

Patient information from the BMJ Group

Herpes, genital

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Herpes, genital

Genital herpes is an infection that causes painful sores in and around your genitals. It's caused by the herpes simplex virus. You may be upset to find out you have genital herpes, but it isn't a serious illness. And there are good treatments to help clear your symptoms and reduce the chance of further outbreaks of symptoms.

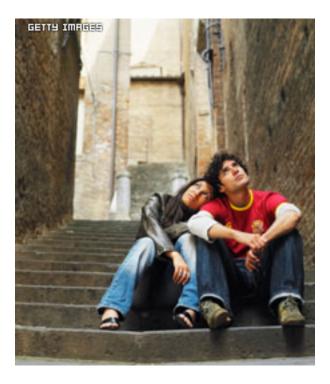
We've brought together the best research about genital herpes and weighed up the evidence about how to treat it. You can use our information to talk to your doctor and decide which treatments are best for you.

What is genital herpes?

Genital herpes is a common infection caused by the herpes simplex virus. Anyone who has sex can get it. Most of the time the infection doesn't cause any problems. But from time to time the virus becomes active and causes painful sores around your genitals.

There are two types of herpes simplex virus.

- Herpes simplex virus type 2 is the most common cause of genital herpes. It's sometimes called HSV-2 for short.
- Herpes simplex virus type 1 mostly causes <u>cold sores</u>. But it can also cause genital herpes. It's sometimes called HSV-1 for short.



Most people with genital herpes don't have any symptoms.

The viruses that cause genital herpes spread from one person to another through sex. You may not be able to tell you've got genital herpes because it doesn't always cause symptoms.

You can catch genital herpes from a sexual partner:

- Before they know they are infected
- Before they first develop symptoms
- During an outbreak, when they have symptoms
- Between outbreaks, when they have no symptoms but the virus is still active.

A herpes virus can also cause infection after being passed from the lips and face of your sexual partner during oral sex if they have a cold sore, or if they've had a cold sore in the past.

Most people catch genital herpes viruses from someone with no obvious symptoms.

Once you've got the herpes simplex virus, it will be inactive and most of the time won't cause any symptoms. But it will still be there, and if is reactivated will cause symptoms.

You can pass on genital herpes to a sexual partner: [1]

Before you know you are infected

- Before the first symptoms have developed
- During an outbreak, when you have genital herpes symptoms such as sores or cracks in your skin
- Between outbreaks, when you have no genital herpes symptoms but the virus is still active.

You can also pass on genital herpes by giving oral sex when you have a cold sore, or if you've had a cold sore in the past.

If you are in a long-term relationship, the appearance of genital herpes doesn't necessarily mean that you or your partner has been unfaithful. One of you could have been carrying a herpes virus for a long time without knowing it.

What are the symptoms of genital herpes?

Many people with genital herpes have no symptoms. Others get outbreaks of painful spots, sores, or blisters around their genitals. Up to 8 in 10 people with genital herpes don't know they have it.

Most of the time you carry the herpes virus harmlessly inside your body. But from time to time the virus is **activated**. This means:

- You become infectious during sex, because the virus is multiplying in and around your genitals
- You may get symptoms.

Symptoms are different for different people. You may get one or more of the following symptoms: [2]

- Itching, tingling, pain, or burning around your genitals
- Painful blisters or ulcers on or around your genitals
- Painful blisters or ulcers on your thighs or buttocks
- Itchy red patches or cracks in the skin around your genitals
- Enlarged lymph nodes in your groin.

If you're a woman, you also may have difficulty urinating.

It's difficult to say how genital herpes will affect you. You may have an annoying itch that won't go away. Or some areas of your skin may be sore when you move. Some people have lots of painful blisters all over their genitals and buttocks. [3]

Your ulcers, blisters, or cracks will get better on their own within two or three weeks. But they can be very painful, especially the first time you have symptoms. Some people also get a mild fever or a headache when they have these first symptoms. [4]

Once you've had one outbreak of symptoms, you are likely to have at least one more. But it is likely to be milder than the first, and you're likely to get better faster. You'll probably get fewer episodes of symptoms over time. [5]

We don't know why some people's symptoms are worse than others. And we don't know what triggers them.

