

Short communication

Incidence rates of selected infectious diseases in the most populated counties, United States, 2004

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Abstracts: This report compares rates of selected nationally notifiable diseases in the 100 most populated counties to overall U.S. rates. We analyzed data from the 2004 National Notifiable Diseases Surveillance System (NNDSS) maintained by CDC. Notifiable diseases reports, collected by the states and U.S. territories, are transmitted to CDC in an agreement with the Council of State and Territorial Epidemiologists. By using the Bureau of Census population estimates, we calculated and compared rates. Rates were higher in the most populated counties for six of the nine conditions examined in comparison with national rates: chlamydia (rate ratio:1.2), gonorrhea (rate ratio: 1.2), syphilis (rate ratio: 1.7), hepatitis A (rate ratio: 1.2), hepatitis B (rate ratio: 1.1), and shigellosis (rate ratio: 1.2). The incidence rate for Lyme disease was 40% lower among populated counties (rate ratio: 0.6). Incidence of infectious diseases is different in the most populated counties, and prevention programs should consider local occurrence.

Key words: infectious diseases, National Notifiable Infectious Diseases

INTRODUCTION

The Centers for Disease Control and Prevention (CDC) routinely publishes finalized data on national notifiable infectious diseases reported voluntarily by U.S. states and territories. Every year, >1.5 million cases of notifiable diseases are reported, but <10 disease conditions account for >85% of incidence [1]. Previous epidemiologic reports indicated higher incidence rates for selected diseases in large cities, counties, and metropolitan areas [2, 3], but rates have not been reported in tandem for the most frequently reported infections, and national rates often mask substantial variations at the community level.

Formal quantification of the magnitude of infectious diseases and assessment of patterns are necessary steps in the development of prevention efforts, and basic epidemiological studies are essential in this regard. As part of the CDC's Assessment Initiative program, states are funded to assess their progress toward meeting the *Healthy People* 2010 objectives [4], and data from the National Notifiable Diseases Surveillance System (NNDSS) is useful in evaluating infectious diseases occurrence and trends. However, subpopulation analysis of the notifiable diseases has been

limited; to maintain confidentiality of cases. This report compares rates of selected nationally notifiable diseases in the 100 most populated counties to overall U.S. rates. The 100 most populated counties were selected because 2 of every 5 people living in the United States reside in these counties and policy makers should be informed about where best to direct limited resources in addressing infectious diseases. Despite a greater potential for disease burden in these counties, this information has not been published in the literature and underscores the utility of public health surveillance data and the importance of implementing prevention and control measures at the local or county level.

METHODS

NNDSS is a public health surveillance system that collects data on cases of notifiable conditions. The system is operated by CDC, in conjunction with the Council of State and Territorial Epidemiologists (CSTE), which determines reportable conditions, protocol for formatting and transmitting data, and standard case definitions. The decision to make a disease nationally notifiable is based on its public health importance and its preventability [5]. Data for 2004

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were reviewed for selected conditions, which are reportable in all 50 states, the District of Columbia, and New York City; data from U.S. territories were excluded. Data were analyzed for cases reported directly through NNDSS. Data for primary and secondary syphilis were combined. The number of cases and rates¹ per 100,000 population were determined by county population [6] for nine nationally notifiable diseases. Demographic data have been published for notifiable diseases [1] and are not provided in this report. Data on socioeconomic status of individuals reported through the surveillance system were not available (e.g., education, income, and occupation) and we are unable to relate findings to these indicators.

The United States includes 3,142 counties [7]. The largest county in the nation is Los Angeles County, California, with >9 million residents and the smallest county is Loving County, Texas with <200 residents. An estimated 124 million residents live in the most populated 100 counties [6], corresponding to 42% of the U.S. population. Population estimates of the 100 most populated counties ranged from an estimated 569, 148 to an estimated 9.9 million.

