



HEPATITIS B, PERINATAL

CRUDE DATA	
Infants Born to HBsAg+ Mothers	915
Incidence of Exposure ^a LA County	6.7
HBsAg+ Infant ^b	1
Maternal Age at Diagnosis	38 years
Infant Age at Diagnosis	9 months

^aNumber of infants born to HBsAg-positive mothers per 1000 live births in 2013.

^bBased on number of infants that had post vaccine serology testing.

DESCRIPTION

Hepatitis B is a vaccine-preventable disease transmitted through parenteral or mucous membrane exposure to blood and other body fluids of individuals infected with the hepatitis B virus (HBV). A woman can transmit the HBV to her infant during pregnancy and from exposure to cervical secretions and blood during the birthing process. In Los Angeles County (LAC), it is estimated that over 40% of infants born to hepatitis B surface antigen (HBsAg) positive women would become infected without prophylaxis. An estimated 90% of infants who become infected by perinatal transmission develop chronic HBV infection and up to 25% will die from chronic liver disease as adults. Post-exposure prophylaxis (PEP) with hepatitis B vaccine and hepatitis B immune globulin (HBIG) administered 12 to 24 hours after birth, followed by completion of a three-dose vaccine series, has demonstrated 85%-95% effectiveness in preventing acute and chronic HBV infection in infants born to mothers who are positive for both HBsAg and hepatitis B e-antigen. However, efficacy is enhanced if administered within 12 hours of birth. Post-vaccination serologic (PVS) testing is recommended at age 9-18 months after completing PEP to verify vaccine success or failure. The LAC Immunization Program's Perinatal Hepatitis B Prevention Unit (PHBPU) conducts enhanced case management of HBsAg-positive pregnant women, their newborns, and household and sexual contacts (SC). Household contacts (HHC) are defined as an individual(s) with anticipated continuous household exposure

to the HBsAg-positive mother for greater than one year (often limited to nuclear family).

2013 TRENDS AND HIGHLIGHTS

- Nine hundred and fifteen infants (includes twelve sets of twins) were born to 891 HBsAg+ women.
- The incidence of exposure increased by 3% from 6.5 to 6.7 per 1000 infants born in 2013 compared to 2012 (Figure 1).
- Sixty-one percent (n=544) of women screened for HBsAg were 15-34 years of age (Figure 7).
- Eighty-eight percent (n=782) of HBsAg+ women were born outside of the United States.
- Eighty percent (n=712) of HBsAg+ women were Asian followed by 5% (n=51) unknown, 5% (n=44) Hispanic, 4% (n=32) black, 3% (n= 28) other and 3% (n=24) white (Figures 2 and 3).
- Sixty-five percent (n=580) of the HBsAg+ women reside in Service Planning Area (SPA) 3, which has a large Asian population (Figure 4).
- Ninety-five percent (n=867) of infants received the first dose of Hepatitis B vaccine and HBIG within 12 hours of birth (Figure 5).
- Eleven percent (n=105) of infants born to HBsAg+ women received PVS testing to determine immunity to hepatitis B after receipt of one dose of HBIG and completion of the three dose hepatitis B vaccination series. Infants born in the later part of 2013 are too young for PVS testing. One infant was HBsAg+, indicating infection (Figure 6).
- Among the HHCs, 37% (n=452) were 0-10 years of age and 30% (n=370) were 31-40 years of age (Figure 7).
- Hepatitis B virus marker status of HHCs (n=315) is as follows: Fifty-one percent (n=160) had positive antibodies to HBsAg (anti-HBs), 26% (n=82) were HBsAg negative, 6% (n=18) were susceptible (anti-HBs negative), 15% (n=46) were infected (HBsAg+) and 2% (n=9) had positive hepatitis B core antibodies, which indicates a previous or ongoing infection. The PHBPU recommends the Hepatitis B vaccine series for those who are susceptible (Figure 8).



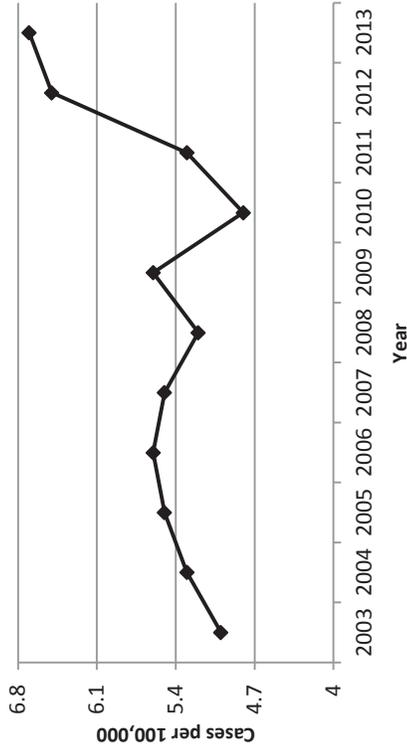
**Reported Hepatitis B, Perinatal Cases and Rates* per 100,000 by Maternal Age Group, Race/Ethnicity, and SPA
Los Angeles County, 2009-2013**

Age Group	2009 (N=760)			2010 (N=653)			2011 (N=700)			2012 (N=854)			2013 (N=891)		
	No.	(%)	Rate/ 100,000												
<1	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
1-4	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
5-14	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
15-34	520	58.4	18.4	448	68.6	15.2	476	68	16.1	589	69.0	20	544	61.1	19.2
35-44	237	31.2	10.7	204	31.2	14.2	219	31.3	15.2	263	31.0	18.3	339	38.0	25.4
45-54	3	0.4	0.2	0	0	0	2	0.3	0.1	1	0.1	0.1	8	0.9	0.6
55-64	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0%
65+	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0%
Unknown	0	0.0		1	0.2		3	0.4		1	0.1		0	0.0	--
Race/Ethnicity															
Asian	570	75.0	43.8	491	75.2	37.4	555	79.3	42.3	678	79.0	51.7	712	79.9	52.7
Black	33	4.0	3.9	22	3.4	2.6	25	3.6	2.9	30	4.0	3.5	32	3.6	4.1
Hispanic	76	10.0	1.6	50	7.7	1.1	55	7.9	1.2	46	5.0	1.0	44	4.9	1
White	40	5.0	1.4	38	5.8	1.3	33	4.7	1.2	41	5.0	1.4	24	2.7	0.9
*Other	41	5.0	1.6	19	2.9	40.4	13	1.9	34.9	20	2.3	82.4	28	3.1	155
Unknown	0	0.0		33	5.1		19	2.7		39	5.0		51	5.7	--
SPA															
1	6	0.8	1.6	9	1.4	2.4	10	1.4	2.7	15	1.8	4.0	8	0.9	2.0
2	117	15.4	5.3	85	13	3.8	78	11.1	3.5	93	10.9	4.2	76	8.5	3.5
3	355	46.7	20.5	329	50.4	19.0	369	52.7	21.3	491	57.5	28.3	580	65.1	35.5
4	83	10.9	6.7	83	12.7	6.6	74	10.6	5.9	82	9.6	6.5	64	7.2	5.6
5	32	4.2	4.9	19	2.9	2.9	30	4.3	4.5	34	4.0	5.2	36	4.0	5.6
6	38	5.0	3.6	19	2.9	1.8	29	4.1	2.7	24	2.8	2.2	19	2.1	1.8
7	50	6.6	3.6	42	6.4	3.0	46	6.6	3.3	34	4.0	2.5	47	5.3	3.6
8	75	9.9	6.7	58	8.9	5.2	47	6.7	4.2	69	8.1	6.1	60	6.7	5.6
Unknown	4	0.5		9	1.4		17	2.4		12	1.4		1	0.1	--

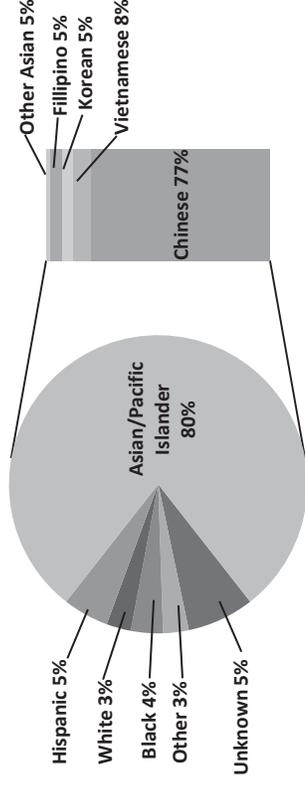
* Rates calculated based on less than 19 cases or events are considered unreliable * Other includes Pacific Islanders.



**Figure 1. Perinatal Hepatitis B Incidence of Exposure
LAC, 2003-2013**

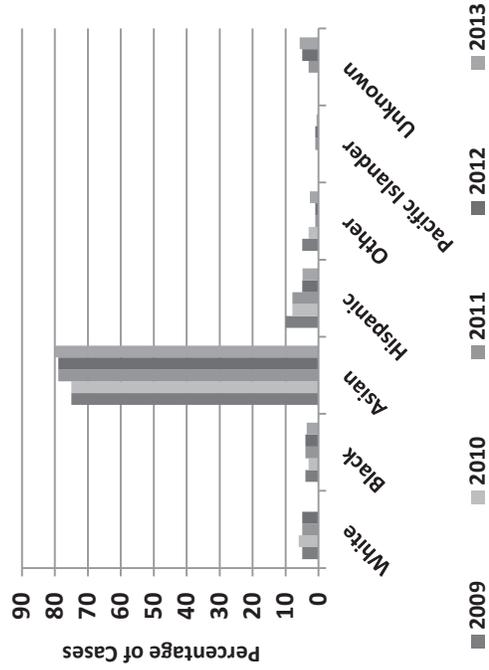


**Figure 2. Perinatal Hepatitis B Maternal Race/Ethnicity
LAC, 2013 (N=891)**



Other includes Native-American and any racial group that cannot be categorized as Asian, Black, Hispanic, White or unknown. Other Asian is Japanese, Asian-Indian, Cambodian non-Hmong, Thai, Lao or unknown Asian.

**Figure 3. Perinatal Hepatitis B Maternal Race/Ethnicity
LAC, 2009-2013 (N= 3858)**



**Figure 4. Perinatal Hepatitis B Maternal by SPA
LAC, 2013 (N=891)**

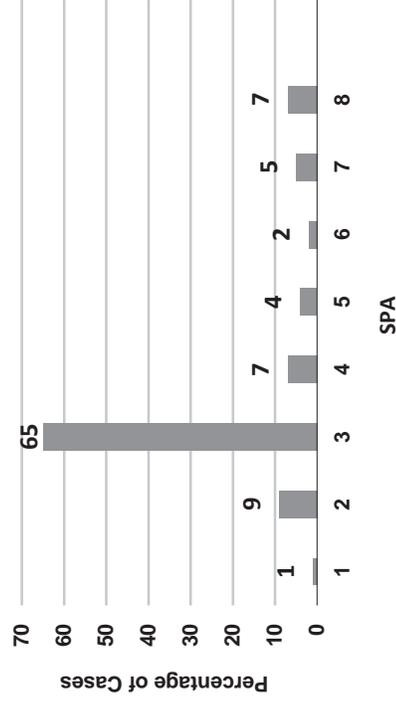
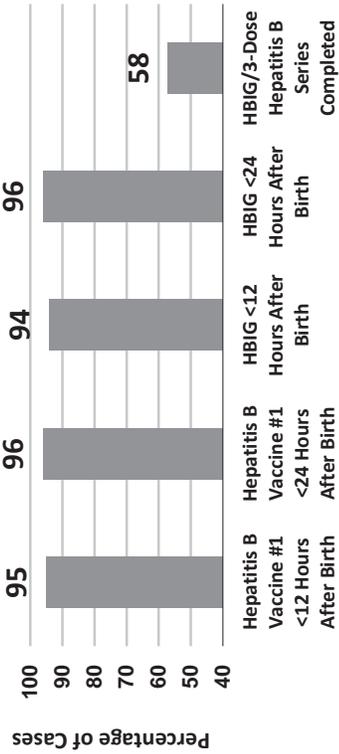


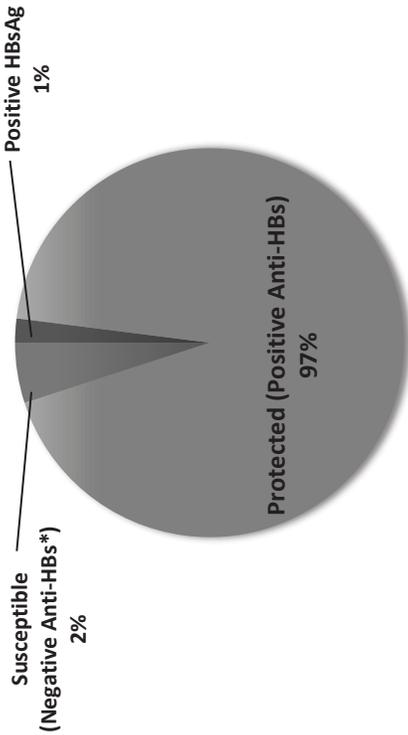


Figure 5. Perinatal Hepatitis B Summary of Infant Hepatitis B Immunoprophylaxis, LAC, 2013 (N=915)



Note: As of the date of this report, many infants born in the later part of 2012 are not due to receive the 3rd dose hepatitis B vaccine.

Figure 6. Perinatal Hepatitis B Infant Post Vaccination Serology (PVS) Results LAC, 2013 (N=105)



*Antibody to Hepatitis B Surface Antigen
Note: As of the date of this report, many infants born in the later part of 2013 are not eligible for PVS testing which is recommended at 9-18 months of age after completion of at least 3 doses of hepatitis B vaccine.