In general, you are most infectious when you have symptoms on or around your genitals.

The biggest problem with genital herpes is the way it makes people feel about themselves. You may feel shocked, depressed, anxious, embarrassed, or guilty. Being told you have genital herpes can even stop you wanting to go out with friends, see your partner, or go to work or school. Lots of people feel angry. Your doctor can help you with these feelings.

[3] [4]

You might find it reassuring to know that most people cope well once they're over the initial shock. In a survey, 9 in 10 people said they were 'very upset' at first, but almost everyone said they eventually 'learned to live with genital herpes'. [6] About one-third of people said the condition was 'not a big deal'.

How common is genital herpes?

Genital herpes is common. Anyone who is sexually active can get it.

It's difficult to know exactly how many people are infected with one of the viruses that cause genital herpes. (To read about the types of virus that cause genital herpes, see What is genital herpes?)

One study that involved blood donors found that about 1 in 12 had symptoms of the infection. ^[7] About 1 in 4 people who go to a sexual medicine clinic have the infection. ^[7]

Most people who are infected with the herpes virus (type 1 or type 2) don't know they have genital herpes. This could be because:

- They don't ever get symptoms such as sores, blisters, or cracking skin on their genitals
- They've had symptoms, but they weren't bad enough to go to the doctor
- They went to the doctor, but the doctor didn't think it was herpes.

Genital herpes is getting more common. One-third more people had the infection at the end of the 1990s than 25 years earlier. [8] And clinics treating sexually transmitted

infections in the UK reported about 90% more new cases of genital herpes in 2012 than in 2003. [9]

What treatments work for genital herpes?

There are good treatments for genital herpes that can help with your symptoms and reduce the number of outbreaks of symptoms you get. Having treatment can also reduce the chances that you'll infect your partner.

- Although treatment can't clear the herpes virus from your body, it can help with symptoms.
- For most of the time, the herpes virus will be inactive and you won't notice any problems. When you do get symptoms of genital herpes, such as painful sores or ulcers, they'll usually clear up within a few weeks, even if you don't have treatment.
- During mild episodes of symptoms, you could try simple treatments such as salt water baths and painkillers (such as paracetamol or ibuprofen).
- Taking antiviral drugs can help clear up your symptoms more quickly.
- Taking antiviral drugs even when you don't have symptoms can reduce the number of times you have symptoms.
- If you're a woman and you have an attack of genital herpes symptoms in late pregnancy, doctors recommend you have your baby by **caesarean section**. They think this reduces the chances of passing on the infection to your baby. But we don't know for certain whether it's necessary. Nobody has done the research to see if there is a difference in infection rates in babies born after a caesarean section or a vaginal birth.
- Picking up the infection for the first time in late pregnancy can be dangerous for your baby. If your partner has genital herpes and you aren't yet infected, ask your doctor about how to protect yourself and your baby.

We've divided the treatments for genital herpes into the following groups:

- Treatments for genital herpes
- Treatments to prevent passing on genital herpes
- Treatments for genital herpes in pregnancy
- Treatments for genital herpes if you have HIV.

Which treatments work best? We've looked at the best research and given a rating for each treatment according to how well it works.

Treatment Group 1

Treatments for genital herpes

Treatments that work

Antiviral drugs for genital herpes

Treatments that need further study

Psychotherapy or emotional support

Treatment Group 2

Treatments to prevent passing on genital herpes

- Most experts say you should avoid having sex with a partner who doesn't have the
 virus when you're having symptoms of genital herpes, or if you feel symptoms are
 on their way. You are most infectious during these times.
- Men who use condoms are less likely to infect their sexual partners than men who
 don't. [15] We don't know how well female condoms protect men or women from
 herpes because nobody has done the research to find out.
- If you have genital herpes, taking an antiviral drug every day can reduce the chances
 of you passing it on to your uninfected partner.
- None of these precautions or treatments can protect your partner completely.

