Utilization of Public Health Clinics for Immunization Services

January 2013

Since 2005 all Los Angeles County Department of Public Health (LACDPH) Public Health Centers (PHCs) have used the regional immunization registry (formerly the Los Angeles-Orange Immunization Network or LINK; currently the California Immunization Registry or CAIR) to keep track of the vaccinations administered in their in-house immunization clinics and in outreach clinics conducted during the 2011-2012 influenza campaign.

The California Immunization Registry (CAIR) is a secure, confidential, statewide computerized immunization information system for California residents. Visit www.cairweb.org for more information on CAIR.

Uses/Purpose of this Report

This is the third report in which the Los Angeles County Department of Public Health, Immunization Program (LACDPH-IP) analyzed data from CAIR to characterize the population within each Service Planning Area (SPA) utilizing PHCs for immunization purposes; the second containing comparisons to previous years. This analysis allowed LACIP to observe changes in patient profiles (age range, types of vaccines sought, SPA of residence) that may have occurred from 2006 to 2011, with years 2006-2010 presented as 5-year averages for comparison with 2011. Data from previous reports have been utilized to prevent health center closures. These findings have been shared with CAIR personnel responsible for data quality. Finally, the data in this report have been cited for an article in *Rx for Prevention*, an LAC Department of Public Health publication. Other potential uses of these data can be found at the end of this report.

Terminology

Antigen – any substance that, when introduced, causes the human body to activate its immune system and create antibodies (proteins that fight the germs that cause disease). In this report antigens are named according to the disease.

Dose – any antigen administered to a patient. A single antigen vaccine contains one dose (e.g. the hepatitis A vaccine counts as a single dose) while a combination vaccine contains several doses (e.g. MMR contains one dose of measles antigen, one dose of mumps antigen, and one dose of rubella antigen).

Vaccine/vaccination – Vaccines can be administered to patients orally, intranasally, or as a shot. This can be a single antigen vaccine (e.g. Hepatitis A) or a vaccine with multiple antigens (e.g. MMR).

Vaccine-related visit – any visit made to a health facility during which at least one vaccination is received.

Population Presented in this Report

Persons included in the analysis for this report were those who received at least one immunization at a PHC in 2011. Except for immunizations administered after December 31, 2011, the entire vaccination history of these persons was included in the analysis.

Overall Trends

Although the overall population profile (age and SPA distribution) of persons utilizing PHCs has not changed in comparison to the last 5 years, some increases were observed. The proportion of adolescents and adults utilizing PHCs has increased. For adolescents (aged 7-18 years), the increase was primarily due to Tdap, most likely because of the requirement for school entry, which went into effect for the 2011-2012 school year. The increase in adults (age >18 years) was primarily due to the increased uptake of the Hepatitis B and MMR vaccines.

There was a slight shift in the distribution of vaccines obtained from PHCs (data not shown). Compared to 2010, vaccines against hepatitis A, hepatitis B, Hib, and MMR made up a smaller proportion of the total number of vaccines administered by PHCs. Although there were also decreases in the proportion of DTaP, PCV7, Pediarix, and Td, this was most

likely due to the switch to using the newer vaccines (i.e., Tdap and PCV13).

Who utilizes the Public Health Centers?

In 2011, PHCs administered at least one vaccination to nearly 65,000 Los Angeles County residents. These LAC residents received over 175,000 vaccinations at a PHC during more than 90,000 visits (Table 1). SPA 3 residents utilized PHCs the most with 25,430 visits and 46,318 vaccinations. SPA 2 residents were second in PHC usage with 13,574 visits and 26,212 vaccinations. SPA 5 residents utilized PHC the least with 1,490 visits and 2,859 vaccinations.

Persons utilizing PHCs were more inclined to visit the health center(s) closest to them (Table 2). For example, persons living in SPA 3 utilized Monrovia and Pomona Health Centers more often than any of the other PHCs. Persons living in SPA 5, which does not have a PHC located within the SPA, utilized Curtis Tucker and Hollywood/Wilshire Health Centers. Compared to the 5-year average, there was not much of a shift in the clinics utilized by residents in SPAs 1, 4, 7, and 8. However, SPA 2, 3, 5, and 6 residents utilized Pacoima, Monrovia, Hollywood-Wilshire, and South Health Centers, respectively, more than in the past 5 years.

Adolescents (persons age 7-18 years of age) used PHCs primarily to obtain hepatitis A,

Table 1. Total Number of Visits to and Vaccinations Administered by Public Health Centers in 2011, By Patients' SPA of Residence.

SPA	Total number of visits to Public Health Centers[1]		Total number of vaccinations given at Public Health Centers[2]	
	n	(%)	n	(%)
1	9,215	(10)	23,521	(13)
2	13,574	(15)	26,212	(15)
3	25,430	(28)	46,318	(26)
4	9,640	(11)	18,118	(10)
5	1,490	(2)	2,859	(2)
6	11,501	(13)	21,985	(13)
7	6,752	(7)	12,069	(7)
8	12,984	(14)	25,561	(14)
Total	90,586	(100)	176,643	(100)

[1] Total number of visits for all persons who visited a Public Health Center at least once in 2011 for a vaccination. Total visits include those occurring prior to 2011.
[2] Total number of vaccinations for all persons who obtained at least one vaccination at a Public Health Center in 2011. Total vaccinations include those administered prior to 2011.

