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## B. GONORRHEA INFECTIONS

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#### The nature and epidemiology of *Neisseria gonorrhoeae*

Gonorrhea, caused by *Neisseria gonorrhoeae*, is a common sexually transmitted disease. The estimated incidence of gonorrhea in the US is over 800,000 cases annually.<sup>5</sup> As with chlamydia, testing and reporting are not consistent. Many infections are without symptoms and remain undiagnosed and unreported.

In the US, there were 361,705 cases reported to the CDC in 2001; Texas ranked 16<sup>th</sup> among states with 144.0 cases per 100,000 population and Houston ranked 42<sup>nd</sup> among cities of greater than 200,000 population, with 161.4 cases per 100,000 population.<sup>2</sup>

Year 2010 goal for gonorrhea is for no more than 19 new cases or less per 100,000.<sup>3</sup> Year 2000 goals were for rates of no more than 375 per 100,000 among adolescents 15-19 years old and no more than 175 per 100,000 among women 15-44 years old. Houston gonorrhea rates in 2001 were 159 per 100,000 or nearly at the Year 2000 goals.

The Institute of Medicine estimated that the annual total cost associated with gonorrhea infection was 1.0 billion dollars.<sup>5</sup> This includes both the direct cost of medical care and the contribution of lost productivity associated with being infected.

The national age-specific incidence rates tripled from 1963 to 1975, when over 1 million cases were reported. Prevalence rates for gonorrhea are related to age, gender, sexual preference, race, socioeconomic status, marital status, urban residence, and level of education.<sup>17</sup> Rates are highest among teenagers, non-whites, the poor and poorly educated, in large cities, and among unmarried persons. As with chlamydia, rates are highest in the 15-24 year range and the female to male ratio is 1.3:1. Black and Hispanic females aged 15-24 have gonorrhea rates that are 17.6 and 1.6 times same-aged White females, respectively.<sup>2</sup>

Gonorrhea is usually spread by carriers who have no symptoms. Over 90 percent of men with gonococcal infection seek medical attention because of the development of urethral discharge. However, those who do not develop symptoms remain untreated and often serve as the main source of spread of infection to women. The infection can be passed to the newborn during birth and infect the conjunctivas, pharynx, respiratory tract, or anal canal.

**B. GONORRHEA: CRUDE RATES**

**Table B.1.** Crude rates for gonorrhea in Houston/Harris County, Texas, 1991-2001.

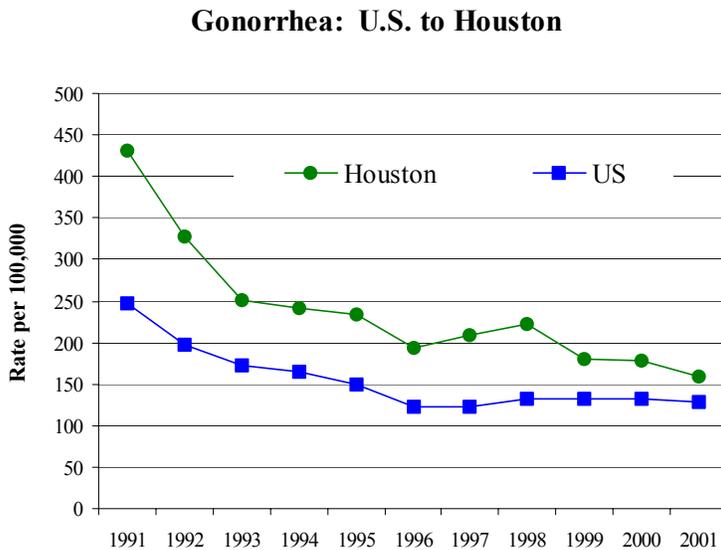
Gonorrhea	N	Rate	% Change*
1991	12,449	431.4	
1992	9,667	328.3	- 24%
1993	7,565	251.8	- 23%
1994	7,358	242.1	- 4%
1995	7,191	234.3	- 3%
1996	6,046	193.9	- 17%
1997	6,633	209.7	8%
1998	7,164	222.8	6%
1999	5,905	180.7	- 19%
2000	6,033	177.4	- 2%
2001	5,501	159.2	- 10%