Treatments to prevent passing on genital herpes

Treatments that are likely to work

- Antiviral drugs to prevent passing on genital herpes
- Male condoms

Treatments that need further study

Female condoms

Treatments that are unlikely to work

Vaccines

Treatment Group 3

Treatments for genital herpes in pregnancy

Treatments that need further study

- Caesarean section to protect your baby
- Antiviral drugs to protect your baby

Treatment Group 4

Treatments for genital herpes if you have HIV

Treatments that work

Antiviral drugs for genital herpes if you have HIV

What will happen to me?

Most of the time the genital herpes virus lives harmlessly inside your body. The infection is not a serious illness. For many people it's just a nuisance. But you will probably never get rid of it completely.

About 9 in 10 people who have had one episode of symptoms will have at least one more episode within a year. Outbreaks caused by the type 2 virus are more likely to come back than those caused by the type 1 virus. (To read about the types of virus that cause herpes, see What is genital herpes?)

About one-quarter of people with the type 2 virus will have six or more episodes of symptoms in the year after they are first infected. [4]

You don't always need treatment for genital herpes. If you get symptoms, they'll usually clear up on their own within a week or two. [4] But if your symptoms are more severe, you'll probably need to see a doctor. There are treatments that can:

- Help clear your symptoms of genital herpes
- Reduce the number of future episodes of symptoms you have
- Help stop the infection spreading to your sexual partner.

No treatment clears the virus from your body completely. But even without treatment, you'll have fewer symptoms over time.

If you're pregnant

If you're pregnant, there's a small chance you could pass on genital herpes to your baby. Herpes viruses can make your baby dangerously ill. But this only happens if you catch the infection for the first time late in your pregnancy. About 4 in 10 women who pick up the infection late in pregnancy pass on the infection to their baby. [10] [11]

If you're pregnant or thinking about having a baby and you have genital herpes, you should tell your doctor. Also, if you don't have genital herpes but your partner does, you should talk to your doctor or other health professional about how to protect yourself and your baby.

You should avoid oral sex in late pregnancy with a partner who has had cold sores.

If you have genital herpes and are pregnant, you may be offered antiviral treatment or a caesarean section to protect your baby from infection. See <u>Treatments for genital</u> <u>herpes in pregnancy</u>.

If you have HIV infection

Genital herpes can be more serious if you have HIV (human immunodeficiency virus) infection or AIDS (acquired immune deficiency syndrome), particularly if your immune system is badly affected. Your symptoms may be more severe, and you may need stronger treatment than people whose immune system is healthy.

If you have HIV or AIDS, genital herpes can increase your chances of infecting others with HIV during sex. [12] Scientists have found HIV in sores and blisters caused by genital herpes. [13]

What will happen to my partner?

When the virus you are carrying becomes **active** you can pass it on during sex. You are most infectious during an outbreak of genital herpes symptoms. This is when you have symptoms around your genitals, such as painful blisters, broken skin, or chafing.

Most experts say you shouldn't have sex when you have symptoms or if you feel you are about to develop symptoms. [4]

But you can also pass the virus on when you don't have symptoms. We don't know for certain how often this happens. We also don't know how easy it is to pass on the virus. But we do know there are good treatments that help reduce the risk.

No treatment or precaution can protect your partner completely. But the risk of you passing on the infection probably becomes less with time, whatever you do. [14]

Treatments:

Antiviral drugs for genital herpes

In this section

Antiviral drugs can't get rid of the herpes virus from your body. But lots of research has shown they can help your symptoms clear up more quickly. They can also reduce the number of attacks you get.

Antiviral drugs attack both the types of herpes virus that cause genital herpes. (To read more about these viruses, see <u>What is genital herpes?</u>) Three antiviral drugs are used to treat genital herpes:

- Aciclovir (brand name Zovirax)
- Famciclovir (Famvir)
- Valaciclovir (Valtrex).

These drugs seem to work equally well. [16] [17] [18] [19] They come as tablets, liquids, and injections.

The **first time you get an outbreak of symptoms**, taking antiviral drugs can help clear them. (The first attack is usually the worst.) [20] [21] [22] Antiviral drugs help clear up the cracks, blisters, or sores on your genitals and other areas, and stop them hurting so much. For a first episode, people usually take antiviral drugs for seven days to ten days. [21]

Very bad first episodes of genital herpes are usually treated with injections. Injections are also given to people whose <u>immune system</u> is not working so well, for example because they have HIV (human immunodeficiency virus).