RESULTS

The nine nationally notifiable infectious diseases examined accounted for approximately 1.4 million cases in 2004; 680,215 cases were reported in the 100 most populated counties (Table I). In comparison with the national data, rates were higher among residents of the most populated counties for six conditions: chlamydia, gonorrhea, syphilis, hepatitis A, hepatitis B, and shigellosis. The rate for Lyme disease was 40% lower among residents of the

most populated counties; salmonellosis was 10% lower; and pertussis was 27% lower. The higher rates determined in the most populated counties were also reflected when data were examined for the combined remaining counties.

Table II presents data on notifiable diseases in the most populated counties. The aim of this Table is to show distribution and identify counties where incidence rates are higher. This Table is different from Table I where information on the remaining counties and national data are compared. Regarding chlamydia, 54 counties exceeded national rate; for syphilis, 50 counties exceeded national rate; for gonorrhea, 48 counties exceeded national rate; for hepatitis A, 45 counties exceeded national rate; hepatitis B, 43 counties exceeded national rate; for shigellosis, 33 counties exceeded national rate; for salmonellosis, 31 counties exceeded national rate; for pertussis, 21 counties exceeded national rate; and 19 exceeded national rate for Lyme disease.

The following counties recorded the highest rates for the nine conditions: hepatitis A (Suffolk County, Massachusetts, rate: 17.7/100,000 population); hepatitis B (Bexar County, Texas, rate: 7.5/100,000 population); chlamydia (Philadelphia County, Pennsylvania, rate: 1137.5/100,000 population); gonorrhea (Baltimore City, Maryland, rate: 618.9/100,000 population); Lyme disease (Westchester County, New York, rate: 79.2/100,000 population); pertussis (Milwaukee County, Wisconsin, rate: 129.5/100,000 population); salmonellosis (Duval County, Florida, rate: 43.7/100,000 population); shigellosis (Bexar County, Texas, rate: 51.9/100,000 population) and syphilis (San Francisco, California, rate: 46.4/100,000 population).

None of the counties examined have met the *HP 2010* target for Gonorrhea reduction (19/100,000); 90 counties have met the Hepatitis A target (4.5/100,000); 11 counties

Table I. Distribution of selected notifiable diseases by population, US, 2004.

Diseases	Most Populous Counties (100)		Remaining Counties		National	
	Number	Rate* (95% CI) [‡]	Number	Rate* (95% CI) [‡]	Number	Rate* (95% CI) [‡]
Chlamydia**	463,696	373.3 (372.3-374.4)	465,766	276.6 (278.8-280.4)	929,462	319.6 (319.0-320.3)
Gonorrhea	168,119	135.4 (134.7-136.0)	162,013	97.2 (96.8-97.7)	330,132	113.5 (113.1-113.9)
Hepatitis A	2,980	2.4 (2.3-2.5)	2,703	1.6 (1.6-1.7)	5,683	2.0 (1.9-2.0)
Hepatitis B	2,826	2.3 (2.3-2.4)	3,386	2.0 (2.0-2.1)	6,212	2.1 (2.1-2.2)
Lyme disease	5,152	4.1 (4.0-4.3)	14,652	8.8 (8.7-8.9)	19,804	6.8 (6.7-6.9)
Pertussis	8,111	6.5 (6.4-6.7)	17,716	10.6 (10.5-10.8)	25,827	8.9 (8.8-9.0)
Salmonellosis	16,301	13.1 (12.9-13.3)	25,896	15.5 (15.4-15.7)	42,197	14.5 (14.4-14.7)
Shigellosis	7,174	5.8 (5.6-5.9)	7,453	4.5 (4.4-4.6)	14,627	5.0 (5.0-5.1)
Syphilis	5,856	4.7 (4.6-4.8)	2,124	1.3 (1.2-1.3)	7,980	2.7 (2.7-2.8)
Total	680,215		701,709		1,381,924	

* per 100,000 population.

[‡] = Confidence Interval.

** Chlamydia trachomatis infection.

¹ Rates are not calculated for conditions with <10 cases.

Table II: Number and rates* of selected infectious diseases and population estimates for the 100 largest U.S. counties based on July 1, 2004 population estimates, US, 2004.

