Section 4: The Impact of Chlamydia

Health Consequences
The general public is largely unaware of the health consequences of chlamydia for four main reasons:

1) Chlamydia is asymptomatic and often goes undetected.

2) A major health consequence such as infertility occurs years after the initial infection, making it more difficult for people to make the link to an infection experienced years earlier.

3) The stigma associated with having any STI/STD has inhibited public discussion and health education about the various diseases and in some cases, even prevents health care professionals and educators from providing the information and skills necessary for young people to protect themselves from disease – information and skills that are applicable for the rest of their lives.

4) There has been no advocacy group to speak up for the needs of adolescent and young adult females that have experienced sex and are or may be infected with chlamydia.

Complications from chlamydia, as with most STIs/STDs, are greater and more frequent among women than men, representing a serious health threat to the reproductive capacity of individuals and couples. A variety of short-term and long-term health problems for women all result from unrecognized or untreated STIs/STDs, especially chlamydia.

Short-term reproductive health consequences for women include PID and complications during pregnancy. Up to 40 percent of women with untreated chlamydia will develop PID and, in some cases, may need to be hospitalized. In addition, pregnant women can infect their babies during the birthing process. This can result in eye infections and pneumonia, causing stress and expense for families. Symptoms of urethritis and epididymitis in men tend to show up within a short time after chlamydia is contracted, resulting in males seeking diagnosis and treatment much sooner than females.

Long-term reproductive health consequences for women include ectopic pregnancy, infertility and chronic pelvic pain. Ectopic pregnancy affects approximately 9 percent of women with PID and can be life-threatening. Of those with PID, 20 percent will become infertile; males can experience infertility as well although it is rare. Eighteen (18) percent of women with PID will experience debilitating and chronic pelvic pain which can affect them for the rest of their lives, long past their reproductive years. The rates of infertility in the U.S. have risen dramatically over the past several decades. It is unknown how much undiagnosed chlamydia has contributed to this trend.

Additional Risks
The more times that a female contracts chlamydia, the greater the likelihood that she will experience the serious consequences listed above. People are often re-infected by having sex with partners who have not been screened or treated.

Chlamydia causes inflammation in the genital area and reproductive organs, making it easier to contract and transmit the HIV virus if it is present during sex.
Disparities in Communities of Color

Certain racial and ethnic groups (mainly African Americans and Hispanics) have high rates of STIs/STDs, compared with rates for whites. There are no biological characteristics related to being African American or Hispanic that makes one more susceptible to becoming infected with an STI/STD. Chlamydia is an equal-opportunity infection that affects people of all ages, all races and ethnic groups, all sexual orientations, and those living in any location. However, there are other factors at work that can increase the risk of acquiring or transmitting chlamydia.

A study done in the Twin Cities urban area in 2010 by the Wilder foundation and funded by Blue Cross Blue Shield revealed that, “In general, we see the same pattern with health that we do for other measures of well-being, including educational attainment, poverty and income, employment, and rates of home ownership: As a group, people of color fare worse than do whites in our region on a variety of health measures including birth weights, obesity, diabetes and mortality.” The report also found that Asian, Latino and African-born populations have better health outcomes than non-Hispanic whites, American Indians, and U.S.-born blacks in our region.

The Wilder report supported other studies done in the U. S. and other countries that demonstrated how higher socioeconomic status coincided with improved health outcomes. Health has been shown to be connected to the socioeconomic condition and relative prosperity of the neighborhoods in which people live. In particular, poverty and economic inequality have been found to be associated with high rates of sexual activity, pregnancy, premarital births, abortions and resistance to contraceptive use in adolescents. A few studies have examined the association between community characteristics and STI/STD infection rates among adolescents. These studies suggest that disadvantaged communities have higher STI/STD rates.

Frequently people of color are impacted by fundamental, community-level factors that determine health status, such as poverty, limited or no access to high quality, culturally-competent health care, lack of health insurance, homelessness, limited transportation and community disorganization.

Economic Impact

Costs Related to Chlamydia in the United States

STIs/STDs are a tremendous health and economic burden on the people of the U.S. Several research studies have examined the existing literature on STI/STD costs to estimate the lifetime medical cost per case of several major STIs/STDs, including chlamydia. In Sexually Transmitted Diseases in America: How Many Cases and at What Cost?, a report prepared by the American Social Health Association (ASHA) for the Kaiser Family Foundation in 1998, the total estimated burden of the nine million cases of eight major STIs/STDs that occurred among 14-24 year-olds in 2000 was $6.5 million. About 6 percent of that amount was attributable to non-viral STIs/STDs. Another study states that untreated chlamydia can cost society over $3.1 billion annually.

It is useful to look at the costs for treating bacterial and viral STIs/STDs separately because the nature of these infections is quite different. Treatment of bacterial STIs/STDs usually results in a cure and the therapy is short and relatively inexpensive. In addition, by far the greatest costs associated with bacterial STIs/STDs result from complications of untreated chlamydia and gonorrhea, particularly PID. Assessing the economic burden of STIs/STDs is important for two reasons. First, estimates of the cost of treating STIs/STDs among adolescents and young adults can help quantify the impact of STIs/STDs on the nation’s youth and on those who pay for their medical care. In many cases, the payers are publically...
funded programs. Second, routine economic impact assessments (cost-effectiveness and cost-benefit analyses) of chlamydia screening programs, interventions and prevention programs are critical for making decisions related to health policies. The National Commission on Prevention Priorities ranks the screening of females ages 25 years and under as one of the 10 most beneficial and cost-effective prevention services, but it is also among the most underutilized.\textsuperscript{5}

**Direct and Indirect Costs**

The economic impact of STIs/STDs includes direct, indirect and intangible costs. Direct cost refers to expenditures for health care and includes the value of goods and services that were actually used to diagnose and treat STIs/STDs and their sequelae. These direct expenditures may either be for medical or non-medical services and materials. Examples of direct medical costs include the cost of clinician visits, hospitalization, diagnostic testing, drug treatments and therapeutic approaches. Other direct, non-medical costs associated with receiving medical care or prevention services include the cost of transportation or educational materials. Indirect cost refers to lost productivity and lost wages attributable to STD-related illness and any associated disability. It also includes lost wages due to premature death.