Antiviral drugs can also help with **repeat episodes**. You can keep some antiviral drugs at home and take them as soon as you feel the symptoms coming on. This can help clear your symptoms more quickly. The first symptom you have could be just mild tingling or it could be more severe pain, sometimes in your legs, buttocks, or hips. [23] [4] [24] You'll learn to recognise your early symptoms, which can be different for different people.

Antiviral drugs shorten most attacks by one or two days. [18] [25] [26] And they can stop your symptoms. [18] [23] If you take antiviral drugs up to six hours after your first symptoms, there's a good chance your symptoms won't get worse. [23] You'll usually need to take the antiviral drugs for three to five days, depending on the treatment used and what dose is used. [23] [27]

If you have more than six episodes of genital herpes a year, your doctor might suggest that you take antiviral drugs every day. Many good-quality studies (called randomised controlled trials) have found that regular treatment with antiviral drugs cuts down the number of times you have symptoms. [28] [29] [30]

In one study, up to 50 in 100 people who took valaciclovir every day had no symptoms for a year. But about 95 in 100 people who took a dummy treatment (a placebo) had at least one episode of herpes symptoms. [18] People have taken antiviral drugs continually for up to seven years to prevent attacks of genital herpes. [25]

Your doctor might suggest you take a break from having treatment with antiviral drugs after a year or so, just to see if you still need it. [4] [5]

Antiviral drugs cause few problems. You may get headaches or nausea, but these are mostly mild. These problems usually don't stop people taking their antiviral drug treatment.
[18] [31]

Psychotherapy or emotional support

In this section

Treatments that offer support, such as psychotherapy, may help people cope better with genital herpes. It's possible that this kind of support could help reduce the number of episodes you get. But there hasn't been enough good research to say for certain whether it does. [32]

Psychotherapy and other types of help for people with genital herpes can include:

- Learning more about herpes infection
- Coping with stress
- Relaxation
- Hypnosis
- Cognitive therapy.

Antiviral drugs to prevent passing on genital herpes

In this section

Taking antiviral drugs may help prevent passing on genital herpes. While you're taking an antiviral drug you 'shed' the herpes virus on fewer days than you would otherwise. [20] [21] [22] Shedding means the virus is active around your genital area, and you can pass it on during sex. You may not know when you are shedding the virus.

Three antiviral drugs are used to prevent genital herpes being passed on:

Aciclovir (brand name Zovirax)

- Famciclovir (Famvir)
- Valaciclovir (Valtrex).

You usually take these drugs as tablets or a liquid.

One good-quality study (called a randomised controlled trial) looked at passing on the virus during sex. [14] The study found:

- Only 2 in 100 people who took valaciclovir infected their sexual partner
- In the people who didn't take valaciclovir, 4 in 100 infected their sexual partner
- Women were three times more likely to pick up herpes from men than men were from women.

Antiviral drugs cause few problems. You may get headaches or nausea, but these are mostly mild. These problems usually don't stop people taking their antiviral drug treatment.
[31]

Male condoms

In this section

Male condoms may also help prevent passing on genital herpes. Experts advise men with genital herpes to use a condom whenever they have sex with a partner who doesn't have the virus. [4]

Two reasonably good-quality studies found that men who used condoms were much less likely to pass the virus on to their partners. [33] [34] Condoms didn't remove the risk completely, but one study found they reduced it by about 90 percent. [33]

If you're a man whose female sexual partner has genital herpes, wearing a condom during sex might reduce your chances of becoming infected. When researchers looked at the overall effects of condom use in six studies they found that using condoms protected both men and women from infection with the main virus that causes genital herpes (HSV-2). [15]

But different studies say different things, so we can't be sure overall. In one study, men who wore condoms were just as likely to become infected as men who didn't. [33] Other studies have found that using condoms protects men from getting genital herpes. [35]

Female condoms

In this section

We don't know whether female condoms protect either women or men from genital herpes. There haven't been any studies that have tested female condoms in genital herpes.