Figure 7. Perinatal Hepatitis B Household & Sexual Contacts Age Range, LAC, 2013 (N=1232)

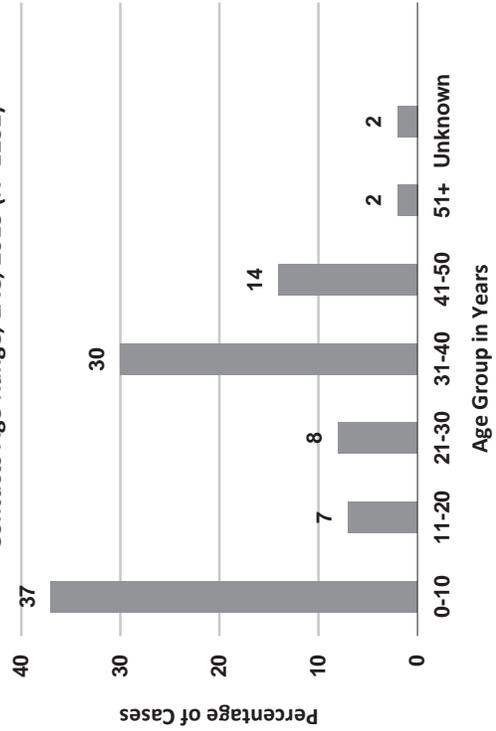
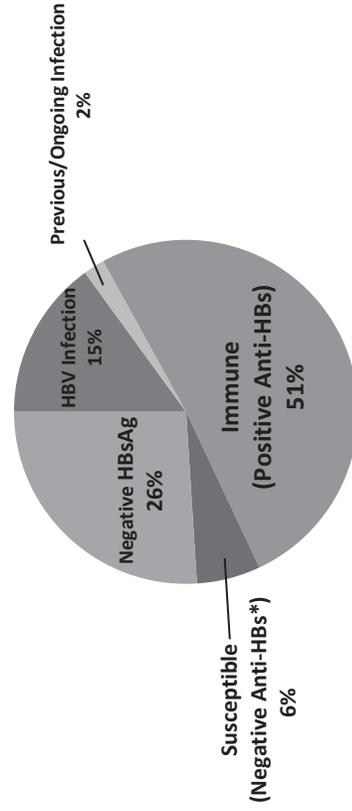


Figure 8. Hepatitis B Status of Household Contacts LAC, 2013 (N=315)



* Antibody to Hepatitis B Surface Antigen



HEPATITIS B, PERINATAL

CRUDE DATA	
Infants Born to HBsAg+ Mothers	773
HBsAg+ Infants	2
Incidence of Exposure ^a LA County	5.6
Maternal Age at Diagnosis	
Mean	31.6 years
Median	32 years
Range	15-46 years
Infant Age at Diagnosis	
Mean	12.5 months
Median	12.5 months
Range	12-13 months

^aNumber of infants born to HBsAg-positive mothers per 1000 live births in 2008.

DESCRIPTION

Hepatitis B is a vaccine-preventable disease transmitted through parenteral or mucous membrane exposure to blood and other body fluids of individuals infected with the hepatitis B virus (HBV). It is also transmitted from mother to infant during birth. In Los Angeles County (LAC), it is estimated that over 40% of infants born to hepatitis B surface antigen (HBsAg) positive women will become infected without prophylaxis. An estimated 90% of infants who become infected by perinatal transmission develop chronic HBV infection and up to 25% will die from chronic liver disease as adults. Post-exposure prophylaxis with hepatitis B vaccine and hepatitis B immune globulin (HBIG) administered 12 to 24 hours after birth, followed by completion of a 3-dose vaccine series, has been demonstrated to be 85 to 95% effective in preventing acute and chronic HBV infection in infants born to mothers who are positive for both HBsAg and hepatitis B e-antigen. Post-vaccination serologic (PVS) testing is recommended at age 9–18 months after completing immunoprophylaxis to verify vaccine success or failure. The LAC Immunization Program's Perinatal Hepatitis B Prevention Program (PHBPP) conducts enhanced

case management of HBsAg-positive pregnant women, their newborns, and household and sexual contacts (SC). Household contacts (HHC) are defined as an individual(s) with anticipated continuous household exposure for greater than one year (often limited to nuclear family).

2009 TRENDS AND HIGHLIGHTS

- In 2009, 773 infants (including 13 twins) were born to 760 HBsAg+ women.
- In 2009, the incidence of exposure increased by 8% from 5.2 to 5.6 per 1000 infants born in 2008 (Figure 1).
- Over 68.4% (n=520) of women screened for HBsAg were between 15 and 34 years of age.
- As consistent with previous years, in 2009, the majority of HBsAg+ women were Asian (n=557, 73.3%) followed by white (n=110, 14.5%), Other unknown (n=44, 5.8%), black (n=35, 4.6%), and Pacific Islanders (n=14, 1.8%) (Figures 2 and 3).
- The majority of HBsAg+ women reside in Service Planning Area (SPA) 3 (n=355, 46.7%), which has a large Asian population (Figure 4).
- The majority of infants received the first dose of Hepatitis B vaccine and HBIG within 12 hours of birth (Figure 5).
- In 2009, 15.9 % (n=123) of infants born to HBsAg+ women received post-vaccination serology (PVS) testing to determine immunity to hepatitis B after receipt of one dose of HBIG and completion of the three dose hepatitis B vaccination series. PVS results for two infants were HBsAg +, indicating infection (Figure 6).
- The majority of HHCs 39% were among the age groups 0-10 years (n=438) and 31-40 years (n=326, 29%) (Figure 7).
- Of the household contacts screened (n=175, 16%), 6 % (n=11) were infected, 69% (n=120), were immune, and 25% (n=44) were susceptible to hepatitis B. The Hepatitis B vaccine series was recommended for those who were susceptible (Figure 8).



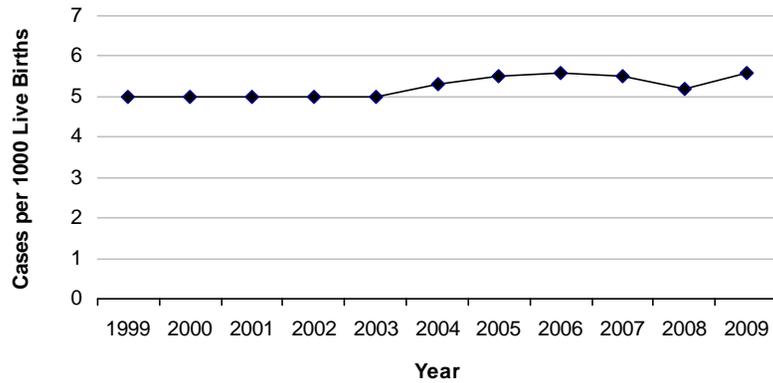
**Reported Hepatitis B, Perinatal Cases and Rates* per 100,000 by Maternal Age Group, Race/Ethnicity, and SPA
 Los Angeles County, 2005-2009**

	2005 (N=762)			2006 (N=803)			2007 (N=774)			2008 (N=778)			2009 (N=760)		
	No.	(%)	Rate/ 100,000												
Age Group															
<1	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
1-4	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
5-14	0	0.0	0.0	0	0.0	0.0	1	0.1	0.1	0	0.0	0.0	0	0.0	0.0
15-34	572	75.1	20.4	613	76.3	22.0	567	73.3	20.1	550	70.7	19.2	520	58.4	18.4
35-44	187	24.5	12.4	190	23.7	12.6	206	26.6	13.7	225	28.9	14.9	237	31.2	10.7
45-54	3	0.4	0.2	0	0.0	0.0	0	0.0	0.0	3	0.4	0.2	3	0.4	0.2
55-64	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
65+	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
Unknown	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
Race/Ethnicity															
Asian	619	81.2	49.2	627	78.1	49.3	636	82.2	49.5	611	78.5	46.9	570	75.0	43.8
Black	35	4.6	4.1	30	3.7	3.6	28	3.6	3.3	32	4.1	3.7	33	4.0	3.9
Hispanic	70	9.2	1.5	90	11.2	1.9	70	9.0	1.5	71	9.1	1.5	76	10.0	1.6
White	35	4.6	1.2	51	6.4	1.8	29	3.7	1.0	30	3.9	1.0	40	5.0	1.4
Other	3	0.4	10.6	4	0.5	14.0	11	1.4	52.8	34	4.4	137	41	5.0	1.6
Unknown	0	0.0		1	0.1		0	0.0		0	0.0		0	0.0	
SPA															
1	8	1.0	2.3	6	0.7	1.7	8	1.0	2.2	4	0.5	1.1	6	0.8	1.6
2	100	13.1	4.7	99	12.3	4.6	100	12.9	4.6	96	12.3	4.4	117	15.4	5.3
3	361	47.4	21.1	396	49.3	23.0	392	50.6	22.7	394	50.6	22.7	355	46.7	20.5
4	81	10.6	6.5	97	12.1	7.7	88	11.4	7.0	96	12.3	7.5	83	10.9	6.7
5	36	4.7	5.7	37	4.6	5.8	33	4.3	5.2	37	4.8	5.7	32	4.2	4.9
6	38	5.0	3.7	41	5.1	3.9	33	4.3	3.2	43	5.5	4.1	38	5.0	3.6
7	62	8.1	4.5	58	7.2	4.2	54	7.0	3.9	55	7.1	4.0	50	6.6	3.6
8	76	10.0	6.9	56	7.0	5.0	66	8.5	5.9	50	6.4	4.4	75	9.9	6.7
Unknown	0	0.0		13	1.6		0	0.0		3	0.4		4	0.5	

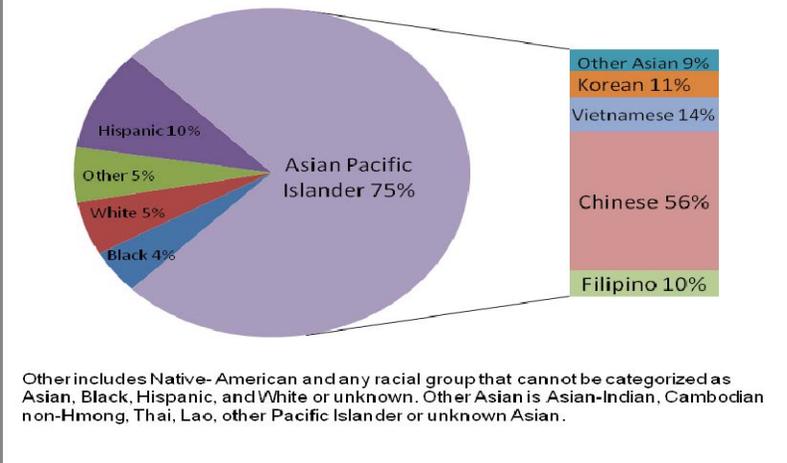
*Rates calculated based on less than 19 cases or events are considered unreliable



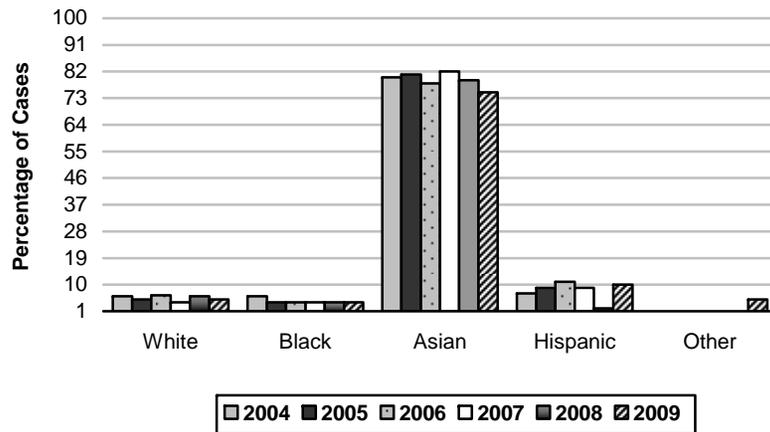
**Figure 1. Perinatal Hepatitis B Incidence of Exposure
LAC, 1999-2009**



**Figure 2.
Perinatal Hepatitis B Maternal Race/Ethnicity
LAC, 2009 (N=760)**



**Figure 3. Perinatal Hepatitis B Maternal Race/Ethnicity
LAC, 2004-2009 (N=4610)**



**Figure 4. Perinatal Hepatitis B Maternal by SPA
LAC, 2009 (N=760)**

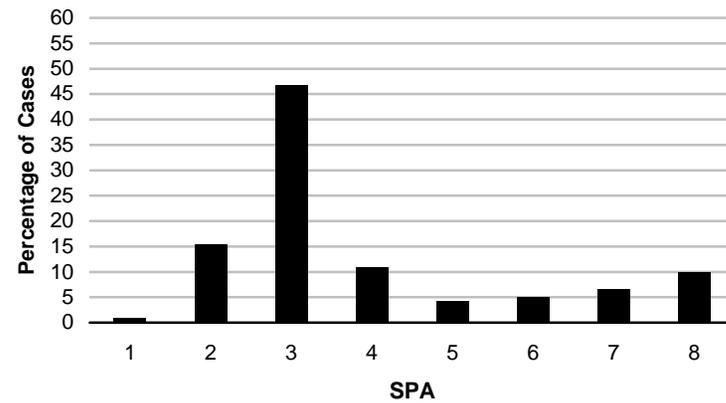




Figure 5. Perinatal Hepatitis B Summary of Infant Hepatitis B Immunoprophylaxis, LAC, 2009 (N=773)

