Reducing the Sexual Transmission of Genital Herpes
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**Introduction**

People diagnosed with genital herpes usually have many questions and concerns, a key one being anxiety about possible transmission of the infection to a partner. Similarly, an uninfected partner is often anxious about the possibility of acquiring genital herpes from the infected person.

**The Epidemiology of Genital Herpes**

Genital herpes is one of the most common sexually transmitted infections worldwide. However, many individuals with this infection are asymptomatic or have minor symptoms that are not recognised by the patient or their healthcare provider as being due to herpes [1,2].

Genital herpes may be caused by either HSV-1 or HSV-2. A recent Australian study showed that 12% of Australian adults are infected with HSV-2, and 76% are infected with HSV-1. The study showed that HSV-2 infection is of public health importance within Australia as it is one of the commonest causes of genital ulceration and also implicated as an important co-factor for HIV transmission [3]. In the USA approximately one-fifth of the general population is HSV-2 seropositive [5].

Another Australian study in women attending an antenatal clinic in western Sydney showed that HSV-2 prevalence was about 12% [6]. Not surprisingly studies in patients attending sexual health clinics show a much higher prevalence (35-65%) [7,8]. Other studies have reported high rates of infection in homosexual men, with HIV infected men having nearly twice the prevalence of HSV-2 than HIV negative men (61% vs 28%) [9]. A study conducted in NSW correctional centres reported a 58% seroprevalence rate in women versus 21% for males [10].

**Risk Factors Associated with HSV-2 Infection**

A number of risk factors and behaviours are associated with HSV-2 infection (seropositivity). An understanding of these factors is important for the diagnosis of infection as well as discussion of possible interventions with patients to prevent or reduce HSV-2 transmission and acquisition.

Some of the more important risk factors associated with HSV-2 seropositivity include:

- Female gender: HSV-2 seropositivity is higher among women than men;
- Higher number of lifetime sexual partners: the risk of HSV-2 infection increases with the number of partners;
- Early age at first intercourse: this is likely to be a marker of longer duration of sexual activity and, therefore, exposure;
- Lower socio-economic status or level of education;
• History of a sexually transmitted disease: this is a marker of having partners who are at higher risk of HSV-2 infection; and,

• Age: HSV-2 seroprevalence increases with age, which likely reflects the cumulative increase in the number of sexual partners and the chronic nature of HSV-2 infection

Contributors to the Spread of Genital Herpes

Several factors may contribute to the epidemic spread of HSV-2 infection:

• Unrecognised infection and undiagnosed infection;

• Asymptomatic reactivation of the virus in individuals who are diagnosed with the infection and know they have the virus and also those with undiagnosed infection that are unaware they have the virus;

• Failure to use condoms; and

• Relatively low levels of treatment when genital herpes is diagnosed.

Facts about HSV transmission

• Genital HSV infection is transmitted by close physical (skin to skin) contact where the susceptible individual is exposed to the infectious virus from oral (usually HSV1 associated with ‘cold sores’) or genital skin or mucosal surfaces. Such contact can be genital to genital or mouth to genital contact.

• HSV is readily transmitted when blisters or ulcers are present. However, the infection is more commonly transmitted through asymptomatic viral shedding (virus shedding without detectable lesions). Asymptomatic HSV shedding is common.

• Transmission commonly occurs from partners who are unaware that they are infected (i.e. they have unrecognized or asymptomatic genital HSV infection).

• Condoms consistently provide considerable prevention against sexual transmission of herpes for both men and women.

Reducing Transmission of HSV-2

A number of strategies have been suggested for reducing the risk of transmission of genital herpes. These include education and counselling of infected individuals, the use of condoms and advice about avoiding genital-to-genital contact when genital lesions are present. Finally, the use of suppressive antivirals in couples where one has the infection and the other doesn’t has been recently evaluated.

Transmission of HSV-1 and HSV-2 often occurs from unrecognized symptomatic episodes or asymptomatic reactivations.
Counselling and Education

Many patients with genital herpes are concerned about transmission, specifically who gave it to them and whether they have passed it on to anybody else. It is important for the health care provider to explain how transmission can occur, including the important issue of asymptomatic viral shedding. The AHMF have a clinical guideline on counselling and communication skills for people with genital herpes.

