

– SEXUAL HEALTH ISSUE BRIEF –

Genital Herpes Type 1 and Type 2 Infections: Information for Sexual Health Educators

Genital herpes, caused by the herpes simplex virus (HSV), is among the most common STIs in Canada and has a range of important medical and psycho-social outcomes. Although there have been significant improvements in our understanding of the biology and transmission of genital herpes, as well as the development of effective medical treatments, the epidemiology of genital herpes has evolved significantly in recent years. In the past, most cases of genital herpes were caused by herpes simplex virus type 2 (HSV-2) but, as detailed below, Herpes simplex type 1 (HSV-1), which has commonly been associated with “cold sores” on lips and mouth, is increasingly playing a role in the transmission and acquisition of genital herpes.

This Sexual Health Issue Brief provides information on: 1) the changing epidemiology of genital herpes in North America; 2) the difference between HSV-1 and HSV-2 and their respective roles in the transmission and acquisition of genital herpes; 3) the prevalence of HSV-1 and HSV-2 in Canada; 4) asymptomatic HSV infection and transmission; 5) primary and recurrent genital herpes; 6) genital herpes screening and treatment; 7) genital herpes and HIV; 8) reducing the risk of genital herpes infection and transmission; and 9) counselling people with genital herpes.

The Changing Epidemiology of Genital Herpes

While HSV-2 was the cause of most genital herpes infections in the past, genital HSV-1 infections were not uncommon. Research studies from the United States conducted in the 1970s and 1980s typically indicated that about a third of genital herpes infections were due to HSV-1 (Wald, 2006). However, the proportion of genital herpes cases caused by HSV-1 has been increasing. Two potential contributing factors have been put forward to explain the rise in the proportion of genital herpes infections due to HSV-1.

First, the percentage of people who acquire HSV-1 on the lips and mouth during childhood has been declining over time (Bradley, Markowitz, Gibson, & McQuillan, 2014; Garland & Steban, 2014). An oral HSV-1 infection acquired in childhood provides an individual with antibodies to this strain of the virus which reduces the risk of an HSV-1 genital infection resulting from sexual activity in adolescence or adulthood (Kimberlin, 2014). Thus, as the percentage of population who have acquired HSV-1 oral infection decreases, the percentage of people who are susceptible to HSV-1 genital infection increases. Nevertheless, even though the prevalence of oral infection is declining, the overall prevalence of HSV-1 remains high. For example, data from the United States indicates that, although HSV-1 seroprevalence declined among 14- to 19-year-olds from 1999-2004 to 2005-2010, nearly a third (30%) had HSV-1 infection (Bradley et al., 2014). In sum, “almost 1 in 10 adolescents who 10 years ago already would have acquired HSV-1 earlier in life now are vulnerable to getting a primary infection as they enter their sexually active years” (Kimberlin, 2014, p. 315).

Second, the increasing proportion of genital herpes cases resulting from HSV-1 infection may also be due the increasing likelihood of recent generations to engage in oral sex (Garland & Steben, 2014; Kimberlin, 2014). That is, individuals with oral HSV-1 infection can transmit the virus during oral sex to the genital area of sex partners with no prior exposure to HSV-1.

HSV Type 1 and Type 2 Genital Infections

Both HSV-1 and HSV-2 infect the epithelial cells of the skin or mucous membranes (Garland & Steban, 2014). The virus then travels to a nerve root called a ganglion at the base of the spine. HSV stays in the ganglion for the rest of a person's life. Periodically, the virus travels back to the skin or mucous membranes, which may or may not cause symptoms. The most common symptoms are the appearance of cold sores on the lips or mouth in the case of oral infections and blisters or sores in the genital area in the case of genital infections.

HSV-1

HSV-1 predominantly infects the skin and mucous membranes of the mouth and lips (i.e., orolabial area) which can result in lesions, commonly known as cold sores. In the case of oral HSV-1, lesions can also appear on/in the nose or on the chin or cheek, which is referred to as oral-facial herpes.