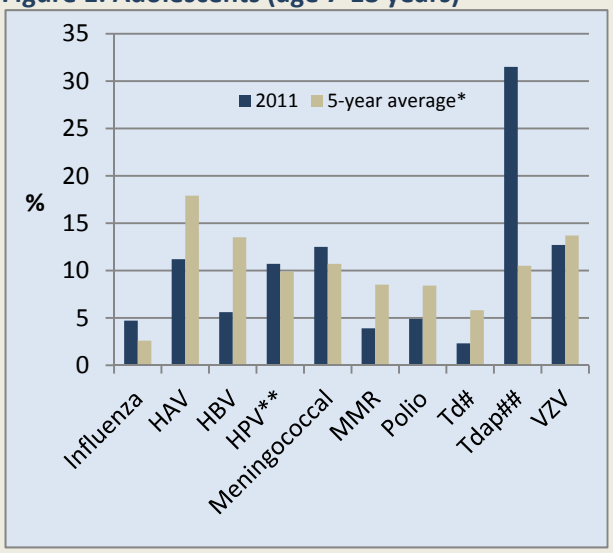
Table 2. Public Health Centers Utilized by LAC Residents for At Least One Vaccination in 2011, by Patients' SPA of Residence[1]

SPA	Public Health Center(s) visited most frequently	# of visits		% of all visits[2]	
		2011	2006-2010*	2011	2006-2010*
1	Antelope Valley	8,953	5,585	97.2	97.3
2	Glendale	5,452	3,422	40.2	51.3
	Pacoima	6,480	2,552	47.7	38.5
3	Monrovia	12,977	6,627	51.0	46.0
	Pomona	9,719	5,475	38.2	38.0
4	Central	3,194	1,888	33.1	33.7
	Hollywood-Wilshire	4,879	2,865	50.6	51.0
5	Curtis Tucker	411	363	27.6	38.7
	Hollywood-Wilshire	755	392	50.7	44.6
6	Curtis Tucker	1,556	1,319	13.5	21.7
	South	7,948	3,630	69.1	59.2
7	Whittier	5,200	3,956	77.0	85.6
8	Curtis Tucker	4,855	3,068	37.4	42.3
	Torrance	6,846	3,756	52.7	49.5

[1] Visits to Public Health Clinics include those occurring prior to 2011.
[2] Calculated by dividing the number of visits by the total number of visits reported in Table 1.
*The 5-year average for 2006-2010 is reported.

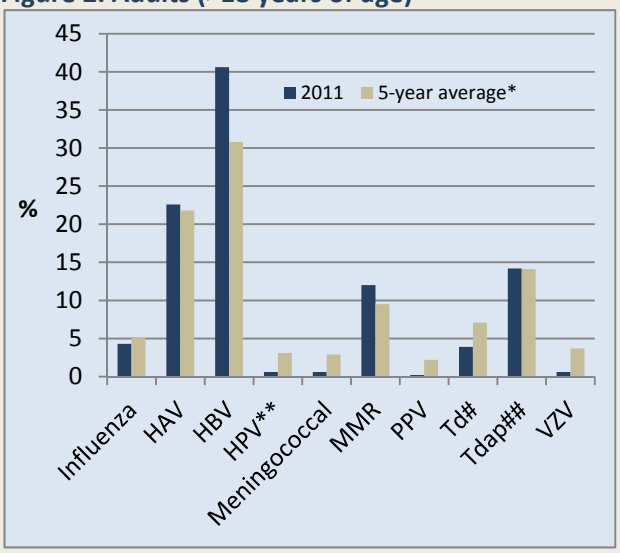
Vaccines Received at Public Health Centers by Persons Who Utilized a Public Health Center for At Least One Vaccination in 2011, by Antigen.

Figure 1. Adolescents (age 7-18 years)



*5-year average (2006-2010)
** The 4-year average (2007-2010) is reported
# Tetanus and Diphtheria antigens
Tetanus, Diphtheria, and Pertussis antigens

Figure 2. Adults (>18 years of age)



*5-year average (2006-2010)
** The 4-year average (2007-2010) is reported
# Tetanus and Diphtheria antigens
Tetanus, Diphtheria, and Pertussis antigens

HPV, Meningococcal polysaccharide, Tdap, and varicella vaccines (Figure 1). Compared to the 5-year average, the proportions of influenza, HPV, Meningococcal polysaccharide, and Tdap vaccines have increased. Conversely, decreased proportions of hepatitis A, hepatitis B, MMR, Polio, and Td vaccines were observed. The decrease in Td vaccine was largely due to the increased use of Tdap.

Vaccines administered to adults (persons older than 18 years of age) were primarily the hepatitis A, hepatitis B, MMR, and Tdap vaccines (Figure 2). Compared to the 5-year average there were increased proportions of hepatitis B and MMR vaccines and decreased proportions of influenza, HPV, Meningococcal polysaccharide, PPV, Td, and varicella vaccines administered to adults. As with the adolescent population, the decrease in Td vaccine was largely due to the increased use of Tdap.

Table 3. The Proportion of Total Vaccinations[1] and Total Vaccine-Related Visits[2] for LAC residents Who Utilized a Public Health Center for At Least One Vaccination in 2011, by Age. (SPA specific data can be found in the appendices)

	# at Public Health	Total #	%	5-year average (2006-2010)
VACCINATIONS				
≤6 months	11,093	221,965	5.0[3]	11.4
7-18 months	13,653	131,448	10.4	22.3
19-23 months	2,691	18,532	14.5	27.9
2-6 years	22,667	147,038	15.4	34.9
7-18 years	88,504	151,207	58.5	54.7
>18 years	38,035	44,063	86.3	82.6
VISITS				
≤6 months	3,275	93,029	3.5[4]	8.8
7-18 months	4,058	62,951	6.4	15.2
19-23 months	923	9,670	9.5	19.8
2-6 years	8,526	75,229	11.3	26.1
7-18 years	43,330	77,627	55.8	53.5
>18 years	30,474	35,111	86.8	81.2

[1] A vaccination is any shot/injection administered to a patient. This can be a single antigen vaccine (e.g. Hepatitis A) or a vaccine with multiple antigens (e.g. MMR).
[2] A vaccine-related visit is any visit made to a health facility during which at least one vaccination was received.
[3] Percent of all vaccinations that were obtained at a Public Health Center.
[4] Percent of all vaccine-related visits that were to Public Health Centers.

How often are PHCs utilized for vaccinations?

To determine how frequently LAC residents utilized PHCs for immunization purposes we calculated the proportion of vaccinations they received at a PHC (compared to all their immunizations) and the proportion of vaccination-related visits for which a PHC was utilized. This information is presented in Table 3.

In children 6 months or younger, the proportion of immunization-related visits and vaccinations taking place at PHCs was less than 10%. For children less than 2 years of age, the proportion of vaccinations obtained from PHCs ranged from 5.0% (newborns 6 months of age or younger) to 14.5% (persons 19-23 months). The proportion of visits to PHCs ranged from 3.5% (newborns 6 months of age or younger) to 9.5% (persons 19-23 months). In children aged 2 to 6 years, the proportion of immunization-related visits and vaccinations taking place at PHCs was 15% and 11%, respectively. Persons older than 7 years of age utilized PHCs for the majority of their vaccines and their vaccination-related visits.

