GIARDIASIS

CRUDE DATA	
Number of Cases	452
Annual Incidence	
LA County[a]	4.71
California[b]	6.37
United States[b]	4.25
Age at Diagnosis	
Mean	40
Median	40
Range	0–88 years

[a]Cases per 100,000 population
[b]Calculated from: CDC. *Notice to Readers:* Final 2016 Reports of Nationally Notifiable Infectious Diseases and Conditions *Weekly* / January 6, 2018 / 65(52). Available at: https://www.cdc.gov/mmwr/volumes/65/wr/mm6552md.htm?s_cid=mm6552md_w

DESCRIPTION

Giardiasis is an intestinal infection caused by the zoonotic protozoan parasite *Giardia intestinalis* (previously *G. lamblia*). *Giardia* cysts shed in animal or human feces may contaminate food or drinking water or be transferred on hands or fomites. Recreational waters may also serve as vehicles of transmission. Incubation can range from 3-25 days or longer, but the median incubation time is 7-10 days. While often asymptomatic, symptoms can include sulfurous burps, chronic diarrhea, frequent loose and pale greasy stools, bloating, cramps, fatigue, and weight loss. Complications are rare but may include malabsorption of fats and fat-soluble vitamins. Children at day care represent a reservoir of disease in developed countries. There is no vaccine.

To prevent transmission of giardiasis, individuals should wash their hands before eating, after using the toilet, and after changing diapers.

People should shower before and avoid accidental swallowing of recreational water. Persons with diarrhea should avoid swimming in recreational waters to prevent transmission to others. Fecal exposure during sexual activity such as anal intercourse and oral-anal sexual practices should also be avoided.

2016 TRENDS AND HIGHLIGHTS

- In 2016, only laboratory-confirmed symptomatic *Giardia* infections continued to be counted as confirmed cases of giardiasis in LAC.
- Giardiasis disease incidence slightly increased in LAC from 4.0 cases per 100,000 in 2015 to 4.7 cases per 100,000 (Figure 1). This increase can possibly be explained by the adoption of PCR panel testing for gastrointestinal (GI) illness as well as an increasing number of pathology labs adopting electronic reporting.
- The highest age-specific incidence rate occurred among adults 45-54 year olds with 6.6 cases per 100,000. The 35-44 year old age group and the 55-64 year old age group had the next highest incidence rates, at 5.5 cases per 100,000 (Figure 2).
- Whites continue to have the highest race/ethnicity-specific incidence rates (Figure 3). The greatest proportion of cases were reported among Whites (n=252, 56%) and Hispanics (n=132, 29%) (Figure 3).
- SPA 5 reported the highest incidence rate of giardiasis with 9.5 cases per 100,000 in 2016 (Figure 5).
- More cases were reported in March (n=48) and April (n=47) than any other months. However, every month but August reported more cases than the five-year average for giardiasis (Figure 6).
- Males have consistently accounted for a larger proportion of cases. Males accounted for 70% and females 30% of cases. The incidence rate of giardiasis for males was 6.8 per 100,000 and for females was 2.7 cases per 100,000.

Reported Giardiasis Cases and Rates* per 100,000 by Age Group, Race/Ethnicity, and SPA
LAC, 2012-2016

	2012 (N=294)			2013 (N=392)			2014 (N=346)			2015 (N=379)			2016 (N=452)		
	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000
Age Group															
<1	0	-	-	3	0.7	2.5	0	-	-	0	-	-	2	0.4	1.9
1-4	30	10.2	6.3	20	5.1	4.1	19	5.5	3.9	14	3.7	2.9	14	3.1	3.0
5-14	29	9.9	2.4	41	10.5	3.4	27	7.8	2.2	20	5.3	1.7	25	5.5	2.1
15-34	86	29.3	3.1	114	29.1	4.0	96	27.7	3.4	126	33.2	4.5	147	32.5	5.2
35-44	52	17.7	3.9	65	16.6	4.9	70	20.2	5.3	76	20.1	5.7	72	15.9	5.5
45-54	39	13.3	3.0	72	18.4	5.6	63	18.2	4.8	66	17.4	5.0	87	19.2	6.6
55-64	35	11.9	3.4	51	13.0	5.0	42	12.1	4.0	47	12.4	4.2	62	13.7	5.5
65+	22	7.5	2.0	26	6.6	2.3	29	8.4	2.6	29	7.7	2.4	43	9.5	3.5
Unknown	1	0.3	-	0	-	-	0	-	-	1	0.3	-	0	-	-
Race/Ethnicity															
Asian	18	6.1	1.4	25	6.4	1.8	24	6.9	1.7	17	4.5	1.2	27	6.0	1.9
Black	17	5.8	2.2	27	6.9	3.5	25	7.2	3.2	14	3.7	1.8	26	5.8	3.3
Hispanic	84	28.6	1.9	124	31.6	2.7	113	32.7	2.5	104	27.4	2.2	131	29.0	2.8
White	125	42.5	4.7	210	53.6	7.9	175	50.6	6.6	238	62.8	8.9	252	55.8	9.4
Other	1	0.3	-	2	0.5	-	3	0.9	-	4	1.1	-	2	0.4	-
Unknown	49	16.7	-	4	1.0	-	6	1.7	-	2	0.5	-	14	3.1	-
SPA															
1	5	1.7	1.3	9	2.3	2.3	10	2.9	2.5	9	2.4	2.3	10	2.2	2.5
2	96	32.7	4.5	95	24.2	4.4	89	25.7	4.1	67	17.7	3.0	105	23.2	4.7
3	27	9.2	1.7	50	12.8	3.1	26	7.5	1.6	34	9.0	2.1	50	11.0	3.0
4	57	19.4	5.1	71	18.1	6.2	82	23.7	7.1	110	29.0	9.4	105	23.2	8.9
5	39	13.3	6.1	49	12.5	7.6	46	13.3	7.1	77	20.3	11.7	63	13.9	9.5
6	17	5.8	1.7	39	9.9	3.8	24	6.9	2.3	22	5.8	2.1	32	7.1	3.0
7	25	8.5	1.9	42	10.7	3.2	31	9.0	2.4	28	7.4	2.1	36	7.9	2.7
8	28	9.5	2.6	37	9.4	3.4	38	11.0	3.5	32	8.4	2.9	49	10.8	4.5
Unknown	0	-	-	0	-	-	0	-	-	0	-	-	2	0.4	-

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

Figure 1. Incidence Rates of Giardiasis LAC, CA, and US, 2007-2016

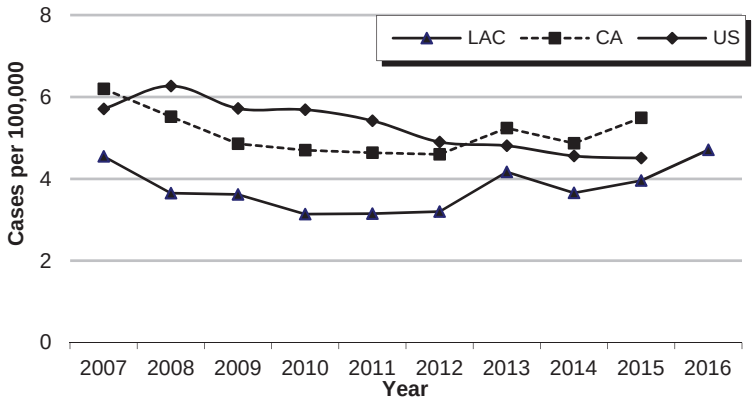


Figure 2. Incidence Rates of Giardiasis by Age Group LAC, 2016 (N=452)

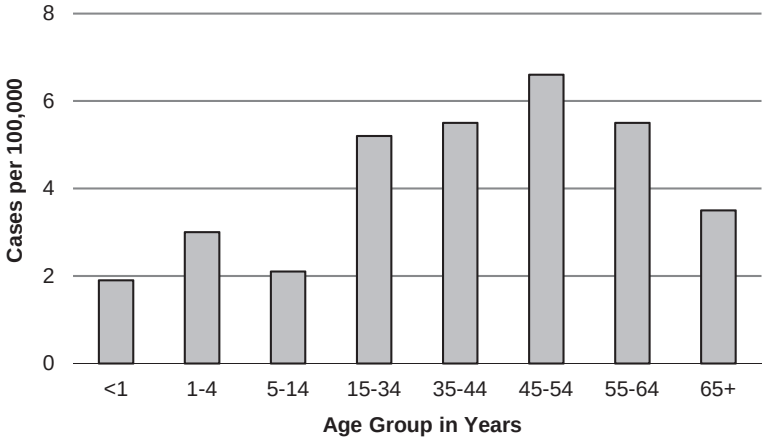
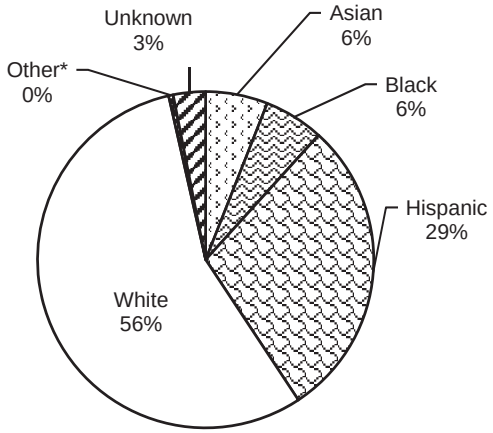


Figure 3. Percent of Giardiasis Cases by Race/Ethnicity LAC, 2016 (*N=452)



*Other includes Native American and any additional racial/ethnic group that cannot be categorized as Asian, Black, Hispanic, and White.

Figure 4. Incidence Rates of Giardiasis by Race/Ethnicity LAC, 2012-2016

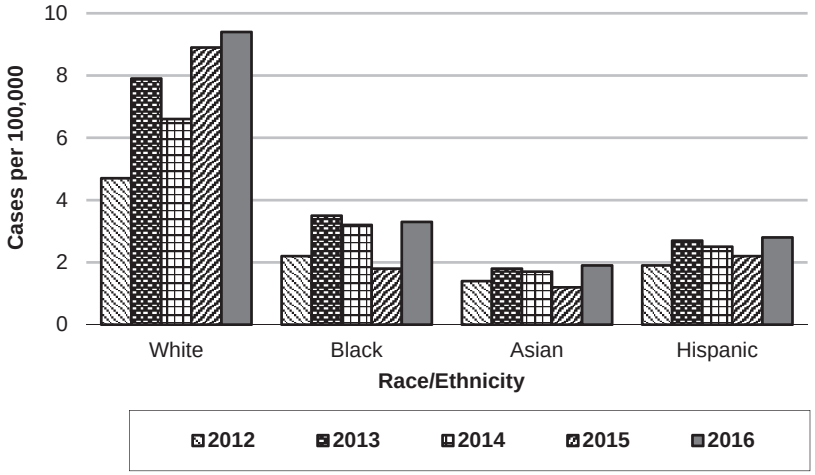


Figure 5. Incidence Rates of Giardiasis by SPA
LAC, 2016 (N=452)

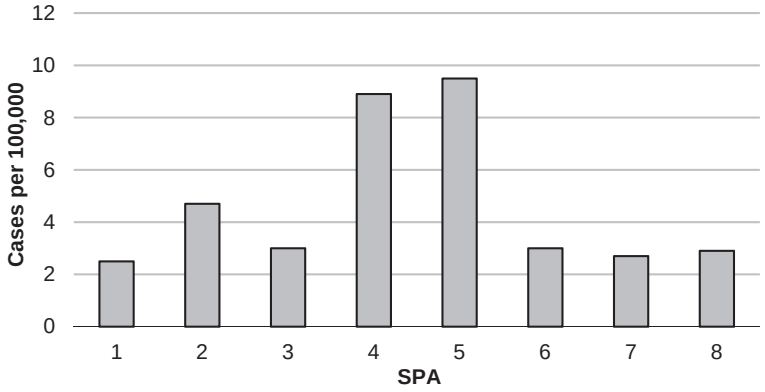
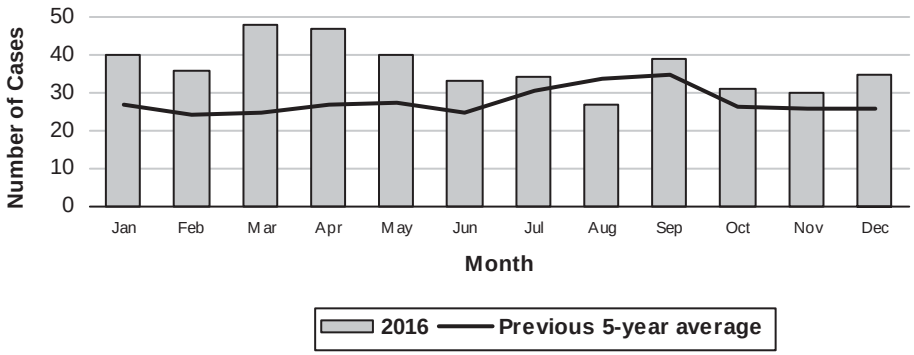
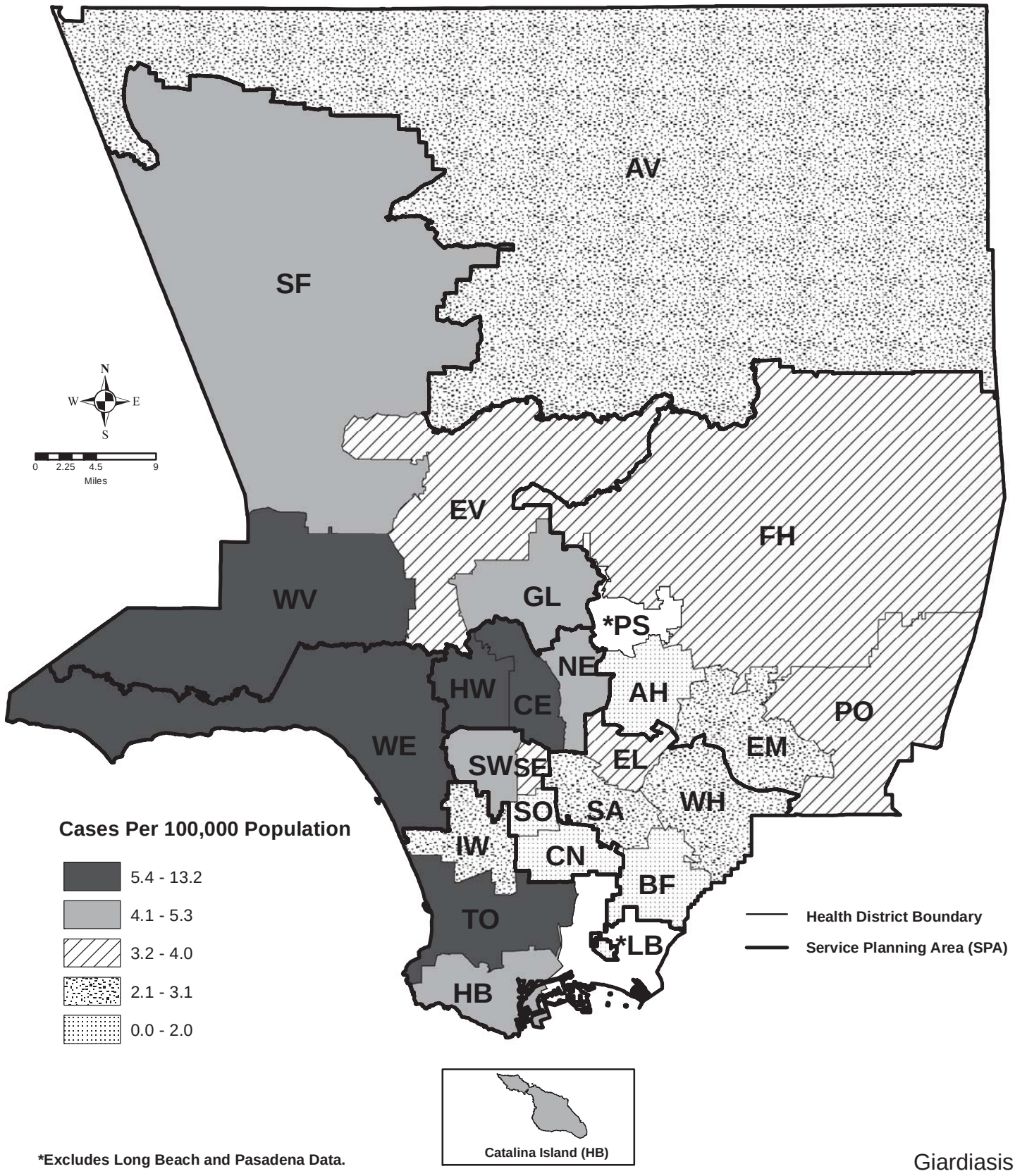


Figure 6. Reported Giardiasis Cases by Month of Onset
LAC, 2016 (N=452)



Map 7. Giardiasis
Rates by Health District, Los Angeles County, 2016*



*Excludes Long Beach and Pasadena Data.

GIARDIASIS

CRUDE DATA	
Number of Cases	379
Annual Incidence	
LA County[a]	4.00
California[b]	5.49
United States[b]	4.51
Age at Diagnosis	
Mean	39
Median	38
Range	1–90 years

[a]Cases per 100,000 population
[b]Calculated from: CDC. *Notice to Readers:* Final 2015 Reports of Nationally Notifiable Infectious Diseases and Conditions *Weekly* / November 25, 2016 / 65(46);1306–1321. Available at: www.cdc.gov/mmwr/volumes/65/wr/mm6546a9.htm

DESCRIPTION

Giardiasis is an intestinal infection caused by the zoonotic protozoan parasite *Giardia intestinalis* (previously *G. lamblia*). *Giardia* cysts shed in animal or human feces may contaminate food or drinking water or be transferred on hands or fomites. Recreational waters such as lakes and pools may also serve as vehicles of transmission. Incubation can range from 3-25 days or longer, but the median incubation time is 7-10 days. While often asymptomatic, symptoms can include sulfurous burps, chronic diarrhea, frequent loose and pale greasy stools, bloating, cramps, fatigue, and weight loss. Complications are rare but may include malabsorption of fats and fat-soluble vitamins. Children attending day care represent a reservoir of disease in developed countries. There is no vaccine.

To prevent transmission of giardiasis, individuals should wash their hands before eating, after using the toilet, and after changing diapers. People should shower before recreational water use and avoid accidental swallowing of recreational water. Persons with diarrhea should avoid swimming in recreational waters in order to prevent transmission to others. Fecal exposure during sexual activity such as anal intercourse and oral-anal sexual practices should also be avoided.

2015 TRENDS AND HIGHLIGHTS

- In 2015, only laboratory confirmed symptomatic *Giardia* infections continued to be counted as confirmed cases of giardiasis in LAC.
- Giardiasis disease incidence slightly increased in LAC from 3.7 cases per 100,000 in 2014 to 4.0 cases per 100,000 in 2015 (Figure 1).
- The highest age-specific incidence rate occurred among adults 35-44 years old with 5.7 cases per 100,000. In 2013 and 2014, the incidence was also highest among 35-44 year olds. From 2010-2012, the highest incidence was among 1-4 year olds (Figure 2).
- Whites continue to have the highest race/ethnicity-specific incidence rates compared to other races (Figure 3). The greatest proportion of cases were reported among Whites (n=238, 63%) and Hispanics (n=104, 27%) (Figure 3).
- SPA 5 reported the highest incidence rate of giardiasis with 11.7 cases per 100,000 in 2015 (Figure 5). The most common risk factors reported among these cases were travel to another country and contact with animals.
- The number of cases reported in 2015 peaked from August to September, which was consistent with the previous five-year average (Figure 6).
- Males have consistently accounted for a larger proportion of cases. In 2015, males accounted for 73% and females 27% of cases. The incidence rate of giardiasis in males was 5.8 per 100,000 and females was 2.1 cases per 100,000.
- Complete risk factor data were available for all cases. More than one risk factor was identified for many cases. The most frequently reported risk factor was contact with animals (42%), predominantly dogs. Travel to another country was also frequently reported (28%) followed by MSM (men who have sex with men) activity (27%) and exposure to recreational waters (19%). Other reported risk factors included hiking (10%), camping (6%), and recently arrived immigrant or refugee status (3%).

Reported Giardiasis Cases and Rates* per 100,000 by Age Group, Race/Ethnicity, and SPA
LAC, 2011-2015

	2011 (N=292)			2012 (N=294)			2013 (N=392)			2014 (N=346)			2015 (N=379)		
	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000
Age Group															
<1	1	0.3	0.7	0	-	-	3	0.7	2.5	0	-	-	0	-	-
1-4	22	7.5	3.8	30	10.2	6.3	20	5.1	4.1	19	5.5	3.9	14	3.7	2.9
5-14	39	13.4	2.9	29	9.9	2.4	41	10.5	3.4	27	7.8	2.2	20	5.3	1.7
15-34	84	28.8	2.8	86	29.3	3.1	114	29.1	4.0	96	27.7	3.4	126	33.2	4.5
35-44	49	16.8	3.4	52	17.7	3.9	65	16.6	4.9	70	20.2	5.3	76	20.1	5.7
45-54	44	15.1	3.3	39	13.3	3	72	18.4	5.6	63	18.2	4.8	66	17.4	5.0
55-64	29	9.9	3	35	11.9	3.4	51	13.0	5.0	42	12.1	4.0	47	12.4	4.2
65+	23	7.9	2.2	22	7.5	2	26	6.6	2.3	29	8.4	2.6	29	7.7	2.4
Unknown	1	0.3	-	1	0.3	-	0	-	-	0	-	-	1	0.3	-
Race/Ethnicity															
Asian	20	6.8	1.5	18	6.1	1.4	25	6.4	1.8	24	6.9	1.7	17	4.5	1.2
Black	18	6.2	2.1	17	5.8	2.2	27	6.9	3.5	25	7.2	3.2	14	3.7	1.8
Hispanic	89	30.5	1.9	84	28.6	1.9	124	31.6	2.7	113	32.7	2.5	104	27.4	2.2
White	146	50.0	5.1	125	42.5	4.7	210	53.6	7.9	175	50.6	6.6	238	62.8	8.9
Other	2	0.7	-	1	0.3	-	2	0.5	-	3	0.9	-	4	1.1	-
Unknown	17	5.8	-	49	16.7	-	4	1.0	-	6	1.7	-	2	0.5	-
SPA															
1	8	2.7	2.1	5	1.7	1.3	9	2.3	2.3	10	2.9	2.5	9	2.4	2.3
2	102	34.9	4.6	96	32.7	4.5	95	24.2	4.4	89	25.7	4.1	67	17.7	3.0
3	22	7.5	1.3	27	9.2	1.7	50	12.8	3.1	26	7.5	1.6	34	9.0	2.1
4	47	16.1	3.7	57	19.4	5.1	71	18.1	6.2	82	23.7	7.1	110	29.0	9.4
5	37	12.7	5.6	39	13.3	6.1	49	12.5	7.6	46	13.3	7.1	77	20.3	11.7
6	20	6.8	1.9	17	5.8	1.7	39	9.9	3.8	24	6.9	2.3	22	5.8	2.1
7	26	8.9	1.9	25	8.5	1.9	42	10.7	3.2	31	9.0	2.4	28	7.4	2.1
8	28	9.6	2.5	28	9.5	2.6	37	9.4	3.4	38	11.0	3.5	32	8.4	2.9
Unknown	2	0.7	-	0	-	-	0	-	-	0	-	-	0	-	-

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

Figure 1. Incidence Rates of Giardiasis LAC, CA, and US, 2006-2015

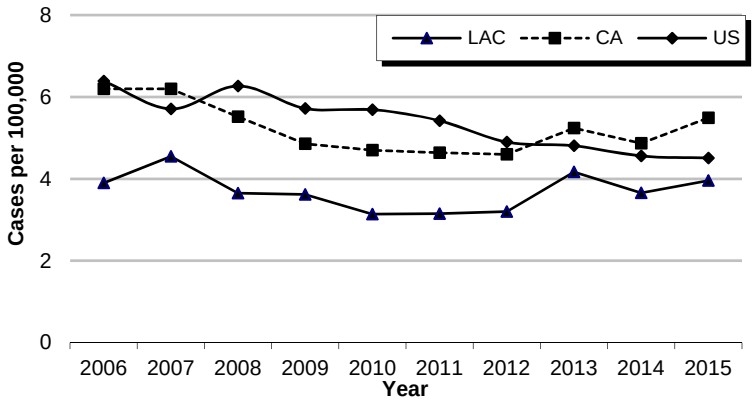


Figure 2. Incidence Rates of Giardiasis by Age Group LAC, 2015 (N=379)

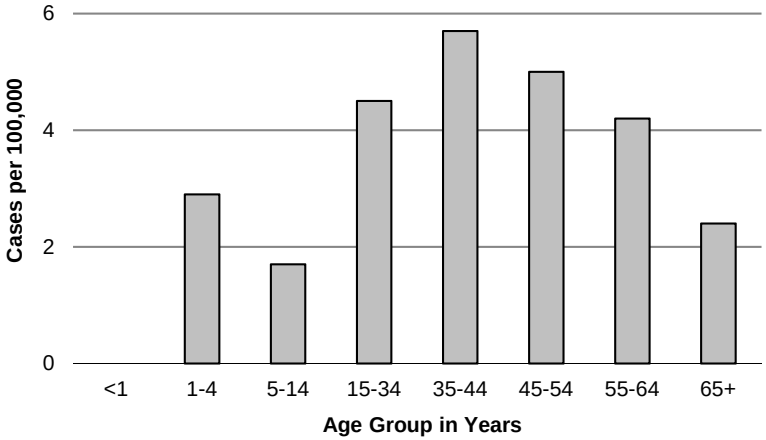
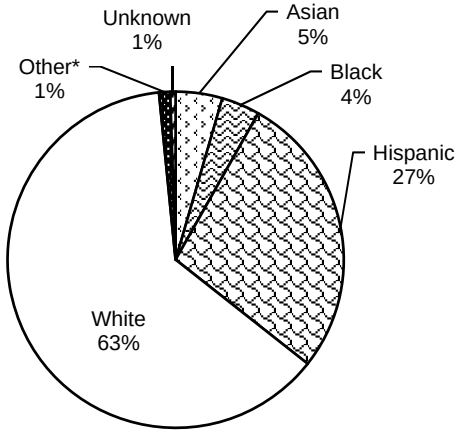


Figure 3. Percent of Giardiasis Cases by Race/Ethnicity LAC, 2015 (*N=379)



*Other includes Native American and any additional racial/ethnic group that cannot be categorized as Asian, Black, Hispanic, and White.

