

# Epidemiology Update

## Sexually Transmitted Diseases (Part II): Gonorrhea & Syphilis

### Hennepin County Key Findings

- ◆ Forty-eight percent (48%) of gonorrhea cases reported in Minnesota in 2007 were among Hennepin County residents. Hennepin County accounted for sixty-nine percent (69%) of the state's early (i.e., primary and secondary) syphilis cases in 2007.
- ◆ The incidence of gonorrhea infection decreased slightly between 2006 and 2007, from 150 to 145 cases per 100,000 population. Incidence of early syphilis increased during this time to 4 cases from 3 cases per 100,000 population.
- ◆ The increase in the syphilis rate is mostly attributed to an increased occurrence of this infection among men who have sex with men (MSM).
- ◆ The majority of gonorrhea cases was found in adolescent (ages 15-19 years) and young adult (ages 20-24 years) populations. Early syphilis cases were most commonly found among persons 30 years or older.

### Introduction

This *Epidemiology Update* on gonorrhea and syphilis is the second of two reports focused on treatable and reportable sexually transmitted diseases (STDs) in Hennepin County. A previous report focused on chlamydia.

This issue of *Epidemiology Update* is one in a series of reports available from Hennepin County Human Services and Public Health Department—Epidemiology.

<http://www.hennepin.us/EpiUpdates>

### Background

Gonorrhea is the second most commonly reported notifiable infectious disease both locally and nationwide. In 2007, there were 1,651 reported cases of gonorrhea in Hennepin County. These cases made up 48% of the total number of cases reported in Minnesota that year.

In the United States in 2006, the incidence rate for gonorrhea infection was 120.9 cases per 100,000 population.<sup>1</sup> However, it is estimated that, nationwide, only half of the actual infections each year are reported. Hennepin County, with an incidence rate of 145 cases per 100,000 population, exceeded the U.S. rate.

Syphilis is a less commonly occurring STD, but has recently been on the rise in the U.S. In 2007, there were 112 total syphilis cases reported in Hennepin County, with 41 of those being early (i.e., primary or secondary) infections. The increase in cases is primarily attributed to an increase of the disease among men who have sex with men (MSM). This finding is cause for public health alarm, as it indicates a decline in safe sex practices among this population, and an increased risk for HIV, hepatitis B and possibly hepatitis C transmission.

The majority of early syphilis cases (69%) in Minnesota were found in Hennepin County. Overall, the U.S. has noted an increase in the rate of early syphilis<sup>2</sup> and the County has also noted a similar trend (3 cases per 100,000 population in 2006 to 4 cases per 100,000 population in 2007).

## Characteristics of Gonorrhea and

### Background Cont.

Although both are treatable, gonorrhea and syphilis continue to persist in the population due to people not recognizing their symptoms or attributing them to other causes. Gonorrhea typically produces symptoms in men, including a burning sensation when urinating or discharge.

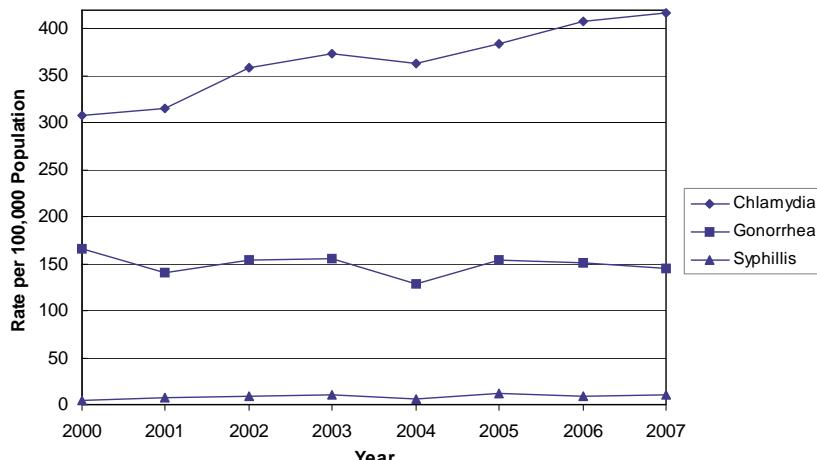
While women may have these same symptoms, they are often more mild or may not occur at all. In men, epididymitis (a painful condition affecting the testes) and in women, pelvic inflammatory disease (PID), may develop as a result of untreated gonorrhea. These conditions can lead to infertility in both sexes. In women, PID may also lead to ectopic pregnancy, a life-threatening condition.<sup>3</sup>

The symptoms of syphilis play out over various stages, starting with a single sore (called a chancre) in the primary stage, a rash in the secondary stage, finally progressing to organ damage and neurological dysfunction, possibly even death, if the infection is allowed to progress to the late stage. Syphilis has been called “the great imitator” because its symptoms can resemble other types of diseases allowing it to remain misdiagnosed and untreated.<sup>4</sup>

### Gonorrhea and Syphilis Trends

**Figure 1** shows the trend in the overall rates of gonorrhea and syphilis infections in Hennepin County from 2000 to 2007. The rates of chlamydia are also shown for comparison.