When comparing 2011 proportions to the 5-year average, a drop in both vaccinations and vaccination-related visits for all children younger than 7 years of age is observed. Conversely, adolescents and adults used PHCs more often for their vaccinations.

Invalid Doses

An invalid dose is one that is not administered according to the guidelines established by the Advisory Committee on Immunization Practices. Information on invalid doses is presented in Table 4. IPV was the most common vaccine with invalid doses, with 16% of IPV doses administered being categorized as invalid doses. One likely explanation is that the guidelines for administration of the fourth dose changed in 2010. The fourth dose was no longer necessary if the third dose was administered after the fourth birthday. The fourth dose being the most common invalid IPV and polio dose implies that the change in

Table 4. Invalid Doses* Administered by Public Health Centers to LAC Residents Who Utilized a Public Health Center for At Least One Vaccination in 2011. (SPA specific data can be found in the appendices)

	Most Common Doses Administered Invalidly – n (%)	Total	%	5-year average (2006-2010)
VACCINES				
Hepatitis A	Dose 2 – 71 (49.0%) Dose 3 – 66 (45.5%)	145	8.0[a]	10.9
MMR	Dose 3 – 130 (78.3%)	166	9.1	6.2
Hepatitis B	Dose 4 – 119 (53.1%)	224	12.3	10.6
Pediarix[1]	Dose 4 – 150 (54.2%)	277	15.2	23.3
IPV	Dose 4 – 120 (41.1%) Dose 5 – 116 (39.7%)	292	16.0	11.3
ANTIGENS				
DTP	Dose 5 – 46 (27.0%) Dose 6 – 42 (25.0%)	170	9.3[b]	13.6
MMR	Dose 3 – 132 (77.0%)	171	9.4	6.7
Hepatitis A	Dose 3 – 87 (49.0%) Dose 2 – 80 (45.0%)	176	9.6	12.5
Polio	Dose 4 – 251 (56.0%)	452	25.0	14.9
Hepatitis B	Dose 4 – 253 (54.0%)	465	25.0	31.3
TOTAL	Dose 4 – 602 (33.0%) Dose 3 – 457 (25%)	1,825	100.0	

*An invalid dose is one that is not administered according to the guidelines established by the Advisory Committee on Immunization Practices. Examples of this include vaccinations given too early (child is too young or the minimal interval was not reached) or vaccinations given after the series is complete.

[1] Pediarix protects against diphtheria, tetanus, pertussis, hepatitis B, and polio.

[a] Percent of all vaccines administered by Public Health with an invalid dose recorded in CAIR.

[b] Percent of all antigens administered by Public Health with an invalid dose recorded in CAIR.

guidelines resulted in the unnecessary administration of polio vaccine. Pediarix, a combination vaccine that protects against diptheria, tetanus, pertussis, hepatitis B, and polio, was another source of many invalid doses. More specifically, the hepatitis B component was the cause of the invalid dose 75% of the time (data not shown).

Data entry errors explained approximately 18% of doses recorded as invalid (data not shown). Entering a combination vaccine and its individual antigens double counts the antigen, which leads to CAIR counting one of the antigen doses as invalid.

Using These Data: Next Steps Planned by the Department of Public Health

Immunization Program

Epidemiology Unit

- Perform an analysis of CAIR data for Personal Health Centers as a comparison to the trends observed at PHCs

CAIR

- Information on invalid doses can be used in PHC and other provider trainings with the aim of decreasing data entry errors

AEP Unit

- The report can be shared with members of the Immunization Coalition of Los Angeles County
- Provides awareness of the patients seeking care at PHCs and which vaccines are commonly administered invalidly
- The data in this report can be integrated into policy briefs and media releases regarding immunization access, coverage levels, and registry use

Nursing

- The information on invalid doses can be used to guide QARs with health centers

Community Health Services

- By identifying which age groups utilize PHCs as their primary provider for vaccinations other services targeting those age groups can be added or better outreach for other age groups can be developed
- These data can be used to help guide discussions regarding the scope of Public Health services to be provided in light of health care reform

APPENDIX A: Adult vaccine usage

Vaccines administered to LAC adults (>18 years of age) in 2011, by Public Health Center.

		Antelope Valley	Central	Curtis Tucker	Glendale	Hollywood/ Wilshire	Monrovia	Pacoima	Pomona	South	Torrance	Whittier	Total
FLU	**n**	995	1,377	971	981	1,469	1,468	706	1,488	3,268	1,397	1,704	15,824
	%	47.1	54.8	42.7	47.1	30.7	38.4	30.8	59.4	63.9	46.2	66.3	47.8
FLU-LAIV	**n**	193	93	18	27	51	53	105	27	138	79	136	920
	%	9.1	3.7	0.8	1.3	1.1	1.4	4.6	1.1	2.7	2.6	5.3	2.8
HAV	**n**	35	66	46	71	157	105	63	33	29	98	40	743
	%	1.7	2.6	2.0	3.4	3.3	2.8	2.8	1.3	0.6	3.2	1.6	2.3
HAV-HBV	**n**	88	204	74	128	836	227	162	51	138	15	78	2,001
	%	4.2	8.1	3.3	6.1	17.5	5.9	7.1	2.0	2.7	0.5	3.0	6.1
HBV	**n**	157	167	287	219	471	377	151	206	79	303	191	2,608
	%	7.4	6.7	12.6	10.5	9.9	9.9	6.6	8.2	1.5	10.0	7.4	7.9
HPV	**n**	4	15	16	1	59	-	4	1	7	2	2	111
	%	0.2	0.6	0.7	0.1	1.2	0.0	0.2	0.0	0.1	0.1	0.1	0.3
IPV	**n**	1	5	7	-	37	-	2	1	1	2	1	57
	%	0.1	0.2	0.3	0.0	0.8	0.0	0.1	0.0	0.0	0.1	0.0	0.2
MCV4	**n**	20	16	6	1	68	-	3	-	6	9	5	134
	%	1.0	0.6	0.3	0.1	1.4	0.0	0.1	0.0	0.1	0.3	0.2	0.4
MMR	**n**	64	134	230	109	394	240	138	91	133	318	1	1,852
	%	3.0	5.3	10.1	5.2	8.2	6.3	6.0	3.6	2.6	10.5	0.0	5.6
PPV	**n**	31	38	31	66	85	47	23	24	230	60	9	644
	%	1.5	1.5	1.4	3.2	1.8	1.2	1.0	1.0	4.5	2.0	0.4	2.0
RABIES/ RIG	**n**	5	17	-	-	-	-	10	-	-	-	-	32
	%	0.2	0.7	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.1
Td	**n**	5	8	8	18	85	24	5	4	-	51	2	210
	%	0.2	0.3	0.4	0.9	1.8	0.6	0.2	0.2	0.0	1.7	0.1	0.6
Tdap	**n**	494	362	564	461	1,019	1,282	915	577	1,083	686	400	7,843
	%	23.4	14.4	24.8	22.1	21.3	33.5	40.0	23.0	21.2	22.7	15.6	23.7
VZV	**n**	20	10	17	1	52	-	2	1	5	3	3	114
	%	1.0	0.4	0.8	0.1	1.1	0.0	0.1	0.0	0.1	0.1	0.1	0.3
Total	**n**	2,112	2,512	2,275	2,083	4,783	3,823	2,289	2,504	5,117	3,023	2,572	33,093
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