Figure 4. Incidence Rates of Giardiasis by Race/Ethnicity LAC, 2011-2015

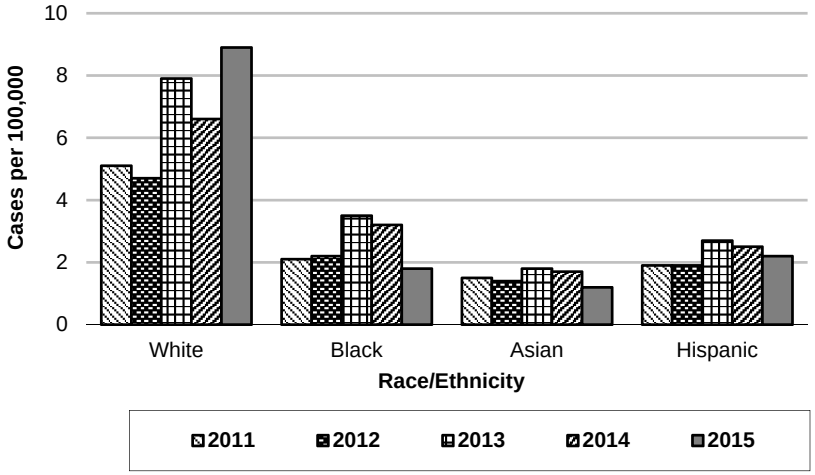


Figure 5. Incidence Rates of Giardiasis by SPA
LAC, 2015 (N=379)

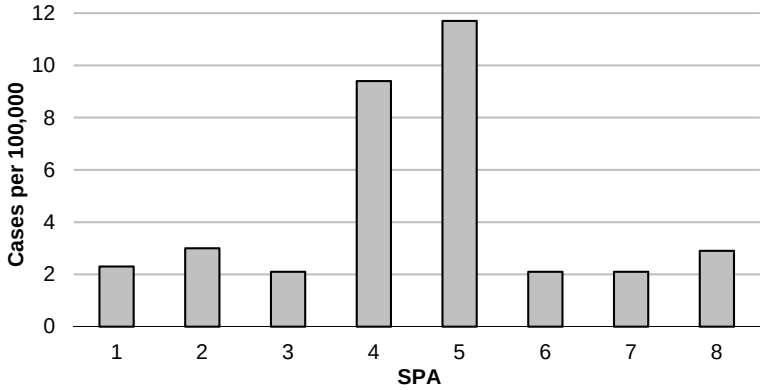
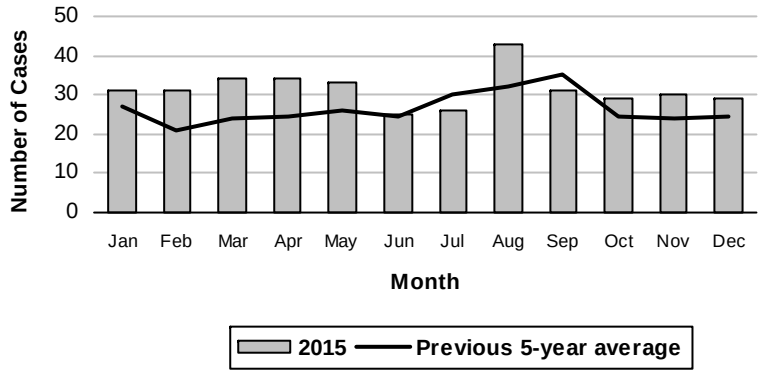
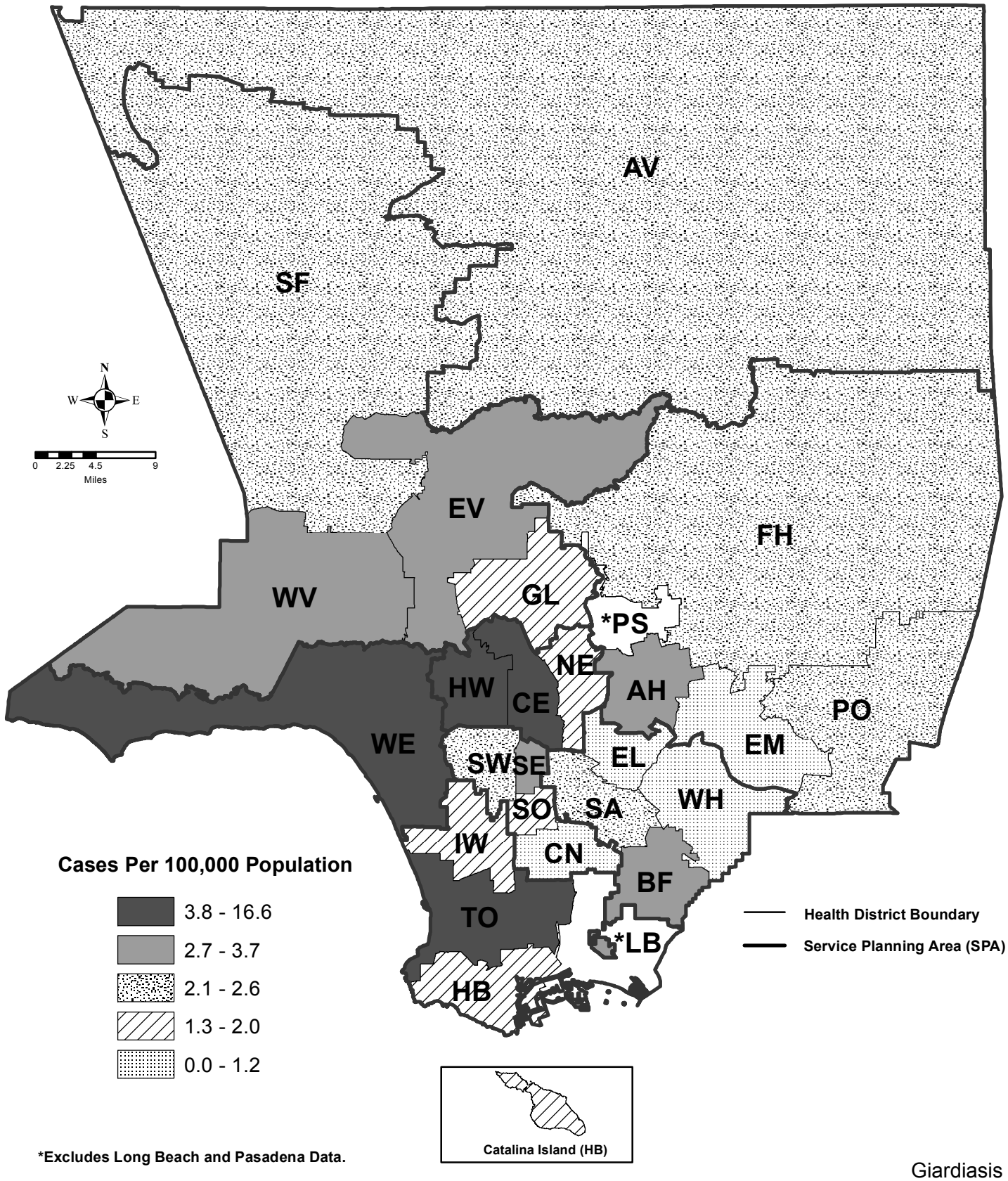


Figure 6. Reported Giardiasis Cases by Month of Onset
LAC, 2015 (N=379)



Map 6. Giardiasis
Rates by Health District, Los Angeles County, 2015*



*Excludes Long Beach and Pasadena Data.

GIARDIASIS

CRUDE DATA	
Number of Cases	346
Annual Incidence	
LA County[a]	3.66
California[b]	4.87
United States[b]	4.56
Age at Diagnosis	
Mean	38
Median	38
Range	1–85 yearsp

[a]Cases per 100,000 population.

[b]Calculated from Final 2014 Reports of Nationally Notifiable Infectious Diseases. MMWR 64(36):1019–1033.

DESCRIPTION

Giardiasis is an intestinal infection caused by the zoonotic protozoan parasite *Giardia intestinalis* (previously *G. lamblia*). *Giardia* cysts shed in animal or human feces may contaminate food or drinking water or be transferred on hands or fomites; recreational waters such as lakes and pools may also serve as vehicles of transmission. Incubation can range from 3 to 25 days or longer, but the median incubation time is 7 to 10 days. While often asymptomatic, symptoms can include sulfurous burps, chronic diarrhea, frequent loose and pale greasy stools, bloating, cramps, fatigue, and weight loss. Complications are rare, but may include malabsorption of fats and fat-soluble vitamins. Children in day care represent a reservoir of disease in developed countries. There is no vaccine.

To prevent transmission of giardiasis, individuals should wash their hands before eating, after using the toilet, and after changing diapers. People should shower before recreational water use and avoid accidental swallowing of recreational water. Persons with diarrhea should avoid swimming in recreational waters in order to prevent transmission to others. Fecal exposure during sexual activity, anal intercourse and oral-anal sexual practices, should also be avoided.

2014 TRENDS AND HIGHLIGHTS

- In 2014, only laboratory confirmed symptomatic Giardia infections continued to be counted as confirmed cases of giardiasis in LAC.
- Giardiasis disease incidence slightly decreased in LAC from 4.2 cases per 100,000 in 2013 to 3.7 cases per 100,000 in 2014 (Figure 1).
- The highest age-specific incidence rate occurred among adults aged 35-44 years with 5.3 cases per 100,000. In 2013, the incidence was highest among 45-54 year olds, and from 2010-12, the highest incidence was among the 1-4 year old age group. (Figure 2, Table).
- Whites continue to have the highest race/ethnicity-specific incidence rates compared to other races (Figure 6). The greatest proportion of cases were reported among whites (50%) and Hispanics (33%) (Figure 3).
- Service Planning Area (SPA) 4 and 5 both reported the highest incidence rate of giardiasis with 7.1 cases per 100,000 in 2014 (Figure 4).
- The number of cases reported in 2014 peaked from August to September which was consistent with the previous 5 year average (Figure 5).
- Males have consistently accounted for a larger proportion of cases. Similarly, in 2014, males accounted for 69% and females 31% of cases. The incidence rate of cryptosporidiosis in males was 5.1 per 100,000, and females was 2.2 cases per 100,000.
- Complete risk factor data were available for all cases. More than one risk factor was identified for many cases. The most frequently reported risk factor was contact with animals (46%), predominantly dogs. Travel to another country was also frequently reported (28%) followed by exposure to recreational waters (25%), and MSM (men who have sex with men) activity (21%). Other reported risk factors were hiking (12%), drinking untreated water (10%), being a recently arrived immigrant or refugee (11%), and consumption of unpasteurized milk, and cheese (4%).

Reported Giardiasis Cases and Rates* per 100,000 by Age Group, Race/Ethnicity, and SPA
Los Angeles County, 2010-2014

	2010 (N=308)			2011 (N=292)			2012 (N=294)			2013 (N=392)			2014 (N=346)		
	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000
Age Group															
<1	5	0.2	3.6	1	0.3	0.7	0	-	-	3	0.7	2.5	0	-	-
1-4	41	13.3	7.1	22	7.5	3.8	30	10.2	6.3	20	5.1	4.1	19	5.5	3.9
5-14	37	12	2.8	39	13.7	2.9	29	9.9	2.4	41	10.5	3.4	27	7.8	2.2
15-34	81	26.3	2.7	84	28.7	2.8	86	29.3	3.1	114	29.1	4	96	27.7	3.4
35-44	46	14.9	3.2	49	16.8	3.4	52	17.7	3.9	65	16.6	4.9	70	20.2	5.3
45-54	36	11.7	2.7	44	15	3.3	39	13.3	3	72	18.4	5.6	63	18.2	4.8
55-64	37	12	3.8	29	9.8	3	35	11.9	3.4	51	13	5	42	12.1	4
65+	24	7.8	2.3	23	7.9	2.2	22	7.5	2	26	6.6	2.3	29	8.4	2.6
Unknown	0	-	-	1	0.3	-	1	0.3	-	0	-	-	0	-	-
Race / Ethnicity															
Asian	23	7.5	1.7	20	6.8	1.5	18	6.1	1.4	25	6.4	1.8	24	7.2	1.7
Black	28	9.1	3.3	18	6.2	2.1	17	5.8	2.2	27	6.9	3.5	25	7.2	3.2
Hispanic	90	29.2	1.9	89	30.5	1.9	84	28.6	1.9	124	31.6	2.7	113	32.7	2.5
White	137	44.5	4.8	146	50	5.1	125	42.5	4.7	210	53.6	7.9	175	50.6	6.6
Other	8	27.3	-	2	0.7	-	1	0.3	-	2	0.5	-	3	0.9	-
Unknown	22	7.1	-	17	5.8	-	49	16.3	-	4	1	-	6	1.7	-
SPA															
1	11	3.6	2.9	8	2.7	2.1	5	1.7	1.3	9	2.3	2.3	10	2.9	2.5
2	10	3.2	0.5	102	35	4.6	96	32.7	4.5	95	24.2	4.4	89	25.7	4.1
3	27	8.8	1.6	22	7.5	1.3	27	9.2	1.7	50	12.8	3.1	26	7.5	1.6
4	49	15.9	3.9	47	16.1	3.7	57	19.4	5.1	71	18.1	6.2	82	23.7	7.1
5	31	10	4.7	37	12.7	5.6	39	13.3	6.1	49	12.5	7.6	46	13.3	7.1
6	21	6.8	2	20	6.8	1.9	17	5.8	1.7	39	9.9	3.8	24	7.2	2.3
7	31	10.1	2.3	26	8.9	1.9	25	8.5	1.9	42	10.7	3.2	31	8.9	2.4
8	26	8.4	2.3	28	9.6	2.5	28	9.4	2.6	37	9.5	3.4	38	11	3.5
Unknown	0	-	-	2	0.7	-	0	-	-	0	-	-	0	-	-

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

**Figure 1. Incidence Rates of Giardiasis
LAC, CA and US, 2005-2014**

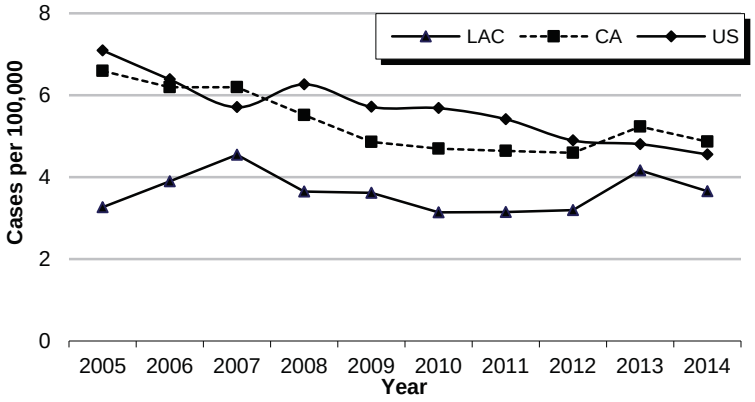


**Figure 2. Incidence Rates of Giardiasis by Age Group
LAC, 2014 (N=346)**

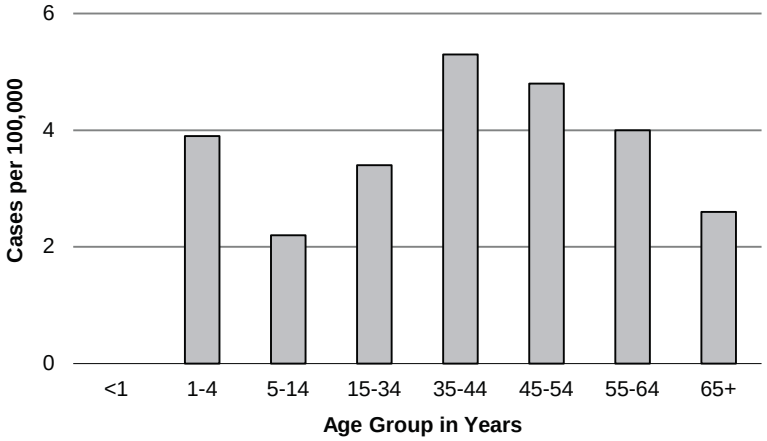
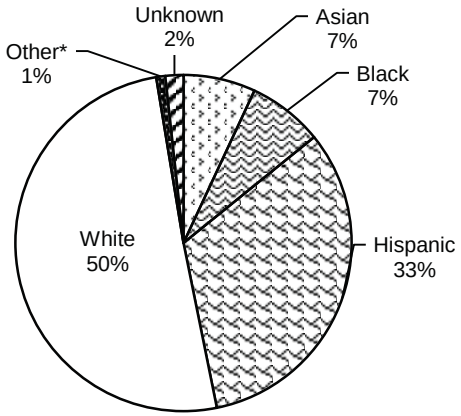


**Figure 3. Percent of Giardiasis Cases by
Race/Ethnicity LAC, 2014 (*N=346)**



*Other includes Native American and any additional racial/ethnic group that cannot be categorized as Asian, black, Hispanic and white.

**Figure 4. Incidence Rates of Giardiasis by SPA
LAC, 2014 (N=346)**

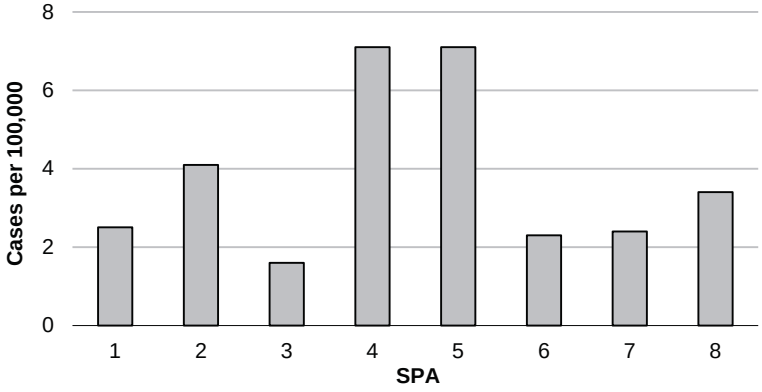


Figure 5. Reported Giardiasis Cases by Month of Onset LAC, 2014 (N=346)

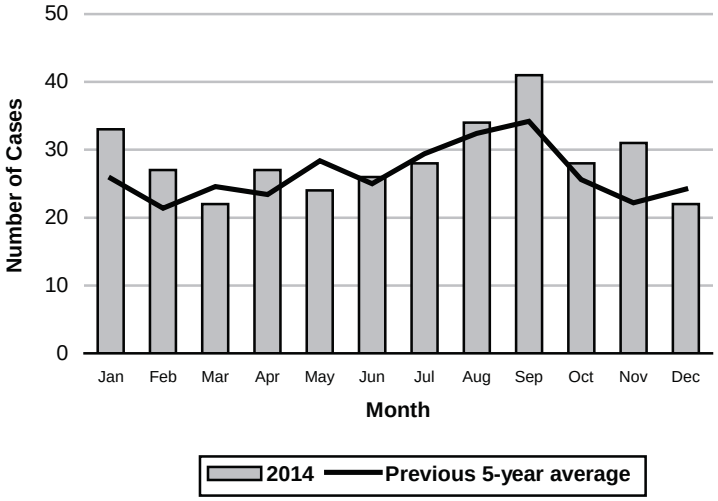
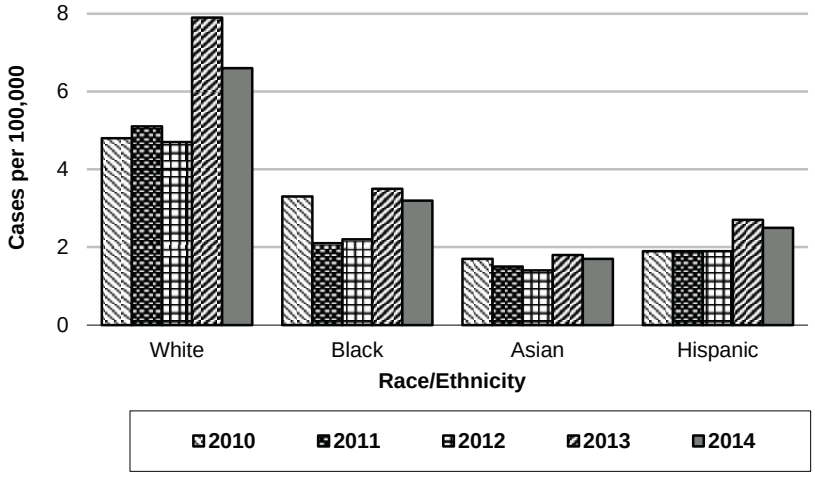
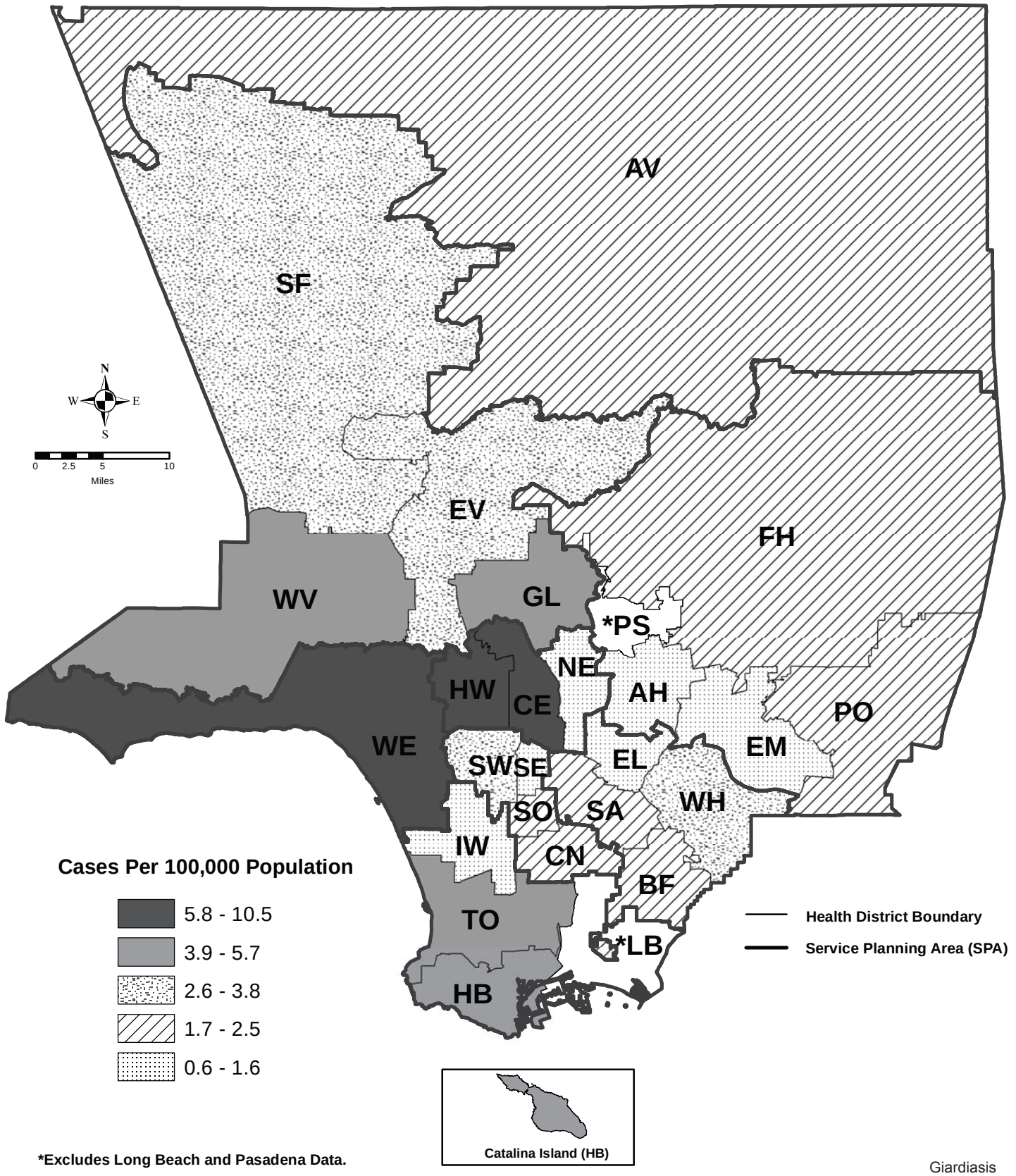


Figure 6. Incidence Rates of Giardiasis by Race/Ethnicity LAC, 2010-2014



Map 7. Giardiasis
Rates by Health District, Los Angeles County, 2014*



*Excludes Long Beach and Pasadena Data.

GIARDIASIS

CRUDE DATA	
Number of Cases	392
Annual Incidence	
LA County	4.17
California	5.24
United States	4.81
Age at Diagnosis	
Mean	37
Median	37
Range	0 - 85

[a]Cases per 100,000 population.
[b]Calculated from Final 2013 Reports of Nationally Notifiable Infectious Diseases. MMWR 63(32):702-716.

DESCRIPTION

Giardiasis is an intestinal infection caused by the zoonotic protozoan parasite *Giardia intestinalis* (previously *G. lamblia*). *Giardia* cysts shed in animal or human feces may contaminate food or drinking water or be transferred on hands or fomites; recreational waters such as lakes and pools may also serve as vehicles of transmission. Incubation can range from 3 to 25 days or longer, but the median incubation time is 7 to 10 days. While often asymptomatic, symptoms can include sulfurous burps, chronic diarrhea, frequent loose and pale greasy stools, bloating, cramps, fatigue, and weight loss. Complications are rare, but may include malabsorption of fats and fat-soluble vitamins. Children in day care represent a reservoir of disease in developed countries. There is no vaccine.

To prevent transmission of giardiasis, individuals should wash their hands before eating, after using the toilet, and after changing diapers. Persons ill with diarrhea should avoid swimming. Fecal exposure during sexual activity should also be avoided.

2013 TRENDS AND HIGHLIGHTS

- Giardiasis disease incidence has increased in LAC from 3.16 cases per 100,000 in 2012 to 4.17 cases per 100,000 in 2013. (Figure 1).
- The highest age-specific incidence rate occurred among adults aged 45-54 years with 5.6 cases per 100,000 compared with previous years when the highest incidence had consistently been in the 1-4 age group. The highest total number of cases was reported in the 15-34 year age group (114, 29%) which is consistent with 2012 which had 86 (29%) (Figure 2).
- Whites continue to have highest race/ethnicity-specific incidence rates and proportion of cases compared to other races. Whites accounted for 54% (210) of reported cases in 2013 and 43% (125) in 2012. (Figure 3).
- Within Los Angeles County (LAC), Service Planning Area (SPA) 5 reported the highest incidence rate of giardiasis with 7.6 cases per 100,000 in 2013 compared with 6.1 cases per 100,000 in 2012. The second highest incidence rate was reported from SPA 4 (6.2 per 100,000) in 2013 and 5.1 cases per 100,000 in 2012 (Figure 4).
- The number of cases reported in 2013 peaked from July to September which was consistent with the previous 5 year average (Figure 5).
- Males have consistently accounted for a larger proportion of cases in previous reporting periods. Similarly, in 2013, males accounted for 66% (258) and females 34% (134) of the cases.
- The most frequently reported risk factor was contact with animals (182, 46%), predominantly dogs. Travel to another country was also frequently reported (109, 28%). Of those who traveled, Mexico was the most frequently reported travel destination (32, 29%) followed by India (12, 11%). Immigration to the US (85, 22%) was also cited as a risk factor: approximately a quarter of immigrant cases were from Mexico (21, 25%). In total, 77 (20%) Giardiasis cases were reported among MSM (men who have sex with men). These risk factors are consistent with risk factor information for other waterborne parasitic diseases reported in LAC.