Vaccines

In this section

A vaccine has been developed against herpes simplex virus type 2 (HSV-2), one of the viruses that cause genital herpes. But the vaccine doesn't work very well.

One good-quality study (called a randomised controlled trial) found that people who had the vaccine were just as likely to catch genital herpes as people who had a dummy vaccine (a placebo). [36] In another study, the vaccine helped protect some uninfected women but didn't work for men. [37]

Caesarean section to protect your baby

In this section

Having a caesarean section is sometimes recommended to avoid passing on genital herpes to babies during birth.

Women with genital herpes can pass the infection on to their babies during a vaginal delivery, whether or not they have genital herpes symptoms at the time. But the risk is very low. Fewer than 3 in 100 women pass the herpes virus on to their babies. [10] [11] Even so, because herpes can make babies dangerously ill, there are some situations where you may be offered a caesarean section.

Your doctor will probably recommend a caesarean if you get symptoms of genital herpes for the first time in the last three months of your pregnancy, especially if the infection starts in the six weeks before you're due. [38] [5] [39]

If you've had symptoms of genital herpes in the past and get them again during pregnancy, you probably won't need a caesarean. [38] [5] [39] Even if you have sores on your genitals at the time you're due to give birth, it's not clear if you need a caesarean. [38] Some doctors don't recommend it, and others say it's worth considering. [5] [39] If you do opt for a natural birth, the risk to your baby is small. [39]

In theory, a caesarean section should help protect your baby from a herpes virus that's active in and around your birth canal. But there hasn't been any good research, so we don't know whether it works.

The risk of infecting your baby is much higher if you pick up a genital herpes virus for the first time late in pregnancy. Your body hasn't had time to attack the virus before you go into labour, so the virus is active in your birth canal and genital area. [1] About 4 in 10 women who pick up genital herpes virus late in pregnancy will infect their baby.

Antiviral drugs to protect your baby

In this section

If you have an attack of genital herpes symptoms while you are pregnant, your doctor may suggest you take antiviral drugs. This is to try to prevent another attack around the time of your delivery.

Several studies have found that aciclovir (brand name Zovirax) and valaciclovir (Valtrex) can reduce the chances of symptoms around the time of delivery. [40] [41] [42]

It isn't clear yet whether antiviral drugs make it less likely that the baby will get infected with the herpes virus. In a review of the research, no babies had symptoms of the herpes virus after being born. ^[40] It didn't matter whether their mothers had taken antiviral drugs or not. However, slightly fewer women needed a caesarean delivery if they'd taken antiviral drugs. According to the researchers, one caesarean would be avoided for every 10 women who took antiviral drugs.

Antiviral drugs didn't harm the women or their babies in these studies. But researchers can't rule out rare side effects.

Antiviral drugs for genital herpes if you have HIV

In this section

Antiviral drugs attack both types of herpes virus that cause genital herpes. (To read more about the types of virus that cause herpes, see <u>What is genital herpes?</u>) Three antiviral drugs are used for treating genital herpes:

- Aciclovir (brand name Zovirax)
- Famciclovir (Famvir)
- Valaciclovir (Valtrex).

They come as tablets, a liquid, and injections. If you have the HIV (human immunodeficiency virus) infection, you might get injections if you get a very bad first attack of genital herpes.

There haven't been any studies testing these drugs as a treatment for a **first episode** of genital herpes symptoms in people with HIV. But doctors think they are likely to work, because they work well for people without HIV.

All three antiviral drugs help the symptoms of **repeat episodes** of herpes in people with HIV. [43] [44] [45] Each of the three drugs seem to work as well as the others. In one study, treatment with either famciclovir or aciclovir cleared up genital herpes symptoms within a week. [44]

The most common side effects of antiviral drugs in people with HIV who take them are headaches, nausea, and diarrhoea. But even these are unusual. In one study, about 1 in 10 people felt sick, slightly fewer got diarrhoea, and about 1 in 6 got headaches. [43]

If your genital herpes symptoms keep on coming back, your doctor may suggest you take an antiviral drug every day for several months, or even years. In one good-quality study (called a randomised controlled trial), people with HIV who took valaciclovir were less likely to have outbreaks of symptoms than people who took a dummy treatment (a placebo). ^[46] In long-term studies, about 1 in 10 people had to stop taking their antiviral treatment because of side effects. Usually, the side effects were nausea or headaches.