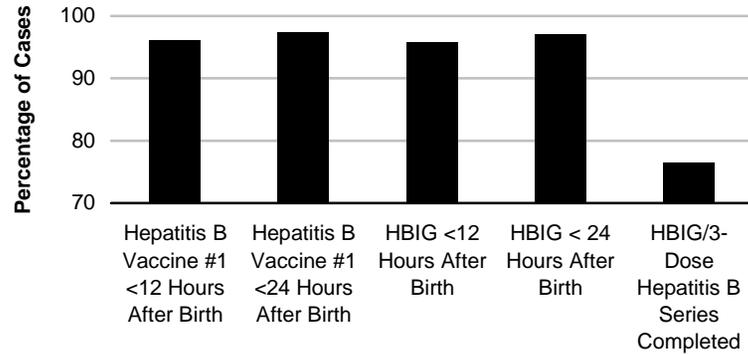
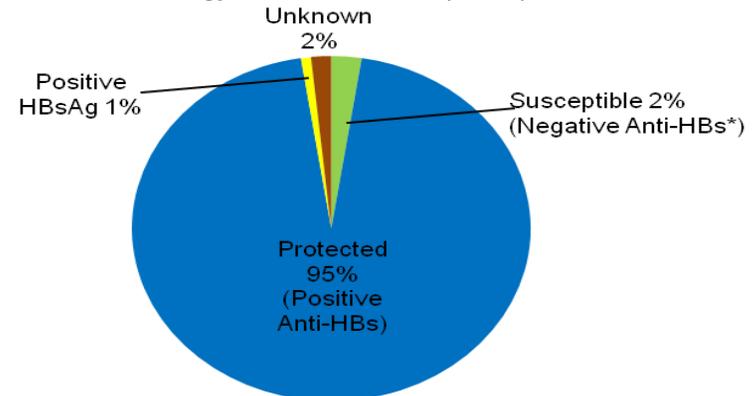


Figure 6. Perinatal Hepatitis B Infant Post Vaccination Serology Results LAC, 2009 (N=123)



*Antibody to Hepatitis B Surface Antigen

Figure 7. Perinatal Hepatitis B Household and Sexual Contacts Age Range, LAC, 2009 (N=1126)

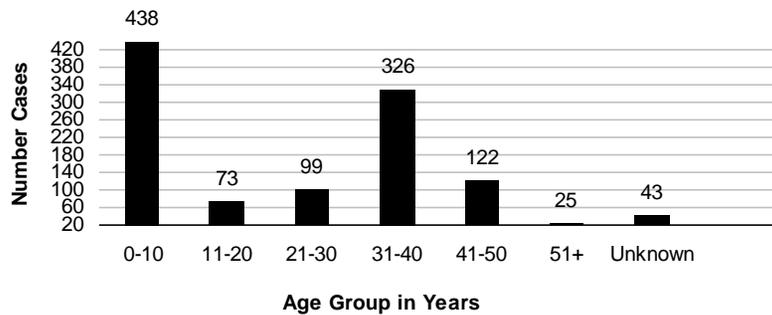
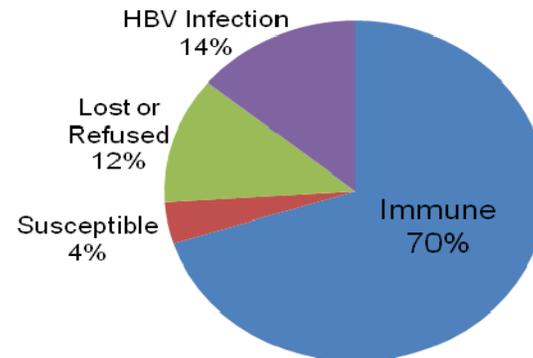


Figure 8. Hepatitis B Status of Household Contacts LAC, 2009 (N=1126)

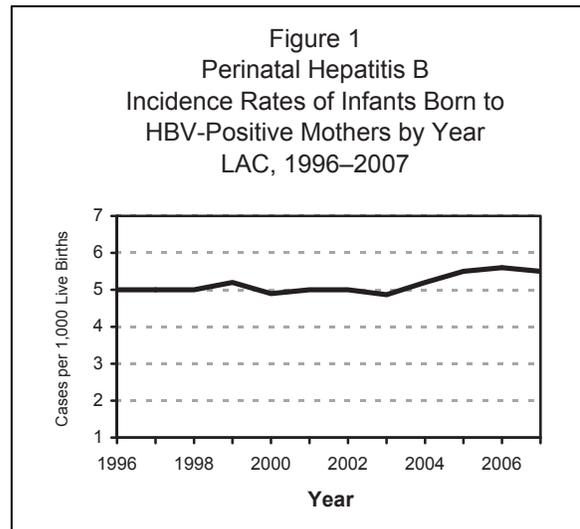




HEPATITIS B, PERINATAL

CRUDE DATA	
Number of Infants Born to HBsAg Positive Mothers	774
Incidence of Exposure ^a	
LA County	5.5
United States	N/A
Age at Diagnosis	
Mean	N/A
Median	N/A
Range	N/A

^a Number of Infants born to HBsAg-positive mothers per 1,000 live births in 2006.



DESCRIPTION

Hepatitis B is a vaccine-preventable disease transmitted through parenteral or mucous membrane exposure to blood and other body fluids of individuals infected with the hepatitis B virus (HBV). It is also transmitted from mother to infant during birth. In Los Angeles County (LAC), it is estimated that over 40% of infants born to hepatitis B surface antigen (HBsAg) positive women will become infected without prophylaxis. An estimated 90% of infants who become infected by perinatal transmission develop chronic HBV infection by 6 months of age, and up to 25% will die from chronic liver disease as adults. Post-exposure prophylaxis with hepatitis B vaccine and hepatitis B immune globulin (HBIG) administered 12-24 hours after birth, followed by completion of a 3-dose vaccine series, has been demonstrated to be 85-95% effective in preventing acute and chronic HBV infection in infants born to mothers who are positive for both HBsAg and hepatitis B e-antigen. Post-vaccination serologic testing is recommended at age 9-18 months after completing immunoprophylaxis to verify vaccine success or failure. The LAC Immunization Program's Perinatal Hepatitis B Prevention Program (PHBPP) conducts enhanced case management of HBsAg-positive pregnant women, their newborns, household, and sexual contacts.

DISEASE ABSTRACT

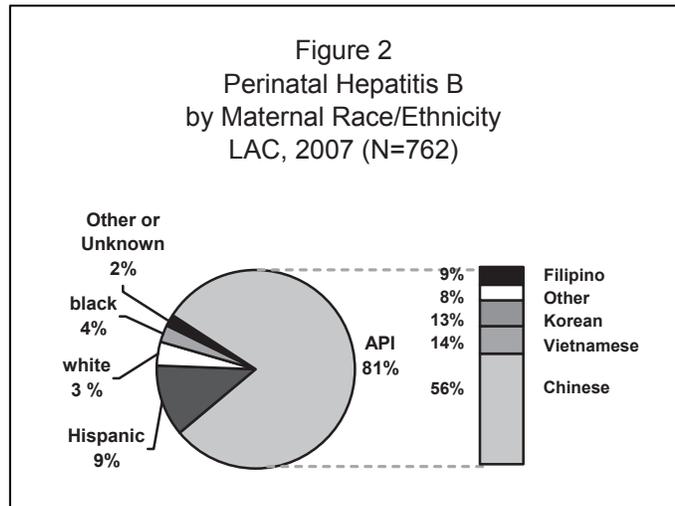
- The majority of HBsAg-positive women giving birth were born in areas of the world with high or intermediate levels of endemic hepatitis B disease (e.g., Asia, Africa, Eastern Europe, Independent States of the former Soviet Union, Middle East, Pacific Islands, and several Central and South American countries).
- Of infants born to HBsAg-positive mothers, 97% received hepatitis B vaccine and 96% received HBIG within 24 hours of birth.
- Among those infants whose pediatric health care providers responded (n=193, 25%) to a survey after the completion of the full vaccination series, 89% of infants were protected against HBV, 10% were still susceptible, and 1% were infected with HBV.
- The incidence of exposure of infants born to HBsAg-positive mothers decreased by 2% from 5.6 to 5.5 per 1,000 infants born in 2007.



STRATIFIED DATA

Trends: In 2007, 774 infants (including 12 sets of twins) were born to 762 HBsAg-positive women. The incidence of exposure of infants born to HBsAg-positive mothers decreased by 2% from 5.6 to 5.5 per 1,000 infants born in 2007 (Figure 1).

Race/Ethnicity: The majority of the HBsAg-positive women (n=620, 81%) were Asian/Pacific Islanders (API). Other ethnic groups identified were Hispanic (9%), white (4%), black (4%), and 2% were classified as other or unknown (Figure 2). Of API women, over half were Chinese (n=349, 56%). The remaining API women included: Vietnamese (n=91, 14%), Korean (n=80, 13%), Filipino (n=53, 9%), and others from various countries (e.g., Cambodia, Thailand, Samoa, Tonga, Japan, Burma, Indonesia; Laos and Mongolia) (n=47, 8%).



Age: The age range of mothers was 14-43 years of age with a median age of 31 years.

Location: The majority of the HBsAg-positive mothers (n=380, 50%) resided in SPA 3, which has a large Asian constituency. An additional 11% resided in SPA 4 (n=83), followed by SPA 2 (n=99, 13%), SPA 8 (n=63, 8%), SPA 7 (n=53, 7%), SPA 6 (n=31, 4%), SPA 5 (n=32, 4%), and SPA 1 (n=8, 1%). Thirteen cases (2%) resided in Pasadena.

Countries of Origin: The majority (n=704, 92%) of the HBsAg-positive women giving birth were born outside of the U.S. Of these women, 668 (95%) were known to be born in areas of the world with high or intermediate levels of endemic hepatitis B disease, such as Asia, Africa, Eastern Europe, Independent States of the former Soviet Union, Middle East, Pacific Islands, Caribbean Island, and several Central and South American countries.

ENHANCED CASE MANAGEMENT

In 2007, enhanced case management was completed for 732 HBsAg-positive mothers, their 744 newborns, and 1,205 household contacts. Case managers made numerous attempts to complete follow-up of mothers, infants, and household contacts. The majority (76%, n=556) of the HBsAg-positive mothers were reported in 2007. An additional 12% were reported in 2005 (n=90) followed by 2006 (n=85, 12%) with one case reported in 2003. One hundred thirty mothers were excluded for infant follow-up (86 mothers miscarried, terminated or had fetal demise, 9 transferred/moved out of LAC or were unable to be located before delivery, and 35 were retested and found to be HBsAg negative).

Enhanced case management protocol includes:

1. Providing education for HBsAg-positive pregnant women regarding HBV, liver disease, and possible transmission of the virus to household and sexual contacts,
2. Instructing HBsAg-positive pregnant women on the importance of protecting their infant against HBV by immunoprophylaxis and completion of the vaccination series,
3. Identifying and referring household and sexual contacts for screening and vaccination,
4. Notifying hospitals of expected deliveries and requesting hospitals return documentation after the infant's birth with specific dates and times post-exposure prophylaxis (HBIG and hepatitis B vaccine #1) was completed,
5. Advising the infant's health care provider regarding the need for hepatitis B vaccine #2 at 1 to 2 months and hepatitis B vaccine #3 at six months of age,



6. Reminding parents of the importance of completing the hepatitis B vaccination series, and
7. Consulting with pediatric health care providers to ensure post-vaccination serology testing for infants who completed their vaccination series.

Infant Immunoprophylaxis Completion Rates: Within the enhanced management, the majority of 744 eligible infants (including 12 sets of twins) born to 732 mothers received the hepatitis B vaccine #1 (n=720, 97%) and HBIG (n= 714, 96%) within 24 hours of birth. The majority of infants (n=686, 92%) received HBIG and a complete three-dose series of hepatitis B vaccine (Table 1).

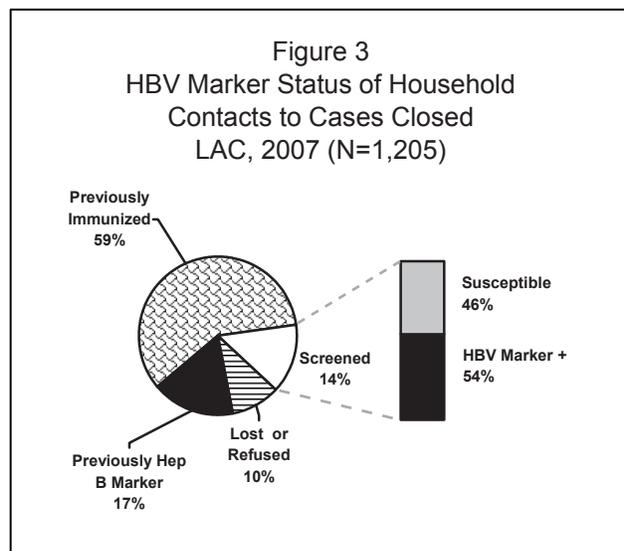
Table 1. Summary of Infant Hepatitis B Immunoprophylaxis, LAC—2007 (N=744)

Hepatitis B Immunoprophylaxis	# of Infants	Percent*
Received hepatitis B vaccine #1 ≤ 12 hours after birth	714	96%
Received hepatitis B vaccine #1 ≤ 24 hours after birth	720	97%
Received HBIG ≤ 12 hours after birth	702	94%
Received HBIG ≤ 24 hours after birth	714	96%
Completed HBIG/3-dose hepatitis B vaccine series	686	92%

* Percent of infants receiving hepatitis B immunoprophylaxis out of a total 744 infants born to 732 HBsAg+ mothers who completed follow-up in 2007.

Household and Sexual Contacts Completion Rates:

A household contact was defined as an individual with anticipated continuous household exposure for greater than one year (often limited to nuclear family). Of 1,205 household and sexual contacts identified, 713 (59%) had already been vaccinated against hepatitis B, and 203 (17%) were known to have serologic evidence of hepatitis B infection. Of the remaining 289 (24%) contacts, 163 (14%) were screened for serologic evidence of hepatitis B infection or immunity, while 126 (10%) refused screening or vaccination, were lost to follow-up, or moved. Of the 163 (14%) household contacts that were serologically screened, 88 (54%) had positive markers for hepatitis B and therefore did not need vaccine. The remaining 75 (46%) household contacts were seronegative, and therefore, susceptible to hepatitis B infection (Figure 3). At the time of completion of case management for the HBsAg-positive mothers, 67 (89%) of these susceptible household contacts had completed all three doses of hepatitis B vaccine.