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

	2009 (N=354)			2010 (N=308)			2011 (N=292)			2012 (N=294)			2013 (N=392)		
	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000
Age Group															
<1	1	0.3	0.7	5	0.2	3.6	1	0.3	0.7	0	0.0	0	3	0.7	2.5
1-4	46	13.0	8.2	41	13.3	7.1	22	7.5	3.8	30	10.2	6.3	20	5.1	4.1
5-14	40	11.3	2.9	37	12.0	2.8	39	13.7	2.9	29	9.9	2.4	41	10.5	3.4
15-34	85	24.0	3.0	81	26.3	2.7	84	28.7	2.8	86	29.3	3.1	114	29.1	4.0
35-44	67	19.0	4.5	46	14.9	3.2	49	16.8	3.4	52	17.7	3.9	65	16.6	4.9
45-54	43	12.1	3.1	36	11.7	2.7	44	15.0	3.3	39	13.3	3.0	72	18.4	5.6
55-64	41	11.6	4.3	37	12.0	3.8	29	9.8	3.0	35	11.9	3.4	51	13.0	5.0
65+	30	8.5	2.8	24	7.8	2.3	23	7.9	2.2	22	7.5	2.0	26	6.6	2.3
Unknown	1	0.3		0	0		1	0.3	-	1	0.3				
Race/Ethnicity															
Asian	13	3.7	1.0	23	7.5	1.7	20	6.8	1.5	18	6.1	1.4	25	6.4	1.8
Black	25	7.1	2.9	28	9.1	3.3	18	6.2	2.1	17	5.8	2.2	27	6.9	3.5
Hispanic	102	28.8	2.2	90	29.2	1.9	89	30.5	1.9	84	28.6	1.9	124	31.6	2.7
White	129	36.4	4.4	137	44.5	4.8	146	50.0	5.1	125	42.5	4.7	210	53.6	7.9
Other	4	1.1		8	27.3		2	0.7		1	0.3		2	0.5	
Unknown	81	22.9		22	7.1		17	5.8		49	16.3		4	1.0	
SPA															
1	5	1.4	1.4	11	3.6	2.9	8	2.7	2.1	5	1.7	1.3	9	2.3	2.3
2	138	39.0	6.2	10	3.2	0.5	102	35	4.6	96	32.7	4.5	95	24.2	4.4
3	27	7.6	1.6	27	8.8	1.6	22	7.5	1.3	27	9.2	1.7	50	12.8	3.1
4	46	13.0	3.7	49	15.9	3.9	47	16.1	3.7	57	19.4	5.1	71	18.1	6.2
5	43	12.1	6.6	31	10.0	4.7	37	12.7	5.6	39	13.3	6.1	49	12.5	7.6
6	29	8.2	2.8	21	6.8	2.0	20	6.8	1.9	17	5.8	1.7	39	9.9	3.8
7	26	7.3	1.9	31	10.1	2.3	26	8.9	1.9	25	8.5	1.9	42	10.7	3.2
8	36	10.2	3.2	26	8.4	2.3	28	9.6	2.5	28	9.4	2.6	37	9.5	3.4
Unknown	0	0.0		0	0.0		2	0.7		0	0.0		0	0	

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

**Figure 1. Incidence Rates of Giardiasis
LAC, CA and US, 2002 - 2013**

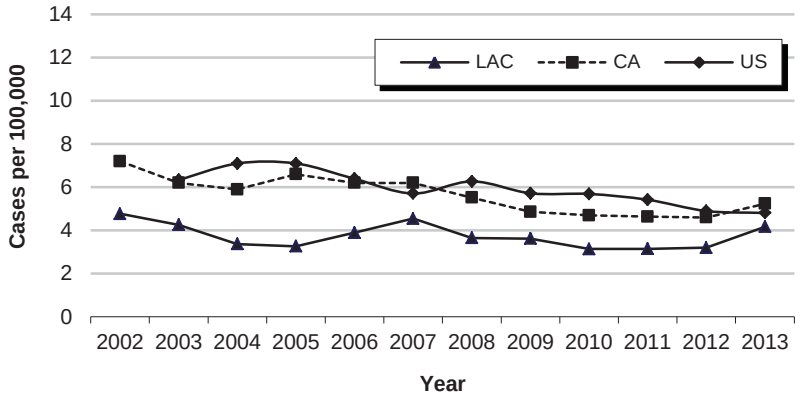


**Figure 2. Cases of Giardiasis by Age Group
LAC, 2013, N=392**

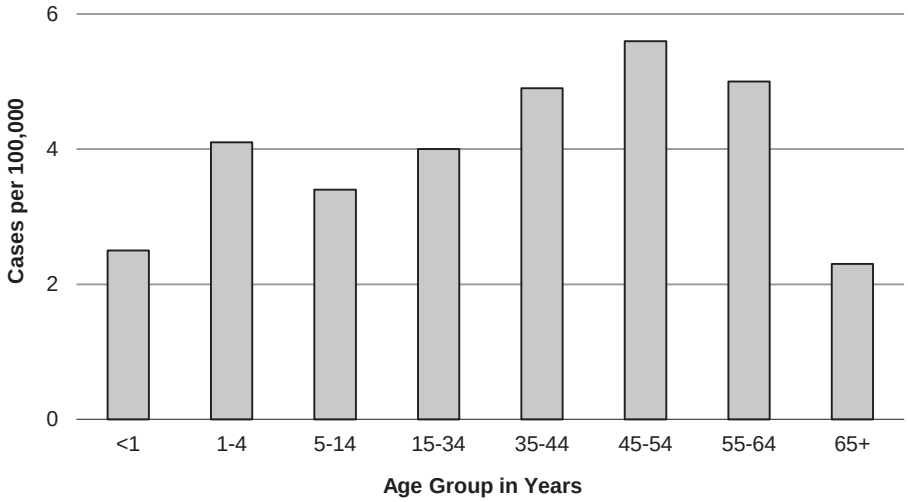


**Figure 3. Proportion of Giardiasis Cases by Race/Ethnicity
LAC, 2013, N=392**

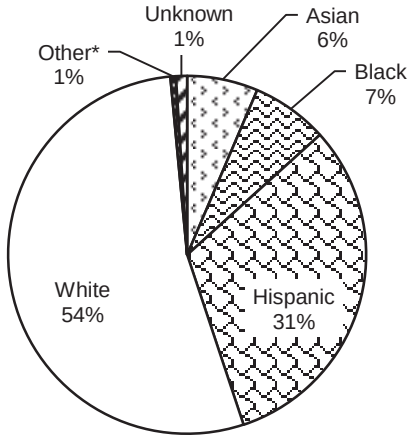
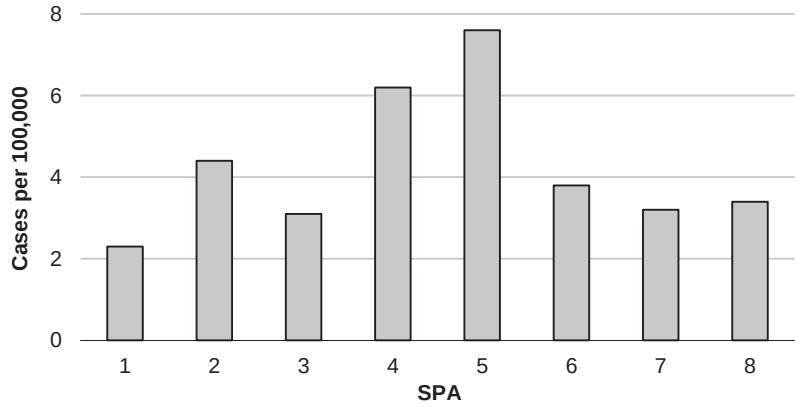


**Figure 4. Incidence Rates of Giardiasis by SPA
LAC, 2013, N=392**



* Other includes Native American and any additional racial/ethnic group that cannot be categorized as Asian, black, Hispanic, and white.

Figure 5. Reported Giardiasis Cases by Month of Onset
LAC, 2013, N=392

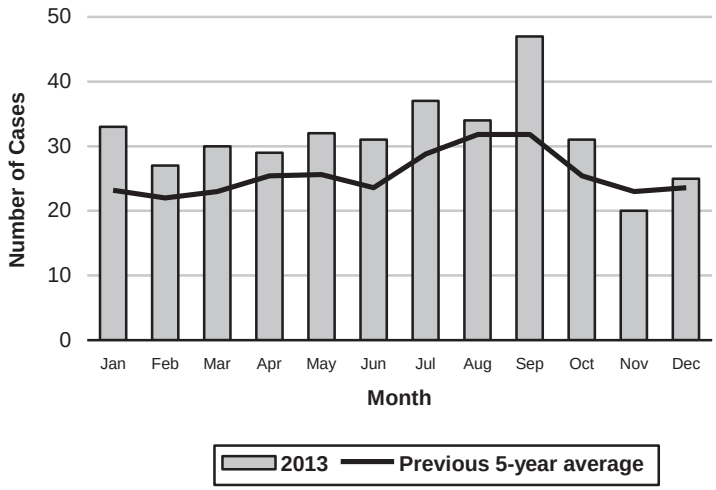
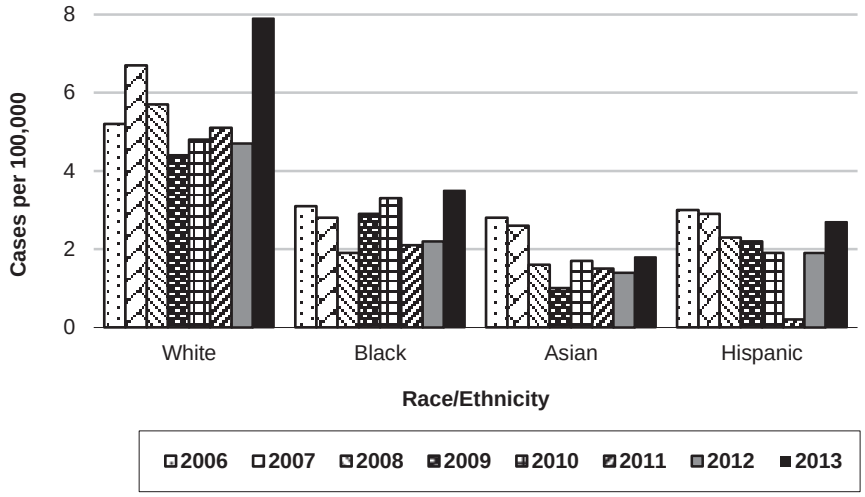
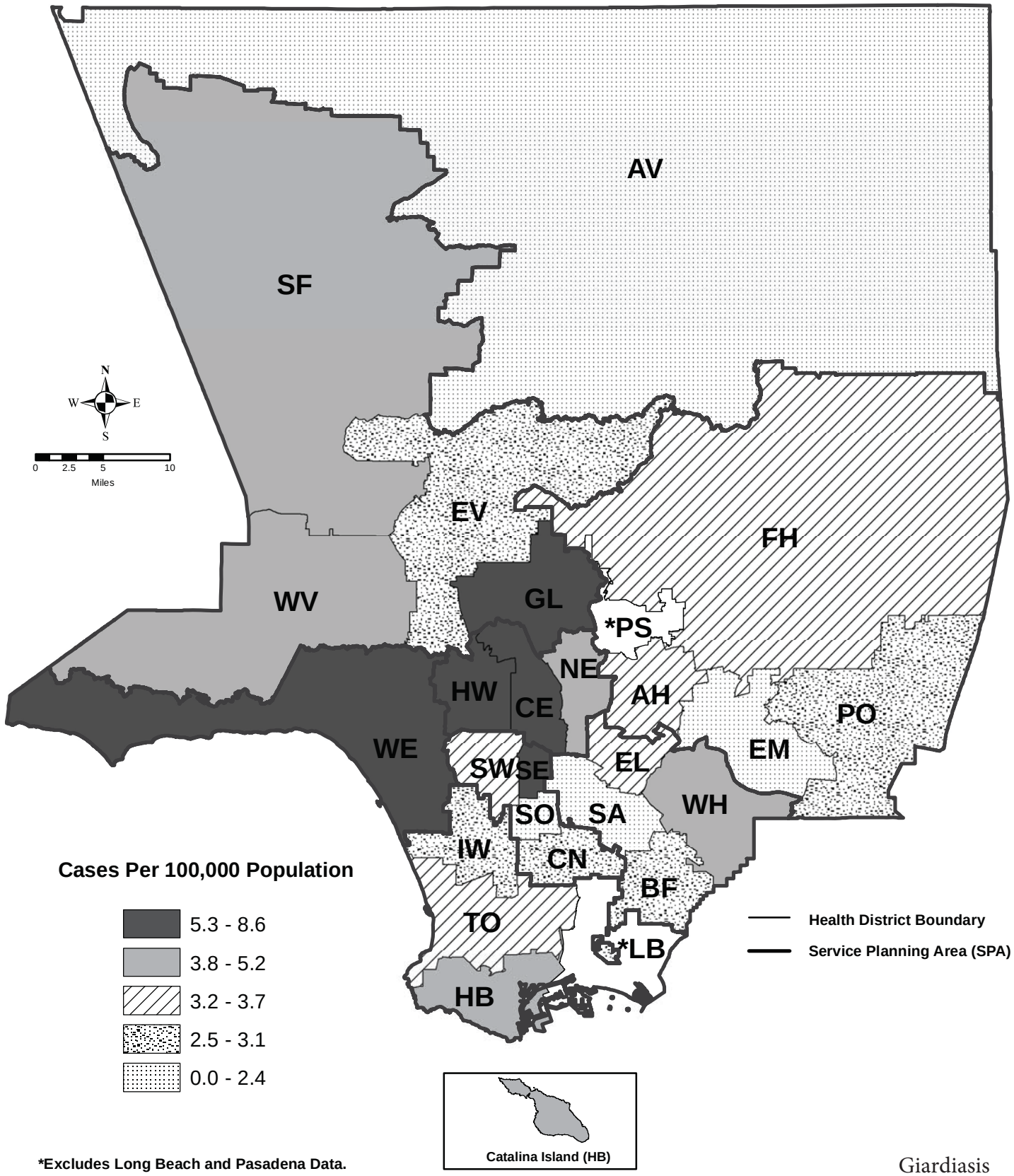


Figure 6. Giardiasis Incidence by Race/Ethnicity
LAC, 2006 - 2013, N=392



Map 6. Giardiasis
Rates by Health District, Los Angeles County, 2013*



*Excludes Long Beach and Pasadena Data.

GIARDIASIS

CRUDE DATA	
Number of Cases	294
Annual Incidence[a]	
LA County	3.2
California[b]	4.6
United States[b]	4.9
Age at Diagnosis	
Mean	35
Median	35
Range	1 - 88

[a]Cases per 100,000 population.
[b]Calculated from Final 2012 Reports of Nationally Notifiable Infectious Disease. MMWR 62(33);669-682.

DESCRIPTION

Giardiasis is an intestinal infection caused by the zoonotic protozoan parasite *Giardia intestinalis* (previously *G. lamblia*). *Giardia* cysts shed in animal or human feces may contaminate food or drinking water or be transferred on hands or fomites; recreational waters such as lakes and pools may also serve as vehicles of transmission. Incubation can range from 3 to 25 days or longer, but the median incubation time is 7 to 10 days. While often asymptomatic, symptoms can include sulfurous burps, chronic diarrhea, frequent loose and pale greasy stools, bloating, cramps, fatigue, and weight loss. Complications are rare, but may include malabsorption of fats and fat-soluble vitamins. Children in day care represent a reservoir of disease in developed countries. There is no vaccine.

To prevent transmission of giardiasis, individuals should wash their hands before eating, after using the toilet, and after changing diapers. Persons ill with diarrhea should avoid swimming. Fecal exposure during sexual activity should also be avoided.

2012 TRENDS AND HIGHLIGHTS

- Giardiasis disease incidence has remained stable over the years with 3.2 cases per 100,000 in 2011 and 2012 and 3.1 cases per 100,000 in 2010. (Figure 1).
- The highest age-specific incidence rate occurred among children aged 1-4 years with 6.3 cases per 100,000; the highest total number of cases was reported in the 15-34 year age group (86, 29%) which is consistent with 2011 which had 84 (29%) (Figure 2).
- Whites continue to have highest race/ethnicity-specific incidence rates and proportion of cases compared to other races. Whites accounted for 43% (125) of the reported cases in 2012 and 50% (146) in 2011 (Figure 3).
- Within Los Angeles County (LAC), Service Planning Area (SPA) 5 reported the highest incidence rate of giardiasis with 6.1 cases per 100,000 in 2012 compared with 5.6 cases per 100,000 in 2011. The second highest incidence rate was reported from SPA 2 (4.5 per 100,000) in 2012 and 4.6 cases per 100,000 in 2011 (Figure 4).
- The number of cases reported in 2012 peaked from September to December compared with the previous 5 year average which peaked in July, August and September. (Figure 5).
- Males have consistently accounted for a larger proportion of cases in previous reporting periods. Similarly males accounted for 63% (185) and females 37% (109) of the cases in 2012.
- The most frequently reported risk factor was contact with animals (137, 47%), predominantly dogs. Travel to another country was also frequently reported (78, 27%). Travel to Mexico was the most frequently reported country (18, 23%) by cases followed by India (9, 12%). Immigration to the US (50, 17%) was also cited as a risk factor: approximately one fifth of immigrant cases were from Mexico (11, 22%). These risk factors are consistent with risk factor information for other waterborne parasitic diseases reported in LAC.

Reported Giardiasis Cases and Rates* per 100,000 by Age Group, Race/Ethnicity, and SPA
Los Angeles County, 2007-2012

	2008 (N=355)			2009 (N=354)			2010 (N=308)			2011 (N=292)			2012 (N=294)		
	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000
Age Group															
<1	4	1.1	2.9	1	0.3	0.7	5	0.2	3.6	1	0.3	0.7	0	0.0	0
1-4	45	12.7	7.9	46	13.0	8.2	41	13.3	7.1	22	7.5	3.8	30	10.2	6.3
5-14	41	11.5	2.9	40	11.3	2.9	37	12.0	2.8	39	13.7	2.9	29	9.9	2.4
15-34	96	27.0	3.3	85	24.0	3.0	81	26.3	2.7	84	28.7	2.8	86	29.3	3.1
35-44	63	17.7	4.2	67	19.0	4.5	46	14.9	3.2	49	16.8	3.4	52	17.7	3.9
45-54	62	17.5	4.6	43	12.1	3.1	36	11.7	2.7	44	15.0	3.3	39	13.3	3.0
55-64	27	7.6	3.0	41	11.6	4.3	37	12.0	3.8	29	9.8	3.0	35	11.9	3.4
65+	17	4.8	1.7	30	8.5	2.8	24	7.8	2.3	23	7.9	2.2	22	7.5	2.0
Unknown		0.0		1	0.3		0	0		1	0.3	-	1	0.3	
Race/Ethnicity															
Asian	21	5.9	1.6	13	3.7	1.0	23	7.5	1.7	20	6.8	1.5	18	6.1	1.4
Black	16	4.5	1.9	25	7.1	2.9	28	9.1	3.3	18	6.2	2.1	17	5.8	2.2
Hispanic	106	29.9	2.3	102	28.8	2.2	90	29.2	1.9	89	30.5	1.9	84	28.6	1.9
White	167	47.0	5.7	129	36.4	4.4	137	44.5	4.8	146	50.0	5.1	125	42.5	4.7
Other	5	1.4	20.3	4	1.1		8	27.3		2	0.7		1	0.3	
Unknown	40	11.3		81	22.9		22	7.1		17	5.8		49	16.3	
SPA															
1	8	2.3	2.2	5	1.4	1.4	11	3.6	2.9	8	2.7	2.1	5	1.7	1.3
2	161	45.4	7.4	138	39.0	6.2	10	3.2	0.5	102	35	4.6	96	32.7	4.5
3	34	9.6	2.0	27	7.6	1.6	27	8.8	1.6	22	7.5	1.3	27	9.2	1.7
4	36	10.1	2.8	46	13.0	3.7	49	15.9	3.9	47	16.1	3.7	57	19.4	5.1
5	37	10.4	5.7	43	12.1	6.6	31	10.0	4.7	37	12.7	5.6	39	13.3	6.1
6	27	7.6	2.6	29	8.2	2.8	21	6.8	2.0	20	6.8	1.9	17	5.8	1.7
7	25	7.0	1.8	26	7.3	1.9	31	10.1	2.3	26	8.9	1.9	25	8.5	1.9
8	26	7.3	2.3	36	10.2	3.2	26	8.4	2.3	28	9.6	2.5	28	9.4	2.6
Unknown	1	0.3		0	0.0		0	0.0		2	0.7		0	0.0	

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

**Figure 1. Incidence Rates of Giardiasis
LAC, CA and US, 2002 - 2012**

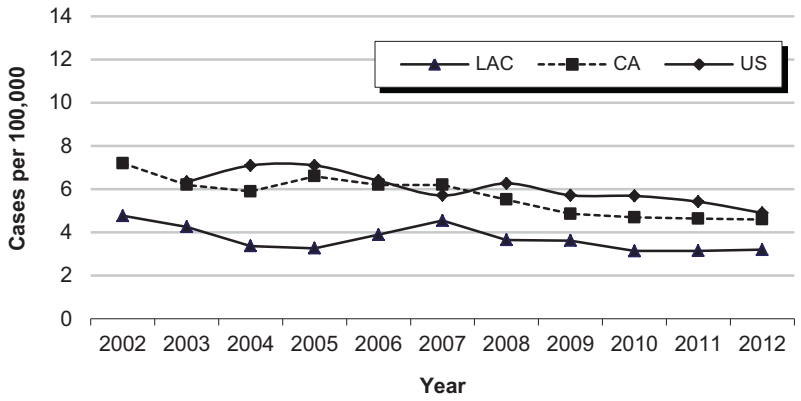


**Figure 2. Cases of Giardiasis by Age Group
LAC, 2012, N=293**

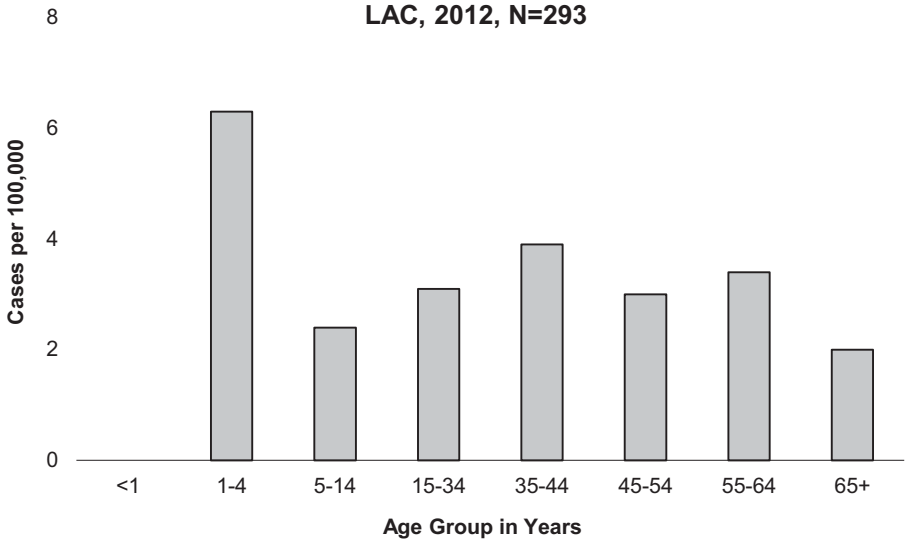


**Figure 3. Proportion of Giardiasis Cases by Race/Ethnicity
LAC, 2012, N=294**

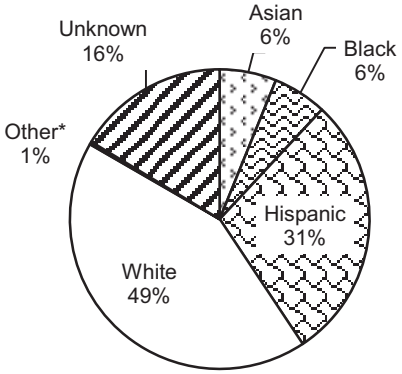
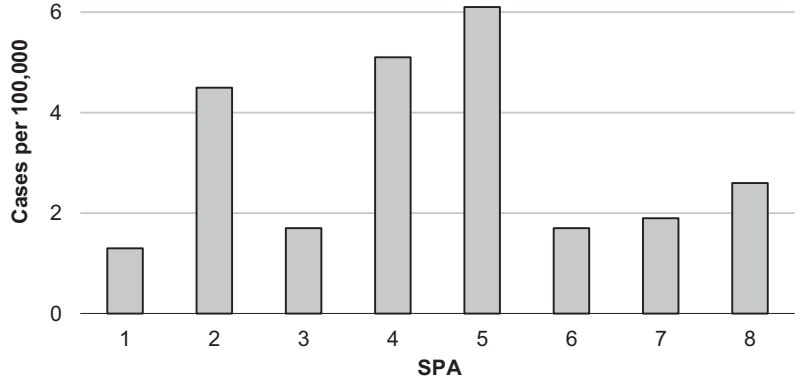


**Figure 4. Incidence Rates of Giardiasis by SPA
LAC, 2012, N=294**



* Other includes Native American and any additional racial/ethnic group that cannot be categorized as Asian, black, Hispanic, and white.

Figure 5. Reported Giardiasis Cases by Month of Onset
LAC, 2012,N=294

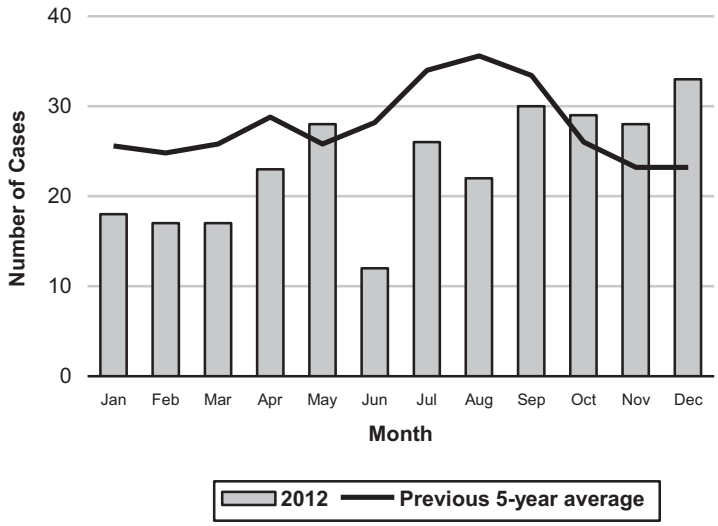
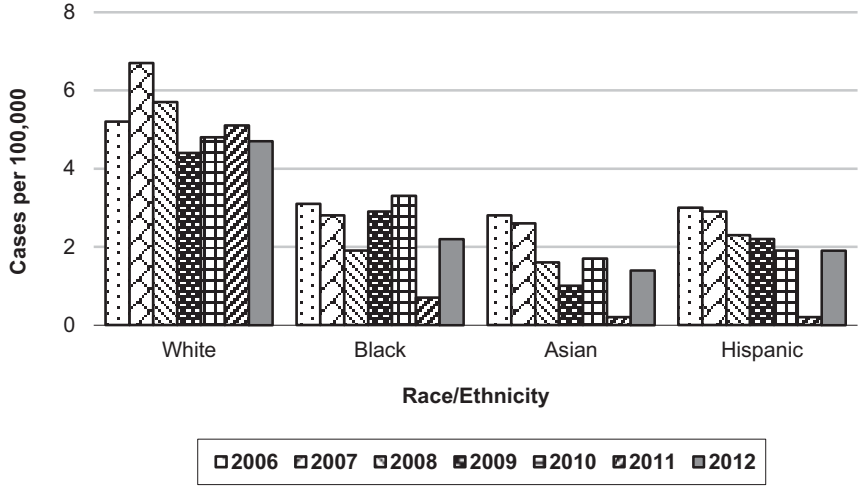
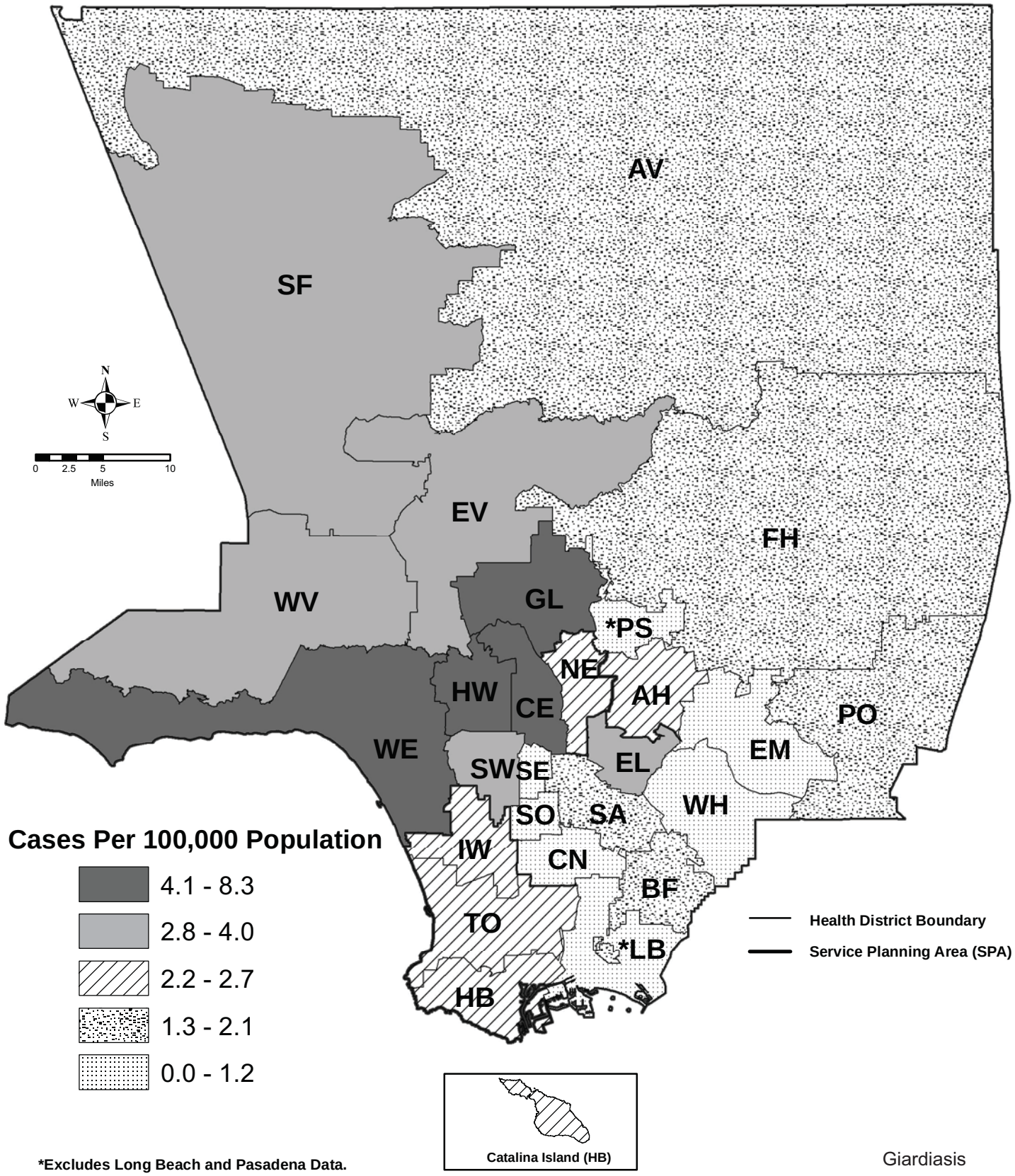


Figure 6. Giardiasis Incidence by Race/Ethnicity
LAC, 2006 - 2012



Map 6. Giardiasis
Rates by Health District, Los Angeles County, 2012*



*Excludes Long Beach and Pasadena Data.