APPENDIX B: SPA 1

Table 3a. The Proportion of Total Vaccinations[1] and Total Vaccine-Related Visits[2] for SPA 1 Residents Who Utilized a Public Health Center for At Least One Vaccination in 2011, by Age

	# at Public Health	Total #	%	5-year average (2006-2010)
VACCINATIONS				
≤6 months	2,762	29,382	9.4[a]	20.1
7-18 months	3,463	19,790	17.5	33.4
19-23 months	717	2,830	25.3	46.9
2-6 years	4,588	20,535	22.3	49.5
7-18 years	10,076	15,390	65.5	69.6
>18 years	1,915	2,105	91.0	85.3
VISITS				
≤6 months	799	11,236	7.1[b]	16.6
7-18 months	937	7,932	11.8	25.6
19-23 months	208	1,216	17.1	32.9
2-6 years	1,479	9,324	15.9	37.3
7-18 years	4,255	7,295	58.3	59.1
>18 years	1,537	1,683	91.3	84.6

[1] A vaccination is any shot/injection administered to a patient. This can be a single antigen vaccine (e.g. Hepatitis A) or a vaccine with multiple antigens (e.g. MMR).
[2] A vaccine-related visit is any visit made to a health facility during which at least one vaccination was received.
[a] Percent of all vaccinations that were obtained at a Public Health Center.
[b] Percent of all vaccine-related visits that were to Public Health Centers.

Table 4a. Invalid Doses* Administered by Antelope Valley Health Center to LAC Residents Who Utilized a Public Health Center for At Least One Vaccination in 2011

	Most Common Doses Administered Invalidly – n (%)	Total	%	5-year average (2006-2010)
VACCINES				
HAV	Dose #4 – 35 (44.5%) Dose #5 – 28 (35.4%)	44	9.2[a]	11.9
HBV	Dose #4 – 25 (51.0%)	49	10.3	9.6
Pediarix[1]	Dose #4 – 37 (47.4%) Dose #5 – 12 (15.4%)	78	16.3	17.2
IPV	Dose #4 – 35 (44.5%) Dose #5 – 28 (35.4%)	79	16.5	11.0
ANTIGENS				
DTP	Dose #5 – 13 (23.2%) Dose #6 – 12 (21.4%) Dose #7 – 12 (21.4%)	56	11.7[b]	15.2
Hepatitis B	Dose #4 – 50 (51.0%)	98	20.5	21.4
Polio	Dose #4 – 23 (76.7%)	126	26.4	15.3
TOTAL	Dose #4 – 156 (32.6%) Dose #3 – 110 (23.0%)	478	100	

*An invalid dose is one that is not administered according to the guidelines established by the Advisory Committee on Immunization Practices. Examples of this include vaccinations given too early (child is too young or the minimal interval was not reached) or vaccinations given after the series is complete.
[1] Pediarix protects against diphtheria, tetanus, pertussis, hepatitis B, and polio.
[a] Percent of all vaccines administered by Antelope Valley Health Center with an invalid dose recorded in CAIR.
[b] Percent of all antigens administered by Antelope Valley Health Center with an invalid dose recorded in CAIR.

APPENDIX C: SPA 2

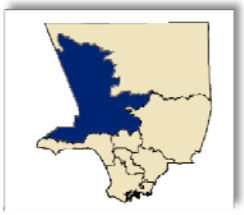


Table 3b. The Proportion of Total Vaccinations[1] and Total Vaccine-Related Visits[2] for SPA 2 Residents Who Utilized a Public Health Center for At Least One Vaccination in 2011, by Age

	# at Public Health	Total #	%	5-year average (2006-2010)
SHOTS				
≤6 months	742	31,618	2.3[a]	6.8
7-18 months	817	17,812	4.6	10.9
19-23 months	190	2,446	7.8	14.1
2-6 years	2,541	20,994	12.1	26.1
7-18 years	16,360	28,113	58.2	58.5
>18 years	5,562	7,277	76.4	79.5
VISITS				
≤6 months	217	13,600	1.6[b]	4.7
7-18 months	256	9,495	2.7	7.1
19-23 months	67	1,458	4.6	9.1
2-6 years	953	11,319	8.4	17.4
7-18 years	7,661	14,119	54.3	55.4
>18 years	4,420	5,610	78.8	79.2

[1] A vaccination is any shot/injection administered to a patient. This can be a single antigen vaccine (e.g. Hepatitis A) or a vaccine with multiple antigens (e.g. MMR).
[2] A vaccine-related visit is any visit made to a health facility during which at least one vaccination was received.
[a] Percent of all vaccinations that were obtained at a Public Health Center.
[b] Percent of all vaccine-related visits that were to Public Health Centers.