Post-Vaccination Serology Results: Post-vaccination serology testing of infants born to HBsAg-positive mothers is recommended 3 to 18 months after completing immunoprophylaxis to verify efficacy of the hepatitis B immunoprophylaxis. Letters requesting post-vaccination serology results were mailed to pediatric health care providers of infants tracked by the PHBPP. Post-vaccination serology results were received for 193 infants screened in 2007. Of these, 171 (89%) had antibodies to hepatitis B surface antigen indicating protection against HBV, 2 (1%) were HBsAg-positive and infected, and 20 (10%) were negative for both markers and revaccination was recommended.



ADDITIONAL RESOURCES

Information from the CDC:

- General information – <http://www.cdc.gov/vaccines/vpd-vac/hepb/>;
<http://www.cdc.gov/hepatitis/index.htm>
- Statistics and Surveillance – <http://www.cdc.gov/hepatitis/Statistics.htm>
- Perinatal hepatitis B vaccine recommendations - <http://www.cdc.gov/mmwr/PDF/rr/rr5416.pdf>

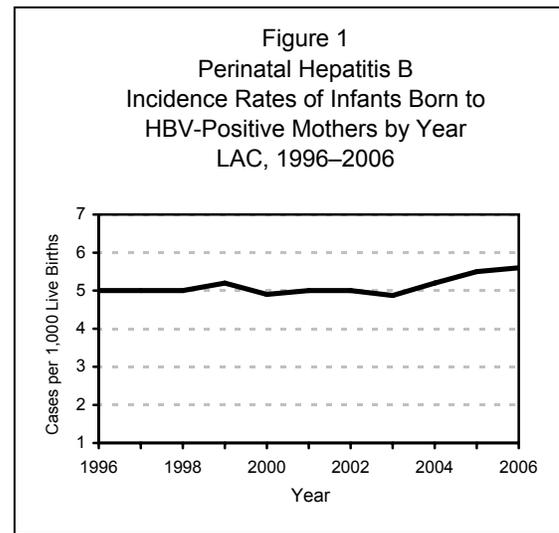
Additional information:

- Immunization Program's PHBPP website - <http://lapublichealth.org/ip/perinatalhepb/>
- Hepatitis B Foundation – <http://www.hepb.org>
- Asian Liver Center - <http://liver.stanford.edu>
- Immunization Action Coalition – <http://www.immunize.org>

HEPATITIS B, PERINATAL

CRUDE DATA	
Number of Infants Born to HBsAg Positive Mothers	795
Incidence of Exposure ^a	
LA County	5.6
United States	N/A
Age at Diagnosis	
Mean	N/A
Median	N/A
Range	N/A

^a Number of Infants born to HBsAg-positive mothers per 1,000 live births.



DESCRIPTION

Hepatitis B is a vaccine-preventable disease transmitted through parenteral or mucous membrane exposure to blood and other body fluids of individuals infected with the hepatitis B virus (HBV). It is also transmitted from mother to infant during birth. Within LAC, it is estimated that over 40% of infants born to hepatitis B surface antigen (HBsAg) positive women will become infected without prophylaxis. An estimated 90% of infants who become infected by perinatal transmission develop chronic HBV infection and up to 25% will die from chronic liver disease as adults. Postexposure prophylaxis with hepatitis B vaccine and hepatitis B immune globulin (HBIG) administered 12-24 hours after birth, followed by completion of a 3-dose vaccine series, has been demonstrated to be 85–95% effective in preventing acute and chronic HBV infection in infants born to mothers who are positive for both HBsAg and hepatitis B e-antigen. Postvaccination serologic testing is recommended at age 9–18 months after completing immunoprophylaxis to verify vaccine success or failure. The LAC Immunization Program's Perinatal Hepatitis B Prevention Program (PHBPP) conducts enhanced case management of HBsAg-positive pregnant women, their newborns, and household contacts.

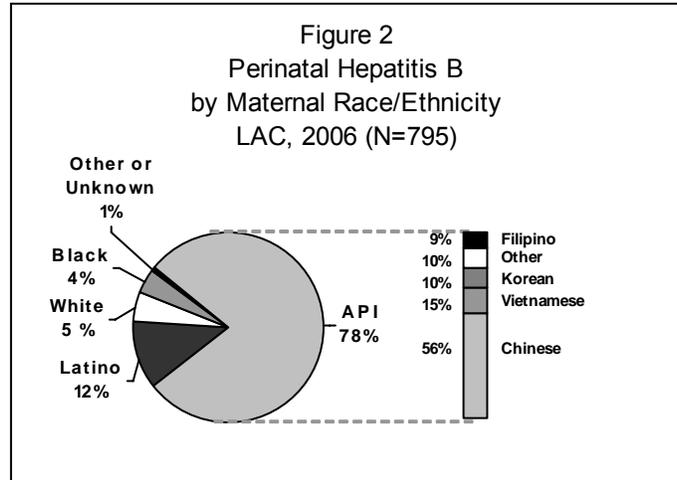
DISEASE ABSTRACT

- The majority of HBsAg-positive women giving birth were born in areas of the world with high or intermediate levels of endemic hepatitis B disease (e.g., Asia, Africa, Eastern Europe, Independent States of the former Soviet Union, Middle East, Pacific Islands, and several Central and South American countries).
- Of infants born to HBsAg-positive mothers, 98% received hepatitis B vaccine and 97% received HBIG within 24 hours of birth.
- Among those infants whose pediatric health care providers responded to a survey after the completion of the full vaccination series, 92% of infants were protected against HBV, 5% were still susceptible, and 3% were infected with HBV.
- The incidence of exposure of infants born to HBsAg-positive mothers increased by 2% from 5.5 to 5.6 per 1,000 infants born in 2006.

STRATIFIED DATA

Trends: In 2006, 795 infants (including 12 sets of twins) were born to 783 HBsAg-positive women. The incidence of exposure of infants born to HBsAg-positive mothers increased by 2% from 5.5 to 5.6 per 1,000 infants born in 2006. (Figure 1).

Race/Ethnicity: The majority of the cases were among Asian/Pacific Islanders (API). Six hundred-nine (78%) of the women were API, 92 (12%) were Latino, 45 (5%) were white, 32 (4%) were black, and 5 (1%) were classified as other or unknown ethnic group (Figure 2). Of API women, over half were Chinese (n=345, 56%). The remaining API women included: Vietnamese (n=90, 15%), Korean (n=60, 10%), Filipino (n=55, 9%), and others from various countries (e.g., Cambodia, Thailand, Samoa, Tonga, Japan, Burma, Indonesia; India, Argentina, and Panama (n=59, 10%).



Age: The age-range of mothers was 15–44 years of age with a median age of 31 years.

Location: The majority of the HBsAg-positive mothers (n=392, 50%) resided in SPA 3, which has a large Asian constituency. An additional 13% resided in SPA 4 (n=100), followed by SPA 2 (n=97, 12%), SPA 7 (n=57, 7%), SPA 8 (n=52, 7%), SPA 6 (n=43, 5%), SPA 5 (n=37, 5%), and SPA 1 (n=5, 1%).

Countries of Origin: The majority (n=714, 91%) of the HBsAg-positive women giving birth were born outside of the US. Of these women, 644 (90%) were known to be born in areas of the world with high or intermediate levels of endemic hepatitis B disease, such as Asia, Africa, Eastern Europe, Independent States of the former Soviet Union, Middle East, Pacific Islands, and several Central and South American countries.

ENHANCED CASE MANAGEMENT

In 2006, enhanced case management was completed for 791 HBsAg-positive mothers, their 798 newborns, and 1,341 households. Case managers made numerous attempts to complete follow-up of mothers, infants and household contacts. The majority (72%, n=569) of the HBsAg-positive mothers were reported in 2005. An additional 15% were reported in 2004 (n=122) followed by 2006 (n=99, 13%) with one case reported in 2003. One hundred thirty mothers were excluded for infant follow-up (86 mothers miscarried, terminated or had fetal demise, 9 transferred/moved out of LAC or were unable to be located before delivery, and 35 were retested and found to be HBsAg negative).

Enhanced case management protocol includes:

1. Educating pregnant HBsAg-positive women about HBV disease and transmission,
2. Identifying and referring household contacts for screening and vaccination,
3. Notifying hospitals of the expected deliveries and requesting that the hospitals return documentation after the infant's birth with the dates and times of the administration of hepatitis B vaccine #1 and HBIG,
4. Notifying the infant's health care provider about the need for hepatitis B vaccine #2 at 1 to 2 months and hepatitis B vaccine #3 at six months of age,
5. Reminding parents about these needed vaccinations, and
6. Sending postvaccination serology letters to pediatric health care providers.

Infant Immunoprophylaxis Completion Rates: Of 798 eligible infants (including 7 sets of twins) born to 791 mothers, nearly all received the hepatitis B vaccine #1 (n=780, 98%) and HBIG (n= 770, 97%) within 24

hours of birth. The majority of infants (n=748, 94%) received HBIG and a complete three-dose series of hepatitis B vaccine (Table 1).

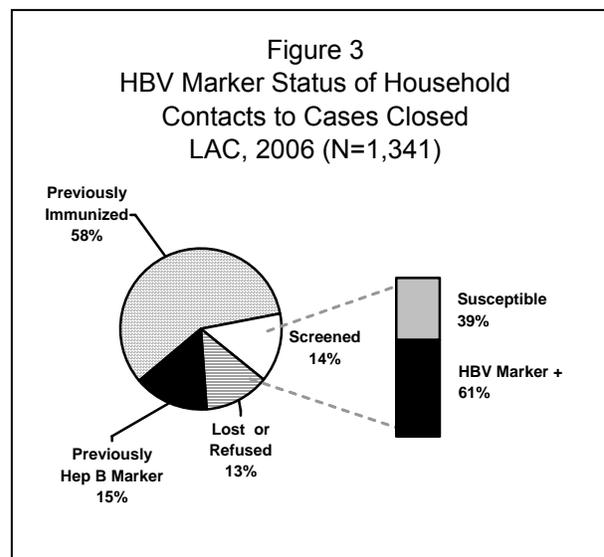
Table 1. Summary of Infant Hepatitis B Immunoprophylaxis, LAC—2006 (N=798)

Hepatitis B Immunoprophylaxis	# of Infants	Percent*
Received hepatitis B vaccine #1 ≤ 12 hours after birth	769	96%
Received hepatitis B vaccine #1 ≤ 24 hours after birth	780	98%
Received HBIG ≤ 12 hours after birth	760	95%
Received HBIG ≤ 24 hours after birth	770	97%
Completed HBIG/3-dose hepatitis B vaccine series	748	94%

* Percent of infants receiving hepatitis B immunoprophylaxis out of a total 798 infants born to 791 HBsAg+ mothers who completed follow-up in 2006.

Household and Sexual Contacts Completion Rates:

A household contact was defined as an individual with anticipated continuous household exposure for greater than one year (often limited to nuclear family). Of 1,341 household and sexual contacts identified, 778 (58%) had already been vaccinated against hepatitis B, and 198 (15%) were known to have serologic evidence of hepatitis B infection. Of the remaining 365 (27%) contacts, 192 (14%) were screened for serologic evidence of hepatitis B infection or immunity, while 173 (13%) refused screening or vaccination, were lost to follow-up, or moved. Of the 192 (14%) household contacts that were serologically screened, 118 (61%) had positive markers for hepatitis B and therefore did not need vaccine. The remaining 74 (39%) household contacts were seronegative, and therefore, susceptible to hepatitis B infection (Figure 3). At the time of completion of case management for the HBsAg-positive mothers, 56 (75%) of these susceptible household contacts had completed all three doses of hepatitis B vaccine.



Postvaccination Serology Results: Postvaccination serology testing of infants born to HBsAg-positive mothers is recommended 3 to 18 months after completing immunoprophylaxis to verify efficacy of the hepatitis B immunoprophylaxis. Letters requesting post-vaccination serology results were mailed to pediatric health care providers of infants tracked by the PHBPP. Post-vaccination serology results were received for 180 infants screened in 2006. Of these, 166 (92%) had antibodies to hepatitis B surface antigen indicating protection against HBV, 5 (3%) were HBsAg-positive and infected, and 9 (5%) were negative for both markers and revaccination was recommended.

ADDITIONAL RESOURCES

Information from the CDC:

- General information – www.cdc.gov/vaccines/vpd-vac/hepb/
- Publications – www.cdc.gov/ncidod/diseases/hepatitis/resource/pubs.htm
- Perinatal hepatitis B vaccine recommendations - www.cdc.gov/mmwr/PDF/rr/rr5416.pdf

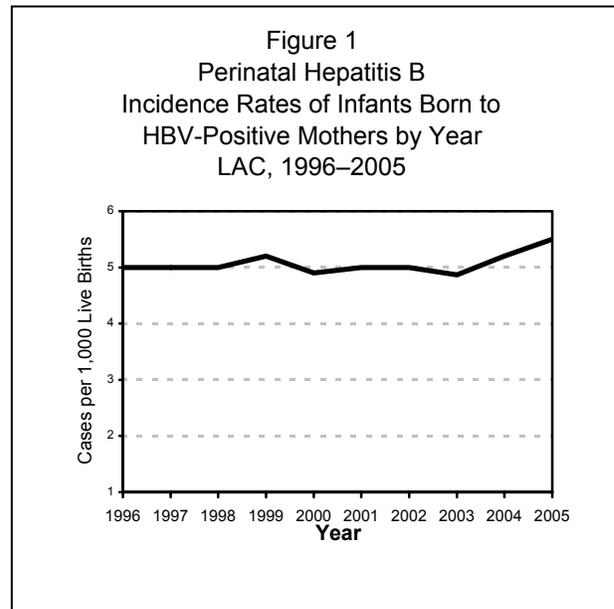
Additional information:

- Immunization Program's PHBPP website - <http://lapublichealth.org/ip/perinatalhepB/>
- Hepatitis B Foundation – www.hepb.org
- Asian Liver Center - <http://liver.stanford.edu>
- Immunization Action Coalition – www.immunize.org



HEPATITIS B, PERINATAL

CRUDE DATA	
Number of Infants Born to HBsAg Positive Mothers	768
Incidence of Exposure ^a	
LA County	5.5
United States	N/A
Age at Diagnosis	
Mean	N/A
Median	N/A
Range	N/A
Case Fatality	
LA County	0.0%
United States	N/A



^a Number of Infants born to HBsAg-positive mothers per 1,000 live births.