GIARDIASIS

CRUDE DATA	
Number of Cases	292
Annual Incidence[a]	
LA County	2.98
California[b]	4.64
United States[b]	5.42
Age at Diagnosis	
Mean	34
Median	34
Range	<1 - 90

[a]Cases per 100,000 population.
[b]Calculated from Final 2011 Reports of Nationally Notifiable Infectious Disease. MMWR 61(32);625-637.

DESCRIPTION

Giardiasis is an intestinal infection caused by the zoonotic protozoan parasite *Giardia intestinalis* (previously *G. lamblia*). *Giardia* cysts shed in animal or human feces may contaminate food or drinking water or be transferred on hands or fomites; recreational waters such as lakes and pools may also serve as vehicles of transmission. Incubation can range from 3 to 25 days or longer, but the median incubation time is 7 to 10 days. While often asymptomatic, symptoms can include sulfurous burps, chronic diarrhea, frequent loose and pale greasy stools, bloating, cramps, fatigue, and weight loss. Complications are rare, but may include malabsorption of fats and fat-soluble vitamins. Children in day care represent a reservoir of disease in developed countries. There is no vaccine.

To prevent transmission of giardiasis, individuals should wash their hands before eating, after using the toilet, and after changing diapers. Persons ill with diarrhea should avoid swimming. Fecal exposure during sexual activity should also be avoided.

2011 TRENDS AND HIGHLIGHTS

- Giardiasis incidence in Los Angeles County (LAC) decreased in 2011 to 3.0 cases per 100,000 from 3.1 and 3.6 cases per 100,000, during 2010 and 2009, respectively (Figure 1).
- The highest age-specific incidence rate occurred among children aged 1 to 4 years; the highest total number of cases was reported in the 15 to 34 year age group which is consistent with the previous year (Figure 2).
- Whites continue to have higher race/ethnicity specific incidence rates and percent cases compared to other races (Figure 3). Whites accounted for 50% of the reported cases.
- Within Los Angeles County (LAC), Service Planning Area (SPA) 5 reported the highest incidence rate of giardiasis with 5.6 cases per 100,000. This is consistent with previous years. The second highest incidence rate was reported from SPA 2 (4.6 per 100,000) (Figure 4).
- The number of cases reported in 2011 peaked early in the summer months, consistent with the previous five-year average (Figure 5).
- The male to female ratio was 2:1; males have consistently accounted for a larger proportion of cases in previous reporting periods.
- The most frequently reported risk factor in 2011 was contact with animals (115, 41%), predominantly dogs. Travel to another country was also frequently reported (67, 24%), with travel to Mexico as the most frequently reported country (13, 19%) and India (12, 18%). Immigration to the US (66, 23%); approximately one fifth of immigrant cases were from Mexico (12, 19%). These risk factors are consistent with risk factor information for other waterborne parasitic diseases reported in LAC.

Reported Giardiasis Cases and Rates* per 100,000 by Age Group, Race/Ethnicity, and SPA
Los Angeles County, 2007-2011

	2007 (N=441)			2008 (N=355)			2009 (N=354)			2010 (N=308)			2011 (N=292)		
	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000
Age Group															
<1	3	0.7	2.0	4	1.1	2.9	1	0.3	0.7	5	0.2	3.6	1	0.3	0.7
1-4	61	13.8	10.6	45	12.7	7.9	46	13.0	8.2	41	13.3	7.1	22	7.5	3.8
5-14	66	15.0	4.6	41	11.5	2.9	40	11.3	2.9	37	12.0	2.8	39	13.7	2.9
15-34	126	28.6	4.5	96	27.0	3.3	85	24.0	3.0	81	26.3	2.7	84	28.7	2.8
35-44	76	17.2	5.1	63	17.7	4.2	67	19.0	4.5	46	14.9	3.2	49	16.8	3.4
45-54	62	14.1	4.7	62	17.5	4.6	43	12.1	3.1	36	11.7	2.7	44	15.0	3.3
55-64	30	6.8	3.4	27	7.6	3.0	41	11.6	4.3	37	12.0	3.8	29	9.8	3.0
65+	17	3.9	1.7	17	4.8	1.7	30	8.5	2.8	24	7.8	2.3	23	7.9	2.2
Unknown		0.0			0.0		1	0.3		0	0		1	0.3	-
Race/Ethnicity															
Asian	33	7.5	2.6	21	5.9	1.6	13	3.7	1.0	23	7.5	1.7	20	6.8	1.5
Black	24	5.4	2.8	16	4.5	1.9	25	7.1	2.9	28	9.1	3.3	18	6.2	2.1
Hispanic	133	30.2	2.9	106	29.9	2.3	102	28.8	2.2	90	29.2	1.9	89	30.5	1.9
White	195	44.2	6.7	167	47.0	5.7	129	36.4	4.4	137	44.5	4.8	146	50.0	5.1
Other	13	2.9	62.4	5	1.4	20.3	4	1.1		8	27.3		2	0.7	
Unknown	43	9.8		40	11.3		81	22.9		22	7.1		17	5.8	
SPA															
1	4	0.9	1.1	8	2.3	2.2	5	1.4	1.4	11	3.6	2.9	8	2.7	2.1
2	170	38.5	7.9	161	45.4	7.4	138	39.0	6.2	10	3.2	0.5	102	35	4.6
3	45	10.2	2.6	34	9.6	2.0	27	7.6	1.6	27	8.8	1.6	22	7.5	1.3
4	63	14.3	5.0	36	10.1	2.8	46	13.0	3.7	49	15.9	3.9	47	16.1	3.7
5	57	12.9	8.9	37	10.4	5.7	43	12.1	6.6	31	10.0	4.7	37	12.7	5.6
6	26	5.9	2.5	27	7.6	2.6	29	8.2	2.8	21	6.8	2.0	20	6.8	1.9
7	42	9.5	3.0	25	7.0	1.8	26	7.3	1.9	31	10.1	2.3	26	8.9	1.9
8	32	7.3	2.9	26	7.3	2.3	36	10.2	3.2	26	8.4	2.3	28	9.6	2.5
Unknown	2	0.5		1	0.3		0	0.0		0	0.0		2	0.7	

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

Figure 1. Incidence Rates of Giardiasis
LAC, CA and US, 2002 - 2011

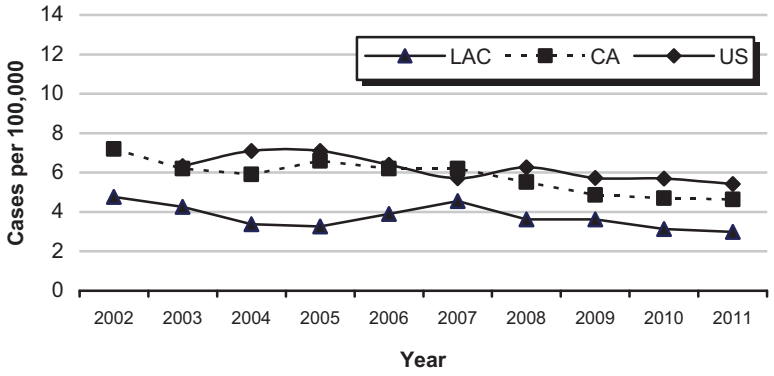


Figure 2. Incidence Rates of Giardiasis by Age Group
LAC, 2011

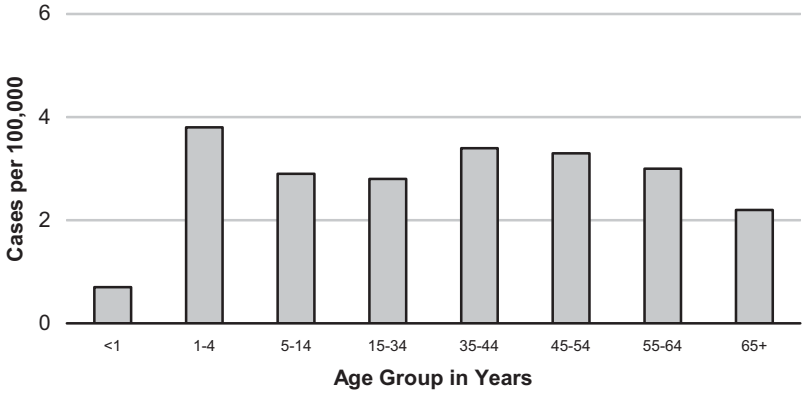


Figure 3. Percent Cases of Giardiasis by Race/Ethnicity
LAC, 2011

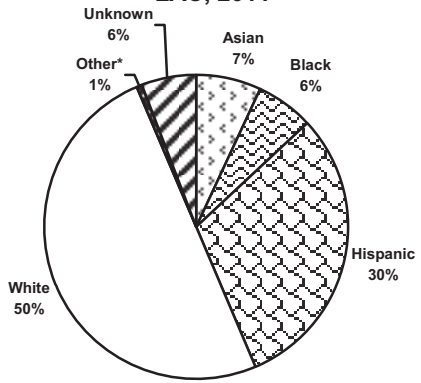
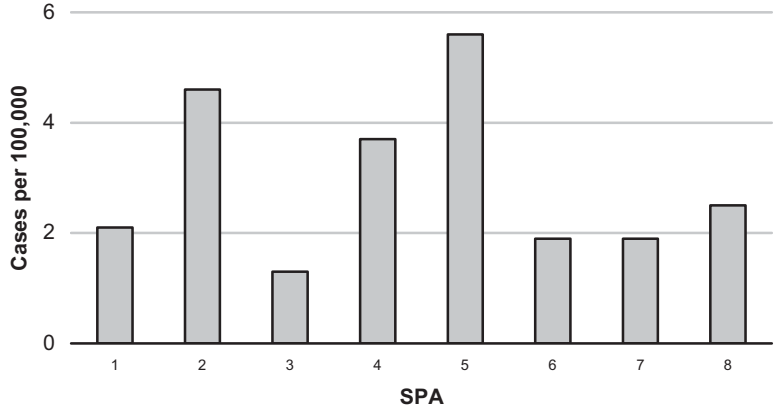


Figure 4. Incidence Rates of Giardiasis by SPA
LAC, 2011



* Other includes Native American and any additional racial/ethnic group that cannot be categorized as Asian, black, Hispanic, and white.

Figure 5. Reported Giardiasis Cases by Month of Onset
LAC, 2011

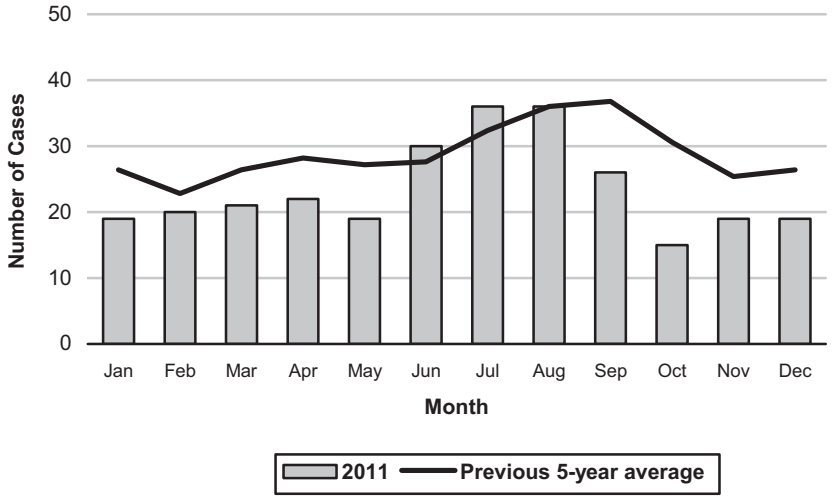
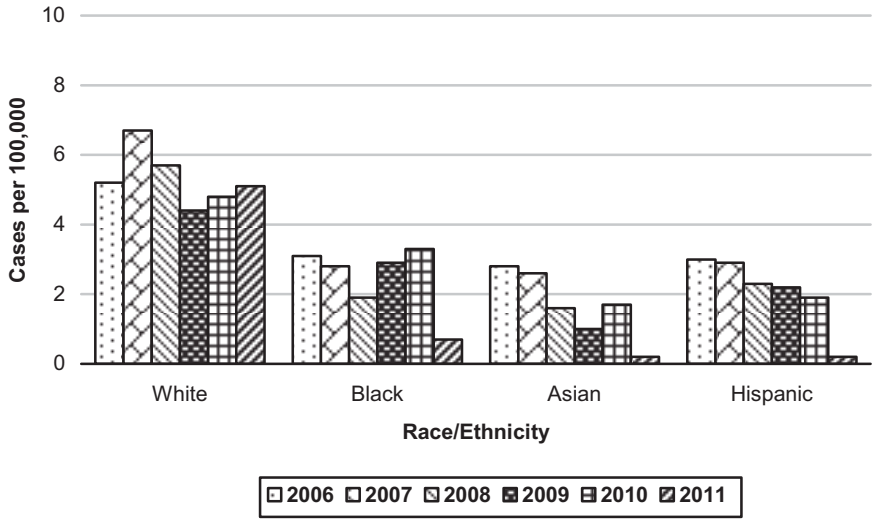
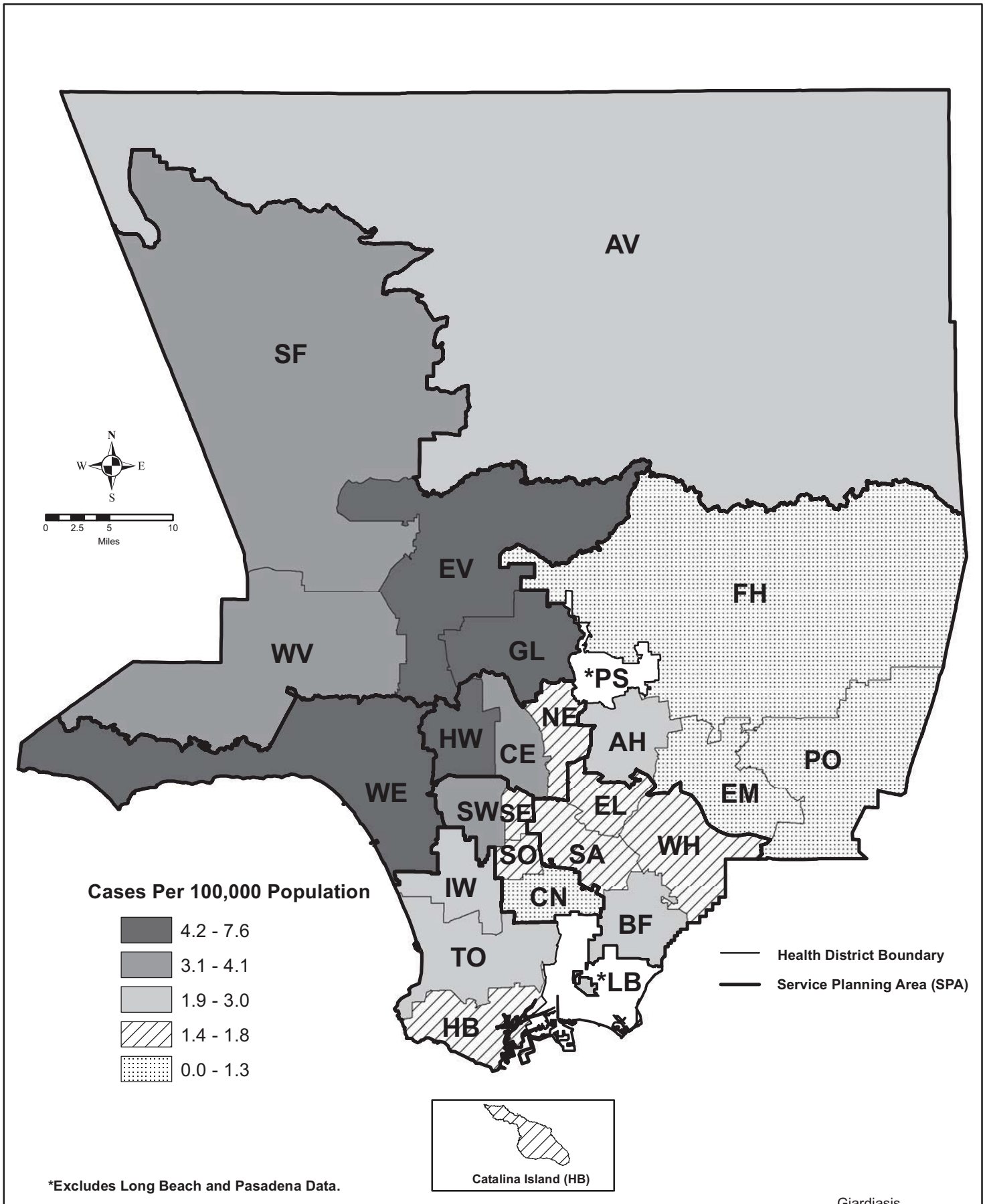


Figure 6. Giardiasis Incidence by Race/Ethnicity
LAC, 2006 - 2011



Map 7. Giardiasis
Rates by Health District, Los Angeles County, 2011*



*Excludes Long Beach and Pasadena Data.

GIARDIASIS

CRUDE DATA	
Number of Cases	308
Annual Incidence[a]	
LA County	3.14
California[b]	--
United States[b]	--
Age at Diagnosis	
Mean	32
Median	30
Range	<1-89

[a]Cases per 100,000 population.
[b]See Final Summary of Nationally Notifiable Infectious Diseases, United States on MMWR website http://www.cdc.gov/mmwr/mmwr_nd/index.html.

DESCRIPTION

Giardiasis is an intestinal infection caused by the zoonotic protozoan parasite *Giardia intestinalis* (previously *G. lamblia*). *Giardia* cysts shed in animal or human feces may contaminate food or drinking water or be transferred on hands or fomites; recreational waters such as lakes and pools may also serve as vehicles of transmission. Incubation can range from 3 to 25 days or longer, but the median incubation time is 7-10 days. While often asymptomatic, symptoms can include sulfurous burps, chronic diarrhea, frequent loose and pale greasy stools, bloating, cramps, fatigue, and weight loss. Complications are rare, but may include malabsorption of fats and fat-soluble vitamins. Children in day care represent a reservoir of disease in developed countries. There is no vaccine.

To prevent transmission of giardiasis, individuals should wash their hands before eating, after using the toilet, and after changing diapers. Persons ill with diarrhea should avoid swimming. Fecal exposure during sexual activity should also be avoided.

2010 TRENDS AND HIGHLIGHTS

- Giardiasis incidence in Los Angeles County (LAC) did not change significantly in 2010 (3.1 per 100,000) compared to 2009 (3.6 per 100,000) (Figure 1).
- The highest age-specific incidence rate occurred among children aged 1 to 4 years; the highest total number of cases was reported in the 15 to 34 year age group (Figure 2).
- Whites continue to have highest race/ethnicity specific incidence rates and proportion of cases compared to other races (Figure 3).
- Within LAC, Service Planning Area (SPA) 5 reported the highest incidence rate of giardiasis with 4.7 cases per 100,000; the second highest incidence rate was reported from SPA 4 (3.9 per 100,000) (Figure 4). This is a consistent with the previous reporting period in which SPA 5 had the highest incidence rate.
- The number of cases reported in 2010 peaked early in the summer months. This is consistent with the previous five-year average where cases tended to peak only in the summer months (Figure 5).
- The male to female ratio was 2:1; males have consistently accounted for a larger proportion of cases in previous reporting periods.
- The most frequently reported risk factor in 2010 was contact with animals (105, 35%), predominantly dogs. Travel to another country was also frequently reported (72, 24%), with travel to Mexico as the most frequently reported country (15, 21%). Immigration to the US (65, 21%); approximately half of immigrant cases were from Iran. These risk factors are consistent with risk factor information for other waterborne parasitic diseases reported in LAC.

Reported Giardiasis Cases and Rates* per 100,000 by Age Group, Race/Ethnicity, and SPA
Los Angeles County, 2006-2010

	2006 (N=376)			2007 (N=441)			2008 (N=355)			2009 (N=354)			2010 (N=308)		
	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000
Age Group															
<1	0	0.0	0.0	3	0.7	2.0	4	1.1	2.9	1	0.3	0.7	5	0.2	3.6
1-4	47	12.5	8.1	61	13.8	10.6	45	12.7	7.9	46	13.0	8.2	41	13.3	7.1
5-14	66	17.6	4.5	66	15.0	4.6	41	11.5	2.9	40	11.3	2.9	37	12.0	2.8
15-34	105	27.9	3.8	126	28.6	4.5	96	27.0	3.3	85	24.0	3.0	81	26.3	2.7
35-44	66	17.6	4.4	76	17.2	5.1	63	17.7	4.2	67	19.0	4.5	46	14.9	3.2
45-54	47	12.5	3.6	62	14.1	4.7	62	17.5	4.6	43	12.1	3.1	36	11.7	2.7
55-64	29	7.7	3.3	30	6.8	3.4	27	7.6	3.0	41	11.6	4.3	37	12.0	3.8
65+	15	4.0	1.5	17	3.9	1.7	17	4.8	1.7	30	8.5	2.8	24	7.8	2.3
Unknown	1	0.3			0.0			0.0		1	0.3		0	0	
Race/Ethnicity															
Asian	36	9.6	2.8	33	7.5	2.6	21	5.9	1.6	13	3.7	1.0	23	7.5	1.7
Black	26	6.9	3.1	24	5.4	2.8	16	4.5	1.9	25	7.1	2.9	28	9.1	3.3
Hispanic	137	36.4	3.0	133	30.2	2.9	106	29.9	2.3	102	28.8	2.2	90	29.2	1.9
White	149	39.6	5.2	195	44.2	6.7	167	47.0	5.7	129	36.4	4.4	137	44.5	4.8
Other	7	1.9	24.5	13	2.9	62.4	5	1.4	20.3	4	1.1		8	27.3	
Unknown	21	5.6		43	9.8		40	11.3		81	22.9		22	7.1	
SPA															
1	11	2.9	3.2	4	0.9	1.1	8	2.3	2.2	5	1.4	1.4	11	3.6	2.9
2	124	33.0	5.8	170	38.5	7.9	161	45.4	7.4	138	39.0	6.2	10	3.2	0.5
3	46	12.2	2.7	45	10.2	2.6	34	9.6	2.0	27	7.6	1.6	27	8.8	1.6
4	57	15.2	4.5	63	14.3	5.0	36	10.1	2.8	46	13.0	3.7	49	15.9	3.9
5	44	11.7	6.9	57	12.9	8.9	37	10.4	5.7	43	12.1	6.6	31	10.0	4.7
6	34	9.0	3.3	26	5.9	2.5	27	7.6	2.6	29	8.2	2.8	21	6.8	2.0
7	30	8.0	2.2	42	9.5	3.0	25	7.0	1.8	26	7.3	1.9	31	10.1	2.3
8	27	7.2	2.4	32	7.3	2.9	26	7.3	2.3	36	10.2	3.2	26	8.4	2.3
Unknown	3	0.8		2	0.5		1	0.3		0	0.0		0	0.0	

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

Figure 1. Incidence Rates of Giardiasis
LAC, CA and US, 2000-2010

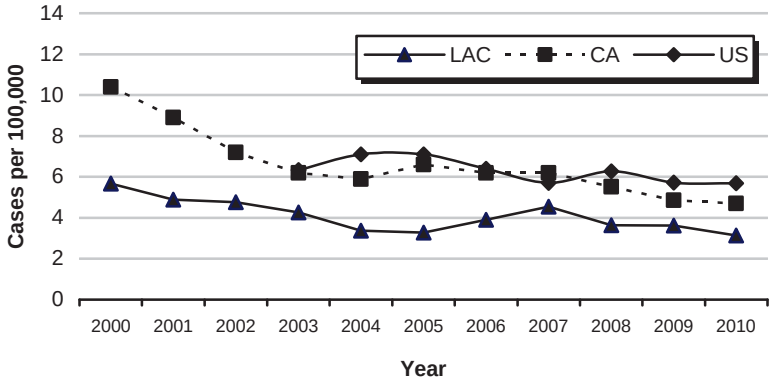


Figure 2. Incidence Rates of Giardiasis by Age Group
LAC, 2010

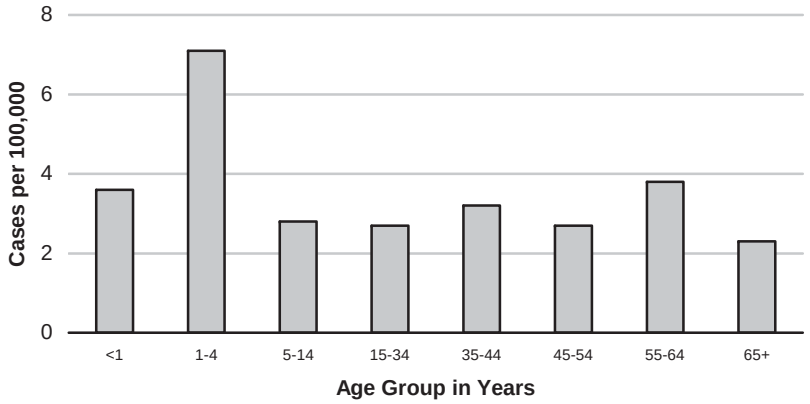


Figure 3. Percent Cases of Giardiasis by Race/Ethnicity
LAC, 2010

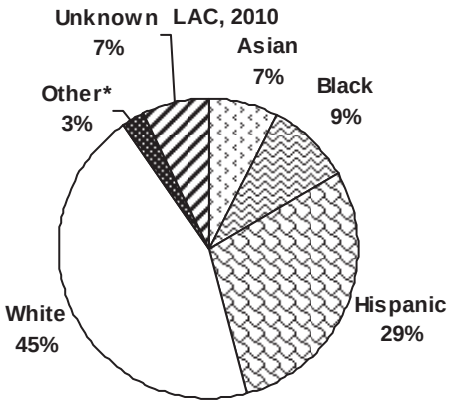
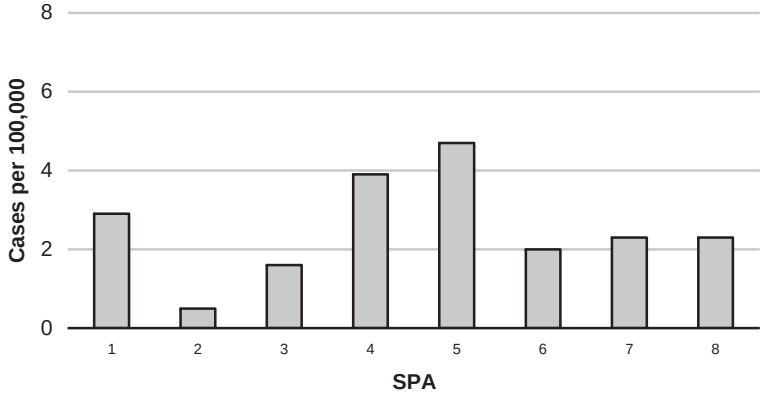


Figure 4. Incidence Rates of Giardiasis by SPA
LAC, 2010



* Other includes Native American and any additional racial/ethnic group that cannot be categorized as Asian, black, Hispanic, and white.