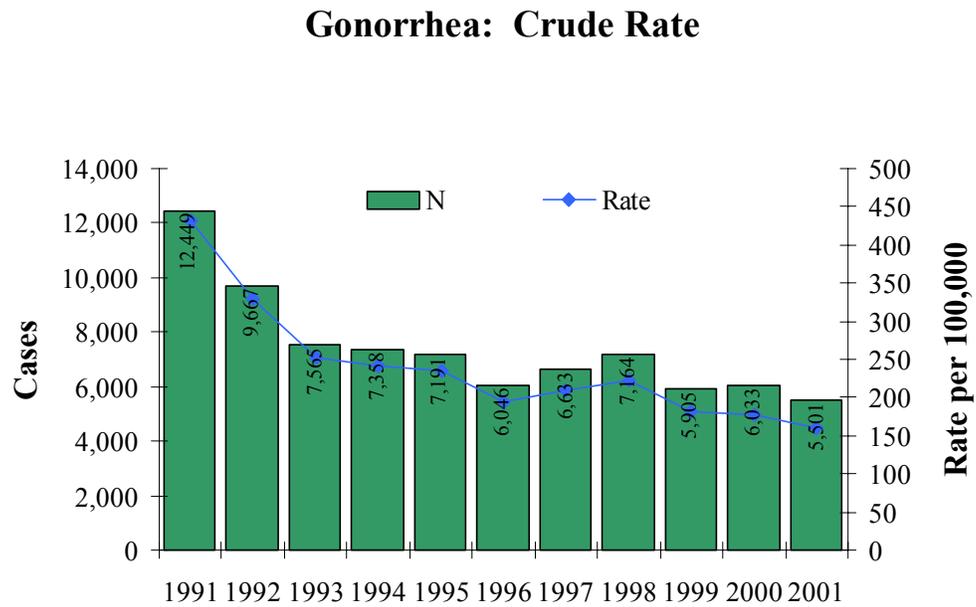
Rates per 100,000 persons per year based on intercensal estimates of Houston/Harris County population. (Appendix).

\* Change in rate from the preceding year.

In Houston/Harris County gonorrhea rates have decreased nearly 60% since 1991.

**Figure B.1.** Comparison of gonorrhea rates in the US to rates in Houston, 1991 through 2001. Gonorrhea rates in Houston/Harris County in 2001 were 1.2 times greater than the US rate of 128.5 per 100,000. Rates are falling nation wide, and rates in Houston are converging with US rates. Rates are reported per 100,000 persons.



**B. GONORRHEA: CRUDE RATES**

**Figure B.2.** Gonorrhea cases and rates per 100,000 persons per year. Since 1991, there has been a slow decline in the number of reported cases of gonorrhea. This could be due to a true decline, or to changes in surveillance.

**B. GONORRHEA: GENDER-SPECIFIC RATES****Table B.2.** Crude rates for gonorrhea in Houston/Harris County Texas, 1991-2001.

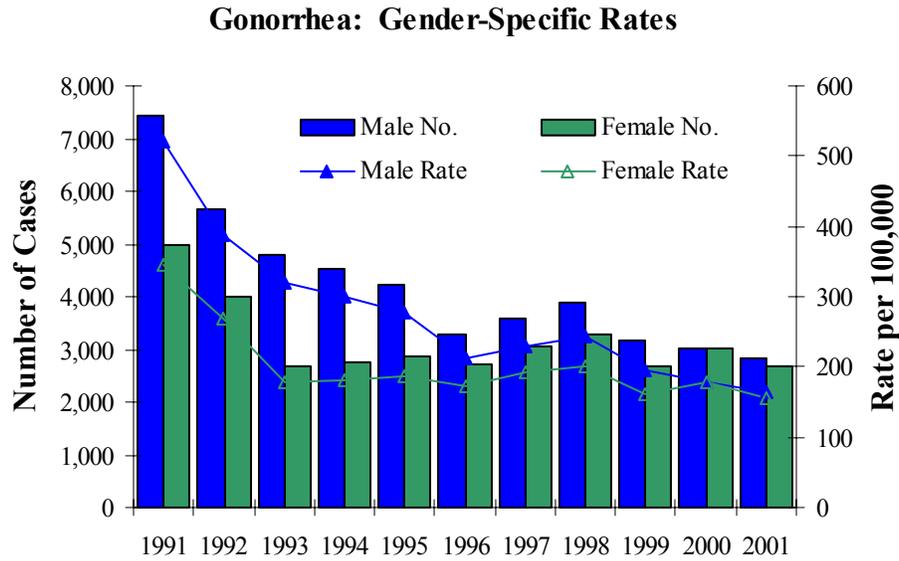
	Male Total Rate		Number of Cases			Missing	
			Black	Hispanic	White	No.	%
1991	7,452	519.9	6,562	357	532	1	0%
1992	5,671	387.6	4,788	260	483	140	2%
1993	4,778	320.1	4,085	191	160	342	7%
1994	4,534	300.2	3,787	147	206	394	9%
1995	4,232	277.6	3,333	138	153	608	14%
1996	3,273	211.3	2,525	134	90	524	16%
1997	3,570	227.9	2,637	162	93	678	19%
1998	3,894	244.5	2,729	191	104	870	22%
1999	3,174	196.1	2,349	212	129	484	15%
2000	3,003	177.3	2,052	340	142	469	16%
2001	2,813	163.3	1,772	274	109	658	23%
<b>Female</b>							
1991	4,994	344.0	3,975	448	569	2	0%
1992	3,984	269.0	2,935	303	435	311	8%
1993	2,694	178.3	1,738	248	155	553	21%
1994	2,756	180.2	1,635	285	276	560	20%
1995	2,873	186.0	1,324	210	185	1,154	40%
1996	2,711	172.9	1,297	178	125	1,111	41%
1997	3,061	191.7	1,505	194	131	1,231	40%
1998	3,267	201.3	1,575	202	171	1,319	40%
1999	2,684	162.7	1,585	301	173	625	23%
2000	3,027	177.4	1,804	448	203	527	17%
2001	2,682	154.8	1,466	354	109	722	28%