DESCRIPTION

Hepatitis B is a vaccine-preventable disease transmitted through parenteral or mucous membrane exposure to blood and other body fluids of individuals infected with the hepatitis B virus (HBV). It is also transmitted from mother to infant during birth. Within LAC, it is estimated that over 40% of infants born to hepatitis B surface antigen (HBsAg) positive women will become infected without prophylaxis. An estimated 90% of infants who become infected by perinatal transmission develop chronic HBV infection and up to 25% will die from chronic liver disease as adults. Hepatitis B vaccination and one dose of hepatitis B immune globulin (HBIG), administered within 24 hours after birth, are 85–95% effective in preventing both HBV infection and the chronic carrier state. Post-vaccination serologic testing is recommended 3–18 months after completing immunoprophylaxis to verify vaccine success or failure. The Immunization Program's Perinatal Hepatitis B Prevention Program (PHBPP) conducts case management of HBsAg-positive pregnant women, their newborns, and household contacts.

DISEASE ABSTRACT

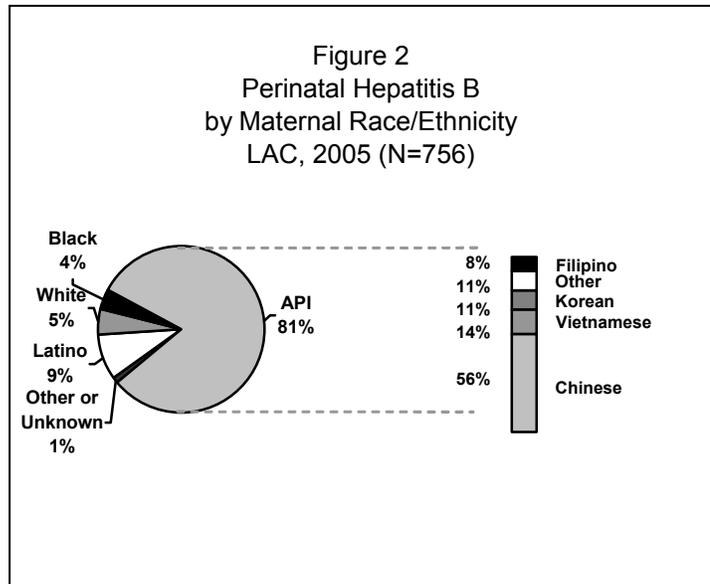
- The majority of HBsAg-positive women giving birth were born in areas of the world with high or intermediate levels of endemic hepatitis B disease (e.g., Asia, Africa, Eastern Europe, Newly Independent States of the former Soviet Union, Middle East, and several Central and South American counties).
- Of infants born to HBsAg-positive mothers, 98% received hepatitis B vaccine and 97% received HBIG within 24 hours of birth.
- Among those infants whose pediatric health care providers responded to a survey after the completion of the full vaccination series, 97% of infants were protected against HBV, 2% were still susceptible, and 1% were infected with HBV.
- The incidence of exposure of infants born to HBsAg-positive mothers increased by 4% from 5.3 births per 1,000 infants born in 2004 to 5.5 births per 1,000 infants born in 2005.



STRATIFIED DATA

Trends: In 2005, 768 infants (including 12 sets of twins) were born to 756 HBsAg-positive women. The incidence exposure of infants born to HBsAg-positive mothers increased 4% from 2004 (Figure 1).

Race/Ethnicity: The majority of the cases were among Asian/Pacific Islanders (API). Six hundred fourteen (81%) of the women were API, 69 (9%) were Latino, 36 (5%) were White, 33 (4%) were Black, and 4 (1%) were classified as other or unknown ethnic group (Figure 2). Of API women, half were Chinese (n=344, 56%). The remaining API women included: Vietnamese (n=87, 14%), Korean (n=64, 10%), Filipino (n=53, 8%), and others from various API countries (e.g., Cambodia, Thailand, Samoa, Tonga, Japan, Laos, Burma, Indonesia; India, and Bangladesh (n=66, 11%).



Age: The age-range of mothers was 16–47 years of age with a median age of 31 years.

Location: The majority of the HBsAg-positive mothers (n=353, 47%) resided in SPA 3, which has a large Asian/Pacific Islander constituency. An additional 13% resided in SPA 2 (n=99), followed by SPA 4 (n=82, 11%), SPA 8 (n=74, 10%), SPA 7 (n=62, 8%), SPA 6 (n=37, 5%), SPA 5 (n=36, 5%), and SPA 1 (n=8, 1%).

Countries of Origin: The majority (n=688, 91%) of the HBsAg-positive women giving birth were born outside of the US. Of these women, 629 (91%) were born in areas of the world with high or intermediate levels of endemic hepatitis B disease, such as Asia, Africa, Eastern Europe, Newly Independent States of the former Soviet Union, Middle East, and several Central and South American countries.

CASES COMPLETED FOR FOLLOW-UP IN 2005

In 2005, follow-up was completed for 678 women, their 693 newborns, and 1,204 household contacts. One hundred-seven mothers were excluded (73 mothers miscarried, terminated or had fetal demise, 11 transferred/moved out of LAC or were unable to be located before delivery, and 23 were retested and found to be HBsAg negative). Case managers made numerous attempts to complete follow up of infants and household contacts; therefore, some of the cases completed in 2005 were reported in 2003 and 2004.

Enhanced case management protocol includes:

1. Educating pregnant HBsAg-positive women about HBV disease and transmission,
2. Identifying and referring household contacts for screening and vaccination,
3. Notifying hospitals of the expected deliveries and requesting that the hospitals return documentation after the infant's birth with the dates and times of the administration of hepatitis B vaccine #1 and HBIG,
4. Notifying the infant's health care provider about the need for hepatitis B vaccine #2 at 1 to 2 months and hepatitis B vaccine #3 at six months of age,
5. Reminding parents about these needed vaccinations, and
6. Sending post-vaccination serology letters to pediatric health care providers.



Infant Immunoprophylaxis Completion Rates: Of 693 eligible infants (including 15 sets of twins), nearly all received the hepatitis B vaccine #1 (n=678, 98%) and HBIG (n= 675, 97%) within 24 hours of birth. The majority of infants (n=648, 94%) received HBIG and a complete three-dose series of hepatitis B vaccine (Table 1).

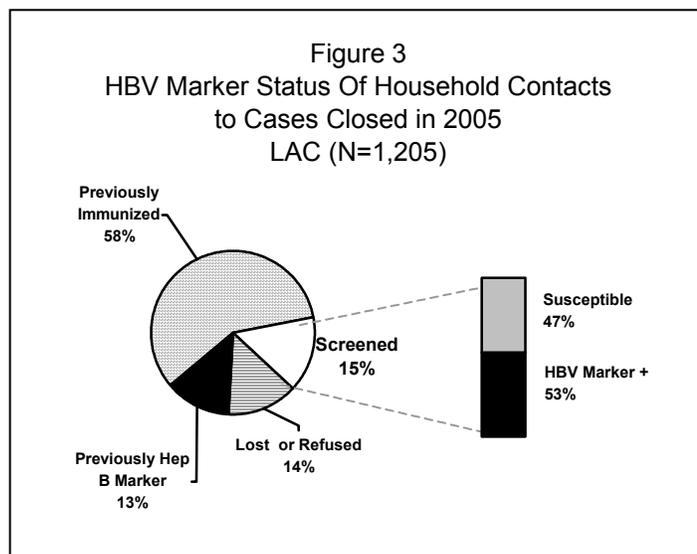
Table 1. Summary of Infant Hepatitis B Immunoprophylaxis, LAC—2005 (N=693)

Hepatitis B Immunoprophylaxis	# of Infants	Percent*
Received hepatitis B vaccine #1 ≤ 12 hours after birth	670	97%
Received hepatitis B vaccine #1 ≤ 24 hours after birth	678	98%
Received HBIG ≤ 12 hours after birth	664	96%
Received HBIG ≤ 24 hours after birth	675	97%
Completed HBIG/3-dose hepatitis B vaccine series	648	94%

* Percent of infants receiving hepatitis B immunoprophylaxis out of a total 693 infants born to 678 HBsAg+ mothers who completed follow-up in 2005. Total includes infants who moved out of LAC prior to 6 months of age and prior to completion of the 3-dose hepatitis B vaccine.

Household and Sexual Contacts

Completion Rates: A household contact was defined as an individual with anticipated continuous household exposure for greater than one year (often limited to nuclear family). Of 1,205 household and sexual contacts identified, 694 (58%) had already been vaccinated against hepatitis B, and 161 (13%) were known to have serologic evidence of hepatitis B infection. Of the remaining 350 (29%) contacts, 184 (15%) were screened for serologic evidence of hepatitis B infection or immunity, while 166 (14%) refused screening or vaccination, were lost to follow-up, or moved. Of the 184 (15%) household contacts that were serologically screened, 97 (53%) had positive markers for hepatitis B and therefore did not need vaccine. Close to half of the screened household contacts (n=87, 47%) were seronegative, and therefore, susceptible to hepatitis B infection (Figure 3). At the time of completion of case management for the HBsAg-positive mothers, 70 (81%) of these susceptible household contacts had completed all three doses of hepatitis B vaccine.



Post-Vaccination Serology Results: Post-vaccination serology testing of infants born to HBsAg-positive mothers is recommended 3 to 18 months after completing immunoprophylaxis to verify efficacy of the hepatitis B immunoprophylaxis. Letters requesting post-vaccination serology results were mailed to pediatric health care providers of infants tracked by the PHBPP. Post-vaccination serology results were received for 334 infants screened in 2005. Of these, 323 (97%) had antibodies to hepatitis B surface antigen indicating protection against HBV, 3 (1%) were HBsAg-positive and infected, and 8 (2%) were negative for both markers and revaccination was recommended.

ADDITIONAL RESOURCES

Additional information is available from the CDC:

- General information – www.cdc.gov/ncidod/diseases/hepatitis/b/index.htm
- Publications – www.cdc.gov/ncidod/diseases/hepatitis/resource/pubs.htm
- Viral Hepatitis B Virus slide set – www.cdc.gov/ncidod/diseases/hepatitis/slideset/hep_b/slide_1.htm



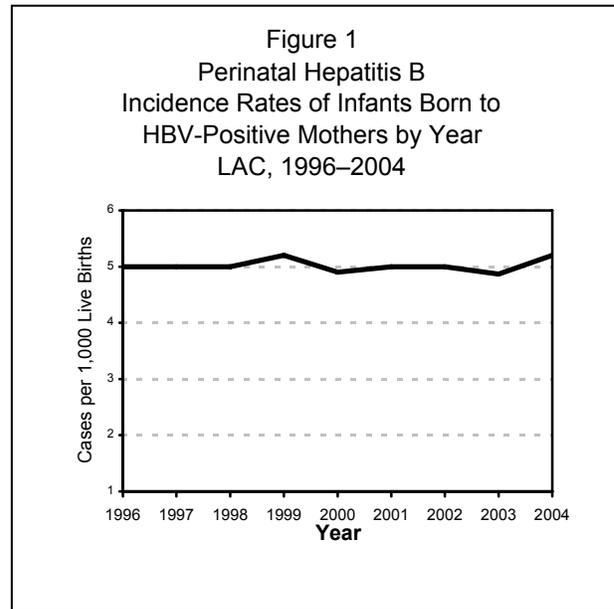
Information from Hepatitis organizations include:

- Immunization Action Coalition – www.immunize.org
Hepatitis B Foundation – www.hepb.org



HEPATITIS B, PERINATAL

CRUDE DATA	
Number of Infants Born to HBsAg Positive Mothers	745
Incidence of Exposure ^a	
LA County	5.3
United States	N/A
Age at Diagnosis	
Mean	N/A
Median	N/A
Range	N/A
Case Fatality	
LA County	0.0%
United States	N/A



^a Number of Infants born to HBsAg-positive mothers per 1,000 live births.

DESCRIPTION

Hepatitis B is a vaccine-preventable disease transmitted through parenteral or mucous membrane exposure to the blood and other body fluids of individuals infected with the hepatitis B virus (HBV). It is also transmitted from mother to infant during birth. Within LAC, it is estimated that over 40% of infants born to hepatitis B surface antigen (HBsAg) positive women will become infected without prophylaxis. An estimated 90% of infants who become infected by perinatal transmission develop chronic HBV infection and up to 25% will die of chronic liver disease as adults. Hepatitis B vaccination and one dose of hepatitis B immune globulin (HBIG), administered within 24 hours after birth, are 85–95% effective in preventing both HBV infection and the chronic carrier state. Post-vaccination serologic testing is recommended 3–9 months after completing immunoprophylaxis to verify vaccine success or failure. The Immunization Program's Perinatal Hepatitis B Prevention Program (PHBPP) conducts case management of chronic HBsAg-positive pregnant women, their newborns, and household contacts.

DISEASE ABSTRACT

- The majority of HBsAg-positive women giving birth were born in areas of the world with high or intermediate levels of endemic hepatitis B disease (e.g., Asia, Africa, several Southern European and Central and South American counties).
- Of infants born to HBsAg-positive mothers, 98% were immunized within 24 hours of birth.
- Among those whose pediatric health care providers responded to a survey after the completion of the full vaccination series, 95% of infants were protected against HBV, 3% were still susceptible, and 2% were infected with HBV.
- The incidence of exposure of infants born to HBsAg-positive mothers increased by 8% from 4.9 per 1,000 infants born in 2003 to 5.3 births per 1,000 infants born in 2004.



STRATIFIED DATA

Trends: In 2004, 745 infants (including 14 sets of twins and 2 sets of triplets) were born to 727 HBsAg-positive women. The incidence exposure of infants born to HBsAg-positive mothers increased 8% from 2003 (Figure 1).