HSV-1 is usually transmitted by kissing, resulting in cold sores in some cases but producing no symptoms in most cases (Hofstetter, Rosenthal & Stanberry, 2014). However, HSV-1 can also be transmitted from the mouth of a person with an oral infection to the genitals or anus of a partner during oral sex. A person with a genital HSV-1 infection can transmit the virus to a partner during penile-vaginal or penile-anal intercourse. However, because genital HSV-1 infections tend to recur less frequently than HSV-2, genital to genital transmission of HSV-1 is thought to be less likely than genital to genital transmission of HSV-2 (Kimberlin, 2014; Patel, 2014; see Table 1).

The overall prevalence of HSV-1 in Canada is unknown. Research from the United States suggests an overall population prevalence of 54% for HSV-1 (Bradley et al., 2014). Unlike HSV-2, for which the vast majority of infections are genital, determining the prevalence of HSV-1 genital infections is difficult because blood tests do not indicate the location of the infection. That is, blood tests do not differentiate between oral and genital HSV-1 infections. While the prevalence of HSV-1 genital infection in Canada is unknown, it is becoming increasingly clear that HSV-1 is responsible for a large, and likely growing, proportion of genital herpes infections. For example, cultures taken from genital herpes samples in Nova Scotia (Forward & Lee, 2003) and New Brunswick (Garceau, Leblanc, Thibault, Girouard & Mallet, 2012) indicated that over half of the infections were due to HSV-1. In both studies, the percentage of genital herpes cases that were due to HSV-1 was progressively higher among younger people. For women under the age of thirty, 70% of genital herpes cases were due to HSV-1 whereas for women over the age of forty, about 35% of samples were HSV-1 (Forward & Lee, 2003; Garceau et al., 2012). Research from the United States indicates that over the past few decades there has been a rising proportion of genital herpes infections caused by HSV-1, particularly among college students, young heterosexual women, and men who have sex with men (Hofstetter et al., 2014).

HSV-2

HSV-2 predominantly infects the skin and mucous membranes of the genital areas. Lesions can appear on or inside the genitals (e.g., in the vaginal canal or on the penis) or anus and rectal area or around the genitals, buttocks, and thighs (Garland & Steban, 2014).

HSV-2 is most often transmitted via genital-genital (penile-vaginal intercourse or other genital to genital contact) or genital-anal (penile-anal intercourse) sexual contact. HSV-2 can be spread from the

genitals to the mouth (genital-oral) or from the anus to the mouth (anal-oral), but HSV-2 infections of the mouth are less common (Wald, Ericsson, Selke, & Corey, 2004; see Table 1).

The most recent data on the prevalence of HSV-2 in Canada comes from the *Canadian Health Measures Survey* (CHMS; Rotermann, Langlois, Severini, & Totten, 2013). According to the CHMS, 13.6% of people aged 14 to 59 years tested positive for HSV-2 antibodies. Age-specific analyses reveal that incidence among 35-59 years was higher (19%) compared to 14-34 years (6%). Overall, 16% of women versus 11% of men tested positive for HSV-2. Caucasian individuals had a higher rate of HSV-2 compared to other ethnicities. Among those who tested positive for HSV-2, only 6% were aware that they had the infection.

Table 1: HSV-1 and HSV-2 Transmission Routes Summary

HSV-1	HSV-2
<ul style="list-style-type: none"> • Oral – oral contact (Kissing). Most common transmission route. • Oral – genital or oral - anal contact resulting in genital or anal infection. (Fellatio/cunnilingus/anilingus). • Genital – genital contact (Penile vaginal intercourse/penile anal intercourse). Less common transmission route. 	<ul style="list-style-type: none"> • Genital – genital contact (Penile vaginal intercourse/penile anal intercourse). Most common transmission route. • Oral – genital or oral – anal contact resulting in oral infection. (Fellatio/cunnilingus/anilingus). Less common transmission route.

Note: Both HSV-1 and HSV-2 can be transmitted from mother to child during delivery with significant health consequences for neonates

Asymptomatic HSV Infection and Transmission

Most people with genital HSV-1 or HSV-2 are asymptomatic, meaning that they do not exhibit signs or symptoms commonly associated with a genital HSV infection (Garland & Steban, 2014). A recent study found that after an initial primary infection, 74% of HSV-1 and 63% of HSV-2 infections were asymptomatic (Bernstein et al., 2013). In addition, in many cases, the individual does not recognize that she or he has an HSV infection because the symptoms are short-lived or mild. In sum, most people with genital herpes are unaware that they have the infection.

