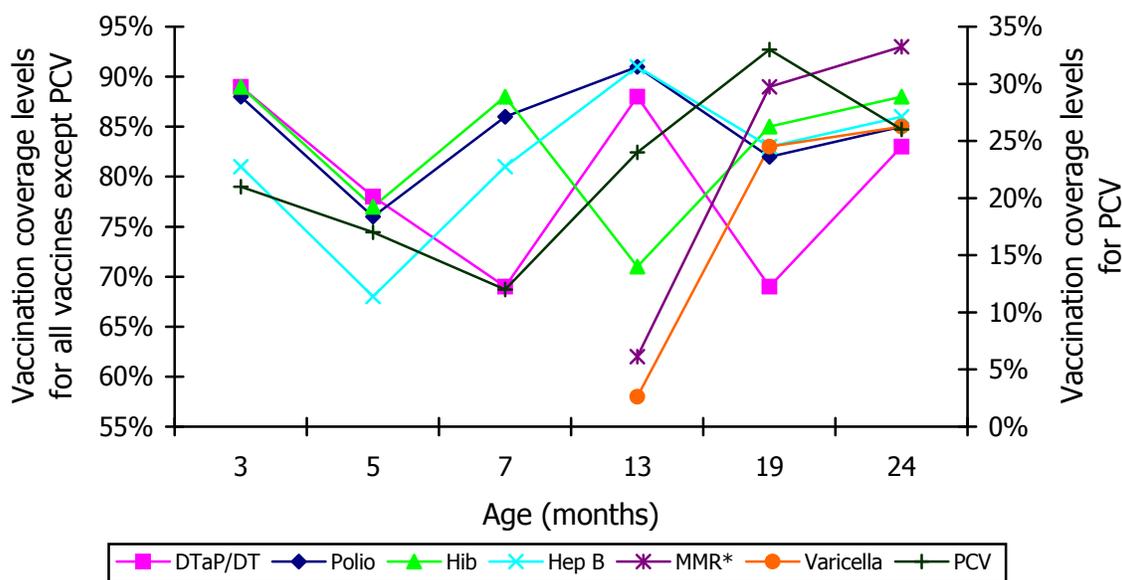
IV. Estimated Vaccination Coverage with Individual Vaccines by Age Milestone

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

Age (months)	DTaP/DT	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 also 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 Table 7. 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 3. Estimated vaccination coverage with individual vaccines by age, Los Angeles County, National Immunization Survey, 2002.



*Measles-Mumps-Rubella vaccine; previous reports of vaccination coverage were for measles-containing vaccine (MCV).

In this graph, all vaccines except PCV are graphed using the vertical axis on the left. The low coverage rates for PCV are probably due to the fact that it is a relatively new vaccine. For poliovirus and hepatitis B vaccines, coverage estimates peaked at 13 months of age. Historically, DTaP/DT also peaks at 13 months. In 2002, coverage estimates for DTaP/DT at 3

and 13 months were about the same. Coverage estimates for Hib, varicella, and MMR increased at each successive age milestone after 13 months. At 24 months of age, there were similar coverage estimates for most vaccines.

The increase in DTaP/DT vaccine coverage levels from 69% at 7 months to 88% at 13 months implies a delay in children getting the third dose of the vaccine. Similarly, the change from a 69% coverage level at 19 months to an 83% coverage level at 24 months implies that children are late in receiving their fourth dose of DTaP/DT vaccine.

V. Healthy People 2010 Objectives and Los Angeles County Status

Table 8. Immunization objectives for Healthy People 2010, target coverage levels vs. Los Angeles County NIS estimates for 2002, and the Los Angeles County average NIS estimate for a 5-year period.

Healthy People 2010 Objective	Healthy People 2010 Target (%)	Los Angeles County Estimate (%), 2002	Previous 5-year average (%), Los Angeles County (1997-2001)
Increase in and Maintenance of Vaccination Coverage Levels Among Children Aged 19 to 35 Months			
4 doses diphtheria-tetanus-acellular pertussis (DTaP) vaccine	90	83.7	79.4
3 doses Haemophilus influenzae type b (Hib) vaccine	90	89.7	91.0
3 doses hepatitis B (hep B) vaccine	90	90.4	87.2
1 dose measles-mumps-rubella (MMR) vaccine	90	91.1	91.7
3 doses polio vaccine	90	88.3	89.0
1 dose varicella vaccine	90	88.1	80.6*
Increase in Coverage Levels of Universally Recommended Vaccines			
Children aged 19 to 35 months who receive the recommended vaccines (4 DTaP, 3 polio, 1 MMR, 3 Hib, 3 hep B)	80	76.0	70.1

*The 3-year average (1999-2001) for varicella vaccine was calculated.