Race/Ethnicity: The majority of the cases were among Asian/Pacific Islanders (API). Five hundred seventy-eight (80%) of the women were API, 53 (7%) were Latino, 45 (6%) were Black, 42 (6%) were White, and 9 (1%) were classified as other or unknown ethnic group (Figure 2). Of API women, half were Chinese (n=302, 52%). The remaining API women included: Vietnamese (n=76, 13%), Filipino (n=74, 13%), Korean (n=69, 12%), and others from various API countries (e.g., Cambodia, Thailand, Samoa, Tonga, Japan, Laos, Burma, Indonesia; and India n=57, 10%).

Age: The age-range of mothers was 16–48 years of age with a median age of 31 years.

Location: The majority of the HBsAg-positive mothers (n=337, 46%) resided in SPA 3, which has a large Asian/Pacific Islander constituency. An additional 14% resided in SPA 4 (n=98), followed by SPA 2 (n=91, 13%), SPA 8 (n=73, 10%), SPA 7 (n=47, 6%), SPA 6 (n=36, 5%), SPA 5 (n=32, 4%), and SPA 1 (n=13, 2%).

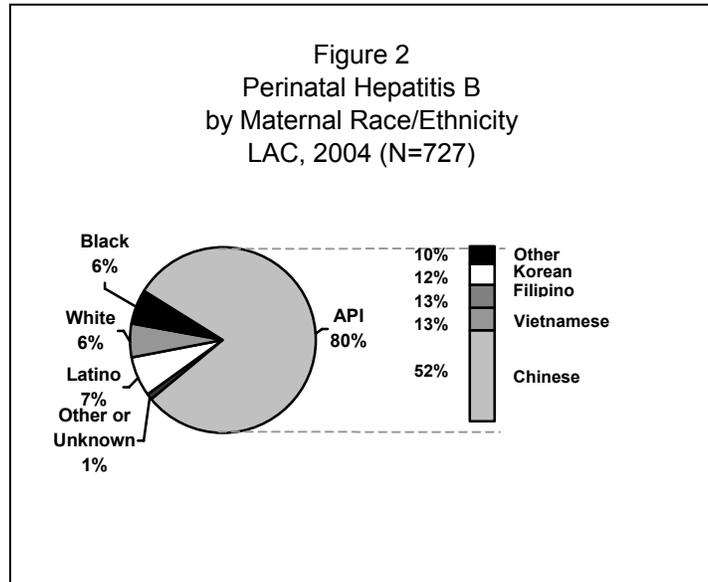
Countries of Origin: The majority (n=656, 90%) of the HBsAg-positive women giving birth were born outside of the US. Of these women, 621 (95%) were born in areas of the world with high or intermediate levels of endemic hepatitis B disease, such as Southeast Asia, Central Asia, India, the Middle East, Africa, South Pacific Islands, several Central and South American countries, and Eastern European countries.

CASES COMPLETED FOR FOLLOW-UP IN 2004

In 2004, follow-up was completed for 753 women, their 766 newborns, and 1,432 household contacts. One hundred-twelve mothers were excluded (85 mothers miscarried, terminated or had fetal demise, 16 transferred/moved out of LAC or were unable to be located before delivery and 11 were retested and found to be HBsAg negative). Case managers made numerous attempts to complete follow up of infants and household contacts; therefore, some of the cases completed in 2004 were reported in 2002 and 2003.

Case management protocol includes:

1. educating pregnant HBsAg-positive women about HBV disease and transmission,
2. identifying and referring household contacts for screening and vaccination,
3. notifying hospitals of the expected deliveries and requesting that the hospitals return documentation after the infant's birth with the dates and times of the administration of hepatitis B vaccine #1 and HBIG,
4. notifying the infant's health care provider about the need for hepatitis B vaccine #2 at 1 to 2 months and hepatitis B vaccine #3 at six months of age,
5. reminding parents about these needed vaccinations, and
6. sending post-vaccination serology letters to pediatric health care providers.





Infant Immunoprophylaxis Completion Rates: Of 766 eligible infants (including 13 sets of twins), nearly all received the hepatitis B vaccine #1 (98%) and HBIG (97%) within 24 hours of birth. The majority of infants (n=717, 94%) received HBIG and a complete three-dose series of hepatitis B vaccine (Table 1).

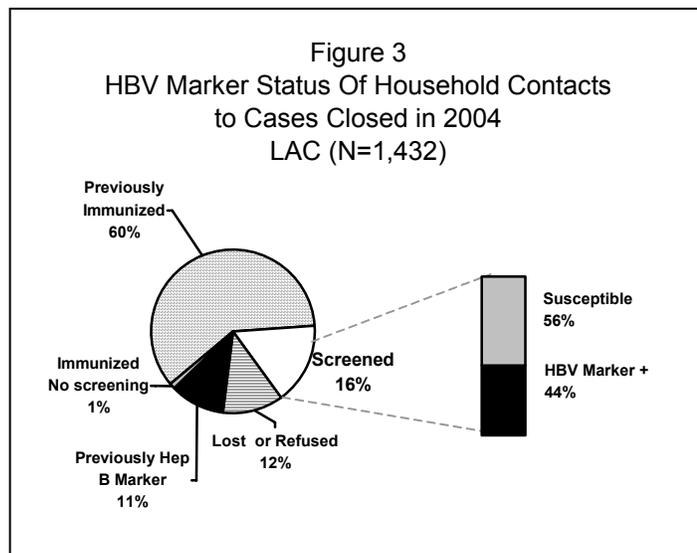
Table 1. Summary of Infant Hepatitis B Immunoprophylaxis, LAC—2004 (N=766)

Hepatitis B Immunoprophylaxis	# of Infants	Percent*
Received hepatitis B vaccine #1 ≤12 hours after birth	744	97%
Received hepatitis B vaccine #1 ≤24 hours after birth	750	98%
Received HBIG ≤12 hours after birth	736	96%
Received HBIG ≤24 hours after birth	746	97%
Completed HBIG/3-dose hepatitis B vaccine series	717	94%

* Percent of infants receiving hepatitis B immunoprophylaxis out of a total 766 infants born to 753 HBsAg+ mothers who completed follow-up in 2004. Total includes infants who moved out of LAC prior to 6 months of age and prior to completion of the 3-dose hepatitis B vaccine.

Household and Sexual Contacts Completion Rates:

A household contact was defined as an individual with anticipated continuous household exposure for greater than one year (often limited to nuclear family). Of 1,432 household and sexual contacts identified, 862 (60%) had already been vaccinated against hepatitis B, and 161 (11%) were known to have serologic evidence of hepatitis B infection. Of the remaining 409 (29%) contacts, 232 (16%) were screened for serologic evidence of hepatitis B infection or immunity, while 168 (12%) refused screening or vaccination, were lost to follow-up, or moved; 1% were vaccinated without screening. Of the 232 (16%) household contacts that were serologically screened,



102 (44%) had positive markers for hepatitis B and therefore did not need vaccine. Over half of the screened household contacts (n=130, 56%) were seronegative, and therefore, susceptible to hepatitis B infection (Figure 3). At the time of completion of case management for the HBsAg-positive mothers, 107 (82%) of these susceptible household contacts had completed all three doses of hepatitis B vaccine.

Post-vaccination serology results: Post-vaccination serology testing of infants born to HBsAg-positive mothers is recommended 3 to 9 months after completing immunoprophylaxis to verify efficacy of the Hep B vaccine. Letters requesting post-vaccination serology results were mailed to pediatric health care providers of infants tracked by the PHBPP. Of the 766 infants, post-vaccination serology results of 295 infants (39%) were received. Of these, 280 (95%) had antibodies to hepatitis B surface antigen indicating protection against HBV, 5 (2%) were HBsAg-positive and infected, and 10 (3%) were negative for both markers and revaccination was recommended.

ADDITIONAL RESOURCES

Additional information is available from the CDC:

- General information – www.cdc.gov/ncidod/diseases/hepatitis/b/index.htm
- Publications – www.cdc.gov/ncidod/diseases/hepatitis/resource/pubs.htm
- Viral Hepatitis B Virus slide set – www.cdc.gov/ncidod/diseases/hepatitis/slideset/hep_b/slide_1.htm



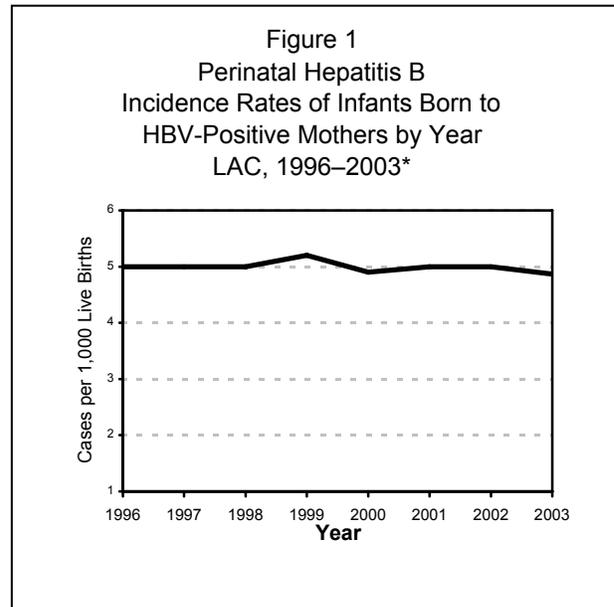
Information from Hepatitis organizations include:

- Immunization Action Coalition – www.immunize.org
- Hepatitis B Foundation – www.hepb.org



HEPATITIS B, PERINATAL

CRUDE DATA	
Number of Infants Born to HbsAg Positive Mothers	693
Annual Prevalence ^a	
LA County	5
United States	N/A
Age at Diagnosis	
Mean	N/A
Median	N/A
Range	N/A
Case Fatality	
LA County	0.0%
United States	N/A



^a Cases per 1,000 live births.

DESCRIPTION

Hepatitis B is a vaccine-preventable disease transmitted through parenteral or mucous membrane exposure to the blood and other body fluids of individuals infected with the hepatitis B virus (HBV). It is also transmitted from mother to infant during birth. Within LAC, it is estimated that over 40% of infants born to hepatitis B surface antigen (HBsAg) positive women will become infected without prophylaxis. An estimated 90% of infants who become infected by perinatal transmission develop chronic HBV infection and up to 25% will die of chronic liver disease as adults. Hepatitis B vaccination and one dose of hepatitis B immune globulin (HBIG), administered within 24 hours after birth, are 85–95% effective in preventing both HBV infection and the chronic carrier state. Post-vaccination serologic testing is recommended 3–9 months after completing immunoprophylaxis to verify vaccine success or failure. The Immunization Program's Perinatal Hepatitis B Prevention Program (PHBPP) conducts case management of chronic HBsAg-positive pregnant women, their newborns, and household contacts.

DISEASE ABSTRACT

- The majority of HBsAg-positive women giving birth were born in areas of the world with high or intermediate levels of endemic hepatitis B disease (e.g., Southeast and Central Asia).
- Of infants born to HBsAg-positive mothers, 96% were immunized within 24 hours of birth.
- Among those whose pediatric health care providers responded to a survey after the completion of the full vaccination series, 91% of infants were protected against HBV, 7% were still susceptible, and 2% were infected with HBV.

STRATIFIED DATA

Trends: In 2003, 693 infants (including 8 sets of twins) were born to 685 HBsAg-positive women. The incidence of infants born to HBsAg-positive mothers was essentially unchanged from 2002 (Figure 1).



Race/Ethnicity: The majority of the cases were among Asian/Pacific Islanders (API). Five hundred thirty-eight (79%) of the women were API, 70 (10%) were Latino, 37 (5%) were Black, 33 (5%) were White, and 7 (1%) were classified by another ("other") ethnic group (Figure 2). Of API women, half were Chinese (n=271, 50%). The remaining API women included: Vietnamese (n=81, 15%), Filipino (n=80, 15%), Korean (n=47, 9%), and others (e.g., Samoa, Tonga, Japan, Laos, Burma, Indonesia, and Malaysia; n=59, 11%).

Age: The age-range of mothers was 16–47 years of age with a median age of 31 years.

Location: The majority of the HBsAg-positive mothers (n=280, 41%) resided in SPA 3, which has a large Asian/Pacific Islander constituency. An additional 16% resided in SPA 4 (n=114), followed by SPA 2 (n=87, 13%), SPA 8 (n=65, 9%), SPA 7 (n=61, 9%), SPA 5 (n=31, 5%), SPA 6 (n=31, 5%), and SPA 1 (n=16, 2%).

Countries of Origin: The majority (n=607, 89%) of the HBsAg-positive women giving birth were born outside of the US. Of these women, 561 (92%) were born in areas of the world with high or intermediate levels of endemic hepatitis B disease, such as Southeast Asia, Central Asia, India, the Middle East, Africa, Eastern Europe, South Pacific Islands, and several Central and South America countries.

CASES COMPLETED FOR FOLLOW-UP IN 2003

In 2003, follow-up was completed for 742 women, their 751 newborns, and 1,267 household contacts. One hundred-seven mothers were excluded (77 mothers miscarried, terminated or had fetal demise, 17 transferred/moved out of LAC or were unable to be located before delivery and 13 were retested and found to be HBsAg negative). Case managers made numerous attempts to complete follow up of infants and household contacts; therefore, some of the cases completed in 2003 were reported in 2001 and 2002.

Case management protocol includes:

1. educating pregnant HBsAg-positive women about HBV disease and transmission,
2. identifying and referring household contacts for screening and vaccination,
3. notifying hospitals of the expected deliveries and requesting that the hospitals return documentation after the infant's birth with the dates and times of the administration of hepatitis B vaccine #1 and HBIG,
4. notifying the infant's health care provider about the need for hepatitis B vaccine #2 at 1 to 2 months and hepatitis B vaccine #3 at six months of age,
5. reminding parents about these needed vaccinations, and
6. sending post vaccination serology letters to pediatric health care providers.