It was once commonly assumed that people with genital herpes could only transmit the virus when they were experiencing outbreaks of visible lesions. While infectivity may be highest when a person is having an outbreak, research has clearly established that a person can transmit HSV when they have no symptoms (Garland & Steben, 2014). Asymptomatic shedding of HSV-2 from the genital tract has been found to occur in 80-90% of people with diagnosed with HSV-2 on about 20% of days (Hofstetter, Rosenthal & Stanberry, 2014). HSV-1 can also shed asymptotically from normal looking skin (Centers for Disease Control and Prevention, 2015a).

Both genital HSV-1 and HSV-2 can be passed from mother to fetus during pregnancy or childbirth (Garland & Steban, 2014). The risk of transmission is higher if the mother is experiencing a primary genital HSV outbreak.

The fact that HSV is often asymptomatic is an important contributing factor to the high prevalence of genital herpes. While people who are aware of their HSV infection, and the reality of asymptomatic shedding, can take precautions to reduce the risk of transmission, people who are unaware of their infection are much less likely to take such precautions. As a result, most HSV transmission occurs while people are asymptomatic (Hofstetter et al., 2014).

Primary and Recurrent Genital Herpes Outbreaks

As noted above, most people with genital herpes are unaware they have the infection. If noticeable genital HSV lesions do occur, they usually appear from 2 to 12 days (the incubation period) after infection. The lesions can occur individually or in clusters and are intensely painful. If a person experiences lesions, the primary (first) outbreak is typically the most severe (Centers for Disease Control and Prevention, 2015a). The clinical features of a genital HSV outbreak are summarized in Table 2.

Table 2: Clinical Features of Genital Herpes Outbreaks

- Lesions in the genital area that appear as blisters that crust over and heal within 1 to 2 weeks
- Itchy, tingling, burning, or painful skin in the infected area
- Pain in the legs or buttocks
- Swollen and tender lymph nodes in the groin area
- Thin watery discharge from the vagina
- Fever, headache, or muscle ache
- Fatigue

For many people, recurrences are less severe and decrease in frequency over time. Some people with genital herpes never have a recurrence after the primary outbreak. However, it should be noted that in some cases the first visibly apparent episode of genital herpes may in fact be a recurrence of a previously unrecognized infection (Garland & Steben, 2014). Among people with a confirmed primary outbreak of genital herpes infection, approximately 57% of those with HSV-1 and 89% of those with HSV-2 experience recurrences (Hofstetter, Rosenthal & Stanberry, 2014). Of people with recurring genital herpes, those with HSV-1 have a median of 1.3 recurrences per year whereas those with HSV-2 have a median of 4 recurrences per year (Hofstetter et al., 2014).

In the case of recurrent outbreaks, the person may notice that the infected area starts to tingle, burn, or itch several days before lesions appear.

Genital Herpes Screening and Treatment

Screening

For individuals presenting to health care providers with a suspected case of genital herpes, cell cultures are the most common method currently used in Canada to test for genital herpes (Public Health Agency of Canada, 2013). A swab is taken from a lesion/blister or skin surface and sent to a lab for testing. The culture test will be more likely to detect the virus if the swab is taken within 72

hours after symptoms appear. The culture test can determine whether a genital herpes infection is caused by HSV-1 or HSV-2 or both.

Testing for genital herpes using Polymerase chain reaction (PCR) technology is faster in diagnosing genital herpes infections, four times more sensitive, and more effective in determining viral type than the culture test: however PCR is often not used for routine diagnosis by public health laboratories in Canada (Public Health Agency of Canada, 2013).

Type-specific testing can be particularly useful for couples in which one partner has a confirmed genital herpes infection but the other partner is unsure of her/his status (Garland & Steben, 2014). For example, the partner of a person with evident HSV-2 genital infection can be tested and if the partner has detectable HSV-2 antibodies then "...a lot of the stress around potential transmission of HSV can be taken out of the relationship" (Garland & Steben, 2014, p. 1103). If, however, the partner does not have detectable antibodies, then measures (e.g., condom use, suppressive therapy) can be used to reduce the risk of genital herpes transmission.