The national 90% vaccination goal for children 19 to 35 months of age was achieved for three doses of Hib vaccine, three or more doses of hepatitis B vaccine, and one or more doses of MMR, which was also the case in the 2001 NIS. LAC has not reached the Healthy People 2010 target levels for four or more doses of DTaP, three doses of poliovirus vaccine, 1 dose of varicella, and the 4:3:1:3:3 series. The low coverage level for four or more DTaP is the primary reason that LAC has not reached the 80% goal for the 4:3:1:3:3 series. However, coverage levels for polio vaccine must also improve if LAC is to achieve this national goal.

Table 9. Immunization objectives for Healthy People 2010, target coverage levels vs. Los Angeles County coverage estimates at 24 month age milestone from different data sources

Healthy People 2010 Objective	Healthy People 2010 Target (%)	Clinic Audits 2002 DHS ¹ Facilities (% children 24-35 months in 2002)	Clinic Audits 2002 CHC ² Facilities (% children 24-35 months in 2002)	NIS ³ 2002 (% Children 19-35 months in 2002)
Increase in and Maintenance of Vaccination Coverage Levels Among Children Aged 19 to 35 Months				
4 doses DTaP	90	69.6	87.1	83.7
3 doses Hib	90	80.6	91.8	89.7
3 doses Hep B	90	77.9	91.8	90.4
1 dose MMR	90	83.9	93.6	91.1
3 doses polio	90	83.5	95.6	88.3
1 dose varicella	90	78.1	90.1	88.1
Increase in Coverage Levels of Universally Recommended Vaccines Among Children Aged 19 to 35 Months				
4:3:1:3:3 ⁴	80	60.3	80.9	76.0
4:3:1 ⁵	N/A	65.9	84.5	79.6

¹ LAC Department of Health Services health centers and hospitals.

² Community Health Centers (nonprofit healthcare providers that receive immunization subvention contract funds).

³ National Immunization Survey, random-digit telephone survey conducted by the Centers for Disease Control and Prevention National Immunization Program.

⁴ Four doses of DTaP/DT, three doses of poliovirus vaccine, one dose of MMR, three doses of Hib, and three doses of hepatitis B vaccine.

⁵ Four doses of DTaP/DT, three doses of poliovirus vaccine, one dose of MMR.

Clinic record audits of children 24-35 months of age are conducted yearly at public pediatric clinics and select non-profit health care providers in order to measure vaccine coverage rates of children seeking immunization services at these facilities. Estimates reported in the National Immunization Survey are more similar to the CHC facility estimates from the 2002 clinic audits than the estimates determined in the DHS facilities. A probable explanation for this finding is because the NIS is a population-based survey and there are few DHS facilities in proportion to the size of the LAC population, the probability of sampling a child who obtained immunizations in the public sector is low.

The delay in administration of the fourth dose of DTaP/DT continues to be the reason why LAC overall cannot reach the 80% goal of appropriately vaccinating 24 month aged children (4:3:1:3:3), although in 2002, the CHC facilities reached this goal.

Discussion

Summary

Through annual surveys like the NIS and the kindergarten retrospective survey, LAC Immunization Program will continue to monitor our progress in achieving our vaccination goals. In 2002, coverage estimates for two vaccines (DTaP and varicella) and the 4:3:1:3:3 series increased 3% to 4% from 2001. These improved vaccination coverage levels among preschool-aged children in Los Angeles County bring us closer to achieving optimal vaccination levels.

Comparison to Other Data Sources

The vaccination coverage estimates from the NIS are slightly higher than the estimates from the annual kindergarten retrospective survey conducted in Los Angeles County. The kindergarten retrospective survey is an annual survey of a sample of children entering public or private kindergartens in Los Angeles County. School-based vaccination records required for kindergarten entry are reviewed to estimate vaccination coverage levels in prior years. Of children who entered kindergarten in fall 2002, an estimated 72.8% had received the 4:3:1 series when they were 24 months of age in 1999. There are several reasons for the differences between the NIS and kindergarten retrospective survey estimates. First, the target age for the NIS is 19-35 months compared with 24 months for the kindergarten retrospective survey. Second, the two surveys use different sampling methods and are subject to different biases. The kindergarten retrospective survey is a records-based assessment and is not subject to response bias. NIS estimates are subject to sampling bias, but are adjusted to account for some of that bias. Third, the two surveys provide estimates for different cohorts of children. The 2002 kindergarten retrospective survey provides an estimate for children who were two years of age in 1999 compared with those 19-35 months of age in 2002 for the NIS. Also, the NIS is a population-based estimation; the kindergarten retrospective survey is not.

Limitations

The NIS provides overall vaccination coverage estimates for Los Angeles County. Because of the sample size and survey technique, 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 2002 NIS are available at <http://www.cdc.gov/vaccines/stats-surv/default.htm>.