**Figure 1. Chlamydia, Gonorrhea & Syphilis Rates, Hennepin County, 2000-2007**



**Table 1. Rates\* of Gonorrhea and Early Syphilis by Age, Hennepin County, 2007**

| Age Group | Rate of Gonorrhea | Rate of Early Syphilis |
|-----------|-------------------|------------------------|
| 0-14      | 7                 | 0                      |
| 15-19     | 499               | 1                      |
| 20-24     | 656               | 7                      |
| 25-29     | 469               | 6                      |
| 30-34     | 216               | 12                     |
| 35-39     | 126               | 8                      |
| 40+       | 33                | 3                      |

\*Rates were calculated per 100,000 population based on 2007 Summary Bridged Population Estimates ([www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm](http://www.cdc.gov/nchs/about/major/dvs/popbridge/popbridge.htm))

### Gonorrhea Occurrence in Specific Populations

Gonorrhea, like chlamydia, is most commonly found in older adolescents (ages 15-19 years) and young adults (ages 20-24 years). In 2007, young adults had the highest rate of gonorrhea at 656 cases per 100,000 population in Hennepin County. Older adolescents had the second highest rate at 499 cases per 100,000 population. Both chlamydia and gonorrhea display a similar rate pattern among the age groups, with chlamydia occurring at a dramatically higher rate in older adolescents and young adults, compared to other age groups (**Table 1**).

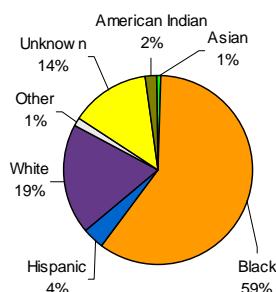
## Syphilis Infections in Hennepin County

### Gonorrhea Occurrence in Specific Populations (continued)

Gonorrhea cases in Hennepin County were reported in women and men equally – most likely due to the fact that men more commonly experience symptoms with gonorrhea than with chlamydia, and would be more inclined to seek treatment.

Gonorrhea is found disproportionately in minority populations, especially in the Black (non-Hispanic) population (**Figure 2**). Blacks had the highest rate, with a rate of gonorrhea 22 times higher than in the White population. American Indians and Hispanics also had rates significantly higher than Whites, with rates seven times and two times higher, respectively.

**Figure 2. Gonorrhea Infections by Race, Hennepin County, 2007**



Overall, in 2007 the population with the highest rate of gonorrhea in Hennepin County was young adult Black females (ages 20-24 years), with a rate 19 times greater than of White females of the same age (3,381 cases per 100,000 population vs. 175 cases per 100,000 population). The next highest rates were found in young adult Black males (2,967 cases per 100,000 population), followed by Black adolescent females (15-19 years of age) (2,948 cases per 100,000 population).

### Early Syphilis Occurrence in Specific Populations

In 2007, early syphilis (i.e., primary and secondary) cases were most commonly found in adults aged 30 years or older (**Table 1**). The age group with the highest rate was 30 to 34-year olds, followed by the 35 to 39-year olds.

In 2007, all cases of early syphilis were found in men. Of these 41 male early syphilis cases, 93% identified themselves as men who have sex with men (MSM).

Syphilis is reported disproportionately in minority populations. In 2007, the population with the highest rate of early syphilis was Black men, 30 to 34 years old, with a rate nearly two times greater than that of White males of the same age (41 cases vs. 25 cases per 100,000 population). The next highest rate was found in Black men, 25 to 29 years old, with a rate four times that of White men of the same age (36 cases vs. 9 cases per 100,000 population).

### Treatment

Treatment of infected patients not only prevents severe complications, but also prevents transmission of the disease to sex partners. Effective treatment requires simultaneous treatment of both the index patient and his or her sex partners. This helps to prevent reinfection of the patient as well as transmission to other partners.

Patients infected with gonorrhea are often co-infected with chlamydia. Therefore, the Centers for Disease Control and Prevention (CDC) recommends considering routine treatment with a regimen that is also effective against uncomplicated chlamydial infections in patients positive for gonorrhea, as the cost of treatment is less than the cost for testing.<sup>5</sup>

This presumptive treatment may be appropriate for some patients more than others, and especially indicated for those unlikely to return for further healthcare.

In Hennepin County, 28% of gonorrhea cases in 2007 were also reported to have chlamydia. The co-morbidity rate was highest in Black and American Indian females who were 15 to 19 years old and 20 to 24 years old.

Data from the CDC sponsored Gonococcal Isolate Surveillance Project (GISP) has shown a dramatic increase in fluoroquinolone-resistant *Neisseria gonorrhoeae* (QRNG).<sup>6</sup> GISP began susceptibility testing for ciprofloxacin in 1990 and noted increases in quinolone resistance in 2002 among certain population groups (cases acquiring their infections in Asia or the Pacific Islands, MSM). By 2006, preliminary data showed that QRNG has continued to increase among heterosexual cases and is present in all regions of the country. **Due to these findings, CDC no longer recommends the use of fluoroquinolones for treating gonorrhea and associated conditions such as PID. Consequently, only one class of drugs, the cephalosporins, is still recommended for the treatment of gonorrhea.<sup>6</sup>**

Parenterally-administered penicillin G is the recommended treatment for syphilis. The type of preparation, dosage and length of treatment time depend on the stage of disease.<sup>7</sup> An acute, febrile reaction, called Jarisch-Herxheimer reaction, is a common adverse outcome of syphilis treatment, and occurs most often in those being treated for early syphilis. Patients should be informed of symptoms that may manifest due to this possible adverse reaction.

## Points to Remember

- Gonorrhea may be asymptomatic in women before causing complications. Appropriate screening for sexually active, young women is particularly important in curbing the spread of this disease.
- Men who have sex with men are a high risk group for syphilis infection. Questioning patients about their sexual history and encouraging safe sex behavior during clinic visits is a vital prevention strategy. This is also an opportunity to screen and vaccinate for hepatitis A and B.
- Sexually transmitted diseases are found disproportionately among minority populations. A special effort should be made to address increased risk in these patients, especially American Indians, Blacks and Hispanics.

## References:

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2. CDC. *Sexually Transmitted Disease Surveillance 2006. National Profile – Syphilis*. Accessed on March, 18 2008 at: <http://www.cdc.gov/std/stats/syphilis.htm>
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