Table 4b.1. Invalid Doses* Administered by Glendale Health Center to LAC Residents Who Utilized a Public Health Center for At Least One Vaccination in 2011

	Most Common Doses Administered Invalidly – n (%)	Total	%	5-year average (2006-2010)
VACCINES				
HAV	Dose #2 – 5 (62.5%)	8	7.1[a]	4.5
MMR	Dose #3 – 7 (70.0%)	10	8.9	6.9
HBV	Dose #4 – 11 (57.9%)	19	16.8	12.4
IPV	Dose #3 – 9 (37.0%) Dose #4 – 7 (25.9%)	27	23.9	15.8
ANTIGENS				
DTP	Dose #5 – 5 (41.7%) Dose #7 – 3 (25.0%)	12	10.6[b]	21.7
MMR	Dose #3 – 7 (53.9%)	13	11.5	7.9
Hepatitis B	Dose #4 – 17 (60.7%)	28	24.8	27.3
Polio	Dose #4 – 11 (33.3%) Dose #5 – 11 (33.3%)	33	29.2	18.4
TOTAL	Dose #4 – 31 (27.4%) Dose #3 – 21 (18.6%) Dose #2 – 15 (13.3%)	113	100	

*An invalid dose is one that is not administered according to the guidelines established by the Advisory Committee on Immunization Practices. Examples of this include vaccinations given too early (child is too young or the minimal interval was not reached) or vaccinations given after the series is complete.
[a] Percent of all vaccines administered by Glendale Health Center with an invalid dose recorded in CAIR.
[b] Percent of all antigens administered by Glendale Health Center with an invalid dose recorded in CAIR.

Table 4b.2. Invalid Doses* Administered by Pacoima Health Center to LAC Residents Who Utilized a Public Health Center for At Least One Vaccination in 2011

	Most Common Doses Administered Invalidly – n (%)	Total	%	5-year average (2006-2010)
VACCINES				
MCV4	Dose #2 – 7 (100%)	7	9.3[a]	2.1
Twinrix[1]	Dose #2 – 2 (28.6%) Dose #4 – 2 (28.6%) Dose #5 – 2 (28.6%)	7	9.3	5.3
Tdap	Dose #7 – 5 (50.0%)	10	13.3	4.4
MMR	Dose #3 – 11 (78.6%)	14	18.7	12.2
ANTIGENS				
Polio	Dose #4 – 5 (55.6%)	9	12.0[b]	15.1
Hepatitis B	Dose #4 – 5 (45.5%) Dose #5 – 3 (27.3%)	11	14.7	13.1
DTP	Dose #7 – 5 (38.5%) Dose #6 – 4 (30.8%)	13	17.3	17.2
MMR	Dose #3 – 11 (78.6%)	14	18.7	18.3
TOTAL	Dose #4 – 20 (26.7%) Dose #5 – 16 (21.3%) Dose #2 – 15 (20.0%)	75	100	

*An invalid dose is one that is not administered according to the guidelines established by the Advisory Committee on Immunization Practices. Examples of this include vaccinations given too early (child is too young or the minimal interval was not reached) or vaccinations given after the series is complete.

[1] Twinrix protects against hepatitis A and hepatitis B.

[a] Percent of all vaccines administered by Pacoima Health Center with an invalid dose recorded in CAIR.

[b] Percent of all antigens administered by Pacoima Health Center with an invalid dose recorded in CAIR.

APPENDIX D: SPA 3

Table 3c. The Proportion of Total Vaccinations[1] and Total Vaccine-Related Visits[2] for SPA 3 Residents Who Utilized a Public Health Center for At Least One Vaccination in 2011, by Age

	# at Public Health	Total #	%	5-year average (2006-2010)
SHOTS				
≤6 months	4,050	72,837	5.6[a]	12.4
7-18 months	4,302	40,085	10.7	23.5
19-23 months	754	5,822	13.0	27.3
2-6 years	6,320	41,060	15.4	35.4
7-18 years	22,422	39,220	57.2	57.9
>18 years	8,470	9,598	88.2	87.0
VISITS				
≤6 months	1,215	31,816	3.8[b]	9.5
7-18 months	1,426	20,146	7.1	18.3
19-23 months	302	3,230	9.3	20.6
2-6 years	2,550	22,173	11.5	26.9
7-18 years	12,689	21,926	57.9	53.1
>18 years	7,248	8,138	89.1	87.0

[1] A vaccination is any shot/injection administered to a patient. This can be a single antigen vaccine (e.g. Hepatitis A) or a vaccine with multiple antigens (e.g. MMR).
[2] A vaccine-related visit is any visit made to a health facility during which at least one vaccination was received.
[a] Percent of all vaccinations that were obtained at a Public Health Center.
[b] Percent of all vaccine-related visits that were to Public Health Centers.

Table 3c.1. Invalid Doses* Administered by Monrovia Health Center to LAC Residents Who Utilized a Public Health Center for At Least One Vaccination in 2011

	Most Common Doses Administered Invalidly – n (%)	Total	%	5-year average (2006-2010)
VACCINES				
HAV	Dose #3 – 7 (50.0%) Dose #2 – 6 (42.9%)	14	8.9[a]	10.2
MMR	Dose #3 – 12 (85.7%)	14	8.9	5.0
Pediarix[1]	Dose #3 – 7 (50.0%) Dose #4 – 7 (50.0%)	14	8.9	17.4
Pentacel[2]	Dose #4 – 9 (56.3%)	16	10.1	6.5[b]
IPV	Dose #5 – 8 (38.1%) Dose #4 – 7 (33.3%)	21	13.3	17.6
HBV	Dose #4 – 21 (53.9%)	39	24.7	19.3
ANTIGENS				
Polio	Dose #4 – 15 (51.7%)	29	18.4[c]	27.7
Hepatitis B	Dose #4 – 30 (50.9%)	59	37.3	28.5
TOTAL	Dose #4 – 49 (31.0%) Dose #3 – 42 (26.6%)	158	100	

*An invalid dose is one that is not administered according to the guidelines established by the Advisory Committee on Immunization Practices. Examples of this include vaccinations given too early (child is too young or the minimal interval was not reached) or vaccinations given after the series is complete.
[1] Pediarix protects against diphtheria, tetanus, pertussis, hepatitis B, and polio.
[2] Pentacel protects against diphtheria, tetanus, pertussis, haemophilus influenzae type B, and polio.
[a] Three year average (2008-2010).
[b] Percent of all vaccines administered by Monrovia Health Center with an invalid dose recorded in CAIR.
[c] Percent of all antigens administered by Monrovia Health Center with an invalid dose recorded in CAIR.