Infant Immunoprophylaxis Completion Rates: Of 751 eligible infants (including 8 sets of twins), nearly all (96%) received the hepatitis B vaccine #1 and HBIG within 24 hours of birth. The majority of infants (n=693, 92%) received HBIG and a complete three-dose series of hepatitis B vaccine (Table 1).

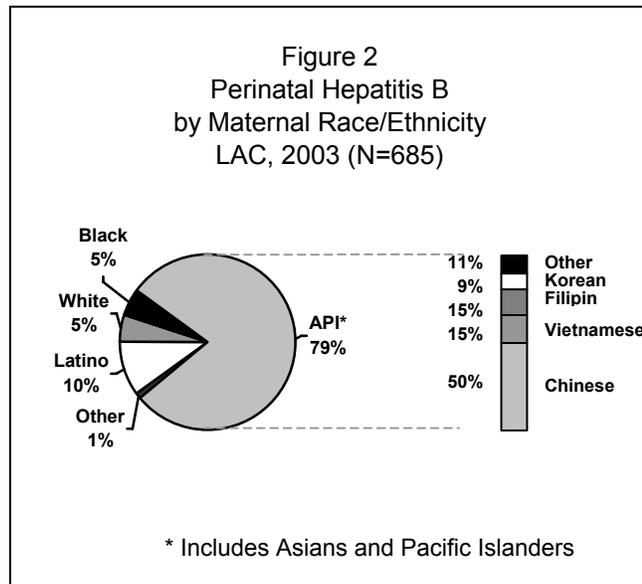




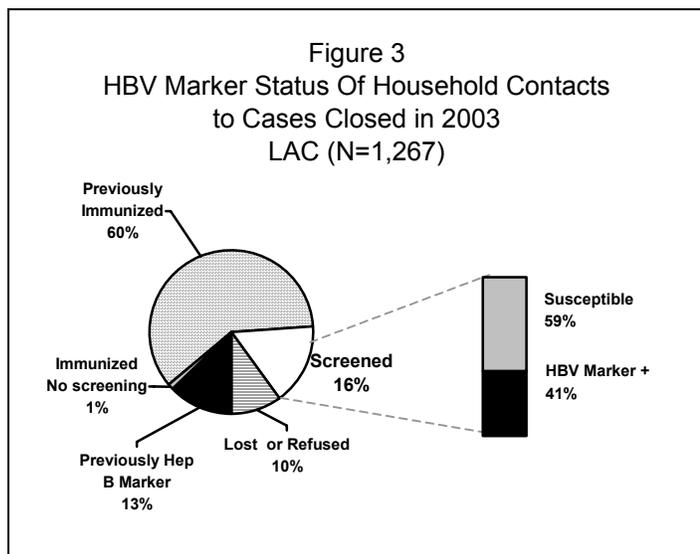
Table 1. Summary of Infant Hepatitis B Immunoprophylaxis, LAC—2003 (N=751)

Hepatitis B Immunoprophylaxis	# of Infants	Percent*
Received hepatitis B vaccine #1 <12 hours after birth	706	94%
Received hepatitis B vaccine #1 <24 hours after birth	724	96%
Received HBIG <12 hours after birth	702	94%
Received HBIG <24 hours after birth	720	96%
Completed HBIG/3-dose hepatitis B vaccine series	693	92%

* Percent of infants receiving hepatitis B immunoprophylaxis out of 751 infants born to 742 HBsAg+ mothers who completed follow-up in 2003. Total includes infants who moved out of LAC prior to 6 months of age and prior to completion of the 3-dose hepatitis B vaccine.

Household and Sexual Contacts Completion Rates:

A household contact was defined as an individual with anticipated continuous household exposure for greater than one year (often limited to nuclear family). Of 1,267 household and sexual contacts identified, 757 (60%) had already been vaccinated against hepatitis B, and 167 (13%) were known to have serologic evidence of hepatitis B infection. Of the remaining 343 (27%) contacts, 207 (16%) were screened for serologic evidence of hepatitis B infection or immunity, while 132 (10%) refused screening or vaccination, were lost to follow-up, or moved; 1% were vaccinated without screening. Of the 207 (16%) household contacts that were serologically screened, 85 (41%) had positive markers for hepatitis B and therefore did not need vaccine. Over half of the screened household contacts (n=122, 59%) were seronegative, and therefore, susceptible to hepatitis B infection (Figure 3). At the time of completion of case management for the HBsAg-positive mothers, 103 (84%) of these susceptible household contacts had completed all three doses of hepatitis B vaccine.



Post-vaccination serology results: Post vaccination serology testing of infants born to HBsAg-positive mothers is recommended 3 to 9 months after completing immunoprophylaxis to verify vaccine failure or success. Letters requesting post vaccination serology results were mailed to pediatric health care providers of infants tracked by the PHBPP. The post vaccination serology results of 375 infants (50%) whose follow-up was completed in 2003 were received. Of these, 342 (91%) had antibodies to hepatitis B surface antigen indicating protection against HBV, 7 (2%) were HBsAg-positive and infected, and 26 (7%) were negative for both markers and revaccination was recommended.

ADDITIONAL RESOURCES

Additional information is available from the CDC:

- General information – www.cdc.gov/ncidod/diseases/hepatitis/b/index.htm
- Publications – www.cdc.gov/ncidod/diseases/hepatitis/resource/pubs.htm
- Viral Hepatitis B Virus slide set – www.cdc.gov/ncidod/diseases/hepatitis/slideset/hep_b/slide_1.htm



Information from Hepatitis organizations include:

- Immunization Action Coalition – www.immunize.org
- Hepatitis B Foundation – www.hepb.org



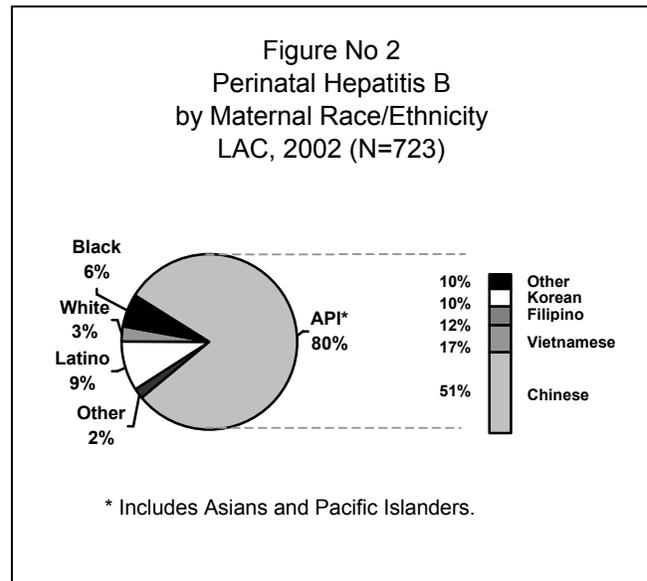
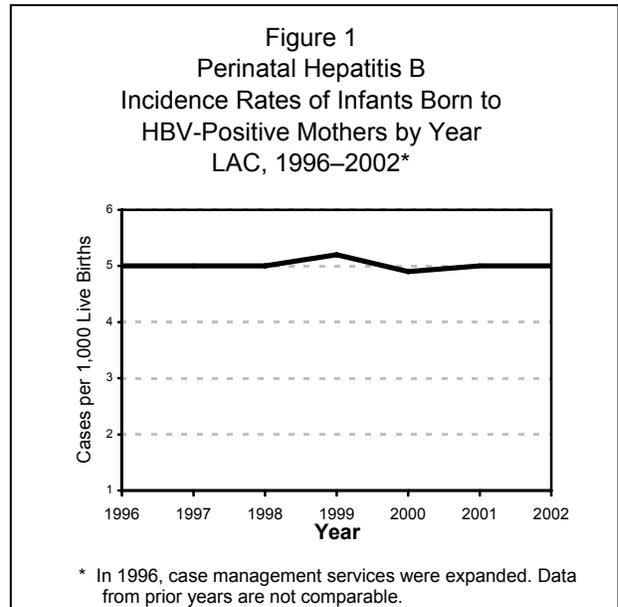
HEPATITIS B, PERINATAL

CRUDE DATA	
Number of Infants Born to HbsAg Positive Mothers	733
Annual Prevalence ^a	
LA County	5
United States	N/A
Case Fatality	
LA County	0.0%
United States	N/A

^a Cases per 100,000 live births.

DESCRIPTION

Hepatitis B is a vaccine-preventable disease transmitted through parenteral or mucous membrane exposure to the blood and other body fluids of individuals infected with the hepatitis B virus (HBV). It is also transmitted from mother to infant during birth. Within LAC, it is estimated that over 40% of infants born to hepatitis B surface antigen (HBsAg) positive women will become infected without prophylaxis. An estimated 90% of infants who become infected by perinatal transmission develop chronic HBV infection and up to 25% will die of chronic liver disease as adults. Hepatitis B vaccination and one dose of hepatitis B immune globulin (HBIG), administered within 24 hours after birth, are 85–95% effective in preventing both HBV infection and the chronic carrier state. The Immunization Program's Perinatal Hepatitis B Prevention Program (PHBPP) conducts case management of chronic HbsAg-positive pregnant women, their newborns, and household contacts.



DISEASE ABSTRACT

- The majority of HBsAg-positive women giving birth were born in areas of the world with high or intermediate levels of endemic hepatitis B disease (e.g., Southeast and Central Asia).
- Of infants born to HBsAg-positive mothers, 96% were immunized within 24 hours of birth.
- Among those whose parents responded to a survey 3 to 9 months after the completion of the full vaccination series, 88% of infants were protected against HBV, 9% were still susceptible, and 3% were infected with HBV.



STRATIFIED DATA

Trends: In 2002, 733 infants (including 10 sets of twins) were born to 723 HBsAg-positive women. The incidence of infants born to HBsAg-positive mothers was essentially unchanged from 2001 (Figure 1).

Race/Ethnicity: The majority of the cases were among Asian/Pacific Islanders (API). Most of the mothers (n=581, 80%) were API, 64 (9%) were Latino, 39 (6%) were Black, 22 (3%) were White, and 17 (2%) were classified by another ("other") ethnic group (Figure 2). Of API women, half were Chinese (n=296, 51%). The remaining API women included: Vietnamese (n=99, 17%), Filipino (n=68, 12%), Korean (n=61, 10%), and others (e.g., Samoa, Tonga, Japan, Laos, Burma, Indonesia, and India; n=57, 10%).

Age: The age-range of mothers was 14–46 years of age with a median age of 31 years.

Location: The majority of the HBsAg-positive mothers (n=333, 45%) resided in SPA 3 which has a large Asian/Pacific Islander constituency. An additional 14% resided in SPA 2 (n=101), followed by SPA 4 (n=96, 13%), SPA 8 (n=59, 8%), SPA 5 (n=44, 6%), SPA 7 (n=36, 5%), SPA 6 (n=35, 5%), and SPA 1 (n=14, 2%). Place of residence could not be confirmed for five cases.

Countries of Origin: The majority (n=672, 93%) of the HBsAg-positive women giving birth were born outside of the US. Of these women, 598 (89%) were born in areas of the world with high or intermediate levels of endemic hepatitis B disease, such as Southeast Asia, Central Asia, India, the Middle East, Africa, Eastern Europe, South Pacific Islands, and Central and South America.

CASES COMPLETED FOR FOLLOW-UP IN 2002

In 2002, follow-up was completed for 881 women, their 894 newborns, and 1,471 household contacts. Fifty-three mothers were excluded (26 mothers miscarried, 11 transferred/moved out of LAC or were unable to be located before delivery and 15 were retested and found to be HBsAg negative). Case managers made numerous attempts to complete follow up of infants and household contacts; therefore, some of the cases completed in 2002 were reported in 2000 and 2001.

Case management protocol includes:

1. educating pregnant HBsAg-positive women about HBV disease, transmission, and other infant vaccinations,
2. identifying and referring household contacts for screening and vaccination,
3. notifying hospitals of the expected deliveries and requesting that the hospitals return documentation after the infant's birth with the dates and times of the administration of hepatitis B vaccine #1 and HBIG,
4. notifying the infant's health care provider about the need for hepatitis B vaccine #2 at 1 to 2 months and hepatitis B vaccine #3 at six months of age,
5. reminding parents about these needed vaccinations, and
6. sending post vaccination serology letters to pediatric health care providers.

Infant Immunoprophylaxis Completion Rates: Of 894 eligible infants (including 13 sets of twins), nearly all (96%) received the hepatitis B vaccine #1 within 24 hours of birth. The majority of infants (n=814, 91%) received HBIG and a complete three-dose series of hepatitis B vaccine (Table 1).



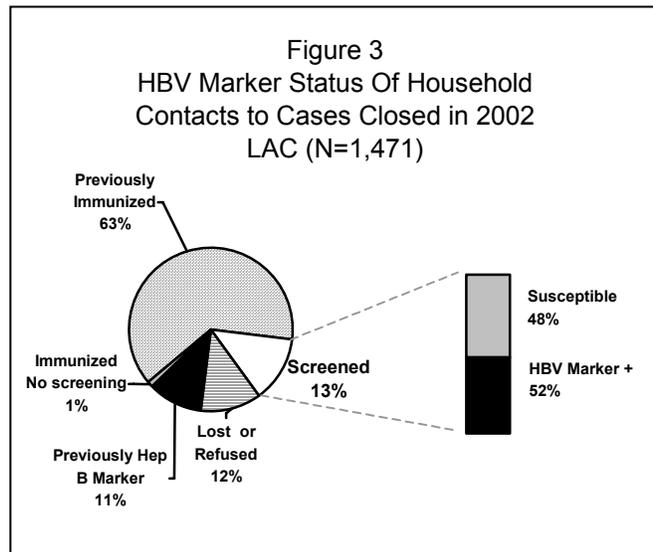
Table 1. Summary of Infant Hepatitis B Immunoprophylaxis—LAC, 2002 (N=894)

Hepatitis B Immunoprophylaxis	# of Infants	Percent*
Received hepatitis B vaccine #1 <12 hours after birth	832	93%
Received hepatitis B vaccine #1 <24 hours after birth	857	96%
Received HBIG <12 hours after birth	823	92%
Received HBIG <24 hours after birth	854	96%
Completed HBIG/3-dose hepatitis B vaccine series	814	91%

* Percent of infants receiving hepatitis B immunoprophylaxis out of 894 infants born to 881 HBsAg+ mothers who completed follow-up in 2002. Total includes infants who moved out of LAC prior to 6 months of age and prior to completion of the 3-dose hepatitis B vaccine.