Treatment

Treatments for genital herpes can reduce symptoms but are not a cure. The Public Health Agency of Canada (2013) recommends that treatment for a first outbreak be started as soon as possible after symptoms appear. Antiviral medications prescribed by a doctor to treat genital herpes include acyclovir, valacyclovir, and famciclovir. These medications can be used to reduce the severity and duration of recurrent outbreaks and should be taken as soon as symptoms begin to appear. People who have frequent recurrences (i.e., 6 or more outbreaks a year) can be prescribed antiviral medications to be taken on a daily basis (referred to as suppressive therapy) to reduce the frequency and severity of outbreaks (Public Health Agency of Canada, 2013). Suppressive therapy can reduce the frequency of genital herpes recurrences by 70%–80% (Centers for Disease Control and Prevention, 2015b).

People experiencing an outbreak of genital herpes may be able to reduce discomfort by taking over the counter pain medication (i.e., Acetaminophen or Ibuprofen), applying ice packs to the lesions, taking warm baths with salt or baking soda, and wearing loose fitting clothing and cotton underwear.

Genital Herpes and HIV

The presence of genital herpes lesions makes it easier to transmit and acquire HIV infection sexually (Centers for Disease Control and Prevention, 2015a). Research has focused on the relationship between HSV-2 and HIV, finding that there is an estimated 2- to 4-fold increased risk of acquiring HIV if a person is exposed to HIV when HSV-2 is present (Centers for Disease Control and Prevention, 2015a). The association between HSV-2 infection and increased risk for HIV is maintained even when there are no symptoms (lesions). It should be noted that suppressive antiviral therapy does not reduce the increased risk for HIV acquisition among people with genital HSV-2 (Centers for Disease Control and Prevention, 2015a).

People who are HIV-positive and also have genital HSV-2 can more easily transmit HIV to a partner during sexual activity. HSV-2 infection increases the amount of HIV in the genital area and the increased risk of transmission remains even when the person has no symptoms (e.g., HSV lesions) (Public Health Agency of Canada, 2013).

The association between HSV-1 and HIV is unknown (Looker et al., 2015).

Reducing the Risk of Genital Herpes Infection/Transmission

Because most individuals with HSV infection are unaware of their HSV status, reducing the risk of genital herpes acquisition among uninfected individuals can be difficult. Nevertheless, there are several effective strategies for reducing the risk of HSV transmission.

Condom/barrier use

There is strong evidence that the consistent use of condoms reduces the risk of HSV transmission (Stanaway, Wald, Martin, Gottlieb, & Magaret, 2012). However, it should be noted that condoms may not cover all skin areas where HSV is present and this limits the effectiveness of condoms in reducing the risk of transmission.

The use of condoms or other latex barriers that cover the genital area can reduce the risk of transmission of HSV during oral sex (BC Centre for Disease Control, 2012a).

Suppressive therapy

Daily suppressive therapy can also reduce the risk of genital herpes transmission. One study found that continuous once-daily treatment with valacyclovir reduced the transmission of HSV-2 by 50% in heterosexual couples (Corey et al., 2004). Suppressive antiviral therapy is also likely to reduce transmission when used by people who have multiple partners (including MSM; Centers for Disease Control and Prevention, 2015b).

Avoiding sexual contact prior to and during outbreaks

Although asymptomatic transmission is very common, people with genital herpes can avoid sexual contact when they are experiencing the symptoms that precede outbreaks (e.g., tingling, burning sensation in the infected area) and during outbreaks because this when the person is most infectious (BC Centre for Disease Control, 2012b).

Counselling People with Genital Herpes

Receiving a diagnosis of genital herpes can be particularly distressing because the infection, even if well managed with medication and asymptomatic, is life-long. In addition, many people with genital herpes perceive that there is a significant social stigma associated with the infection. The most common psychological patient concerns include the following:

- Fear of transmission.
- Fear of being judged or rejected by partner.
- Loneliness, depression, and low self-esteem.
- Anxiety concerning potential effect on childbearing (Public Health Agency of Canada, 2013).

Sensitive, empathetic, knowledgeable counselling by health care providers can play an important role in reassuring people who have recently received a genital herpes diagnosis that they will be able to adjust to living with the infection and go on to establish satisfying sexual relationships. For example, a

recent study by Foster and Byers (2014) examined sexual well-being in 188 individuals who had been living with either genital herpes or human papillomavirus (HPV) for an average of 7 years. The vast majority of participants reported very few sexual problems due to their STI diagnosis. Participants reported high levels of sexual satisfaction, had high level of sexual self-esteem, and held positive sexual self-schemas. The participants also reported engaging in sexual activity on a regular basis and reported little anxiety in sexual situations. Individuals who internalized the stigma associated with their STI diagnosis, as measured by the STI Stigma Scale (“Only people who have slept around get STIs”; “Someone with an STI is damaged goods”) reported the poorest sexual well-being.