Rates per 100,000 persons per year based on census or intercensal estimates of Houston/Harris County population. (Appendix).

Gonorrhea rates have been relatively stable since 1996, however, it is unclear if the stability is due to screening activity or a stability in population infections.

In 2000, rates among males and females in Houston/Harris County were 1.3 times greater than US rates. Healthy People 2010 target for gonorrhea prevalence is 19 cases/100,000; current rates for males and females nearly are 9 times that goal.

Gender data is relatively complete: fewer than 1% for each year are missing gender identification. Race/ethnicity data are relatively incomplete: since 1995, race/ethnicity data has been missing for 40% of females and approximately 20% of males. It is impossible to evaluate whether the missing values are evenly distributed: therefore comparison of changes in rates by race/ethnicity are not appropriate.

**B. GONORRHEA: GENDER-SPECIFIC RATES**

**Figure B.3.** Gonorrhea cases and rates by gender. Rates among males and females have been similar for the last two years. The 2010 goal is for 19 cases per 100,000 population; current rates in Harris County are nearly 9 times that goal. Rates are reported per 100,000 population based on intercensal estimates of Houston/Harris County population and the 2000 census (Appendix).

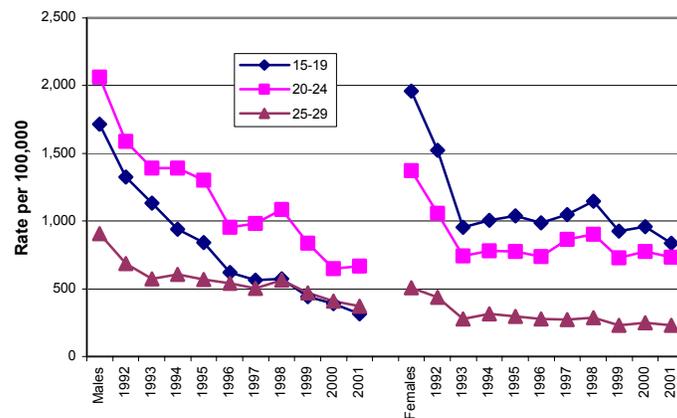
**B. GONORRHEA: AGE-SPECIFIC RATES****Table B.3.** Age-specific gonorrhea rates for Houston/Harris County Texas by sex, from 1991 through 2001.

Total Pop.	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
15-19	1,834	1,423	1,069	985	948	807	800	856	687	670	567
20-24	1,720	1,327	1,077	1,097	1,053	851	924	996	785	728	698
25-29	710	562	428	463	434	409	387	426	354	335	302
30-34	451	332	228	220	232	184	200	215	188	198	178
35-39	260	214	151	150	136	118	135	130	122	124	112
40-44	174	124	107	89	84	65	85	82	74	76	70
>44	48	34	29	26	27	20	39	42	29	20	22
<b>Males</b>											
15-19	1,715	1,323	1,132	938	842	620	562	575	443	388	315
20-24	2,062	1,586	1,389	1,393	1,301	956	983	1,087	836	649	665
25-29	907	686	575	606	567	540	501	563	472	408	372
<b>Females</b>											
15-19	1,959	1,524	952	1,004	1,038	985	1,047	1,148	927	957	835
20-24	1,371	1,056	744	779	774	736	864	900	727	774	733
25-29	508	436	275	316	294	275	273	288	232	249	230

Rates per 100,000 persons per year based on intercensal estimates of Houston/Harris County population (1991-2001) and the 2000 Census. (Appendix).

**Figure B.4.** Gonorrhea rates by sex and age. Although there was a decrease in the crude rates over time, rates among 20-24 year old males and females have not decreased substantially in the last two years.

Rates are highest in 20-24 year old males and 15-19 year old females.



**B. GONORRHEA: DISTRIBUTION BY PROVIDER**

In 2001, 40% of gonorrhea cases were found through HDHHS STD clinics; 3% through HDHHS family planning clinics, and 1.5% through HDHHS pre-natal clinics. 30% were identified through private physicians, Health Maintenance Organizations (HMOs), and laboratory reports.