Figure 5. Reported Giardiasis Cases by Month of Onset
LAC, 2010

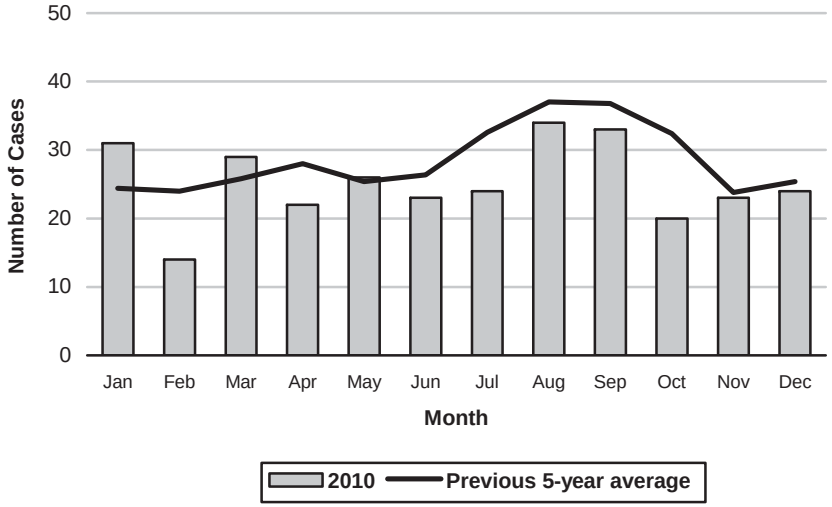
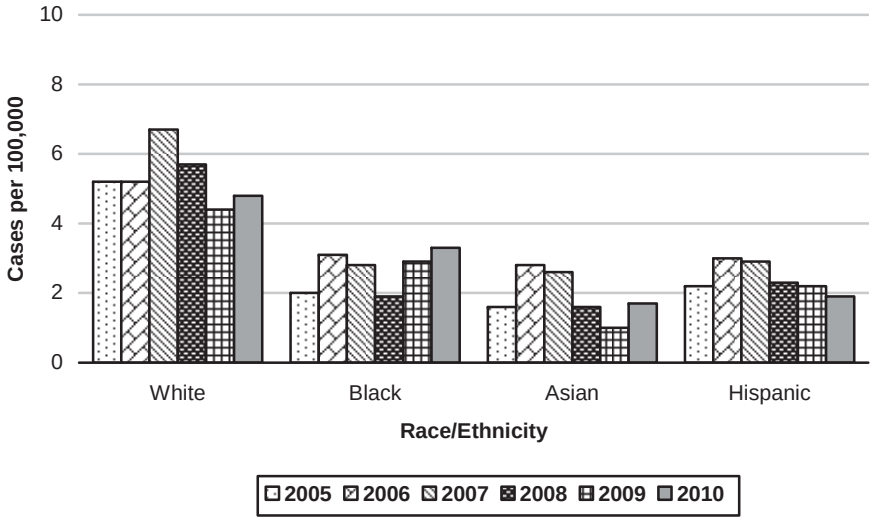


Figure 6. Giardiasis Incidence by Race/Ethnicity
LAC, 2005-2010



GIARDIASIS

CRUDE DATA	
Number of Cases	354
Annual Incidence[a]	
LA County	3.62
California	4.86
United States	5.72
Age at Diagnosis	
Mean	34
Median	36
Range	<1-88

[a]Cases per 100,000 population.

DESCRIPTION

Giardiasis is an intestinal infection caused by the zoonotic protozoan parasite *Giardia intestinalis* (previously *G. lamblia*). *Giardia* cysts shed in animal or human feces may contaminate food or drinking water or be transferred on hands or fomites; recreational waters such as lakes and pools may also serve as vehicles of transmission. Incubation time can range from 3 to 25 days or longer, but the median is 7-10 days. While often asymptomatic, symptoms can include sulfurous burps, chronic diarrhea, frequent loose and pale greasy stools, bloating, cramps, fatigue, and weight loss. Complications are rare, but may include malabsorption of fats and fat-soluble vitamins. Children in day care represent a reservoir of disease in developed countries. There is no vaccine.

To prevent transmission of giardiasis, individuals should wash their hands before eating, after using the toilet, and after changing diapers.

Public water should be filtered if exposed to human or animal fecal contamination. Persons ill with diarrhea should avoid swimming. Fecal exposure during sexual activity should also be avoided.

2009 TRENDS AND HIGHLIGHTS

- Giardiasis incidence remained stable in 2008 and 2009 (3.6 cases per 100,000) (Figure 1).
- The highest age-specific incidence rate occurred among children aged one to four years, 8.2 cases per 100,000; the greatest proportion of cases was reported among the 15 to 34 year age group (85, 24%) (Figure 2).
- Whites continue to have higher race/ethnicity specific incidence rates, 4.4 cases per 100,000, compared to groups from other race/ethnicity (Figure 3).
- Service Planning Area (SPA) 5 had the highest incidence rate of giardiasis with 6.6 cases per 100,000 followed by SPA 2 (6.2 per 100,000) (Figure 4).
- The cases reported in 2009 had two peaks, one in early May and a second in the summer months. This differs from the previous five-year average where cases tended to peak only in the summer months (Figure 5).
- The male to female case ratio was 2:1
- Risk factors for LAC giardiasis cases remained consistent with prior years. The most frequently reported risk factor was immigration to the US (n=106, 30%); half of immigrant cases were from Iran. Contact with animals (n=100, 28%), and travel to another country were also frequently reported (n=70, 20%), with Mexico the most frequently reported country (n=16, 23%).

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

	2005 (N=313)			2006 (N=376)			2007 (N=441)			2008 (N=355)			2009 (N=354)		
	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000
Age Group															
<1	3	1.0	2.1	0	0.0	0.0	3	0.7	2.0	4	1.1	2.9	1	0.3	0.7
1-4	37	11.8	6.4	47	12.5	8.1	61	13.8	10.6	45	12.7	7.9	46	13.0	8.2
5-14	56	17.9	3.8	66	17.6	4.5	66	15.0	4.6	41	11.5	2.9	40	11.3	2.9
15-34	62	19.8	2.2	105	27.9	3.8	126	28.6	4.5	96	27.0	3.3	85	24.0	3.0
35-44	58	18.5	3.8	66	17.6	4.4	76	17.2	5.1	63	17.7	4.2	67	19.0	4.5
45-54	42	13.4	3.3	47	12.5	3.6	62	14.1	4.7	62	17.5	4.6	43	12.1	3.1
55-64	31	9.9	3.7	29	7.7	3.3	30	6.8	3.4	27	7.6	3.0	41	11.6	4.3
65+	23	7.3	2.4	15	4.0	1.5	17	3.9	1.7	17	4.8	1.7	30	8.5	2.8
Unknown	1	0.3		1	0.3			0.0			0.0		1	0.3	
Race / Ethnicity															
Asian	20	6.4	1.6	36	9.6	2.8	33	7.5	2.6	21	5.9	1.6	13	3.7	1.0
Black	17	5.4	2.0	26	6.9	3.1	24	5.4	2.8	16	4.5	1.9	25	7.1	2.9
Hispanic	101	32.3	2.2	137	36.4	3.0	133	30.2	2.9	106	29.9	2.3	102	28.8	2.2
White	149	47.6	5.1	149	39.6	5.2	195	44.2	6.7	167	47.0	5.7	129	36.4	4.4
Other	4	1.3	14.2	7	1.9	24.5	13	2.9	62.4	5	1.4	20.3	4	1.1	
Unknown	22	7.0		21	5.6		43	9.8		40	11.3		81	22.9	
SPA															
1	9	2.9	2.6	11	2.9	3.2	4	0.9	1.1	8	2.3	2.2	5	1.4	1.4
2	94	30.0	4.4	124	33.0	5.8	170	38.5	7.9	161	45.4	7.4	138	39.0	6.2
3	43	13.7	2.5	46	12.2	2.7	45	10.2	2.6	34	9.6	2.0	27	7.6	1.6
4	48	15.3	3.8	57	15.2	4.5	63	14.3	5.0	36	10.1	2.8	46	13.0	3.7
5	34	10.9	5.3	44	11.7	6.9	57	12.9	8.9	37	10.4	5.7	43	12.1	6.6
6	23	7.3	2.2	34	9.0	3.3	26	5.9	2.5	27	7.6	2.6	29	8.2	2.8
7	30	9.6	2.2	30	8.0	2.2	42	9.5	3.0	25	7.0	1.8	26	7.3	1.9
8	32	10.2	2.9	27	7.2	2.4	32	7.3	2.9	26	7.3	2.3	36	10.2	3.2
Unknown	0	0.0		3	0.8		2	0.5		1	0.3		0	0.0	

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

Figure 1. Incidence Rates of Giardiasis
LAC, CA and US, 1999-2009

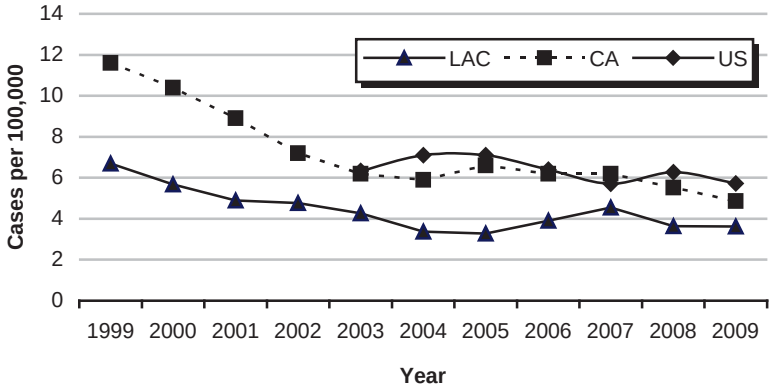


Figure 2. Incidence Rates of Giardiasis by Age Group
LAC, 2009 (N=354)

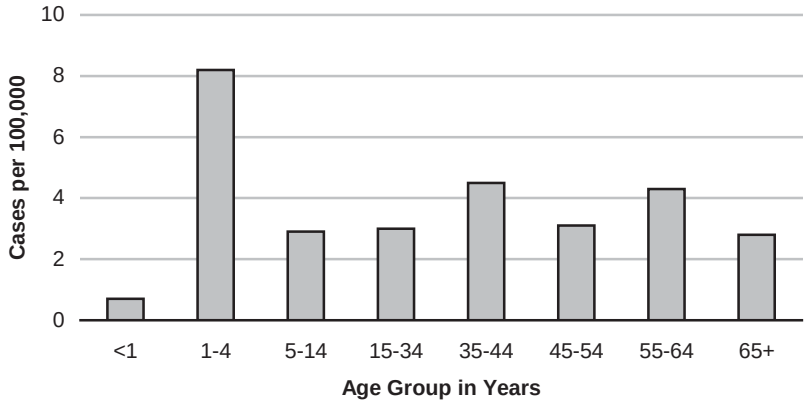


Figure 3. Percent Cases of Giardiasis by Race/Ethnicity
LAC, 2009 (N=354)

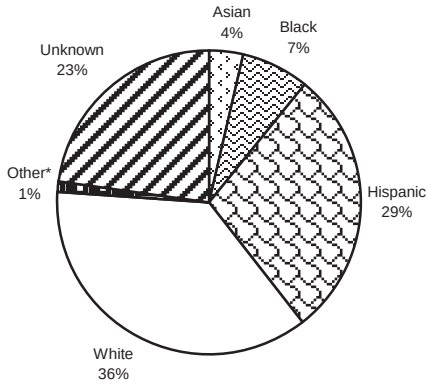
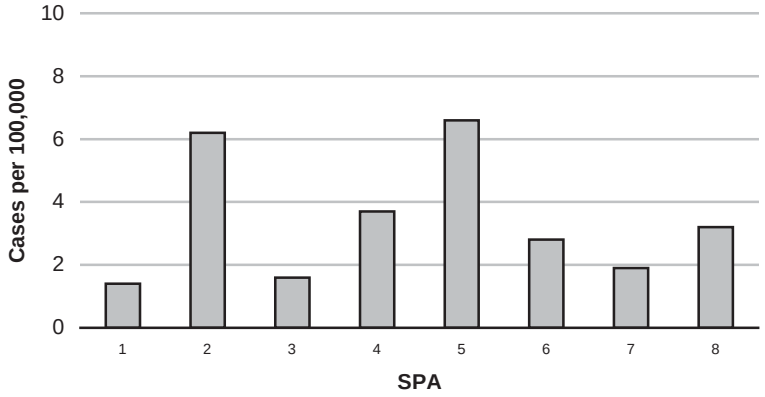


Figure 4. Incidence Rates of Giardiasis by SPA
LAC, 2009 (N=354)



* Other includes Native American and any additional racial/ethnic group that cannot be categorized as Asian, black, Hispanic, and white.

Figure 5. Reported Giardiasis Cases by Month of Onset
LAC, 2009 (N=354)

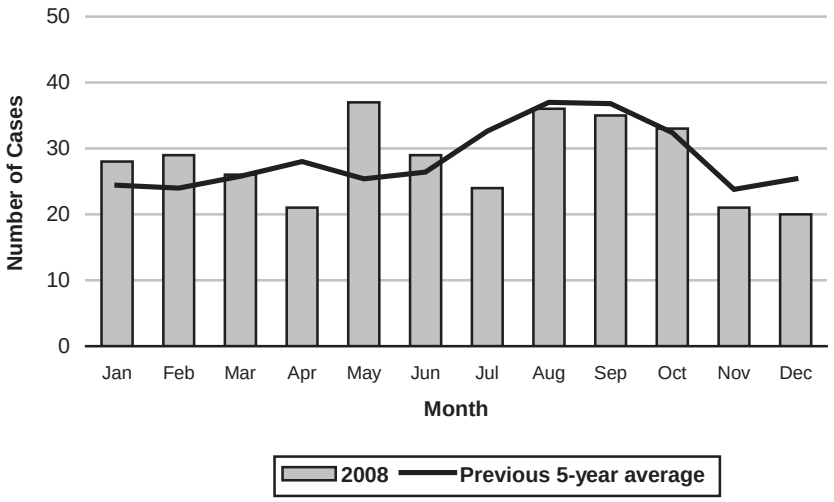
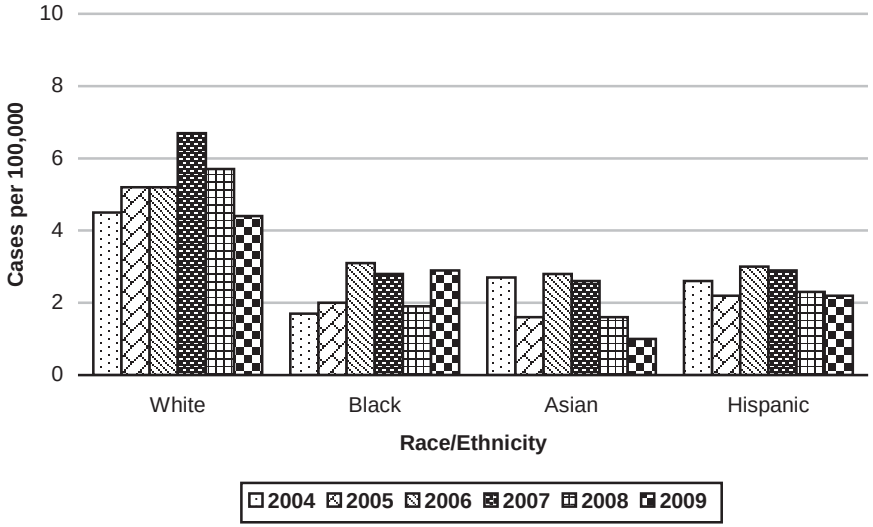
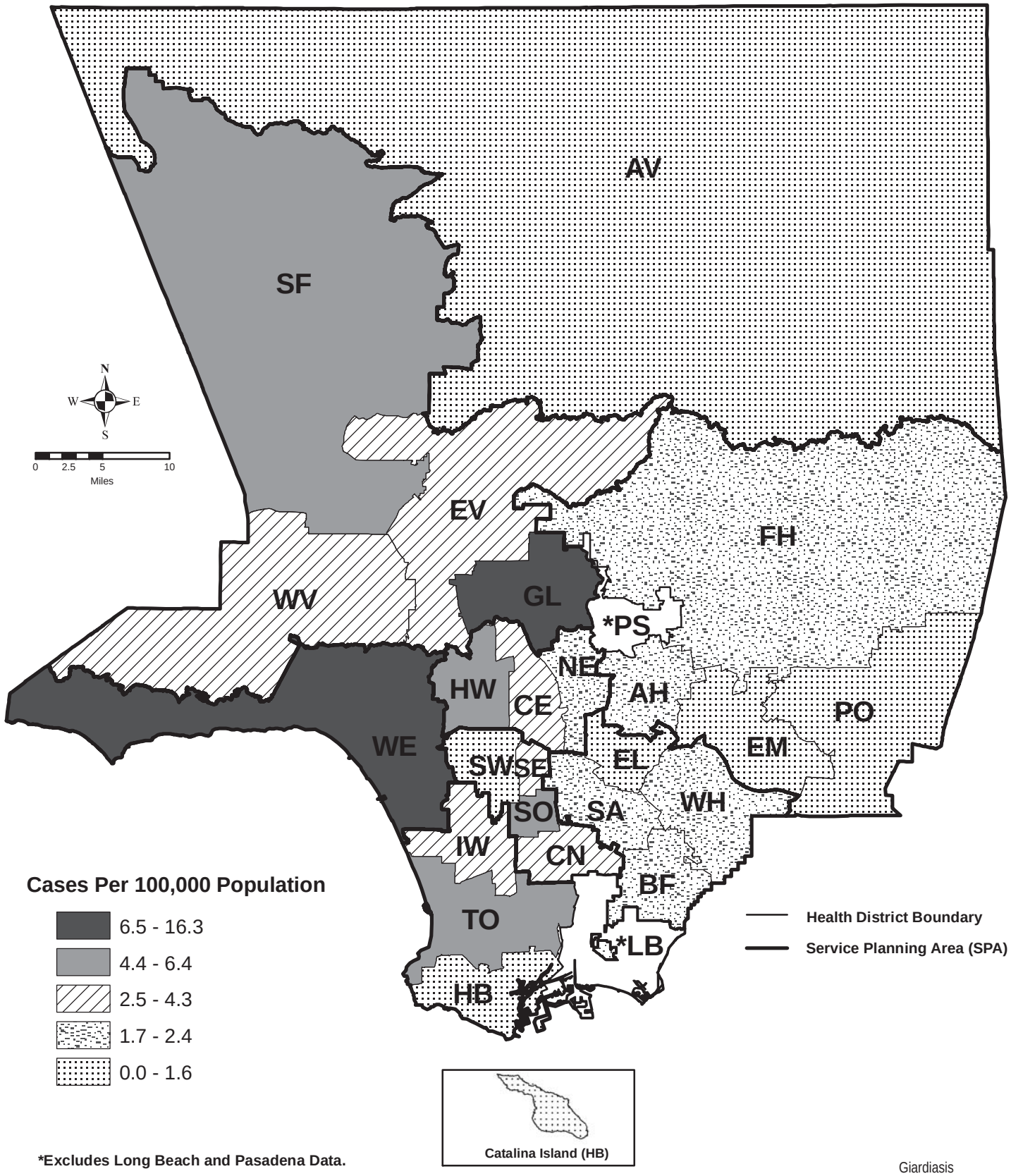


Figure 6. Giardiasis Incidence by Race/Ethnicity
LAC, 2004-2009



Map 5. Giardiasis
Rates by Health District, Los Angeles County, 2009*



*Excludes Long Beach and Pasadena Data.

GIARDIASIS

CRUDE DATA	
Number of Cases	355
Annual Incidence[a]	
LA County	3.63
California[b]	5.52
United States[b]	6.27
Age at Diagnosis	
Mean	32
Median	33
Range	<1-94

[a]Cases per 100,000 population.
[b]Calculated from Final 2008 Reports of Nationally Notifiable Infectious Disease. MMWR 58(31);856-857;859-869.

DESCRIPTION

Giardiasis is an intestinal infection caused by the zoonotic protozoan parasite *Giardia intestinalis* (previously *G. lamblia*). *Giardia* cysts shed in animal or human feces may contaminate food or drinking water or be transferred on hands or fomites; recreational waters such as lakes and pools may also serve as vehicles of transmission. Incubation can range from 3 to 25 days or longer, but the median incubation time is 7-10 days. While often asymptomatic, symptoms can include sulfurous burps, chronic diarrhea, frequent loose and pale greasy stools, bloating, cramps, fatigue, and weight loss. Complications are rare, but may include malabsorption of fats and fat-soluble vitamins. Children in day care represent a reservoir of disease in developed countries. There is no vaccine.

To prevent transmission of giardiasis, individuals should wash their hands before eating, after using the toilet, and after changing diapers. Persons ill with diarrhea should avoid swimming. Fecal exposure during sexual activity should also be avoided.

2008 TRENDS AND HIGHLIGHTS

- Giardiasis incidence decreased in 2008 to 3.6 cases per 100,000 residents compared to 4.6 cases per 100,000 residents in 2007 (Figure 1).
- The highest age-specific incidence rate occurred among children aged 1 to 4 years; the highest total number of cases was reported in the 15 to 34 year age group (Figure 2).
- Whites continue to have higher race/ethnicity specific incidence rates and percent cases compared to other races (Figure 3).
- Within Los Angeles County (LAC), Service Planning Area (SPA) 2 reported the highest incidence rate of giardiasis with 7.4 cases per 100,000; the second highest incidence rate was reported from SPA 5 (5.7 per 100,000) (Figure 4). This is a change from the previous reporting period in which SPA 5 had the highest incidence rate and SPA 2 the second highest.
- The number of cases reported in 2008 peaked in April, differing from the previous five-year average where cases tended to peak in the summer months (Figure 5).
- The male to female ratio was 2.5:1; males have consistently accounted for a larger proportion of cases in previous reporting periods.
- The most frequently reported risk factor in 2008 was immigration to the US (130, 37%); half of immigrant cases were from Iran. Contact with animals was also reported among a large proportion of cases (120, 34%), as well as outdoor recreational activities (76, 21%). These risk factors are consistent with risk factor information for other waterborne parasitic diseases reported in LAC.

Reported Giardiasis Cases and Rates* per 100,000 by Age Group, Race/Ethnicity, and SPA
Los Angeles County, 2004-2008

	2004 (N=320)			2005 (N=313)			2006 (N=376)			2007 (N=441)			2008 (N=355)		
	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000
Age Group															
<1	6	1.9	4.2	3	1.0	2.1	0	0.0	0.0	3	0.7	2.0	4	1.1	2.9
1-4	57	17.8	9.9	37	11.8	6.4	47	12.5	8.1	61	13.8	10.6	45	12.7	7.9
5-14	61	19.1	4.1	56	17.9	3.8	66	17.6	4.5	66	15.0	4.6	41	11.5	2.9
15-34	59	18.4	2.1	62	19.8	2.2	105	27.9	3.8	126	28.6	4.5	96	27.0	3.3
35-44	64	20.0	4.3	58	18.5	3.8	66	17.6	4.4	76	17.2	5.1	63	17.7	4.2
45-54	31	9.7	2.5	42	13.4	3.3	47	12.5	3.6	62	14.1	4.7	62	17.5	4.6
55-64	20	6.3	2.5	31	9.9	3.7	29	7.7	3.3	30	6.8	3.4	27	7.6	3.0
65+	22	6.9	2.3	23	7.3	2.4	15	4.0	1.5	17	3.9	1.7	17	4.8	1.7
Unknown		0.0		1	0.3		1	0.3			0.0			0.0	
Race/Ethnicity															
Asian	34	10.6	2.7	20	6.4	1.6	36	9.6	2.8	33	7.5	2.6	21	5.9	1.6
Black	15	4.7	1.8	17	5.4	2.0	26	6.9	3.1	24	5.4	2.8	16	4.5	1.9
Hispanic	118	36.9	2.6	101	32.3	2.2	137	36.4	3.0	133	30.2	2.9	106	29.9	2.3
White	129	40.3	4.4	149	47.6	5.1	149	39.6	5.2	195	44.2	6.7	167	47.0	5.7
Other	13	4.1	46.7	4	1.3	14.2	7	1.9	24.5	13	2.9	62.4	5	1.4	20.3
Unknown	11	3.4		22	7.0		21	5.6		43	9.8		40	11.3	
SPA															
1	13	4.1	3.9	9	2.9	2.6	11	2.9	3.2	4	0.9	1.1	8	2.3	2.2
2	87	27.2	4.1	94	30.0	4.4	124	33.0	5.8	170	38.5	7.9	161	45.4	7.4
3	51	15.9	3.0	43	13.7	2.5	46	12.2	2.7	45	10.2	2.6	34	9.6	2.0
4	61	19.1	4.9	48	15.3	3.8	57	15.2	4.5	63	14.3	5.0	36	10.1	2.8
5	44	13.8	6.9	34	10.9	5.3	44	11.7	6.9	57	12.9	8.9	37	10.4	5.7
6	17	5.3	1.7	23	7.3	2.2	34	9.0	3.3	26	5.9	2.5	27	7.6	2.6
7	22	6.9	1.6	30	9.6	2.2	30	8.0	2.2	42	9.5	3.0	25	7.0	1.8
8	24	7.5	2.2	32	10.2	2.9	27	7.2	2.4	32	7.3	2.9	26	7.3	2.3
Unknown	1	0.3		0	0.0		3	0.8		2	0.5		1	0.3	

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

**Figure 1. Incidence Rates of Giardiasis
US, CA and LAC, 1999-2008**

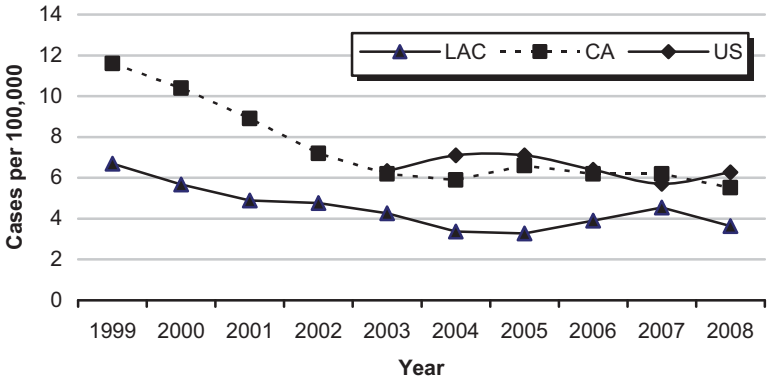


**Figure 2. Incidence Rates of Giardiasis by Age Group
LAC, 2008**

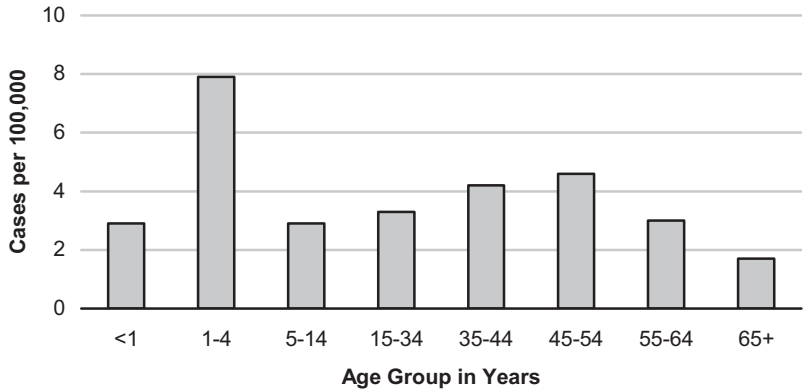


**Figure 3. Percent Cases of Giardiasis by Race/Ethnicity
LAC, 2008**

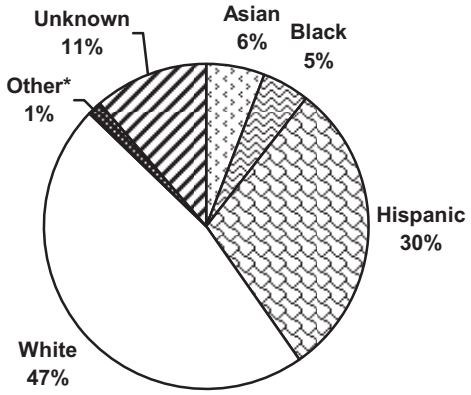
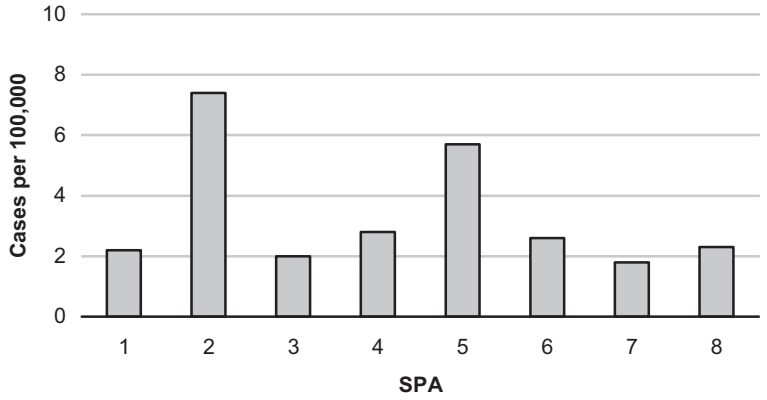


**Figure 4. Incidence Rates of Giardiasis by SPA
LAC, 2008**



* Other includes Native American and any additional racial/ethnic group that cannot be categorized as Asian, black, Hispanic, and white.