It is important, upon learning of a genital herpes diagnosis, for individuals to be informed that genital herpes is extremely common and that many people have the infection without knowing it. In many cases, educating people about genital herpes, including its high prevalence and ways to manage it, will help reduce anxiety and feelings of isolation. Becoming knowledgeable about HSV will also be useful in equipping people to talk to current and prospective sexual partners.

For people currently in established relationships, a recent genital herpes diagnosis in one partner may lead that partner to blame the other partner for transmitting the infection, especially if testing confirms that both partners have genital herpes infections of the same type. For longer-term couples in which monogamy has been assumed, the diagnosis of genital herpes may also lead to an accusation of infidelity based on the assumption that the transmitting partner acquired the infection recently through sexual activity outside the relationship. It is important for couples in these situations to understand that it is often difficult to know which partner is the source of the infection and that it is plausible that one of the partners acquired an unrecognized or asymptomatic genital herpes infection during a prior relationship.

Unlike bacterial STIs (chlamydia, gonorrhea, syphilis) and HIV, HSV is not a reportable infection in Canada. However, people diagnosed with genital herpes should be encouraged to inform sex partners who can then be screened (Garland & Steben, 2014; Public Health Agency of Canada, 2013).

Whether it is informing a current partner after a person has received a genital herpes diagnosis or talking to a prospective new partner, there are a number of ways to prepare for these discussions. The B.C. Centre for Disease Control (2012b) offers the following tips:

- Know the information well (symptoms, treatment, testing, and prevention).
- Pick a time that is non-sexual and not rushed.
- Pick a place that is private, non-sexual, neutral, and quiet.
- Prepare yourself; use all the resources you can find.
- Ask for help from a health care provider.
- Give your partner websites to view.
- Be calm and avoid negative words.
- Be realistic and remember your partner may have some of the same feelings you did and will need time to process the information you have given.

Informing Sexual Partners About Genital Herpes - Sample Statements -

These sample statements can be used to begin a conversation about genital herpes:

- “I need to let you know I have the virus that causes _____. I use condoms, but let’s talk about it.”
- “Before we have sex, I need tell you something. I found out I have _____.”
- “This is hard for me to talk about, but you should know that I have _____. We can talk about what this means for us.”
- “I have a very common STI _____. I’ve learned a lot about it if you have questions.”

Adapted from Smart Sex Resource, BC Centre of Disease Control. *I have an STI*:
<http://smartsexresource.com/sex-talk/i-have-sti>

Once a partner has had an opportunity to process the information, subsequent discussion can focus on reducing the risk of transmission. Current and prospective partners should be encouraged to be tested as many may have an undiagnosed HSV infection themselves. In informing a partner about having genital herpes, a person should try to be prepared for different responses: While some partners will be accepting, others will respond negatively. If a partner reacts negatively, people with genital herpes can re-assure themselves that they dealt with the situation responsibly and then resolve to move on with a positive attitude towards establishing future romantic relationships.

For many people, networking with others with genital herpes can be an important step in resolving feelings of isolation and stigma and in moving forward with new relationships. As noted in the box below, there are a variety of support groups and dating sites for people with genital herpes.

Resources for People with Genital Herpes

Information About Genital Herpes:

The American Sexual Health Association website provides comprehensive information for people with genital herpes including discussion of relationships and informing partners.

<http://www.ashasexualhealth.org/stdsstis/herpes/a/>

Herpes Support Groups:

List of Canadian Local Herpes Support Groups

<http://www.whathealth.com/genitalherpes/supportgroups-ca.html>

The Phoenix Association: Toronto's Support Group for People with Genital Herpes

<http://torontoherpes.com/>

Dating websites for Canadians:

Peopewithherpes.org <http://peopewithherpes.org/>

Positivesingles.com <http://www.positivesingles.com/>

HerpesLove.Net <http://www.herpeslove.net/>

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