Some key counselling points that should be covered include:

- Genital herpes can be transmitted by genital to genital contact, genital to mouth contact or other skin contact with the genital area;
- Nearly everyone with genital herpes sheds the virus intermittently without symptoms and sexual transmission can occur during such asymptomatic periods usually as a consequence of one of the partners having a pre-existing asymptomatic infection;
- Sexual partners of infected persons should be advised that they might be infected even if they have no symptoms.
- Transmission of herpes can occur within monogamous long-term relationships;
- Transmission can occur in people who have never had penetrative sex, through close genital contact or oral genital contact;
- Asymptomatic viral shedding is more frequent in genital HSV-2 infection than genital HSV-1 infection and is most frequent in the first 12 months of acquiring HSV-2.
- Asymptomatic viral shedding may occur more frequently in immunocompromised individuals.

Condoms

Condoms are made of latex or polyurethane. There are 2 major types of condoms, those used by males and those used by females. Condoms act as a mechanical barrier to the spread of HSV. In vitro models have shown that male condoms are impermeable to HSV-2 and these studies confirm the effective nature of the mechanical barrier. Consequently, if condoms were able to cover all the affected anatomical areas and were used throughout every act of sexual contact they would provide excellent protection against transmission.

In reality the situation is somewhat different. First, condoms don’t cover all the affected sites and second, many couples don’t use condoms or use them intermittently. Nonetheless, a study involving 528 monogamous couples who were serodiscordant for HSV-2 showed that if condoms were used by infected males for at least 25% of sexual acts the risk of transmission to their female sexual partners was reduced by about 75%.

It is likely that more consistent condom usage would result in even greater reductions. The efficacy of female condoms to reduce HSV transmission during intercourse has not been assessed.
Effect of Antiviral Therapy on HSV Shedding

Patients with recurrent genital herpes can be treated with antiviral drugs. These drugs can be used intermittently (to treat each episode) or continuously (to prevent episodes)\textsuperscript{11}. Episodic therapy will decrease viral shedding during the treatment period, however will not affect asymptomatic viral shedding outside this time. Suppressive treatment is effective in suppressing recurrences and reducing symptomatic and asymptomatic shedding of HSV\textsuperscript{12}.

Aciclovir, famciclovir and valaciclovir all suppress symptomatic and asymptomatic viral shedding. These drugs have been shown in clinical trials to reduce asymptomatic HSV shedding by about 80-90\%\textsuperscript{14,15,16}.

Effect of Antiviral Therapy on HSV Transmission

The efficacy of antiviral therapy in preventing recurrences and HSV-2 shedding suggests that such treatment may reduce sexual transmission of HSV-2. The results of a study assessing the effect of valaciclovir suppressive therapy in monogamous serodiscordant couples (i.e. one with HSV-2 infection and the other uninfected) supports this.

The study was randomised, placebo-controlled and double-blind\textsuperscript{17}. In almost 1500 couples with a history of less than 10 recurrences per year, participants received valaciclovir 500 mg once daily or placebo for 8 months. The uninfected partners (or HSV-2 seronegative susceptible partners), who could be HSV-1 seropositive, were monitored monthly for acquisition of genital herpes. Couples were offered condoms and counselled on safe sexual behaviour at all visits.

Valaciclovir reduced the risk of transmission of clinical disease by 75\% in the susceptible partner and the acquisition of genital HSV-2 infection (as assessed by serology) was reduced by 48\%.

Once daily valaciclovir suppressive therapy has been shown to significantly reduce the rate of acquisition of symptomatic HSV-2 infection.

Valaciclovir suppression is a useful component in the prevention of HSV-2 transmission and is probably best used in conjunction with condoms. The AHMF recommends that clinicians consider offering HSV-2 discordant couples, once daily suppressive therapy with valaciclovir as a useful adjunct to counselling on the use of condoms for the prevention of genital herpes transmission.

Management Strategies to Prevent Transmission

- Condoms may be partially effective in preventing acquisition of HSV.
- Suppressive antiviral therapy reduces asymptomatic shedding of HSV and clinical recurrences.
- Suppressive antiviral therapy with valaciclovir reduces the rate of acquisition of HSV-2 infection and clinically symptomatic genital herpes. Other antivirals may be effective, but efficacy has not been proven in clinical trials.
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Bibliography


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