Figure 5. Reported Giardiasis Cases by Month of Onset
LAC, 2008

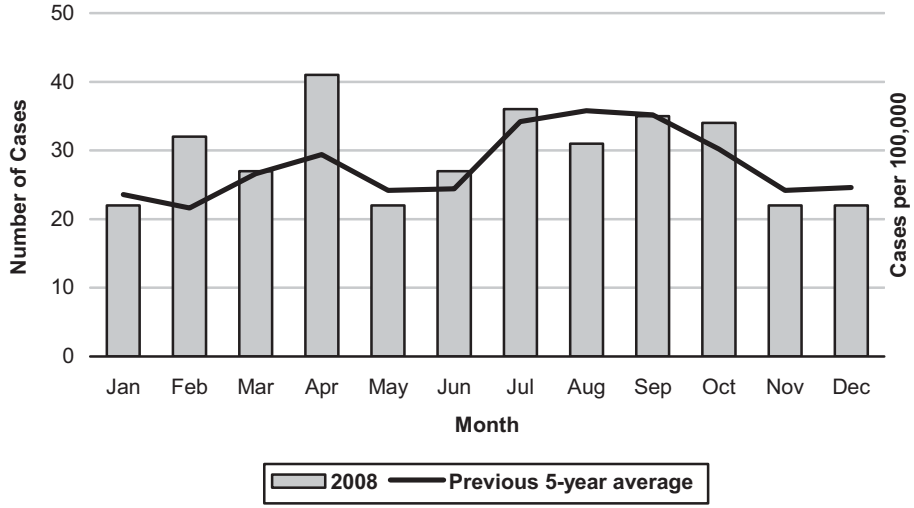
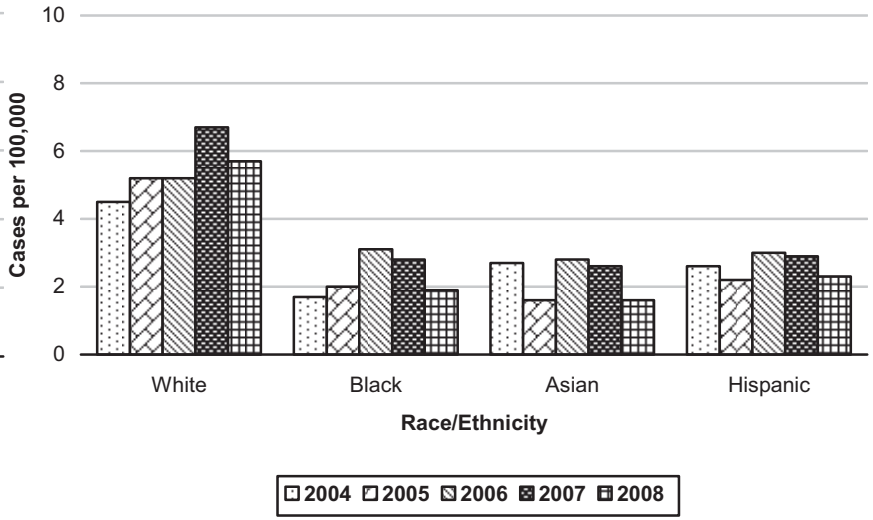
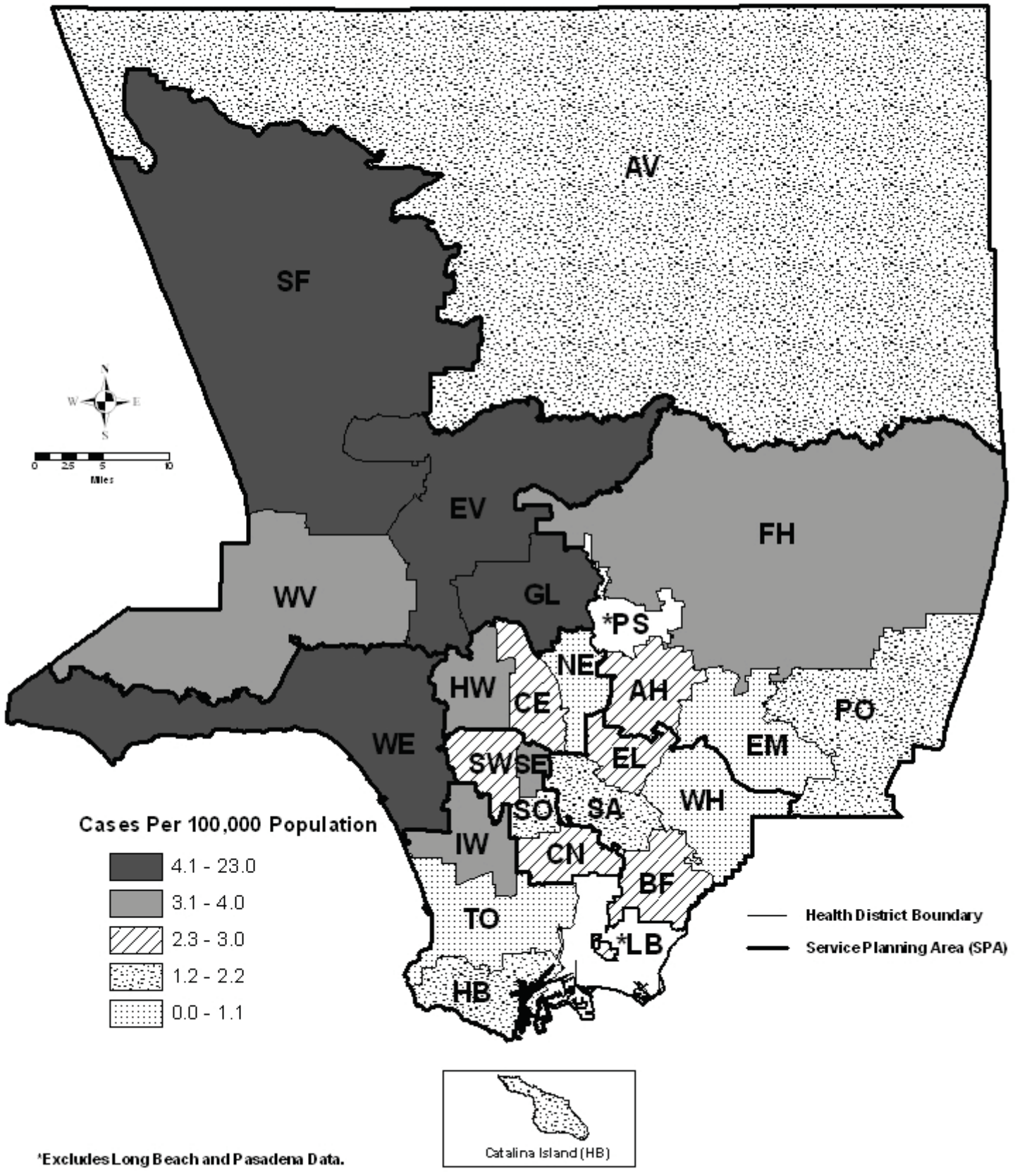


Figure 6. Giardiasis Incidence by Race/Ethnicity
LAC, 2004-2008



Map 5. Giardiasis
Rates by Health District, Los Angeles County, 2008*



*Excludes Long Beach and Pasadena Data.

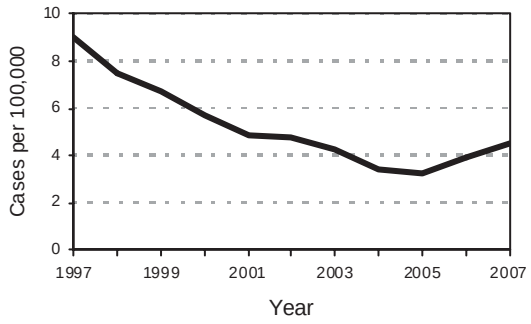
GIARDIASIS

CRUDE DATA	
Number of Cases	441
Annual Incidence[a]	
LA County	4.55
California	5.44[b]
United States	5.71[b]
Age at Diagnosis	
Mean	29
Median	28
Range	<1–84 years

[a] Cases per 100,000 population.

[b] Calculated from Final 2007 Reports of Nationally Notifiable Infectious Diseases issues of MMWR (57: 901, 903-913).

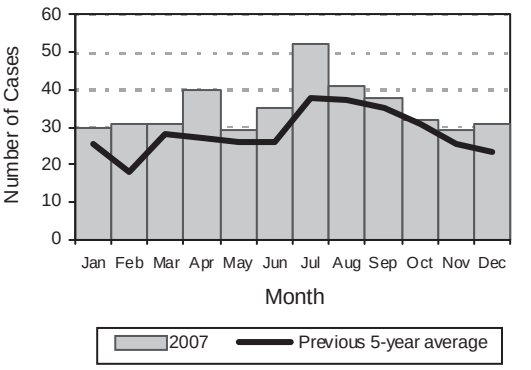
Figure 1
Giardiasis
Incidence Rates by Year of Onset
LAC, 1997–2007



DESCRIPTION

Giardiasis is an intestinal infection caused by the zoonotic protozoan parasite *Giardia intestinalis* (previously *G. lamblia*). *Giardia* cysts shed in animal or human feces may contaminate food or drinking water or be transferred on hands or fomites; recreational waters such as lakes and pools may also serve as vehicles of transmission. Incubation can range from 3-25 days or longer, but the median incubation time is 7-10 days. While often asymptomatic, symptoms can include sulfurous burps, chronic diarrhea, frequent loose and pale greasy stools, bloating, cramps, fatigue, and weight loss. Complications are rare but may include malabsorption of fats and fat-soluble vitamins. Children in day care represent a reservoir of disease in developed countries. There is no vaccine.

Figure 2
Giardiasis
Cases by Month of Onset
LAC, 2007



DISEASE ABSTRACT

- The incidence of reported giardiasis in Los Angeles County has increased steadily over two years, with a 17% increase from 2006 (3.9 per 100,000) to 2007 (4.55 per 100,000). This presents a reversal of the trend from the previous several years.
- Incidence tends to increase during summer months when high-risk activities such as recreational water exposure also increase.
- An increasing number of cases are immigrants and refugees from countries where giardiasis is endemic.

STRATIFIED DATA

Trends: Giardiasis incidence in LAC continues to increase in 2007, reversing the downward trend seen up to 2005 (Figure 1).

Seasonality: The number of cases typically increases during summer months when recreational exposure is more likely (i.e., swimming in infected pools, lakes, etc.) In 2007, the number of cases peaked in July (Figure 2).

Age: As in previous years, the highest age-specific incidence rate occurred among children aged 1-4 years (10.6 cases per 100,000) (Figure 3). Among adults, the incidence was highest in males aged 35-44 years (7.2 cases per 100,000); females aged 35-44 years had a much lower incidence (2.7 cases per 100,000).

Sex: Males are twice as likely to contract *Giardia* as females in 2007 (2.1:1). The incidence for men in 2007 (6.2 per 100,000) increased by 17% from 2006 (5.3 per 100,000), compared to the rate for women which increased by 21% (2.4 to 2.9 per 100,000).

Race/Ethnicity: Whites continue to have higher race/ethnicity specific incidence rates (6.7 per 100,000) than other races (Figure 4).

Location: SPA 5 (West Area) had the highest reported incidence rate (8.9 per 100,000) followed by SPA 2 (San Fernando Area, 7.9 per 100,000).

Risk Factors: Exposure and risk factor information was analyzed for an approximately 10% random sample of giardiasis cases in 2007 (n=48). The most frequently reported risk factors for this sample were having immigrated into the US in the previous six months (n=16, 33%), outdoor exposure (n=12, 26%), and travel outside the US (n=10, 21%). These risk factors are consistent with risk factor information for other waterborne parasitic diseases reported in LAC.

Figure 3
Giardiasis
Incidence Rates by Age Group
LAC 2007

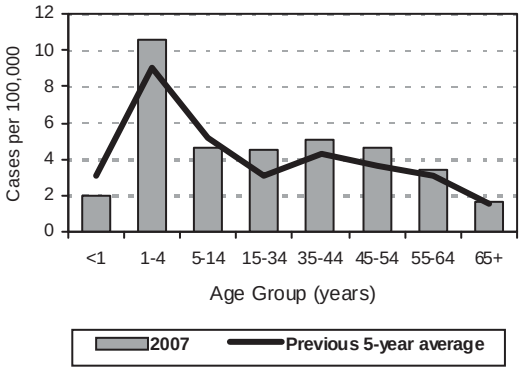
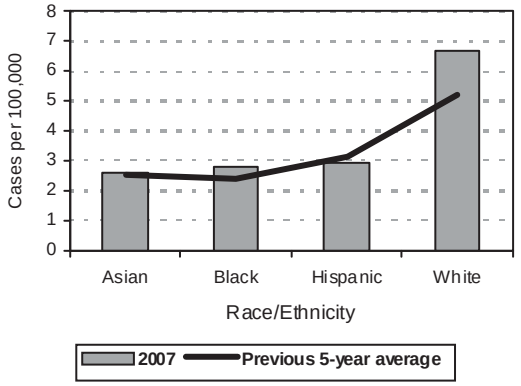


Figure 4
Giardiasis
Incidence Rates by Race/Ethnicity
LAC, 2007



COMMENTS

There has been a noteworthy increase in incidence of giardiasis over the past few years. While the specific reasons for this increase are unknown, several factors may have contributed, including increased exposure to recreational water (i.e., drinking lake and pool water, babies in diapers and individuals with diarrhea swimming in public facilities) as well an increase in travel outside the US. Another possible reason is the increase in electronic laboratory reporting. Also, there has been a noted increase in the number of cases that are immigrants or refugees from countries where giardiasis is endemic. A special studies report summarizing the analysis of the large increase in cases of giardiasis reported from one of the LAC health districts will be published in the annual report next year. There were no giardiasis outbreaks reported in 2007.

PREVENTION

To prevent transmission of giardiasis, individuals should wash their hands before eating, after using the toilet, and after changing diapers. Persons ill with diarrhea should avoid swimming. Fecal exposure during sexual activity should also be avoided.

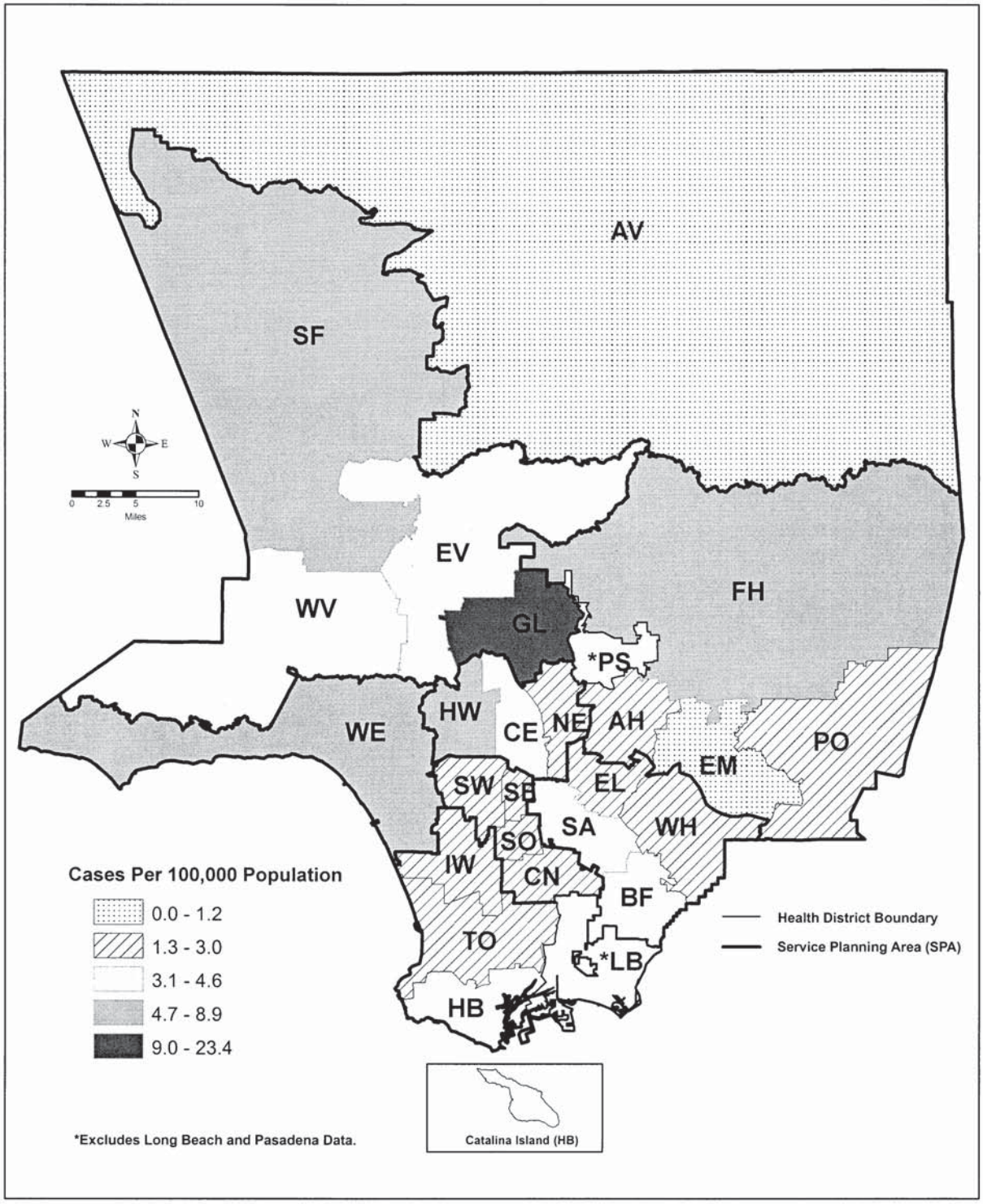
ADDITIONAL RESOURCES

Centers for Disease Control and Prevention (2000). Giardiasis surveillance--United States, 1992–1997. *Morbidity and Mortality Weekly Report*, 49(SS07), 1-13. Available at CDC Web site: http://www.cdc.gov/mmwr/preview/mmwrhtml/ss4907a1.htm

Centers for Disease Control and Prevention (CDC). Parasitic Disease Information Fact Sheet—Giardiasis. Available at CDC Web site: http://www.cdc.gov/ncidod/dpd/parasites/giardiasis/factsht_giardia.htm

Centers for Disease Control and Prevention (2006). Surveillance for foodborne-disease outbreaks—United States, 1998-2002. *Morbidity and Mortality Weekly Report*, 55(SS10), 1-34. Available at: CDC Web site: http://www.cdc.gov/mmwr/preview/mmwrhtml/ss5510a1.htm

Map 6. Giardiasis
Rates by Health District, Los Angeles County, 2007*



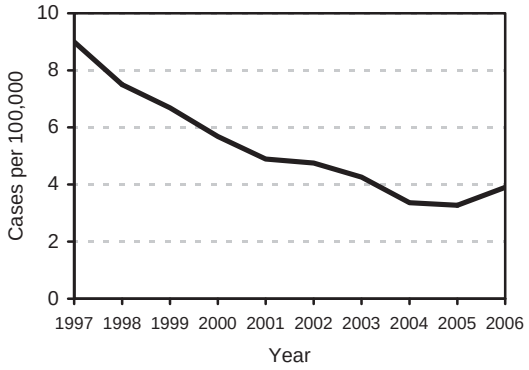
GIARDIASIS

CRUDE DATA	
Number of Cases	376
Annual Incidence[a]	
LA County	3.9
California	6.37[b]
United States	6.39[b]
Age at Diagnosis	
Mean	31
Median	30
Range	<1–89 years

[a] Cases per 100,000 population.

[b] Calculated from 2007 Summary of notifiable diseases issue of MMWR (56:853-863).

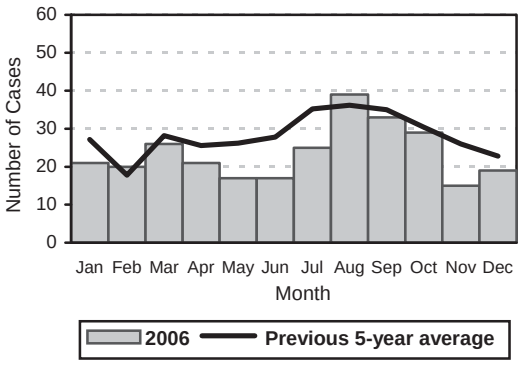
Figure 1
Giardiasis
Incidence Rates by Year of Onset
LAC, 1997–2006



DESCRIPTION

Giardiasis is an intestinal infection caused by the zoonotic protozoan parasite *Giardia intestinalis* (previously *G. lamblia*). *Giardia* cysts shed in animal or human feces may contaminate food or drinking water or be transferred on hands or fomites; recreational waters such as lakes and pools may also serve as vehicles of transmission. Incubation can range from 3-25 days or longer, but the median incubation time is 7-10 days. While usually asymptomatic, symptoms can include sulfurous burps, chronic diarrhea, frequent loose and pale greasy stools, bloating, cramps, fatigue, and weight loss. Complications are rare, but may include malabsorption of fats and fat-soluble vitamins. Children in day care represent a reservoir of disease in developed countries. There is no vaccine.

Figure 2
Giardiasis
Cases by Month of Onset
LAC, 2006



DISEASE ABSTRACT

- The incidence of reported Giardiasis in Los Angeles County has dropped dramatically over the past 10 years, and has remained low for the past 4 years.
- The incidence of Giardiasis in 2006 increase from 2005 (3.3 per 100,000) by 18%, primarily due to a 34% increase in the incidence rate for men (from 3.8 to 5.3 per 100,000).
- Incidence tends to increase during summer months when high-risk activities such as recreational water exposure also increase.

STRATIFIED DATA

Trends: Giardiasis incidence in LAC remains low in 2006 relative to the last 10 years, and the incidence has been reduced by over 50% since 1997 (Figure 1).

Seasonality: The number of cases typically increases during summer months when recreational exposure is more likely (i.e., swimming in infected pools, lakes, etc.) (Figure 2).

Age: As in previous years, the highest age-specific incidence rate occurred among children aged 1–4 years (8.1 cases per 100,000) (Figure 3).

Sex: Males are more then twice as likely to contract *Giardia* than females in 2006 (2.2:1), an increase from that seen in 2005 (1.4:1). The incidence for men in 2006 (5.3 per 100,000) increased from 2005 (3.8 per 100,000) by 34% where as the rate for woman dropped by 12% (2.7 to 2.4 per 100,000).

Race/Ethnicity: Whites continue to have higher race/ethnicity specific incidence rates (5.2 per 100,000) than other races (Figure 4).

Location: SPA 5 (West Area) had the highest reported incidence (6.9 per 100,000) followed by SPA 2 (San Fernando Area) (5.8 per 100,000).

Figure 3
Giardiasis
Incidence Rates by Age Group
LAC 2006

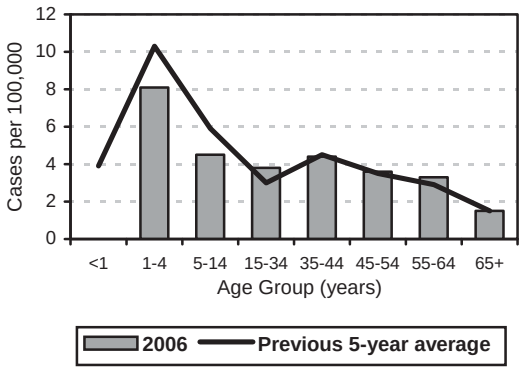
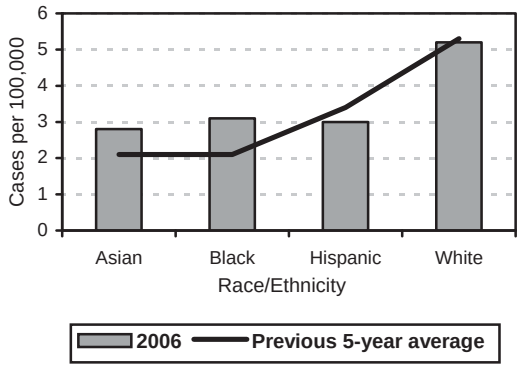


Figure 4
Giardiasis
Incidence Rates by Race/Ethnicity
LAC, 2006



COMMENTS

There has been a considerable decline in incidence of *Giardia* over the past decade. While the specific reasons for this decrease are unknown, several factors may have contributed including advances in food and water safety as well as improved education about safety regarding recreational water (i.e., avoiding drinking lake and pool water, keeping babies in diapers and individuals with diarrhea from swimming in public facilities). There was no outbreak reported in 2006.