Rank	Geographic Area	Pop Est 1-Jul-04	Hepatitis A		Hepatitis B		Chlamydia**		Gonorrhea		Lyme Disease		Pertussis		Salmonellosis		Shigellosis		Syphilis	
			No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
			1	Los Angeles County, CA	9937739	332	3.3	86	0.9	41000	412.6	10342	104.1	2		175	1.8	1245	12.5	593
2	Cook County, IL	5327777	74	1.4	61	1.1	27761	521.1	13244	248.6	23	0.4	491	9.2	661	12.4	224	4.2	340	6.4
3	Harris County, TX	3644285	132	3.6	163	4.5	12061	331.0	4670	128.1	6		68	1.9	421	11.6	323	8.9	211	5.8
4	Maricopa County, AZ	3501001	120	3.4	180	5.1	10599	302.7	2943	84.1	10	0.3	222	6.3	361	10.3	229	6.5	106	3.0
5	Orange County, CA	2987591	39	1.3	29	1.0	5202	174.1	761	25.5	0		107	3.6	305	10.2	124	4.2	45	1.5
6	San Diego County, CA	2931714	81	2.8	12	0.4	10876	371.0	2379	81.1	4		114	3.9	452	15.4	193	6.6	138	4.7
7	Kings County, NY	2475290	115	4.6	51	2.1	12872	520.0	4227	170.8	60	2.4	47	1.9	347	14.0	197	8.0	134	5.4
8	Miami-Dade County, FL	2363600	48	2.0	41	1.7	4933	208.7	1891	80.0	5		9		462	19.5	182	7.7	213	9.0
9	Dallas County, TX	2294706	42	1.8	69	3.0	8539	372.1	4158	181.2	2		251	10.9	167	7.3	201	8.8	184	8.0
10	Queens County, NY	2237216	88	3.9	35	1.6	6177	276.1	1713	76.6	42	1.9	0		349	15.6	96	4.3	89	4.0
11	Wayne County, MI	2016202	35	1.7	146	7.2	15289	758.3	7715	382.7	1		33	1.6	142	7.0	32	1.6	142	7.0
12	San Bernardino County, CA	1921131	20	1.0	14	0.7	7608	396.0	1919	99.9	0		29	1.5	193	10.0	79	4.1	21	1.1
13	Riverside County, CA	1871950	45	2.4	33	1.8	3305	176.6	712	38.0	1		22	1.2	121	6.5	77	4.1	82	4.4
14	King County, WA	1777143	17	1.0	22	1.2	5334	300.1	1265	71.2	9		190	10.7	236	13.3	56	3.2	123	6.9
15	Broward County, FL	1754893	29	1.7	65	3.7	4550	259.3	1911	107.5	0		1		311	17.7	170	9.7	183	10.4
16	Santa Clara County, CA	1685188	26	1.5	7		5545	329.0	1038	61.6	0		59	3.5	246	14.6	78	4.6	56	3.3
17	Clark County, NV	1650671	7		59	3.6	5065	306.8	2645	160.2	1		16	1.0	129	7.8	64	3.9	38	2.3