Household and Sexual Contacts Completion Rates:

A household contact was defined as an individual with anticipated continuous household exposure for greater than one year (often limited to nuclear family). Of the 1,471 contacts identified, 923 (63%) were previously vaccinated and 161 (11%) had demonstrated serologic evidence of hepatitis B infection. Of the remaining contacts (n=381, 26%), 193 (13%) were screened for serologic evidence of hepatitis B infection or immunity, while 188 (12%) refused screening or vaccination, were lost to follow-up, or moved; 1% were vaccinated without screening. Of the 193 (13%) household contacts that were serologically screened, 92 (48%) had positive markers for hepatitis B and therefore did not need vaccine. Half of the screened household contacts (n=101, 52%) were seronegative, and therefore, susceptible to hepatitis B infection (Figure 3). Upon completion of case management for the HBsAg-positive mothers, 63 (62%) of these susceptible household contacts had completed all three doses of hepatitis B vaccine.



Upon completion of case management for the HBsAg-positive mothers, 63 (62%) of these susceptible household contacts had completed all three doses of hepatitis B vaccine.

Post-vaccination serology results: Post vaccination serology testing of infants born to HBsAg-positive mothers is recommended 3 to 9 months after completing immunoprophylaxis to verify vaccine failure or success. Letters requesting post vaccination serology results were mailed to pediatric health care providers of infants tracked by the PHBPP. The post vaccination serology results of 258 infants (29%) whose follow-up was completed in 2002 were received. Of these, 226 (88%) had antibodies to hepatitis B surface antigen indicating protection against HBV, 7 (3%) were HBsAg-positive and infected, and 25 (9%) were negative for both markers and revaccination was recommended.

ADDITIONAL RESOURCES

Information from the CDC includes:

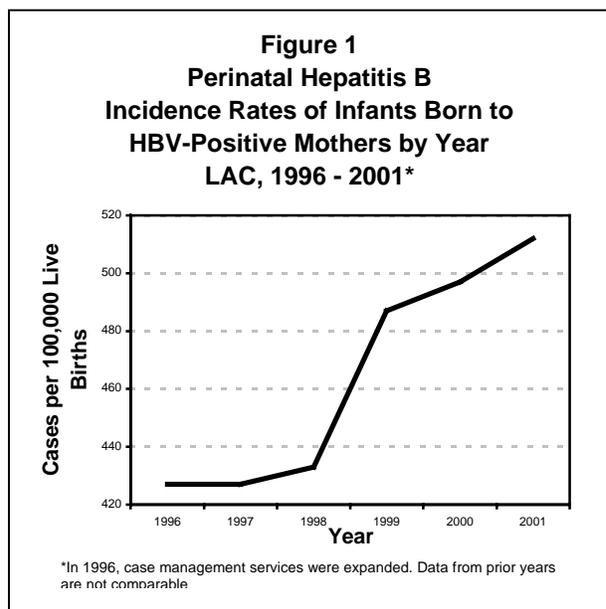
- General information www.cdc.gov/ncidod/diseases/hepatitis/b/index.htm
- Publications www.cdc.gov/ncidod/diseases/hepatitis/resource/pubs.htm
- Viral Hepatitis B Virus slide set www.cdc.gov/ncidod/diseases/hepatitis/slideset/hep_b/slide_1.htm

Information from the Immunization Action Coalition is available at: www.immunize.org

Information from the Hepatitis B Foundation is available at: www.hepb.org/

HEPATITIS B, PERINATAL

CRUDE DATA	
Number of Infants Born to HBsAg- Positive Mothers	733
Annual Incidence	
LA County	512
United States	N/A ^a
Age at Diagnosis	
Mean	N/A ^a
Median	N/A ^a
Range	N/A ^a
Case Fatality	
LA County	0.0%
United States	N/A ^a



^a Not available.

DESCRIPTION

Hepatitis B is a vaccine-preventable disease transmitted through parenteral or mucous membrane exposure to the blood and other body fluids of individuals infected with the hepatitis B virus (HBV), a DNA-virus of the Hepadnaviridae family. It is also transmitted from mother to infant during birth. Within LAC, it is estimated that over 40% of infants born to Hepatitis B surface antigen (HBsAg) positive women will become infected without prophylaxis. An estimated 90% of infants who become infected by perinatal transmission will have chronic HBV infection and up to 25% will die of chronic liver disease as adults. Hepatitis B vaccination and one dose of hepatitis B immune globulin (HBIG), administered within 24 hours after birth, are 85-95% effective in preventing both HBV infection and the chronic carrier state. The Immunization Program's Perinatal Hepatitis B Prevention Program (PHBPP) conducts case management of chronic HBsAg-positive pregnant women, their newborns, and household contacts.

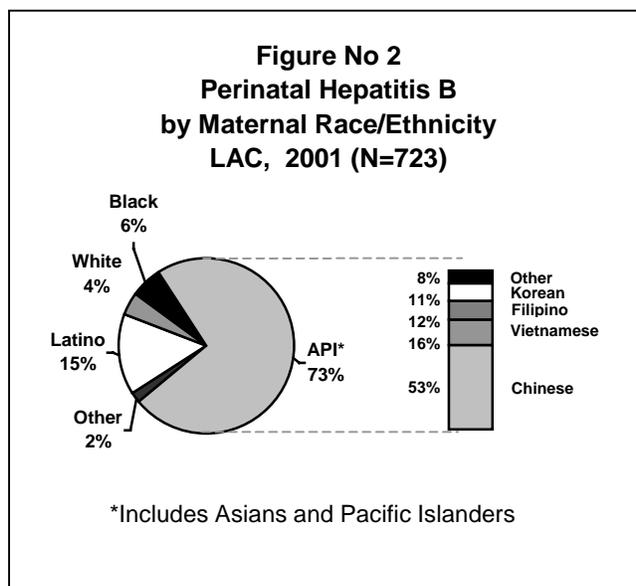
DISEASE ABSTRACT

- The majority of HBsAg-positive women giving birth were born in areas of the world with high or intermediate levels of endemic hepatitis B disease.
- Of infants born to HBsAg-positive mothers, 97% were immunized within 24 hours of birth.
- Of those responding to a survey 3 to 9 months after the full vaccination series was completed, 88% of infants were found to be protected against HBV, 6% were still susceptible, and 6% were found to have been infected with HBV.

STRATIFIED DATA

Trends: In 2001, 733 infants (including 10 sets of twins) were born to 723 HBsAg-positive women. The incidence of infants born to HBsAg-positive mothers was essentially unchanged from 2000 (Figure 1).

Race/Ethnicity: The majority of the cases were among Asian/Pacific Islanders (API). Five hundred twenty-five (73%) of the women were API, 108 (15%) were Latino, 47 (6%) were Black, 28 (4%) were White, and 15 (2%) were Other (Figure 2). Of API women, 277 (53%) were Chinese, 86 (16%) Vietnamese, 63 (12%) Filipino, 59 (11%) Korean, and 40 (8%) other API women from Samoa, Tonga, Japan, Laos, Burma, Indonesia, and India.



Age: The age-range of mothers was 15-50 years of age with a median age of 31 years.

Location: The majority of the HBsAg-positive mothers resided in SPA 3 (n=308, 43%) primarily because of the large Asian/Pacific Islander constituency. An additional 15% resided in SPA 4 (n=111), followed by 90 mothers in SPA 2, 65 in SPA 7, 60 in SPA 8, 52 in SPA 6, 23 in SPA 5, 9 in SPA 1, and 5 where residence could not be confirmed.

Countries of Origin: The majority of the HBsAg-positive women giving birth were born outside of the US. Six hundred and forty-two (89%) were non-US born. Of these women, 548 (85%) were born in areas of the world with high or intermediate levels of endemic hepatitis B disease, such as Southeast Asia, Central Asia, India, the Middle East, Africa, Eastern Europe, South Pacific Islands, and Central and South America.

CASES COMPLETED FOR FOLLOW-UP IN 2001

In 2001, follow-up was completed for 712 women, their 718 newborns, and 1,066 household contacts. Fifty-two mothers were excluded (26 mothers miscarried, 5 transferred/moved out of LAC prior to delivery, 10 were unable to be located before delivery and 11 were retested and found to be HBsAg negative). Case managers made numerous attempts to complete follow up of infants and household contacts; therefore, some of the cases completed in 2001 were reported in 1999 and 2000.

Case management protocol includes (1) educating pregnant HBsAg-positive women about HBV disease, transmission, and infant vaccinations, (2) identifying and referring household contacts for screening and vaccination, (3) notifying hospitals of the expected deliveries and requesting that the hospitals return documentation after the infant's birth with the dates and times of the administration of hepatitis B vaccine #1 and HBIG, (4) notifying the infant's health care provider about the need for hepatitis B vaccine #2 at 1-2 months and hepatitis B vaccine #3 at six months of age, (5) reminding parents about these needed vaccinations, and (6) sending postvaccination serology letters to pediatric health care providers.

Infant Immunoprophylaxis Completion Rates: Of 718 eligible infants (including 6 sets of twins), 94% received both hepatitis B vaccine #1 and HBIG within 12 hours of birth, while 98% received hepatitis B vaccine #1 and 97% received HBIG within 24 hours of birth. Six hundred sixty-four infants (94%) received HBIG and a complete three-dose series of hepatitis B vaccine (Table 1).

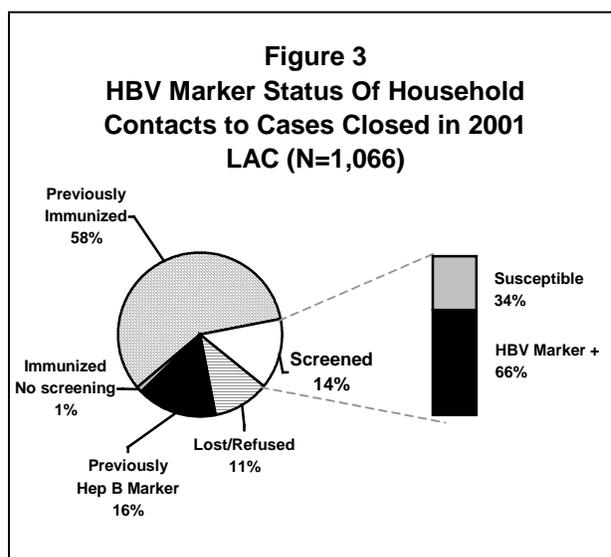
Table 1. Summary of Infant Hepatitis B Immunoprophylaxis, LAC, 2001 (N=718)

Hepatitis B Immunoprophylaxis	Number of Infants	Percent*
Infants who received hepatitis B vaccine #1 within 12 hours of birth	671	94%
Infants who received hepatitis B vaccine #1 within 24 hours of birth	695	98%
Infants who received HBIG within 12 hours of birth	667	94%
Infants who received HBIG within 24 hours of birth	692	97%
Infants who completed HBIG/3-dose hepatitis B vaccine series	664	93%

* Percent of infants receiving hepatitis B immunoprophylaxis out of 718 infants born to 712 HBsAg+ mothers who completed follow-up in 2001. Total includes infants who moved out of LAC prior to 6 months of age and prior to completion of the 3-dose hepatitis B vaccine.

Household and Sexual Contacts Completion Rates:

A household contact was defined as an individual with anticipated continuous household exposure for greater than one year (often limited to nuclear family). Of 1,066 household and sexual contacts identified, 617 (58%) had already been vaccinated against hepatitis B, and 166 (16%) were known to have serologic evidence of hepatitis B infection. Of the remaining 283 (27%) contacts, 154 (14%) were screened for serologic evidence of hepatitis B infection or immunity, while 116 (11%) refused screening or vaccination, were lost to follow-up, or moved; 1% were vaccinated without screening. Of the 138 household contacts who were serologically screened, 91 (66%) had positive markers for hepatitis B and therefore did not need vaccine.



Forty-seven (34%) of the screened household contacts were seronegative that is, susceptible to hepatitis B infection (Figure 3). At the time of completion of case management for the HBsAg-positive mothers, 38 (81%) of the susceptible household contacts had completed all three doses of hepatitis B vaccine.

Post-vaccination serology results: Postvaccination serology testing of infants born to HBsAg-positive mothers is recommended 3 to 9 months after completing immunoprophylaxis to verify vaccine failure or success. Letters requesting postvaccination serology results were mailed to pediatric health care providers of infants tracked by the PHBPP. The postvaccination serology results of 217 infants (27%) whose follow-up was completed in 2001 were received. Of these, 191 (88%) had antibodies to hepatitis B surface antigen indicating protection against HBV, 13 (6%) were HBsAg-positive and infected, and 13 (6%) were negative for both markers and revaccination was recommended.

ADDITIONAL RESOURCES

Viral Hepatitis B Virus slide set.

www.cdc.gov/ncidod/diseases/hepatitis/slideset/hep_b/slide_1.htm

CDC Publications: Viral Hepatitis.

Available at

www.cdc.gov/ncidod/diseases/hepatitis/resource/pubs.htm

Viral Hepatitis B.

www.cdc.gov/ncidod/diseases/hepatitis/b/index.htm

Immunization Action Coalition.

www.immunize.org

Hepatitis B Foundation.

www.hepb.org/

LAC, Acute Communicable Disease Control.

www.lapublichealth.org/acd/procs/b73/b73index.htm

LAC DHS, Immunization Program at:

www.lapublichealth.org/ip