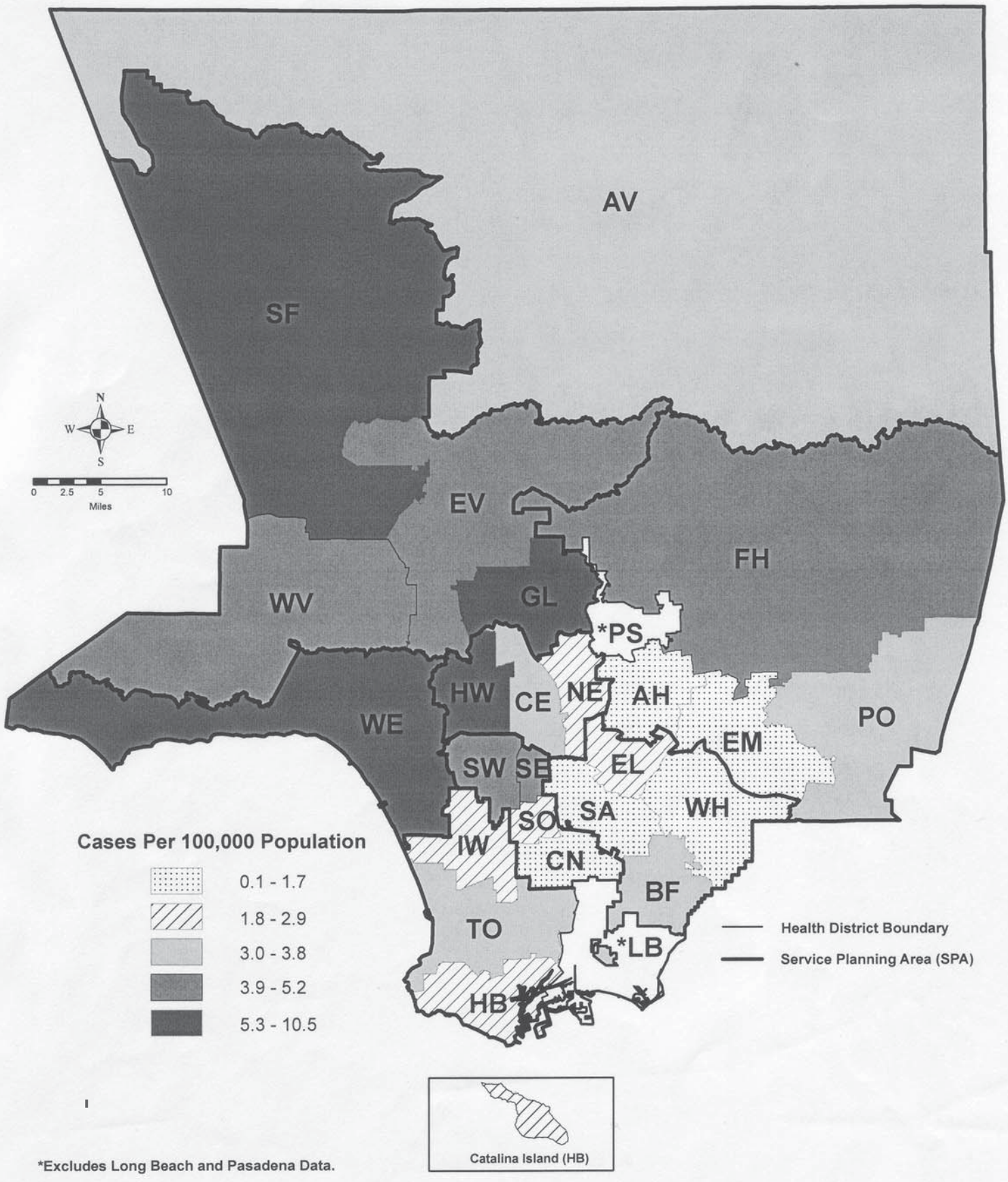
ADDITIONAL RESOURCES

CDC. Giardiasis surveillance--United States, 1992–1997. MMWR 2000; 49(SS07):1–13. Available at: www.cdc.gov/mmwr/preview/mmwrhtml/ss4907a1.htm

CDC. Parasitic Disease Information Fact Sheet—Giardiasis. Available at: www.cdc.gov/ncidod/dpd/parasites/giardiasis/factsht_giardia.htm

CDC. Surveillance for foodborne-disease outbreaks--United States, 1998—2002. MMWR 2006; 55(SS10):1-34. Available at: www.cdc.gov/mmwr/preview/mmwrhtml/ss5510a1.htm

Map 4. Giardiasis
Rates by Health District, Los Angeles County, 2006*



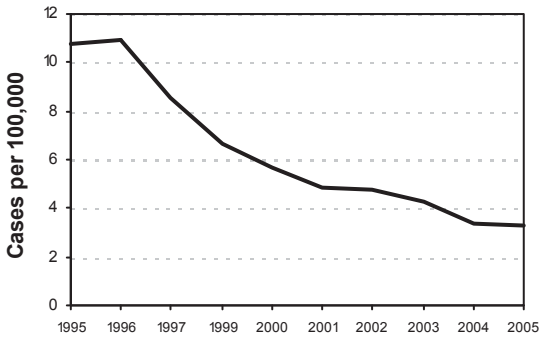
*Excludes Long Beach and Pasadena Data.

GIARDIASIS

CRUDE DATA	
Number of Cases	313
Annual Incidence[a]	
LA County	3.27
United States	7.10
Age at Diagnosis	
Mean	32
Median	34
Range	<1–89 years
Case Fatality	
LA County	0.0%
United States	N/A

[a] Cases per 100,000 population.

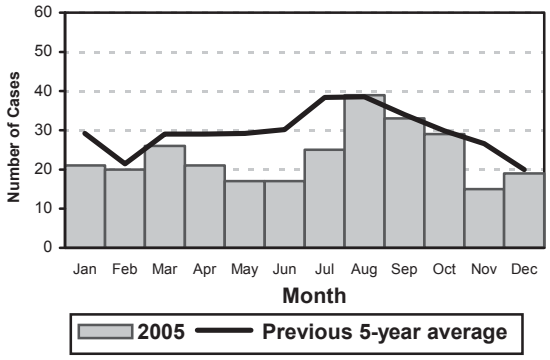
Figure 1
Giardiasis
Incidence Rates by Year of Onset
LAC, 1995–2005



DESCRIPTION

Giardiasis is an intestinal infection caused by the zoonotic protozoan parasite *Giardia intestinalis* (previously *G. lamblia*). *Giardia* cysts shed in animal or human feces may contaminate food or drinking water or be transferred on hands or fomites; recreational waters such as lakes and pools may also serve as vehicles of transmission. Incubation can range from 3–25 days or longer, but the median incubation time is 7–10 days. While usually asymptomatic, symptoms can include sulfurous burps, chronic diarrhea, frequent loose and pale greasy stools, bloating, cramps, fatigue, and weight loss. Complications are rare, but may include malabsorption of fats and fat-soluble vitamins. Children in day care represent a reservoir of disease in developed countries. There is no vaccine.

Figure 2
Giardiasis
Cases by Month of Onset
LAC, 2005



DISEASE ABSTRACT

- The incidence of *Giardia* in LAC has dropped annually over the past 10 years, and has reached an all-time low in 2005.
- Incidence tends to increase during summer months when high-risk activities such as recreational water exposure also increase.

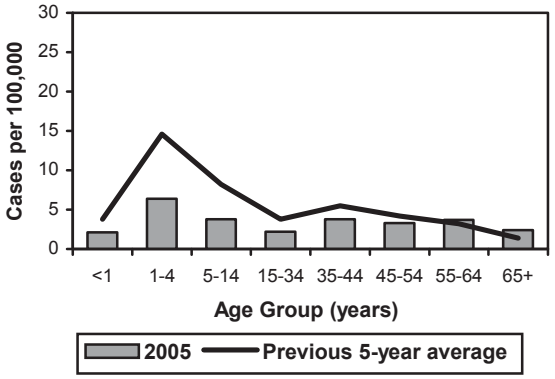
STRATIFIED DATA

Trends: Giardiasis incidence in LAC and has reached an all-time low during 2005; the number of cases reported decreased more than 70% over the past 10 years (1,161 cases reported in 1994, Figure 1). In fact, 2005 Giardiasis incidence in LAC is the lowest reported in the last 20 years.

Seasonality: The number of cases typically increases during summer months when recreational exposure is more likely (i.e., swimming in infected pools, lakes, etc.) (Figure 2).

Age: As in previous years, the highest age-specific incidence rate occurred among children aged 1–4 years (6.4 cases per 100,000); the 5–14 age group and the 35–44 age group followed with an incidence of about 3.8 cases per 100,000 each (Figure 3).

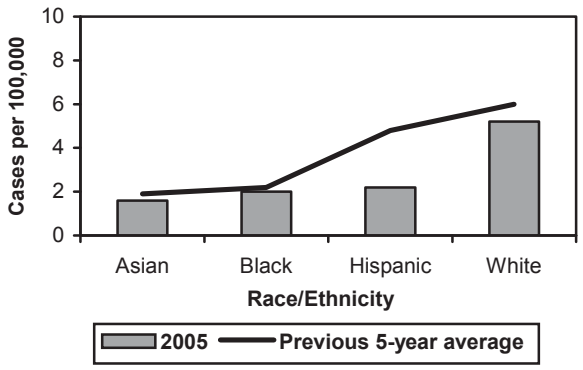
Figure 3
Giardiasis
Incidence Rates by Age Group
LAC, 2005



Sex: Males continue to be more likely to contract *Giardia* than females (1.4:1).

Race/Ethnicity: Whites continue to have higher race/ethnicity specific incidence rates than other races. Compared to the previous five-year average, the incidence for Hispanics has decreased 37% and the incidence for Blacks has decreased 5% (Figure 4); Hispanics continue to have a higher race/ethnicity specific incidence than Blacks. The race/ethnicity specific incidence rate for Asians decreased (9%) compared to previous years.

Figure 4
Giardiasis
Incidence Rates by Race/Ethnicity
LAC, 2005



Location: Of the eight SPAs across LAC, three had rates that were higher than the overall county mean rate for this disease: SPA 2, San Fernando area (4.9 per 100,000); SPA 4 Metro area (3.9 per 100,000); and SPA 5 West (5.2 per 100,000). The rate in SPA 1 Antelope Valley dropped substantially from 3.9 to 0.9 cases per 100,000 population.

COMMENTS

There has been a considerable decline in incidence of *Giardia* over the past decade. While the specific reasons for this decrease are unknown, several factors may have contributed including advances in food and water safety as well as improved education about safety regarding recreational water (i.e., avoiding drinking lake and pool water, keeping babies in diapers and individuals with diarrhea from swimming in public facilities).

There was one outbreak reported in 2005, where 10 women became ill sharing a common water source at a gym. Please see 2005 special report for more details.

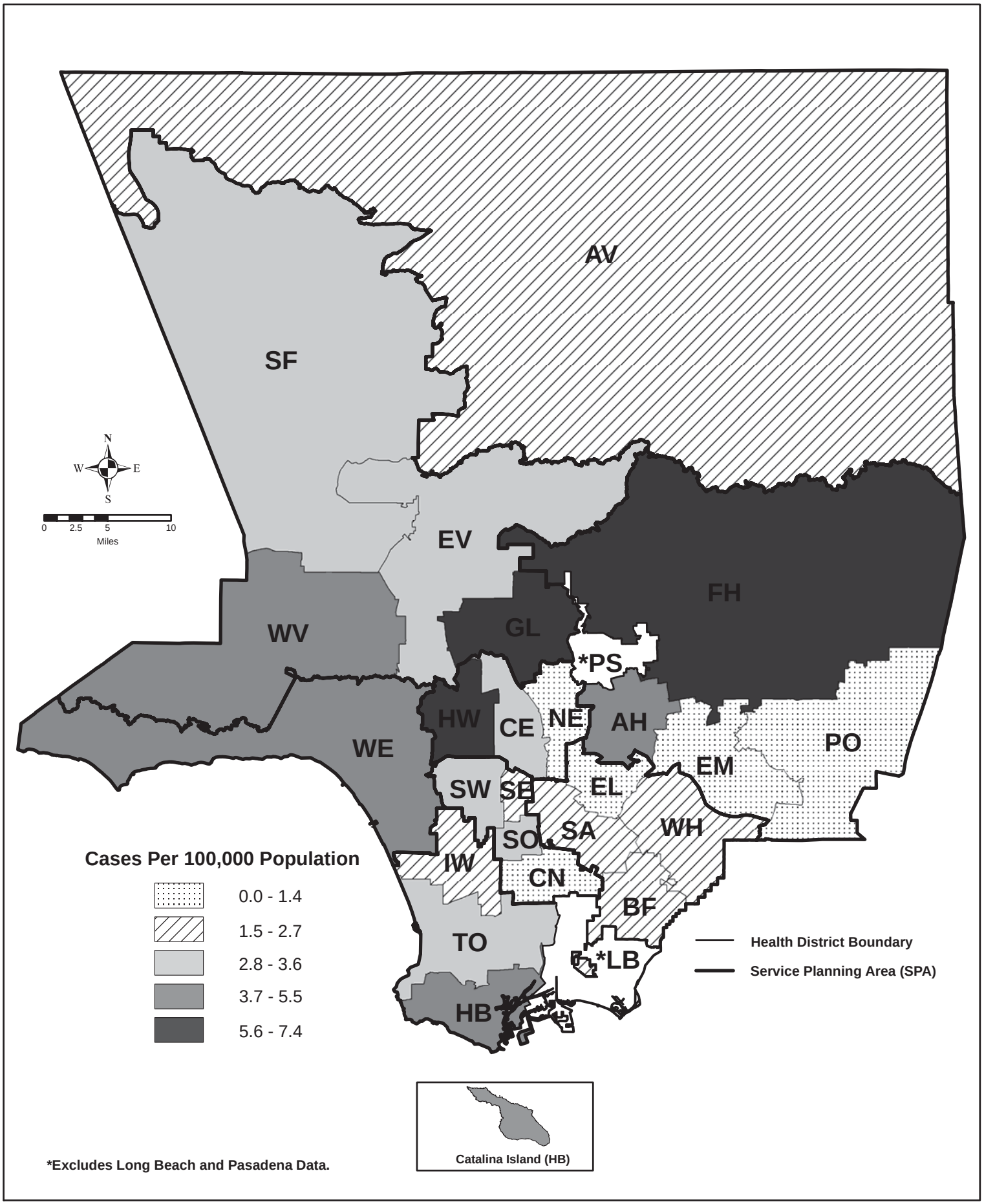
ADDITIONAL RESOURCES

CDC. Giardiasis Surveillance—United States, 1992–1997. MMWR 2000; 49(SS07); 1–13. Available at: www.cdc.gov/epo/mwr/preview/mmwrhtml/ss4907a1.htm

CDC. Parasitic Disease Information Fact Sheet—Giardiasis. Available at: www.cdc.gov/ncidod/dpd/parasities/giardiasis/factsht_giardia.htm

CDC. Surveillance for Waterborne Disease Outbreaks—United States, 1997–1998. MMWR 2000; 49(SS04); 1–35. Available at: www.cdc.gov/epo/mmwr/review/mmwrhtml/ss4904a1.htm

Map 6. Giardiasis
Rates by Health District, Los Angeles County, 2005*



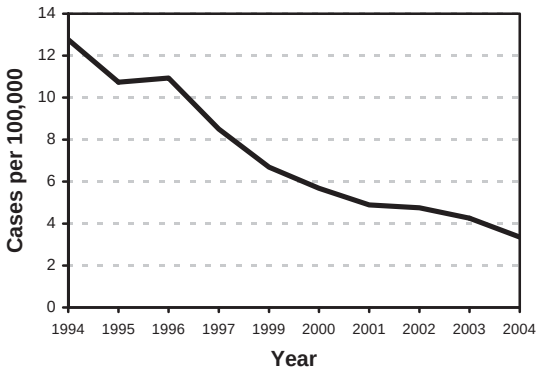
*Excludes Long Beach and Pasadena Data.

GIARDIASIS

CRUDE DATA	
Number of Cases	320
Annual Incidence[a]	
LA County	3.36
United States	7.10
Age at Diagnosis	
Mean	27
Median	24
Range	<1–89 years
Case Fatality	
LA County	0.0%
United States	N/A

[a] Cases per 100,000 population.

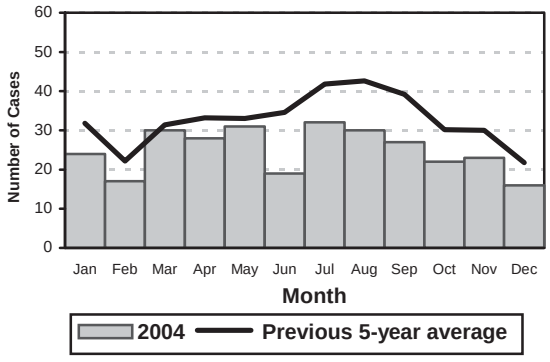
Figure 1
Giardiasis
Incidence Rates by Year of Onset
LAC, 1994–2004



DESCRIPTION

Giardiasis is an intestinal infection caused by the zoonotic protozoan parasite *Giardia intestinalis* (previously *G. lamblia*). *Giardia* cysts shed in animal or human feces may contaminate food or drinking water or be transferred on hands or fomites; recreational waters such as lakes and pools may also serve as vehicles of transmission. Incubation can range from 3-25 days or longer, but the median incubation time is 7-10 days. While usually asymptomatic, symptoms can include sulfurous burps, chronic diarrhea, frequent loose and pale greasy stools, bloating, cramps, fatigue, and weight loss. Complications are rare, but may include malabsorption of fats and fat-soluble vitamins. Children in day care represent a reservoir of disease in developed countries. There is no vaccine.

Figure 2
Giardiasis
Cases by Month of Onset
LAC, 2004



DISEASE ABSTRACT

- The incidence of *Giardia* in Los Angeles County has dropped annually over the past 10 years, and has reached an all-time low in 2004.
- Incidence tends to increase during summer months when high-risk activities such as recreational water exposure also increase.

STRATIFIED DATA

Trends: Giardiasis incidence in LAC and has reached an all-time low during 2004; the number of cases reported decreased more than 72% over the past 10 years (1,161 cases reported in 1994, Figure 1). In fact, 2004 Giardiasis incidence in LAC is the lowest reported in the last 20 years.

Seasonality: The number of cases typically increases during summer months when recreational exposure is more likely (i.e., swimming in infected pools, lakes, etc.) (Figure 2).

Age: As in previous years, the highest age-specific incidence rate occurred among children aged 1–4 years (10.0 cases per 100,000); the children aged <1 group, the 5–14 age group and the 35–44 age group followed with an incidence of about 4.1 cases per 100,000 each (Figure 3).

Sex: Males continue to be more likely to contract *Giardia* than females (1.7:1).

Race/Ethnicity: Whites continue to have higher race/ethnicity specific incidence rates than other races. Compared to the previous five year average, the incidence for Hispanics has decreased 46% and the incidence for Blacks has decreased 23% (Figure 4); Hispanics continue to have a higher race/ethnicity specific incidence than Blacks. The race/ethnicity specific incidence rate for Asians increased (42%) compared to previous years.

Location: Of the eight SPAs across LAC, four had rates that were higher than the overall county mean rate for this disease: SPA 1, Antelope Valley area (3.9 per 100,000); SPA 2, San Fernando area (4.1 per 100,000); SPA 4 Metro area (4.9 per 100,000); and SPA 5 West (6.8 per 100,000). The rate in SPA 8 South Bay dropped substantially from 3.8 to 2.2 cases per 100,000 population.

Figure 3
Giardiasis
Incidence Rates by Age Group
LAC, 2004

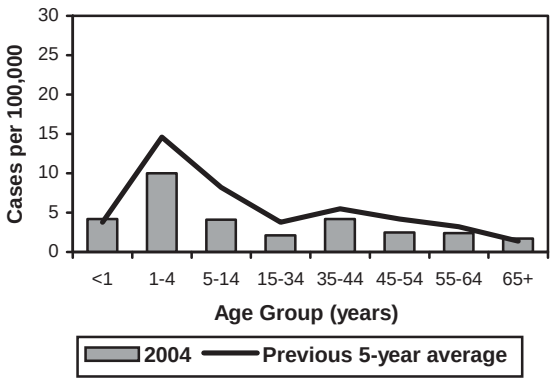
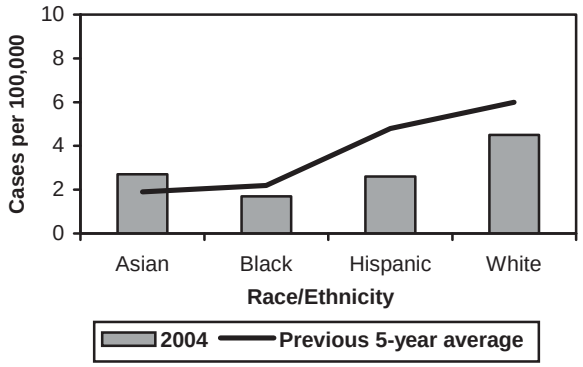


Figure 4
Giardiasis
Incidence Rates by Race/Ethnicity
LAC, 2004



COMMENTS

There has been a considerable decline in incidence of *Giardia* over the past decade. While the specific reasons for this decrease are unknown, several factors may have contributed including advances in food and water safety as well as improved education about safety regarding recreational water (i.e., avoiding drinking lake and pool water, keeping babies in diapers and individuals with diarrhea from swimming in public facilities).

There was one outbreak reported in 2004, three children were ill at a daycare center.

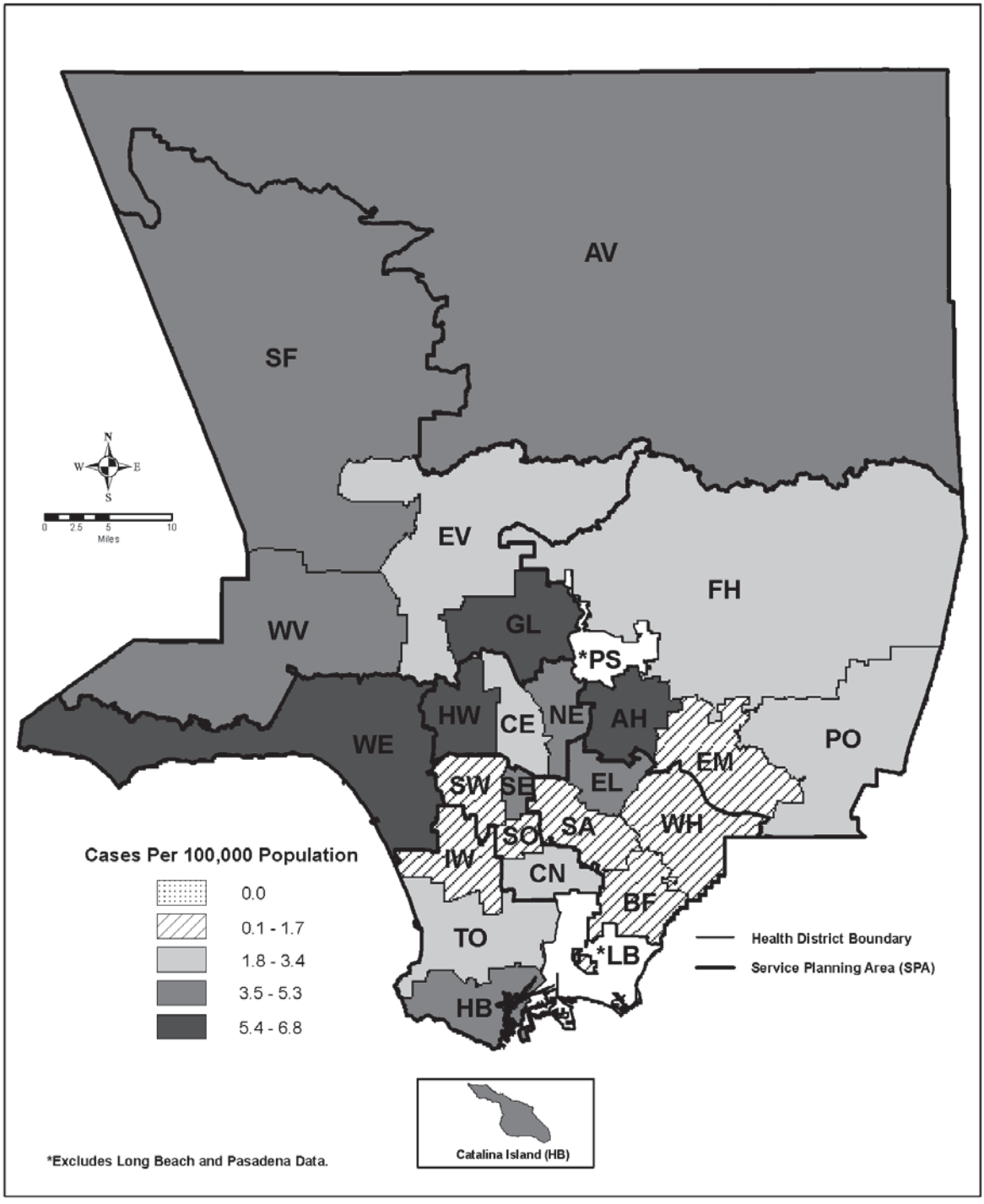
ADDITIONAL RESOURCES

CDC. Giardiasis Surveillance—United States, 1992–1997. MMWR 2000; 49(SS07); 1–13. Available at: www.cdc.gov/epo/mwr/preview/mmwrhtml/ss4907a1.htm

CDC. Parasitic Disease Information Fact Sheet—Giardiasis. Available at: www.cdc.gov/ncidod/dpd/parasities/giardiasis/factsht_giardia.htm

CDC. Surveillance for Waterborne Disease Outbreaks—United States, 1997–1998. MMWR 2000; 49(SS04); 1–35. Available at: www.cdc.gov/epo/mmwr/review/mmwrhtml/ss4904a1.htm

Map 6. Giardiasis
Rates by Health District, Los Angeles County, 2004*



GIARDIASIS

CRUDE DATA	
Number of Cases	401
Annual Incidence[a]	
LA County	4.27
United States	6.33
Age at Diagnosis	
Mean	26.7
Median	25
Range	<1–88 years
Case Fatality	
LA County	0.0%
United States	N/A

[a] Cases per 100,000 population.

Figure 1
Giardiasis
Incidence Rates by Year of Onset
LAC, 1994–2003

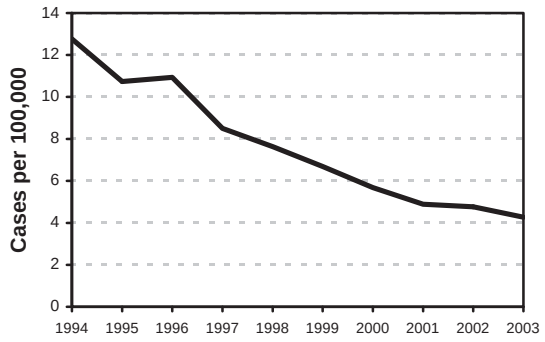
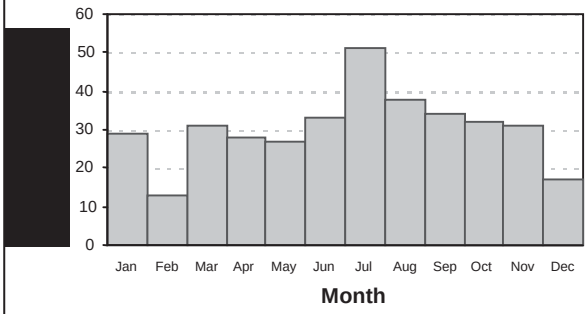


Figure 2
Giardiasis
Cases by Month of Onset
LAC, 2003 (N=364)



DESCRIPTION

Giardiasis is an intestinal infection caused by the zoonotic protozoan parasite *Giardia intestinalis* (previously *G. lamblia*). *Giardia* cysts shed in animal or human feces may contaminate food or drinking water or be transferred on hands or fomites; recreational waters such as lakes and pools may also serve as vehicles of transmission. Incubation can range from 3-25 days or longer, but the median incubation time is 7-10 days. While usually asymptomatic, symptoms can include sulfurous burps, chronic diarrhea, frequent loose and pale greasy stools, bloating, cramps, fatigue, and weight loss. Complications are rare, but may include malabsorption of fats and fat-soluble vitamins. Children in day care represent a reservoir of disease in developed countries. There is no vaccine.

DISEASE ABSTRACT

- The incidence of *Giardia* in LAC has dropped annually over the past 10 years, and has reached an all-time low in 2003.
- Incidence tends to increase during summer months when high-risk activities such as recreational water exposure also increase.