Table 3c.2. Invalid Doses* Administered by Pomona Health Center to LAC Residents Who Utilized a Public Health Center for At Least One Vaccination in 2011

	Most Common Doses Administered Invalidly – n (%)	Total	%	5-year average (2006-2010)
VACCINES				
MMR	Dose #3 – 9 (64.3%)	14	9.7[#]	4.2
HBV	Dose #4 – 9 (52.9%)	17	11.7	7.3
Pediarix[1]	Dose #3 – 24 (53.3%)	45	31.0	58.7
ANTIGENS				
Polio	Dose #4 – 7 (43.8%) Dose #5 – 7 (43.8%)	16	11.0[¶]	9.6
Hib	Dose #2 – 8 (50.0%)	16	11.0	6.6
DTP	Dose #6 – 5 (25.0%) Dose #7 – 5 (25.0%) Dose #5 – 4 (20.0%)	20	13.8	8.1
Hepatitis B	Dose #3 – 26 (43.3%) Dose #4 – 25 (41.7%)	60	41.4	58.7
TOTAL	Dose #3 – 45 (31.0%) Dose #4 – 42 (29.0%)	145	100	

*An invalid dose is one that is not administered according to the guidelines established by the Advisory Committee on Immunization Practices. Examples of this include vaccinations given too early (child is too young or the minimal interval was not reached) or vaccinations given after the series is complete.

[1] Pediarix protects against diphtheria, tetanus, pertussis, hepatitis B, and polio.

[a] Percent of all vaccines administered by Pomona Health Center with an invalid dose recorded in CAIR.

[b] Percent of all antigens administered by Pomona Health Center with an invalid dose recorded in CAIR.

APPENDIX E: SPA 4

Table 3d. The Proportion of Total Vaccinations[1] and Total Vaccine-Related Visits[2] for SPA 4 Residents Who Utilized a Public Health Center for At Least One Vaccination in 2011, by Age

	# at Public Health	Total #	%	5-year average (2006-2010)
SHOTS				
≤6 months	496	18,740	2.6[a]	7.9
7-18 months	744	10,435	7.1	18.5
19-23 months	179	1,383	12.9	20.6
2-6 years	1,399	13,497	10.4	29.0
7-18 years	9,329	18,240	51.1	54.9
>18 years	5,971	6,945	86.0	79.3
VISITS				
≤6 months	148	8,339	1.8[b]	5.8
7-18 months	229	5,634	4.1	12.1
19-23 months	71	814	8.7	15.2
2-6 years	571	7,252	7.9	22.5
7-18 years	4,180	8,692	48.1	50.8
>18 years	4,441	5,247	84.6	76.8

[1] A vaccination is any shot/injection administered to a patient. This can be a single antigen vaccine (e.g. Hepatitis A) or a vaccine with multiple antigens (e.g. MMR).
[2] A vaccine-related visit is any visit made to a health facility during which at least one vaccination was received.
[a] Percent of all vaccinations that were obtained at a Public Health Center.
[b] Percent of all vaccine-related visits that were to Public Health Centers.

Table 4d.1. Invalid Doses* Administered by Central Health Center to LAC Residents Who Utilized a Public Health Center for At Least One Vaccination in 2011

	Most Common Doses Administered Invalidly – n (%)	Total	%	5-year average (2006-2010)
VACCINES				
Pediarix[1]	Dose #4 – 5 (55.6%)	9	5.9[a]	9.3
Pentacel[2]	Dose #4 – 11 (100%)	11	7.2	5.2[b]
HAV	Dose #3 – 6 (50.0%)	12	7.8	25.2
HBV	Dose #4 – 9 (52.9%)	17	11.1	8.3
IPV	Dose #5 – 10 (52.6%)	19	12.4	10.4
MMR	Dose #3 – 16 (76.2%)	21	13.7	5.6
ANTIGENS				
MMR	Dose #3 – 16 (76.2%)	21	13.7[c]	6.0
Hepatitis B	Dose #4 – 14 (56.0%)	25	16.3	16.9
Polio	Dose #4 – 20 (58.8%)	34	22.2	14.5
TOTAL	Dose #4 – 48 (31.4%) Dose #3 – 41 (26.8%)	153	100	

*An invalid dose is one that is not administered according to the guidelines established by the Advisory Committee on Immunization Practices. Examples of this include vaccinations given too early (child is too young or the minimal interval was not reached) or vaccinations given after the series is complete.
[1] Pediarix protects against diphtheria, tetanus, pertussis, hepatitis B, and polio.
[2] Pentacel protects against diphtheria, tetanus, pertussis, haemophilus influenzae type B, and polio.
[a] Percent of all vaccines administered by Central Health Center with an invalid dose recorded in CAIR.
[b] Three year average (2008-2010).
[c] Percent of all antigens administered by Central Health Center with an invalid dose recorded in CAIR.

Table 4d.2. Invalid Doses* Administered by Hollywood/Wilshire Health Center to LAC Residents Who Utilized a Public Health Center for At Least One Vaccination in 2011

	Most Common Doses Administered Invalidly – n (%)	Total	%	5-year average (2006-2010)
VACCINES				
Pediarix[1]	Dose #2 – 11 (57.9%)	19	8.7[a]	9.1
MMR	Dose #3 – 29 (85.3%)	34	15.6	8.0
IPV	Dose #4 – 29 (45.3%) Dose #5 – 28 (43.8%)	64	29.4	14.8
ANTIGENS				
Hepatitis A	Dose #2 – 16 (53.3%)	30	13.8[b]	20.4
Hepatitis B	Dose #4 – 24 (68.6%)	35	16.1	18.5
MMR	Dose #3 – 30 (85.7%)	35	16.1	8.5
Polio	Dose #4 – 39 (49.4%) Dose #5 – 32 (40.5%)	79	36.2	16.2
TOTAL	Dose #4 – 68 (31.2%) Dose #3 – 55 (25.2%)	218	100	

*An invalid dose is one that is not administered according to the guidelines established by the Advisory Committee on Immunization Practices. Examples of this include vaccinations given too early (child is too young or the minimal interval was not reached) or vaccinations given after the series is complete.