18	Tarrant County, TX	1588088	40	2.5	28	1.8	4689	295.3	2248	141.6	5		61	3.8	92	5.8	165	10.4	66	4.2
19	New York County, NY	1562723	87	5.6	49	3.1	6407	410.0	2505	160.3	189	12.1	80	5.1	229	14.7	66	4.2	328	21.0
20	Bexar County, TX	1493965	24	1.6	112	7.5	7001	468.6	2060	137.9	6		55	3.7	170	11.4	775	51.9	107	7.2
21	Suffolk County, NY	1475488	9		3		2031	137.6	543	36.8	561	38.0	69	4.7	200	13.6	41	2.8	15	1.0
22	Philadelphia County, PA	1470151	39	2.7	60	4.1	16723	1137.5	5206	354.1	182	12.4	109	7.4	261	17.8	31	2.1	72	4.9
23	Middlesex County, MA	1464628	115	7.9	30	2.0	1757	120.0	353	24.1	246	16.8	451	30.8	293	20.0	53	3.6	18	1.2
24	Alameda County, CA	1455235	24	1.6	2		5249	360.7	1786	122.7	0		88	6.0	206	14.2	54	3.7	48	3.3
25	Bronx County, NY	1365536	51	3.7	24	1.8	8242	603.6	2394	175.3	28	2.1	52	3.8	290	21.2	53	3.9	63	4.6
26	Sacramento County, CA	1352445	34	2.5	9		6227	460.4	1955	144.6	2		85	6.3	149	11.0	34	2.5	18	1.3
27	Cuyahoga County, OH	1351009	2		25	1.9	6960	515.2	4103	303.7	4		21	1.6	163	12.1	30	2.2	37	2.7
28	Nassau County, NY	1339641	28	2.1	9		1903	142.1	407	30.4	59	4.4	46	3.4	231	17.2	35	2.6	20	1.5
29	Allegheny County, PA	1250867	15	1.2	46	3.7	4253	340.0	1529	122.2	27	2.2	112	9.0	142	11.4	9		21	1.7
30	Palm Beach County, FL	1243230	19	1.5	48	3.9	2298	184.8	820	66.0	3		4		275	22.1	75	6.0	38	3.1
31	Oakland County, MI	1213339	15	1.2	11	0.9	4155	342.4	1180	97.3	2		25	2.1	99	8.2	15	1.2	7	
32	Hennepin County, MN	1120897	16	1.4	17	1.5	4084	364.4	1450	129.4	151	13.5	358	31.9	133	11.9	27	2.4	18	1.6
33	Hillsborough County, FL	1101261	24	2.2	57	5.2	2964	269.1	1197	108.7	1		3		233	21.2	49	4.4	47	4.3
34	Franklin County, OH	1088971	8		4		4535	416.4	2812	258.2	9		200	18.4	82	7.5	34	3.1	105	9.6
35	St. Louis County, MO	1009235	7		15	1.5	4005	396.8	1843	182.6	1		28	2.8	105	10.4	56	5.5	8	
36	Contra Costa County, CA	1009144	25	2.5	12	1.2	2726	270.1	736	72.9	0		10	1.0	123	12.2	34	3.4	12	1.2