**Intangible Costs**

Intangible costs are related to the pain and suffering associated with STIs/STDs. The ASHA panel, in the Kaiser report, noted that STIs/STDs have a high human cost in terms of pain, suffering and grief for people experiencing short-term and long-term consequences. This impact cannot be measured in dollars.\textsuperscript{6}

It is impossible to measure the grief that comes from an ectopic pregnancy that takes a woman from the excitement of finding out she is pregnant to the heartbreak of miscarriage within a few hours. Or the emotional pain women and couples experience as a result of finding out they will not be able to have the children they always wanted. In addition, couples in these situations often experience strain in their relationships.

Another complication from untreated chlamydia that can have profound affects on the quality of a woman's life can be chronic pelvic pain. It can be difficult to assess the source and exact location of pelvic pain, often resulting in multiple doctors' office visits and the expense of multiple diagnostic tests and procedures. Pelvic pain is the number one reason why women visit their gynecologist.

Unlike most other diseases, STIs/STDs often cause stigma and feelings of shame and embarrassment in people who are infected and can also have a dramatic impact on relationships. In a 1998 Kaiser Family Foundation/Glamour Magazine study of adults, 44 percent of men and 47 percent of women said if they were in a new relationship and discovered their partner had an STI/STD, they would be “a lot less likely” to continue the relationship, with another third saying they would be “somewhat less likely” (30 percent men, 29 percent women). Most say they would feel angry at the person they got it from if they found out they had an STI/STD, though women (87 percent) are more likely than men (74 percent) to say so.\textsuperscript{7} Confronting and diminishing the shame and stigma related to chlamydia is a goal of the MCP.
Estimated Costs Specific to Minnesota

It should be noted here that actual comprehensive data for the U.S, as well as for individual states, on STI/STD incidence and cost do not exist. There has never been an analysis of the costs of chlamydia specific to Minnesota. This is an area that needs more research and analysis by health economists, a recommendation that was made by workgroups that worked on the Minnesota Chlamydia Strategy. In lieu of that data, and in order to provide a snapshot of costs that will allow preliminary discussions, we are referring to data presented in three articles published in the journal *Sexually Transmitted Diseases* in recent years.

One study, published in 2010, used data from private insurance claims available for 2003-2007 to estimate the direct cost of chlamydial infections. These researchers estimated the direct costs at $108 per episode of chlamydia, including outpatient costs and medications. Obviously this average amount can vary based on any number of factors, and it does not include indirect costs. It also does not include costs associated with public health follow-up of untreated cases or partners.

Another study published in 2004 looked at the average cost per case of chlamydia, based on costs of diagnosis and treatment of acute infections, screening tests that yielded positive test results and sequelae resulting from untreated acute infections or from delayed or improper treatment.

Authors estimated that the average cost of diagnosing and treating an acute case of chlamydia at $73 per case. This average reflects testing and treatment for males and females provided in a variety of settings and utilizing single dose therapy. The average cost of treating sequelae resulting from acute infections in males was a low of $144 per case to treat epididymitis and a conservative estimate of $1,334 per case of PID in women. When looking at the combined costs, the authors found that 82 percent of the estimated costs per case for women are attributable to sequela (e.g., PID, ectopic pregnancy, and chronic pelvic pain) while 78 percent of the estimated cost per case in men was attributable to acute infection. The expected cost per case of chlamydia in males is $20 and the expected cost per case of chlamydia in females is $244. This includes estimated costs of diagnostic testing and single dose treatment as well as an estimated average cost to treat epididymitis in males and PID in females.

These estimated lifetime costs per case are subject to considerable uncertainty and should be viewed as ballpark figures rather than precise calculations.

A third study published in 2006 attempted to estimate the productivity losses associated with untreated chlamydia in reproductive-age women. The results indicated that the average productivity loss per untreated chlamydia infection was approximately $130. The average productivity loss per case of acute PID was estimated at $649. These losses were highly correlated with age which is understandable since the women in the age groups with the greatest likelihood of having an untreated chlamydia infection and to experience serious sequelae were less likely than older women to be employed in the paid labor force, to be employed in well-paying jobs, or to work full-time. The researchers did not take into consideration the productivity losses of women who were not in the paid labor force but do acknowledge lost production occurs in areas such as child and elder care, and household management.

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**Estimated Annual Cost of Chlamydia in Minnesota**

In 2010, there were 4,327 males and 10,965 females reported with chlamydia in Minnesota. Using $20 per male and $244 per female, it can be estimated that the cost of diagnosing and treating chlamydia in 2010 in Minnesota was $2,762,000.
Funding Needed to Support Chlamydia Activities in Minnesota

It is not possible, without a formal cost analysis, to accurately determine the exact amount of funds that are needed to diagnose and treat chlamydia per year in Minnesota. To determine that amount, we would need to know how many people are tested in addition to how many of those people are positive. At this point in time, there is no centralized mechanism for determining those numbers. As stated earlier, the only data collected by the MDH surveillance system is the number of people who were diagnosed with chlamydia and reported in any given year. For the purposes of assessing what amount of funding is needed to cover the costs of screening and treating chlamydia, a formal cost analysis study is needed.