**Table B.4.** Distribution of gonorrhea cases by provider type, 2001.

	1997	1998	1999	2000	2001
HDHHS STD <sup>1</sup>	3630	3653	3944	2562	2196
HDHHS FP <sup>2</sup>	75	17	94	126	156
HDHHS Maternity <sup>3</sup>	37	4	18	41	76
Jail / Correctional <sup>4</sup>	23	65	66	62	45

<sup>1</sup> City STD: Lyons, Medical Center, Northside, Riverside, West End, and La Nueva Casa de Amigo.

<sup>2</sup> City Family Planning: La Nueva Casa de Amigo, Lyons, Northside, Riverside, Sunnyside and West End.

<sup>3</sup> City Maternity: La Nueva Casa de Amigo, Lyons, Northside, Riverside, Sunnyside, West End.

<sup>4</sup> Jail / Correctional: Harris County Sheriff, Municipal Detention Center.

## B. GONORRHEA: PREVALENCE

### Prevalence in Certain Clinical Settings

Prevalence at screening varies depending on the population examined and whether testing is done for surveillance or among symptomatic individuals. Screening prevalence rates are available for several populations in Houston.

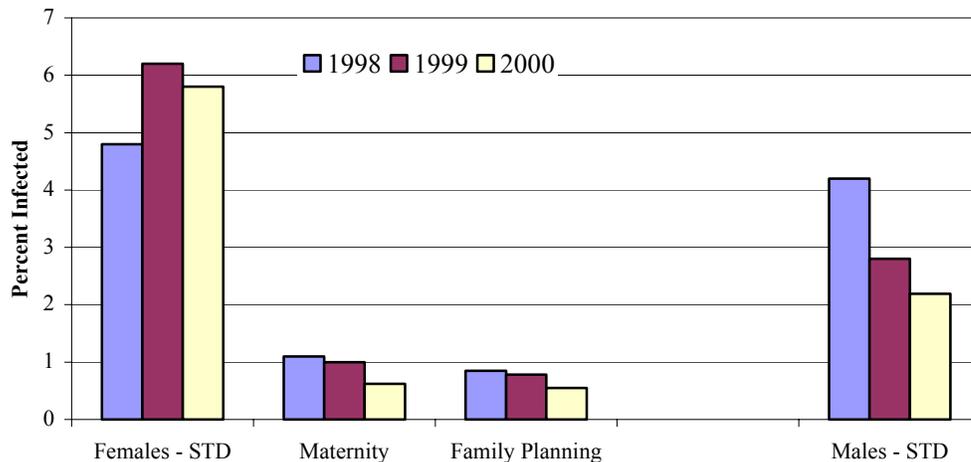
#### HDHHS STD Clinics

Among females tested for gonorrhea in HDHHS STD Clinics, in 1998, 4.8% tested positive, 6.2% in 1999, and 5.8% in 2000. In STD clinics, asymptomatic males are tested for gonorrhea with Gen-Probe; in 1998, 4.2%, 2.8% in 1999, and 2.0% in 2000 tested positive.

#### HDHHS Maternity and Family Planning Clinics

Using data compiled through the HDHHS Laboratory, we can describe the prevalence of gonorrhea among women seeking care at maternity and family planning clinics. Among women tested for gonorrhea at HDHHS maternity clinics in 1998 - 2000, 1.1%, 1%, and 0.6% respectively, were found to be infected. Among women tested for gonorrhea at HDHHS family planning clinics in than 1% were infected in 1998 –2000.

### Gonorrhea: Prevalence at Selected Clinics



**Figure B.6.** Percent of positive tests reported by selected clinics for 1998-2000.

**B. GONORRHEA: GEOGRAPHIC DISTRIBUTION**

Zip code information is missing for nearly 20% of cases in 2001, however, zip code information was missing in only 5% of individuals reported from HDHHS STD, family planning, and pre-natal clinics. Using information from all HDHHS clinics, 50% of cases were found within 21 zip code areas.

Distribution of cases among zip code areas. The areas with the largest numbers of gonorrhea cases identified are similar to those at high risk of chlamydia.

Zip code	Cases	Percent of Total Cases
77033	186	5%
77004	175	11%
77021	127	14%
77036	106	17%
77016	98	20%
77088	96	23%
77026	95	26%
77051	92	29%
77045	80	31%
77028	66	33%
77035	66	35%
77048	61	37%
77053	61	38%
77020	59	40%
77091	59	42%
77060	54	43%
77099	52	45%
77092	51	46%
77061	49	48%
77093	48	49%
77009	46	51%

**B. GONORRHEA: GEOGRAPHIC DISTRIBUTION**

**Figure B.7.** Distribution of cases identified through HDHHS STD clinics, Houston/Harris County, 2001.