Rank	Geographic Area	Pop Est	Hepatitis A		Hepatitis B		Chlamydia**		Gonorrhea		Lyme Disease		Pertussis		Salmonellosis		Shigellosis		Syphilis	
			1-Jul-04																	
			No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
37	Fairfax County, VA	1003157	28	2.8	6		855	85.2	180	17.9	1		67	6.7	188	18.7	43	4.3	8	
38	Orange County, FL	989926	16	1.6	47	4.7	3407	344.2	1622	163.9	3		6		176	17.8	64	6.5	66	6.7
39	Westchester County, NY	942444	24	2.5	4		1649	175.0	434	46.1	746	79.2	81	8.6	136	14.4	23	2.4	21	2.2
40	Erie County, NY	936318	3		9		4090	436.8	1435	153.3	1		72	7.7	95	10.1	22	2.3	9	
41	Salt Lake County, UT	935295	21	2.2	30	3.2	2099	224.4	360	38.5	1		188	20.1	87	9.3	19	2.0	5	
42	DuPage County, IL	928718	19	2.0	7		948	102.1	210	22.6	9		127	13.7	122	13.1	15	1.6	6	
43	Pinellas County, FL	928537	11	1.2	48	5.2	2425	261.2	1382	148.8	4		15	1.6	170	18.3	19	2.0	37	4.0
44	Milwaukee County, WI	928018	19	2.0	14	1.5	9526	1026.5	3244	349.6	0		1202	129.5	114	12.3	69	7.4	18	1.9
45	Montgomery County, MD	921690	14	1.5	4		1163	126.2	175	19.0	38	4.1	21	2.3	91	9.9	48	5.2	13	1.4
46	Shelby County, TN	908175	8		38	4.2	7535	829.7	3277	360.8	1		4		96	10.6	35	3.9	87	9.6
47	Pima County, AZ	907059	52	5.7	36	4.0	2209	243.5	442	48.7	2		32	3.5	141	15.5	79	8.7	38	4.2
48	Fairfield County, CT	903291	21	2.3	26	2.9	1740	192.6	704	77.9	330	36.5	17	1.9	154	17.0	30	3.3	19	2.1
49	Bergen County, NJ	902998	7		23	2.5	712	78.8	189	20.9	86	9.5	37	4.1	115	12.7	21	2.3	11	1.2
50	Honolulu County, HI	899593	21	2.3	9		4347	483.2	1033	114.8	0		24	2.7	280	31.1	36	4.0	7	
51	Hartford County, CT	875602	25	2.9	26	3.0	2730	311.8	838	95.7	73	8.3	3		91	10.4	17	1.9	11	1.3
52	Travis County, TX	869868	16	1.8	36	4.1	3383	388.9	1249	143.6	27	3.1	125	14.4	113	13.0	157	18.0	55	6.3
53	Fresno County, CA	866772	13	1.5	11	1.3	4855	560.1	1146	132.2	0		17	2.0	103	11.9	49	5.7	4	
54	Marion County, IN	863596	6		25	2.9	6124	709.1	3350	387.9	3		18	2.1	65	7.5	168	19.5	29	3.4
55	New Haven County, CT	845694	7		30	3.5	2756	325.9	808	95.5	102	12.1	12	1.4	97	11.5	11	1.3	11	1.3
56	Prince George's County, MD	842967	6		27	3.2	4975	550.9	1913	226.9	63	7.5	18	2.1	48	5.7	26	3.1	66	7.8
57	Macomb County, MI	822660	11	1.3	16	1.9	1172	142.5	263	32.0	0		10	1.2	63	7.7	2		3	
58	Duval County, FL	821338	6		32	3.9	4396	535.2	2035	247.8	2		19	2.3	359	43.7	23	2.8	70	8.5
59	Hamilton County, OH	814611	3		13	1.6	4574	561.5	2739	336.2	0		130	16.0	81	9.9	20	2.5	18	2.2
60	Fulton County, GA	814438	21	2.6	16	2.0	5388	661.6	2765	339.5	0		3		137	16.8	75	9.2	283	34.7
61	Ventura County, CA	797699	19	2.4	31	3.9	1552	194.8	135	16.9	2		27	3.4	70	8.8	31	3.9	8	
62	Essex County, NJ	796684	25	3.1	47	5.9	4092	513.6	2115	265.5	86	10.8	7		83	9.8	24	3.0	43	5.4
63	Middlesex County, NJ	785095	29	3.7	12	1.5	1225	156.0	305	38.8	66	8.4	24	3.1	88	11.2	24	3.1	4	
64	Baltimore County, MD	780821	26	3.3	53	6.8	2403	307.8	756	96.8	23	2.9	26	3.3	120	15.4	21	2.7	35	4.5
65	Worcester County, MA	779488	79	10.1	21	2.7	1213	155.6	201	25.8	144	18.5	247	31.7	100	12.8	13	1.7	4	
66	Montgomery County, PA	774029	8		9		936	120.9	290	37.5	514	66.4	43	5.6	142	18.3	8		8	
67	Mecklenburg County, NC	771617	20	2.6	32	4.1	3186	412.9	2019	261.7	10	1.3	13	1.7	117	15.2	42	5.4	40	5.2
68	Pierce County, WA	745411	2		4		2687	360.5	452	60.6	2		68	9.1	69	9.3	12	1.6	7	
69	San Francisco County, CA	744230	20	2.7	1		3618	486.1	2142	287.8	1		26	3.5	121	2.8	114	15.3	345	46.4
70	Essex County, MA	738984	34	4.6	27	3.7	1242	168.1	219	29.6	164	22.2	128	17.3	131	17.7	23	3.1	3	
71	Monroe County, NY	735177	3		16	2.2	3643	495.5	1778	241.8	4		162	22.0	83	11.3	74	10.1	12	1.6
72	Kern County, CA	734846	15	2.0	31	4.2	3730	507.6	955	130.0	0		37	5.0	52	7.1	29	3.9	2	