[1] Pediarix protects against diphtheria, tetanus, pertussis, hepatitis B, and polio.

[a] Percent of all vaccines administered by Hollywood/Wilshire Health Center with an invalid dose recorded in CAIR.

[b] Percent of all antigens administered by Hollywood/Wilshire Health Center with an invalid dose recorded in CAIR.

APPENDIX F: SPA 5

Table 3e. The Proportion of Total Vaccinations[1] and Total Vaccine-Related Visits[2] for SPA 5 Residents Who Utilized a Public Health Center for At Least One Vaccination in 2011, by Age

	# at Public Health	Total #	%	5-year average (2006-2010)
SHOTS				
≤6 months	78	2,555	3.1[a]	8.8
7-18 months	98	1,342	7.3	15.3
19-23 months	12	199	6.0	24.1
2-6 years	303	1,616	18.8	31.4
7-18 years	1,100	1,897	58.0	63.6
>18 years	1,268	1,472	86.1	77.3
VISITS				
≤6 months	26	1,204	2.2[b]	5.7
7-18 months	30	752	4.0	9.8
19-23 months	5	131	3.8	14.2
2-6 years	111	875	12.7	23.6
7-18 years	478	921	51.9	52.3
>18 years	840	985	85.3	76.8

[1] A vaccination is any shot/injection administered to a patient. This can be a single antigen vaccine (e.g. Hepatitis A) or a vaccine with multiple antigens (e.g. MMR).
[2] A vaccine-related visit is any visit made to a health facility during which at least one vaccination was received.
[a] Percent of all vaccinations that were obtained at a Public Health Center.
[b] Percent of all vaccine-related visits that were to Public Health Centers.

Table 4 does not exist for SPA 5 as there is no Public Health Center in this SPA.

APPENDIX G: SPA 6

Table 3f. The Proportion of Total Vaccinations[1] and Total Vaccine-Related Visits[2] for SPA 6 Residents Who Utilized a Public Health Center for At Least One Vaccination in 2011, by Age

	# at Public Health	Total #	%	5-year average (2006-2010)
SHOTS				
≤6 months	1,269	26,883	4.7[a]	11.7
7-18 months	2,066	18,343	11.3	23.8
19-23 months	406	2,731	14.9	32.0
2-6 years	3,182	22,151	14.4	33.8
7-18 years	9,892	17,970	55.0	58.4
>18 years	5,170	5,794	89.2	83.2
VISITS				
≤6 months	369	10,323	3.6[b]	9.7
7-18 months	564	7,522	7.5	17.7
19-23 months	115	1,169	9.8	24.1
2-6 years	1,250	10,467	11.9	27.3
7-18 years	5,188	9,663	53.7	48.2
>18 years	4,015	4,532	88.6	80.3

[1] A vaccination is any shot/injection administered to a patient. This can be a single antigen vaccine (e.g. Hepatitis A) or a vaccine with multiple antigens (e.g. MMR).
[2] A vaccine-related visit is any visit made to a health facility during which at least one vaccination was received.
[a] Percent of all vaccinations that were obtained at a Public Health Center.
[b] Percent of all vaccine-related visits that were to Public Health Centers.

Table 4f. Invalid Doses* Administered by South Health Center to LAC Residents Who Utilized a Public Health Center for At Least One Vaccination in 2011

	Most Common Doses Administered Invalidly – n (%)	Total	%	5-year average (2006-2010)
VACCINES				
HBV	Dose #4 – 7 (46.7%) Dose #5 – 5 (33.3%)	15	10.5[a]	7.8
Pentacel[1]	Dose #4 – 24 (68.6%)	35	24.5	2.8[b]
Pediarix[2]	Dose #4 – 29 (76.3%)	38	26.6	31.5
ANTIGENS				
Hib	Dose #3 – 5 (33.3%) Dose #5 – 5 (33.3%)	15	10.5[c]	10.6
Polio	Dose #4 – 33 (86.8%)	38	26.6	9.4
Hepatitis B	Dose #4 – 30 (66.7%)	45	31.5	36.5
TOTAL	Dose #4 – 68 (47.6%) Dose #3 – 26 (18.2%)	143	100	

*An invalid dose is one that is not administered according to the guidelines established by the Advisory Committee on Immunization Practices. Examples of this include vaccinations given too early (child is too young or the minimal interval was not reached) or vaccinations given after the series is complete.
[1] Pentacel protects against diphtheria, tetanus, pertussis, haemophilus influenzae type B, and polio.
[2] Pediarix protects against diphtheria, tetanus, pertussis, hepatitis B, and polio.
[a] Percent of all vaccines administered by South Health Center with an invalid dose recorded in CAIR.
[b] Three year average (2008-2010).
[c] Percent of all antigens administered by South Health Center with an invalid dose recorded in CAIR.

APPENDIX H: SPA 7

Table 3g. The Proportion of Total Vaccinations[1] and Total Vaccine-Related Visits[2] for SPA 7 Residents Who Utilized a Public Health Center for At Least One Vaccination in 2011, by Age

	# at Public Health	Total #	%	5-year average (2006-2010)
SHOTS				
≤6 months	708	13,426	5.3[a]	8.8
7-18 months	786	7,964	9.9	19.1
19-23 months	124	924	13.4	26.4
2-6 years	1,244	8,162	15.2	35.0
7-18 years	5,535	8,969	61.7	63.8
>18 years	3,672	4,162	88.2	83.0
VISITS				
≤6 months	209	5,218	4.0[b]	7.1
7-18 months	220	3,582	6.1	13.2
19-23 months	48	488	9.8	20.1
2-6 years	455	4,104	11.1	26.8
7-18 years	2,646	4,570	57.9	53.1
>18 years	3,174	3,568	89.0	81.0

[1] A vaccination is any shot/injection administered to a patient. This can be a single antigen vaccine (e.g. Hepatitis A) or a vaccine with multiple antigens (e.g. MMR).
[2] A vaccine-related visit is any visit made to a health facility during which at least one vaccination was received.
[a] Percent of all vaccinations that were obtained at a Public Health Center.
[b] Percent of all vaccine-related visits that were to Public Health Centers.