STRATIFIED DATA

Trends: Giardiasis incidence in LAC has dropped annually in the last 10 years, and has reached an all-time low during 2003; the number of cases reported decreased more than 67% over the past 10 years (1,104 cases reported in 1994, Figure 1).

Seasonality: The number of cases typically increases during summer months when recreational exposure (i.e., swimming in infected pools, lakes, etc.) is more likely (Figure 2).

Age: As in previous years, the highest age-specific incidence rate occurred among children aged 1–4 years (8.2 cases per 100,000), followed by children aged 5-14 (6.1 cases per 100,000).

Sex: Males continue to be more likely to contract *Giardia* than females (1.5:1).

Race/Ethnicity: Whites continue to have higher race/ethnicity specific incidence rates than other races. Compared to previous years, the incidence for Hispanics has decreased while the incidence for Blacks has increased (Figure 3); Hispanics have a slightly higher race/ethnicity specific incidence than Blacks, and Asians have the lowest race/ethnicity specific incidence.

Location: Of the eight SPAs across LAC, three had rates that were higher than the overall county mean rate for this disease: SPA 2, San Fernando area (5.0 per 100,000), SPA 4 Metro area (4.9 per 100,000), and SPA 5 West (9.4 per 100,000). The rate in SPA 8 South Bay dropped substantially from 5.3 to 3.8 cases per 100,000 population.

Figure 3
Giardiasis
Incidence Rates by Age Group
LAC, 2003

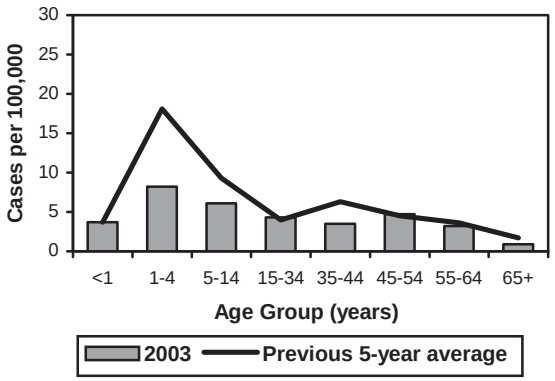
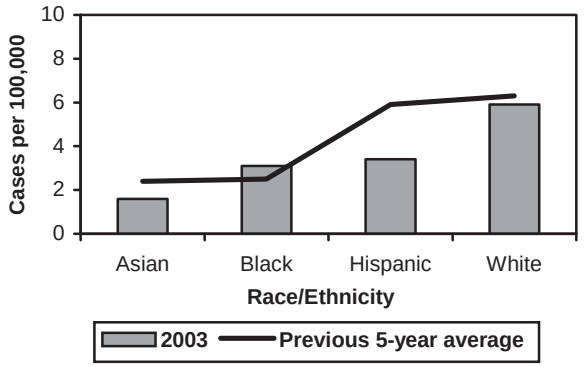


Figure 4
Giardiasis
Incidence Rates by Race/Ethnicity
LAC, 2003



COMMENTS

There has been a considerable decline in incidence of *Giardia* over the past decade. While the specific reasons for this decrease are unknown, several factors may have contributed including advances in food and water safety as well as improved education about safety regarding recreational water (i.e., avoiding drinking lake and pool water, keeping babies in diapers and individuals with diarrhea from swimming in public facilities).

There were no outbreaks reported in 2003.

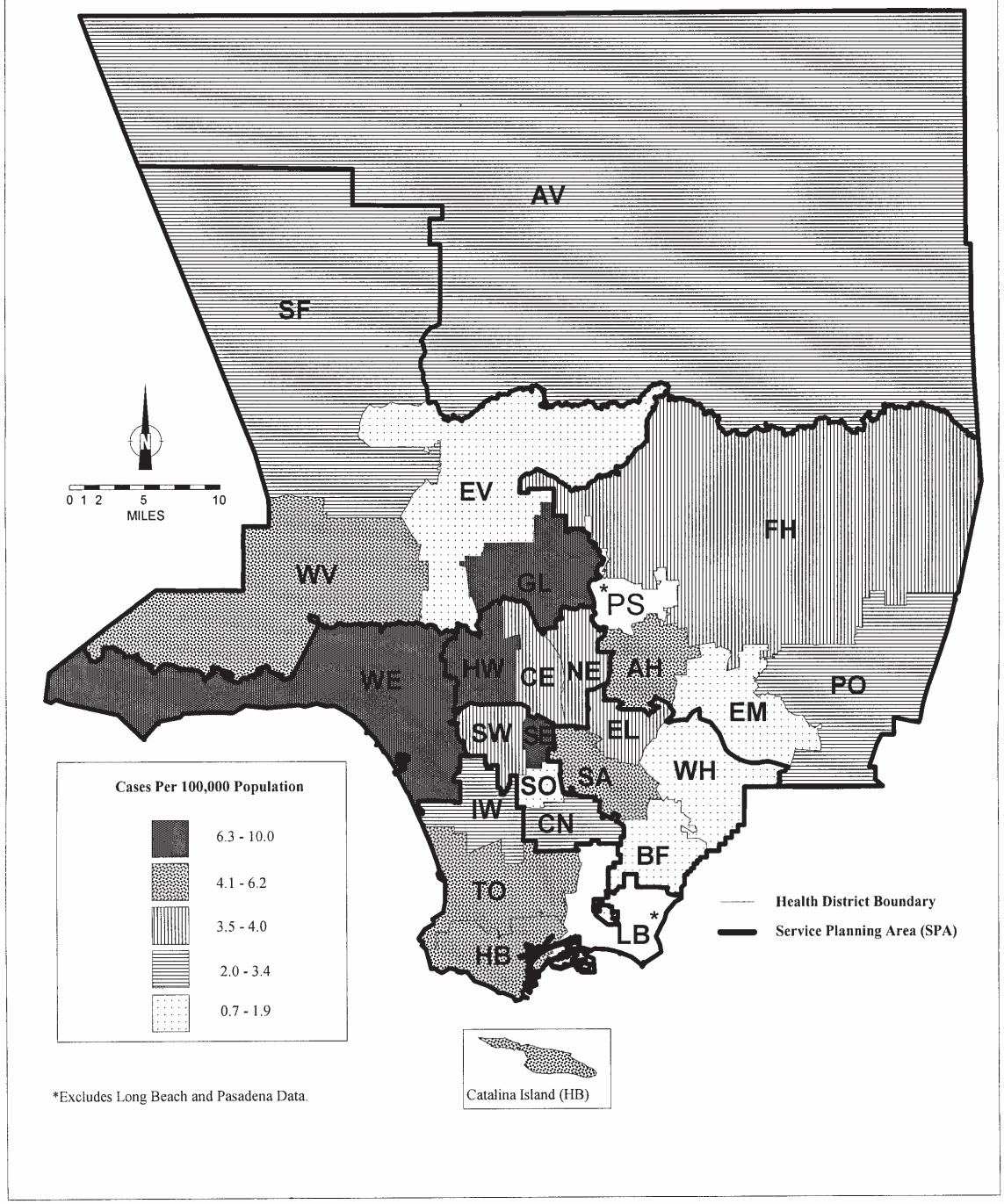
ADDITIONAL RESOURCES

CDC. Giardiasis Surveillance—United States, 1992–1997. MMWR 2000; 49(SS07): 1–13. Available at: www.cdc.gov/epo/mwr/preview/mmwrhtml/ss4907a1.htm

CDC. Parasitic Disease Information Fact Sheet—Giardiasis. Available at: www.cdc.gov/ncidod/dpd/parasities/giardiasis/factsht_giardia.htm

CDC. Surveillance for Waterborne Disease Outbreaks—United States, 1997–1998. MMWR 2000; 49(SS04): 1–35. Available at: www.cdc.gov/epo/mmwr/review/mmwrhtml/ss4904a1.htm

MAP 5. Giardiasis
Rates by Health District, Los Angeles County, 2003*



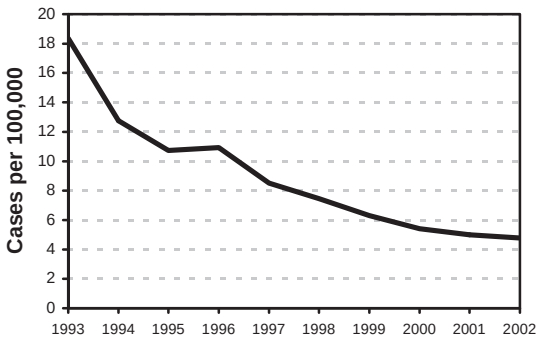
*Excludes Long Beach and Pasadena Data.

GIARDIASIS

CRUDE DATA	
Number of Cases	441
Annual Incidence[a]	
LA County	4.8
United States	N/A
Age at Diagnosis	
Mean	25
Median	22
Range	<1–85 years
Case Fatality	
LA County	0.0%
United States	N/A

[a] Cases per 100,000 population.

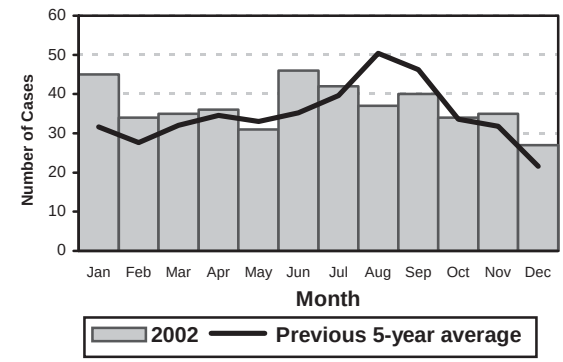
Figure 1
Giardiasis
Incidence Rates by Year
LAC, 1993–2002



DESCRIPTION

Giardiasis is an intestinal infection caused by the zoonotic protozoan parasite *Giardia intestinalis* (previously *G. lamblia*). *Giardia* cysts shed in animal or human feces may contaminate food or drinking water or be transferred on hands or fomites; recreational waters such as lakes and pools may also serve as vehicles of transmission. While usually asymptomatic, symptoms can include chronic diarrhea, bloating, cramps, fatigue, and weight loss. Complications are rare, but may include malabsorption of fats and fat-soluble vitamins. Children in day care represent a reservoir of disease in developed countries. There is no vaccine.

Figure 2
Giardiasis
Cases by Month of Onset
LAC, 2002



DISEASE ABSTRACT

- The incidence of *Giardia* has reached an all-time low; more than 74% fewer cases were reported in 2002 (N=441) as compared to 1993 (N=1,563).
- Incidence tends to increase during summer months when high-risk activities such as recreational water exposure also increase.

STRATIFIED DATA

Trends: Giardiasis incidence in LAC reached an all-time low during 2002; the number of cases reported decreased more than 74% over the past 10 years (1,563 cases reported in 1993, Figure 1).

Seasonality: While the number of cases typically increases during summer months when recreational exposure is more likely (i.e., swimming in infected pools, lakes, etc.), there were only minor seasonal changes during 2002 (Figure 2).

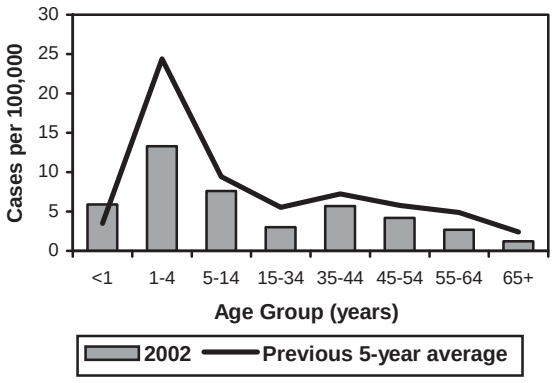
Age: As in previous years, the highest age-specific incidence rate occurred among children aged 1–4 years (13.3 cases per 100,00).

Sex: Males continue to be more likely to contract amebiasis than females (1.4:1).

Race/Ethnicity: Latinos and Whites continue to have higher race/ethnicity specific incidence rates than Asians and Blacks.

Location: Of the eight SPAs across LAC, four had rates that were higher than the overall county mean rate for this disease: SPA 2, San Fernando area (5.9 per 100,000); SPA 4 Metro area (5.5 per 100,000); SPA 5 West (7.2 per 100,000); and lastly, SPA 8, South Bay (5.3 per 100,000).

Figure 3
Giardiasis
Incidence Rates by Age Group
LAC, 2002

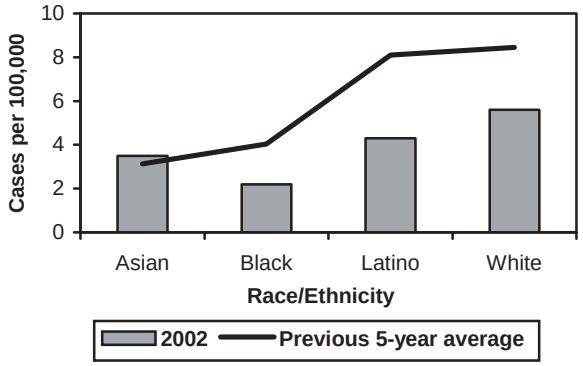


COMMENTS

There has been a considerable decline in incidence of *Giardia* over the past decade. While the specific reasons for this decrease is unknown, several factors may have contributed including advances in food and water safety as well as improved education about safety regarding recreational water (i.e., avoiding drinking lake and pool water, keeping babies in diapers and individuals with diarrhea from swimming in public facilities).

There were no outbreaks reported in 2002.

Figure 4
Giardiasis
Incidence Rates by Race/Ethnicity
LAC, 2002



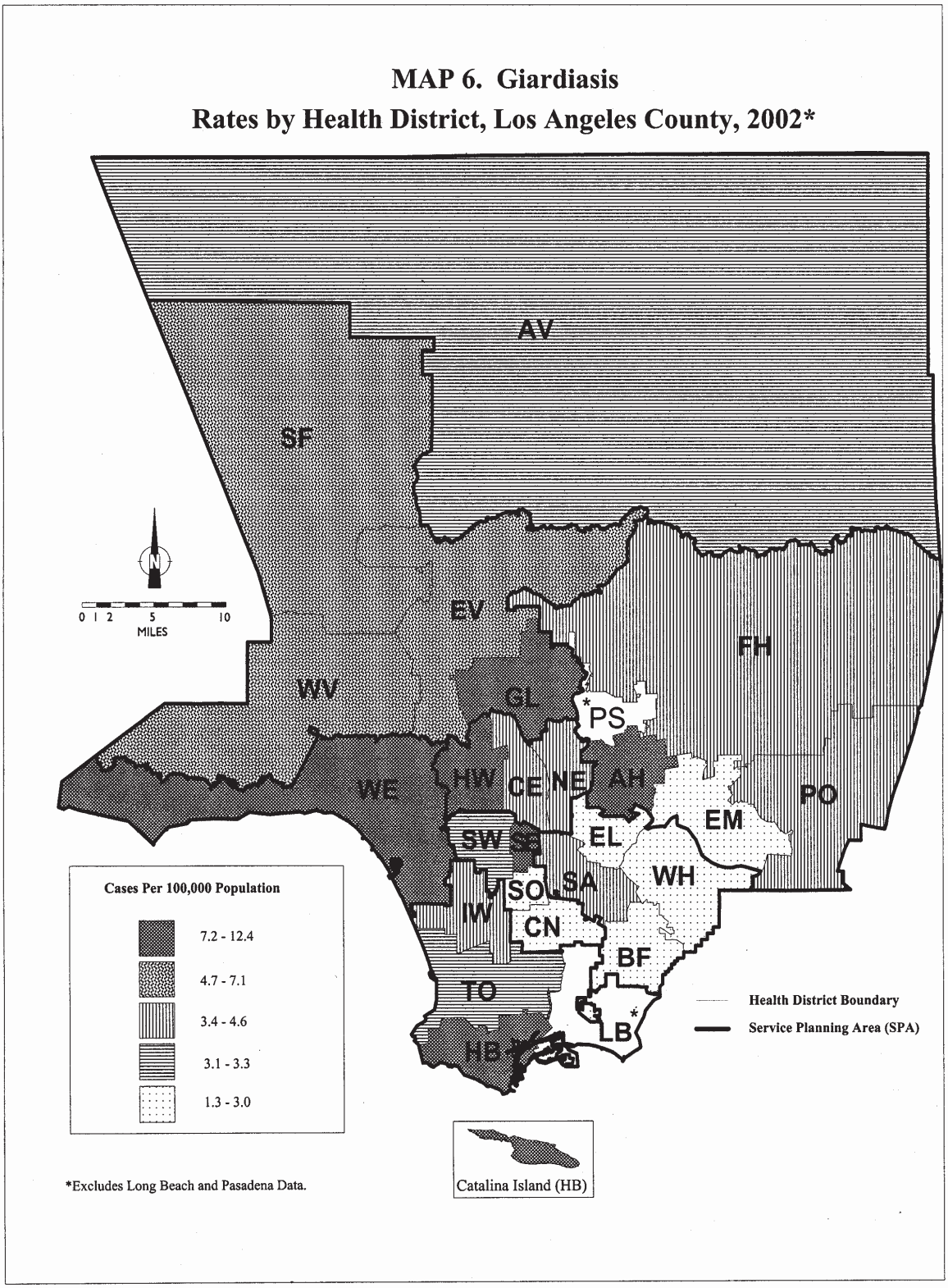
ADDITIONAL RESOURCES

CDC. Giardiasis Surveillance—United States, 1992–1997. MMWR 2000; 49(SS07);1–13. Available at: www.cdc.gov/epo/mwr/preview/mmwrhtml/ss4907a1.htm

CDC. Parasitic Disease Information Fact Sheet—Giardiasis. Available at: www.cdc.gov/ncidod/dpd/parasities/giardiasis/factsht_giardia.htm

CDC. Surveillance for Waterborne Disease Outbreaks—United States, 1997–1998. MMWR 2000; 49(SS04);1–35. Available at: www.cdc.gov/epo/mmwr/review/mmwrhtml/ss4904a1.htm

MAP 6. Giardiasis
Rates by Health District, Los Angeles County, 2002*



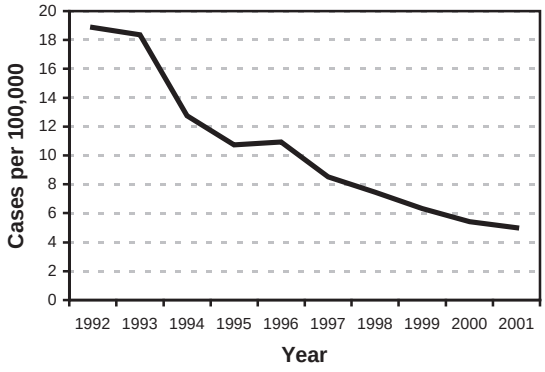
*Excludes Long Beach and Pasadena Data.

GIARDIASIS

CRUDE DATA	
Number of Cases	446
Annual Incidence[a]	
LA County	5.0
United States	N/A
Age at Diagnosis	
Mean	24
Median	19
Range	0-86 years
Case Fatality	
LA County	0.0%
United States	N/A

[a] Cases per 100,000 population.

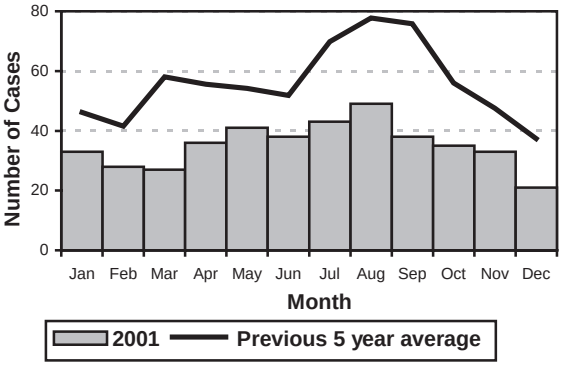
Figure 1
Giardiasis
Incidence Rates by Year of Onset
LAC, 1992 - 2001



DESCRIPTION

Giardiasis is an intestinal infection caused by the zoonotic protozoan parasite *Giardia intestinalis* (previously *G. lamblia*). Giardia cysts shed in animal or human feces may contaminate food or drinking water or be transferred on hands or fomites; recreational waters such as lakes and pools may also serve as vehicles of transmission. The disease is usually asymptomatic. Symptoms can include chronic diarrhea, bloating, cramps, fatigue, and weight loss. Complications are rare, but may include malabsorption of fats and fat-soluble vitamins. Children in day care represent a reservoir of disease in developed countries. There is no vaccine.

Figure 2
Giardiasis
Cases by Month of Onset
LAC, 2001



DISEASE ABSTRACT

- Chiefly a pediatric disease; rates fell in all categories analyzed.
- Significant numbers of cases occur among adults.
- Risk factors are not summarized routinely.

STRATIFIED DATA

Trends: The annual rate and number of reported cases have fallen for more than ten years, with the lowest rate on record recorded in 2001 (Figure 1). Rates fell in all age group, sex, and race/ethnic categories.

Seasonality: Rates are typically higher in the summer, consistent with increased recreational exposure to pools, lakes, and similar water venues (Figure 2).

Age: The age-specific incidence of giardiasis was greatest in children aged 1-4 years (14 per 100,000) followed by children aged 5-14 years (8.2 per 100,000) (Figure 3). Among Whites, there was no age difference between male and female cases; however, among Latino cases females were significantly older than males (p=0.02).

Sex: The male-to-female rate ratio was 1.3:1.

Race/Ethnicity: As in past years, rates for Latinos and Whites were substantially higher than those of Asians and Blacks (Figure 4). White cases were more likely to be male, compared to Latino cases.

Location: The rate reported by Glendale District (16.2 per 100,000) was nearly twice as great as the next highest district rate, West District, at 8.3 per 100,000. Glendale District cases did not differ by age group or sex from all other districts, but were more likely to be White, a reflection of that district's makeup.

Figure 3
Giardiasis
Incidence Rates by Age Group
LAC, 2001

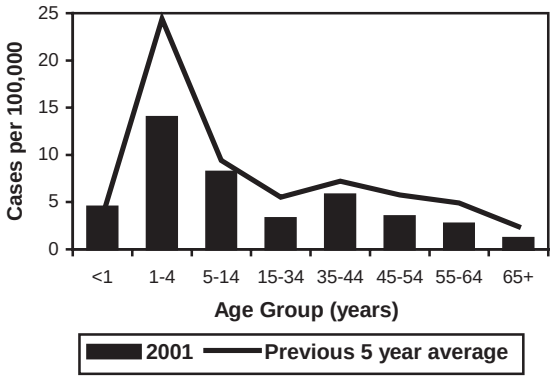
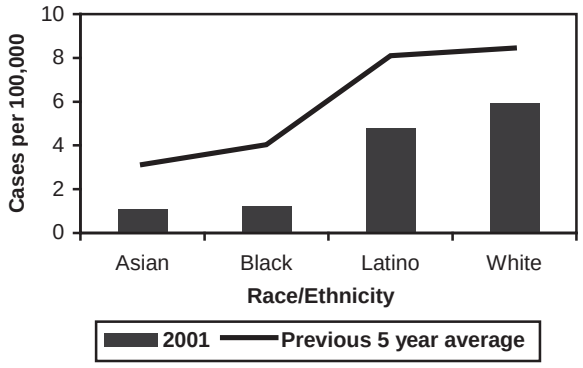


Figure 4
Giardiasis
Incidence Rates by Race/Ethnicity
LAC, 2001



COMMENTS

There were no outbreaks reported.

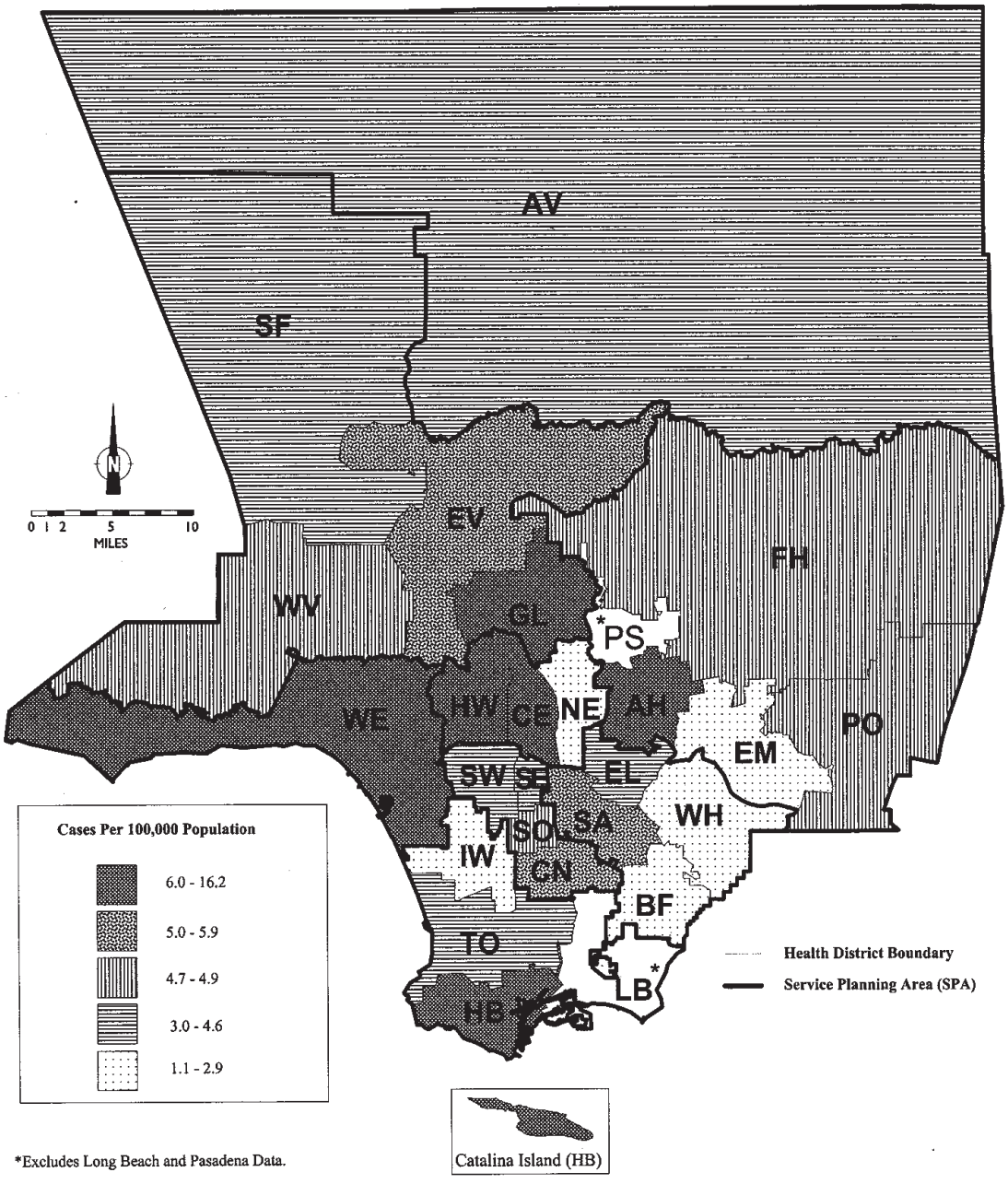
ADDITIONAL RESOURCES

Giardiasis Surveillance — United States, 1992 – 1997. MMWR August 11, 2000/49(SS07);1-13. Available at:
www.cdc.gov/epo/mwr/preview/mmwrhtml/ss4907a1.htm

CDC Parasitic Disease Information. Fact Sheet – Giardiasis. Available at:
www.cdc.gov/ncidod/dpd/parasities/giardiasis/factsht_giardia.htm

Surveillance for Waterborne-Disease Outbreaks -- United States, 1997-1998. MMWR May 26, 2000/49(SS04):1-35. Available at: www.cdc.gov/epo/mmwr/review/mmwrhtml/ss4904a1.htm

MAP 3. Giardiasis
Rates by Health District, Los Angeles County, 2001*



*Excludes Long Beach and Pasadena Data.