73	Wake County, NC	719520	9		10	1.4	2143	297.8	1131	157.2	23	3.2	13	1.8	147	20.4	13	1.8	20	2.8	
74	El Paso County, TX	713126	19	2.7	6		2509	351.8	270	37.9	0		14	2.0	77	10.8	55	7.7	9		
75	Gwinnett County, GA	700794	51	7.3	5		1458	208.0	463	66.1	0		2		62	8.8	28	4.0	23	3.3	
76	Jefferson County, KY	700030	3		10	1.4	1758	251.1	1330	190.0	5		53	7.6	48	6.9	3		33	4.7	
77	San Mateo County, CA	699216	17	2.4	26	3.7	1525	218.1	248	35.5	1		61	8.7	96	13.7	47	6.7	17	2.4	
78	Lake County, IL	692895	18	2.6	4		1694	244.5	345	49.8	6		163	23.5	120	17.3	17	2.5	5		
79	Oklahoma County, OK	680815	4		18	2.6	3047	447.6	1888	277.3	2		53	7.8	84	12.3	160	23.5	17	2.5	
80	DeKalb County, GA	675725	22	3.3	14	2.1	3764	557.0	1847	273.3	1		4		85	12.6	66	9.8	117	17.3	
81	Multnomah County, OR	672161	12	1.8	23	3.4	2623	390.2	726	108.0	3		26	3.9	65	9.7	31	4.6	18	2.7	
82	Suffolk County, MA	666022	118	17.7	24	3.6	4018	603.3	1026	154.0	24	3.6	120	18.0	146	21.9	58	8.7	54	8.1	
83	Jackson County, MO	660095	2		43	6.5	5033	762.5	2782	421.5	1		202	30.6	64	9.7	24	3.6	22	3.3	
84	Jefferson County, AL	658495	0		30	4.6	3404	516.9	2098	318.6	2		13	2.0	92	14.0	124	18.8	31	4.7	
85	Hidalgo County, TX	658248	29	4.4	9		1660	252.2	130	19.7	2		12	1.8	81	12.3	193	29.3	5		
86	Cobb County, GA	654005	12	1.8	6		1568	239.8	533	81.5	2		6		84	12.8	24	3.7	43	6.6	
87	Norfolk County, MA	653617	34	5.2	16	2.4	632	96.7	140	21.4	139	21.3	213	32.6	123	18.8	10	1.5	7		
88	San Joaquin County, CA	649868	17	2.6	30	4.6	2631	404.9	831	127.9	0		12	1.8	91	14.0	14	2.2	10	1.5	
89	Snohomish County, WA	644274	5		11	1.7	1634	253.6	166	25.8	0		40	6.2	67	10.4	10	1.6	8		
90	Providence County, RI	641883	14	2.2	6		2887	449.8	701	109.2	47	7.3	36	5.6	85	13.2	15	2.3	24	3.7	
91	Monmouth County, NJ	636298	5		8		886	139.2	264	41.5	242	38.0	12	1.9	79	12.4	14	2.2	2		
92	Baltimore city, MD	636251	32	5.0	1		6651	1045.3	3938	618.9	3		10	1.6	151	23.7	22	3.5	209	32.8	
93	Collin County, TX	627938	4		16	2.5	874	139.2	228	36.3	0		34	5.4	49	7.8	21	3.3	4		
94	Bucks County, PA	617558	6		12	1.9	519	84.0	118	19.1	477	77.2	21	3.4	84	13.6	5		2		
95	Will County, IL	613849	2		1		955	155.6	346	56.4	7		141	23.0	100	16.3	49	8.0	3		
96	Hudson County, NJ	606240	19	3.1	14	2.3	1722	284.0	435	71.8	10	1.6	1		71	11.7	4		40	6.6	
97	Kent County, MI	593898	6		9		3421	576.0	1473	243.0	4		20	3.3	39	6.4	5		10	1.6	
98	Bernalillo County, NM	593765	7		4		4406	742.0	620	104.4	1		61	10.3	79	13.3	23	3.9	41	6.9	
99	Davidson County, TN	572475	22	3.8	10	1.7	2664	465.3	1221	213.3	0		14	2.4	61	10.7	51	9.1	15	2.6	
100	Tulsa County, OK	569148	1		9		2100	369.0	1001	175.9	0		7		49	8.6	48	8.4	2		
		124,199,00																			
	100 Counties	5	2,980	2.4	2826	2.3	463696	373.3	168119	135.4	5152	4.1	8111	6.5	16301	13.1	7174	5.8	5856	4.7	
	US		5,683	1.9	6,212	2.1	929,462	319.6	330,132	113.5	19,804	6.8	25,827	8.9	42,197	14.5	14,627	5.0	7,980	2.7	