Table 4g. Invalid Doses* Administered by Whittier Health Center to LAC Residents Who Utilized a Public Health Center for At Least One Vaccination in 2011

	Most Common Doses Administered Invalidly – n (%)	Total	%	5-year average (2006-2010)
VACCINES				
Pediarix[1]	Dose #3 – 6 (60.0%)	10	15.4[a]	31.2
HBV	Dose #4 – 9 (81.8%)	11	16.9	10.3
IPV	Dose #4 – 6 (50.0%)	12	18.5	11.4
ANTIGENS				
Hepatitis A	Dose #3 – 4 (50.0%)	8	12.3[b]	5.7
Polio	Dose #4 – 9 (60.0%)	15	23.1	14.5
Hepatitis B	Dose #4 – 12 (60.0%)	20	30.8	36.1
TOTAL	Dose #3 – 25 (38.5%) Dose #4 – 23 (35.4%)	65	100	

*An invalid dose is one that is not administered according to the guidelines established by the Advisory Committee on Immunization Practices. Examples of this include vaccinations given too early (child is too young or the minimal interval was not reached) or vaccinations given after the series is complete.
[1] Pediarix protects against diphtheria, tetanus, pertussis, hepatitis B, and polio.
[a] Percent of all vaccines administered by Whittier Health Center with an invalid dose recorded in CAIR.
[b] Percent of all antigens administered by Whittier Health Center with an invalid dose recorded in CAIR.

APPENDIX I: SPA 8

Table 3h. The Proportion of Total Vaccinations[1] and Total Vaccine-Related Visits[2] for SPA 8 Residents Who Utilized a Public Health Center for At Least One Vaccination in 2011, by Age

	# at Public Health	Total #	%	5-year average (2006-2010)
SHOTS				
≤6 months	988	26,524	3.7[a]	9.8
7-18 months	1,377	15,677	8.8	21.1
19-23 months	309	2,197	14.1	26.9
2-6 years	3,090	19,023	16.2	35.3
7-18 years	13,790	21,408	64.4	65.2
>18 years	6,007	6,710	89.5	83.7
VISITS				
≤6 months	292	11,293	2.6[b]	7.6
7-18 months	396	7,888	5.0	14.2
19-23 months	107	1,164	9.2	19.0
2-6 years	1,157	9,715	11.9	27.1
7-18 years	6,233	10,441	59.7	52.6
>18 years	4,799	5,348	89.7	82.9

[1] A vaccination is any shot/injection administered to a patient. This can be a single antigen vaccine (e.g. Hepatitis A) or a vaccine with multiple antigens (e.g. MMR).
[2] A vaccine-related visit is any visit made to a health facility during which at least one vaccination was received.
[a] Percent of all vaccinations that were obtained at a Public Health Center.
[b] Percent of all vaccine-related visits that were to Public Health Centers.

Table4h.1. Invalid Doses* Administered by Curtis Tucker Health Center to LAC Residents Who Utilized a Public Health Center for At Least One Vaccination in 2011

	Most Common Doses Administered Invalidly – n (%)	Total	%	5-year average (2006-2010)
VACCINES				
HAV	Dose #3 – 9 (64.3%)	14	7.4[a]	8.4
HBV	Dose #3 – 11 (42.3%) Dose #4 – 8 (30.8%)	26	13.8	12.0
IPV	Dose #5 – 18 (64.3%) Dose #4 – 6 (21.4%)	28	14.8	8.1
Pediarix[1]	Dose #4 – 27 (62.8%)	43	22.8	29.5
ANTIGENS				
Polio	Dose #4 – 20 (46.5%) Dose #5 – 19 (44.2%)	43	22.8[b]	13.2
Hepatitis B	Dose #4 – 33 (50.8%)	65	34.4	37.1
TOTAL	Dose #4 – 62 (32.8%) Dose #3 – 48 (25.4%)	189	100	

*An invalid dose is one that is not administered according to the guidelines established by the Advisory Committee on Immunization Practices. Examples of this include vaccinations given too early (child is too young or the minimal interval was not reached) or vaccinations given after the series is complete.
[1] Pediarix protects against diphtheria, tetanus, pertussis, hepatitis B, and polio.
[a] Percent of all vaccines administered by Curtis Tucker Health Center with an invalid dose recorded in CAIR.
[b] Percent of all antigens administered by Curtis Tucker Health Center with an invalid dose recorded in CAIR.

Table 4h.2. Invalid Doses* Administered by Torrance Health Center to LAC Residents Who Utilized a Public Health Center for At Least One Vaccination in 2011

	Most Common Doses Administered Invalidly – n (%)	Total	%	5-year average (2006-2010)
VACCINES				
HAV	Dose #3 – 9 (100%)	9	10.2[a]	5.5
Pediarix[1]	Dose #4 – 8 (66.7%)	12	13.6	31.8
IPV	Dose #4 – 18 (78.3%)	23	26.1	16.8
ANTIGENS				
Hepatitis A	Dose #3 – 9 (100%)	9	10.2[b]	6.1
DTP	Dose #5 – 4 (36.4%) Dose #7 – 4 (36.4%)	11	12.5	12.2
Hepatitis B	Dose #4 – 13 (68.4%)	19	21.6	39.6
Polio	Dose #4 – 23 (76.7%)	30	34.1	18.6
TOTAL	Dose #4 – 39 (44.3%) Dose #3 – 24 (27.3%)	88	100	

*An invalid dose is one that is not administered according to the guidelines established by the Advisory Committee on Immunization Practices. Examples of this include vaccinations given too early (child is too young or the minimal interval was not reached) or vaccinations given after the series is complete.

[1] Pediarix protects against diphtheria, tetanus, pertussis, hepatitis B, and polio.

[a] Percent of all vaccines administered by Torrance Health Center with an invalid dose recorded in CAIR.

[b] Percent of all antigens administered by Torrance Health Center with an invalid dose recorded in CAIR.