* per 100,000 population.

**Chlamydia trachomatis infection.

have met the target for Chlamydia (150/100,000); 5 counties have met the Salmonella target (6.8/100,000); and 74 counties were above the target set for syphilis (0.2/100,000).

DISCUSSION

Notifiable disease reporting is essential for infectious disease prevention and control. The findings in this report demonstrate that there is substantial variability in infectious disease rates between counties, and that measures to reduce the incidence of multiple notifiable diseases should focus on lowering rates at the county level. Large cities and counties typically serve populations with the greatest density, diversity, and number of persons at high-risk. Public health officials are aware that communicable diseases (e.g., sexually transmitted diseases) are higher in heavily populated areas and vector-borne diseases (e.g., Lyme disease) are higher in the more rural or peri-urban areas. Despite knowledge of these differences, reasons for the observed differences are not fully understood.

The responsibilities for public health protection are shared by states and local public health jurisdictions [8]. Knowledge of local patterns of these conditions is essential in tracking national health goals, policies, and preventive efforts [3], and understanding this association can provide valuable insight. Efforts aimed at strengthening local health departments' infrastructure to address behavioral risk factors, contact tracing, screening, and routine vaccinations should be evaluated with respect to the incidence of notifiable diseases. This information may help these jurisdictions determine how best to apply resources (e.g., targeted communications and tailored prevention strategies) because surveillance activities may not benefit from economies of scale.

Larger cities and counties have greater health problems than smaller cities. The findings in this research are consistent with previously published data that showed infant mortality rate variations among the largest cities in the United States [9], and higher rates of sexually transmitted diseases among selected U.S. cities [3]. Resources available for health surveillance and the delivery of health-care services vary among jurisdictions [8]. Moreover, because large communities² benefit from funding initiatives, implications of the present findings on race/ethnicity and special populations, especially the poor and underserved populations who often live in large cities, should be examined by locality. Reasons for lower rates of reported pertussis in the most populated counties are unclear and should be further ex-

plored.

LIMITATIONS

The findings in this report are subject to at least four limitations. First, surveillance practices vary among jurisdictions, and case definitions may not be applied consistently across jurisdictions. Second, availability of resources can influence the detail of reporting by areas. Third, underreporting of certain diseases might reflect lack of awareness of a disease or priorities of state and local officials responsible for reporting [5]. Lastly, only conditions with substantial rates, and which are notifiable in all the 50 states, the District of Columbia, and New York City were reviewed. Although these conditions are responsible for the majority of notifiable conditions, the number of cases is only one criterion used to determine the importance of a disease.

CONCLUSION

This report indicated that incidence rates were higher for sexually transmitted diseases, hepatitis A, and hepatitis B in the most populated counties in comparison to national rates. Conversely, rates were lower for Lyme disease, salmonellosis, and pertussis. The results from this analysis are helpful in identifying priorities for focused prevention and research efforts. The results also provide a basis for comparison with other populations. Infectious diseases continue to place a considerable burden on the nation, and strategies to prevent and control them at county levels are needed, given that 2 of every 5 residents live in the 100 most populated counties. Understanding the local³ patterns of occurrence and directing resources to high morbidity areas should enable the achievement of *Healthy People 2010* objectives [4] for these conditions. NNDSS can be useful in developing partnerships with these jurisdictions because the monitoring of health status to identify community health problems is an essential public health service function.

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² High population counties are usually more densely populated, or they might be regionally located where disease rates are higher or lower.

³ Population density (e.g., persons per square mile) might be a predictor for highly communicable diseases, but might not be a predictor for those related to vector (e.g., Lyme disease) or behavior (e.g., sexually transmitted diseases). Counties vary in size substantially and are simply political demarcations; a county might have a small population, but be densely populated.

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