Further informations:

Glossary:

lymph nodes

Lymph nodes (also called lymph glands) are small, bean-shaped lumps that you can't usually see or feel easily. You have them in various parts of your body, such as your neck, armpits, and groin. Lymph nodes filter lymph and remove unwanted things from your body, such as bacteria and cancer cells.

HIV

HIV stands for human immunodeficiency virus. It's the virus that causes AIDS. It makes you ill by damaging cells called CD4 cells. Your body needs these cells to fight infections. You can get HIV by sharing needles for injecting drugs, or by having sex without a condom with someone who has the virus.

AIDS

AIDS stands for acquired immunodeficiency syndrome. People who are infected with the human immunodeficiency virus (HIV) get AIDS when the virus has destroyed most of their immune system. When people have AIDS, their body isn't able to fight infections. So even common infections, such as colds, can cause serious problems.

immune system

Your immune system is made up of the parts of your body that fight infection. When bacteria or viruses get into your body, it's your immune system that kills them. Antibodies and white blood cells are part of your immune system. They travel in your blood and attack bacteria, viruses and other things that could damage your body.

randomised controlled trials

Randomised controlled trials are medical studies designed to test whether a treatment works. Patients are split into groups. One group is given the treatment being tested (for example, an antidepressant drug) while another group (called the comparison or control group) is given an alternative treatment. This could be a different type of drug or a dummy treatment (a placebo). Researchers then compare the effects of the different treatments.

placebo

A placebo is a 'pretend' or dummy treatment that contains no active substances. A placebo is often given to half the people taking part in medical research trials, for comparison with the 'real' treatment. It is made to look and taste identical to the drug treatment being tested, so that people in the studies do not know if they are getting the placebo or the 'real' treatment. Researchers often talk about the 'placebo effect'. This is where patients feel better after having a placebo treatment because they expect to feel better. Tests may indicate that they actually are better. In the same way, people can also get side effects after having a placebo treatment. Drug treatments can also have a 'placebo effect'. This is why, to get a true picture of how well a drug works, it is important to compare it against a placebo treatment.

hypnosis

Hypnosis is a relaxed state of mind people can be put into through a technique called hypnotism. Hypnosis may make you more suggestible, which means you are more easily persuaded to do something the hypnotist suggests. Hypnosis can be used by trained therapists to try and help improve people's health: for example, by helping them stop smoking.

cognitive therapy

This therapy involves meeting a therapist for a limited number of weekly sessions. The aim is to change the negative thoughts and feelings experienced by people with disorders such as depression, panic disorders and eating disorders. Patients are sometimes asked to keep a diary so they become more aware of their thoughts. Then, with a highly skilled therapist, they can change the beliefs that lead to the negative thoughts and feelings.

vaccination

A vaccination is an injection a doctor can give you to protect you from getting an infectious illness (an illness that spreads between people).

caesarean section

A caesarean section is an operation to take a baby out of a mother's womb. The surgeon makes a cut through her abdomen to take the baby out. You have this if there's a risk that a normal delivery through your vagina would cause harm to you or your baby.

diarrhoea

Diarrhoea is when you have loose, watery stools and you need to go to the toilet far more often than usual. Doctors say you have diarrhoea if you need to go to the toilet more than three times a day.

Sources for the information on this leaflet:

- 1. Drake S, Taylor S, Brown D, et al. Improving the care of patients with genital herpes.BMJ. 2005; 321: 619-623.
- 2. New Zealand Herpes Foundation.Patient information: recognising genital herpes.Available at http://www.herpes.org.nz/patient/recognising.htm (accessed on 15 December 2013).
- 3. Donovan B.Sexually transmitted infections other than HIV.Lancet. 2004; 363: 545-556.
- 4. Kimberlin DW, Rouse DJ.Genital herpes.New England Journal of Medicine. 2004; 350: 1970-1977.
- 5. British Association for Sexual Health and HIV.2007 national guideline for the management of genital herpes. Available at http://www.bashh.org/documents/115/115.pdf (accessed on 15 December 2013).
- 6. Romanowski B, Zdanowicz YM, Owens ST.In search of optimal genital herpes management and standard of care (INSIGHTS): doctors' and patients' perceptions of genital herpes. Sexually Transmitted Infections. 2008; 84: 51-56.
- 7. Cowan FM, Johnson AM, Ashley R, et al. Antibody to herpes simplex virus type 2 as serological marker of sexual lifestyle in populations. BMJ. 1994; 309: 1325-1329.
- 8. Fleming DT, McQuillan GM, Johnson RE, et al. Herpes simplex virus type 2 in the United States, 1976 to 1994. New England Journal of Medicine. 1997; 337: 1105-1111.
- Public Health England. Number & rates of anogenital herpes diagnoses in England, 2003 2012. http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1281953087565 (accessed on 15 December 2013).
- 10. Brown ZA, Selke SA, Zeh J, et al. Acquisition of herpes simplex virus during pregnancy. New England Journal of Medicine. 1997; 337: 509-515.
- 11. Smith J, Cowan FM, Munday P.The management of herpes simplex virus infection in pregnancy. British Journal of Obstetric Gynaecology. 1998; 105: 255-268.
- 12. Freeman EE, Weiss HA, Glynn JR, et al. Herpes simplex virus 2 infection increases HIV acquisition in men and women: systematic review and meta-analysis of longitudinal studies. AIDS. 2006; 20: 73-83.
- 13. Schacker T, Ryncarz A, Goddard J, et al. Frequent recovery of HIV from genital herpes simplex virus lesions in HIV infected men. Journal of the American Medical Association. 1998; 280: 61-66.
- 14. Corey L, Wald A, Patel R, et al. Once-daily valaciclovir to reduce the risk of transmission of genital herpes. New England Journal of Medicine. 2004; 350: 11-20.
- 15. Martin ET, Krantz E, Gottlieb SL, et al.A pooled analysis of the effect of condoms in preventing HSV-2 acquisition. Archives of Internal Medicine. 2009; 169: 1233-1240.
- 16. Chosidow O, Drouault Y, Leconte-Veyriac F, et al. Famciclovir versus aciclovir in immunocompetent patients with recurrent genital herpes infections: a parallel-groups, randomised, double-blind clinical trial. British Journal of Dermatology. 2001; 144: 818-824.
- 17. Fife KH, Barbarash RA, Rudolph T, et al. Valaciclovir versus acyclovir in the treatment of first-episode genital herpes infection: results of an international, multicenter, double-blind randomized clinical trial. Sexually Transmitted Diseases. 1997; 24: 481-486.

- 18. Wald A.New therapies and prevention strategies for genital herpes. Clinical Infectious Diseases. 1999; 28 1: 4-13.
- 19. Wald A, Selke S, Warren T, et al. Comparative efficacy of famciclovir and valacyclovir for suppression of recurrent genital herpes and viral shedding. Sexually Transmitted Diseases. 2006; 33: 529-533.
- 20. Nilsen AE, Aasen T, Halsos AM, et al. Efficacy of oral acyclovir in treatment of initial and recurrent genital herpes. Lancet. 1982; 2: 571-573.
- 21. Mertz G, Critchlow C, Benedetti J, et al.Double-blind placebo-controlled trial of oral acyclovir in the first episode genital herpes simplex virus infection. Journal of the American Medical Association. 1984; 252: 1147-1151.
- 22. Bryson YJ, Dillon M, Lovett M, et al.Treatment of first episodes of genital herpes simplex virus infections with oral acyclovir: a randomized double-blind controlled trial in normal subjects. New England Journal of Medicine. 1983; 308: 916-921.
- 23. Strand A, Patel R, Wulf H C, et al. Aborted genital herpes simplex virus lesions: findings from a randomised controlled trial with valaciclovir. Sexually Transmitted Infections. 2002; 78: 435-439.
- 24. Reichman RC, Badger GJ, Mertz GJ, et al. Treatment of recurrent genital herpes simplex infections with oral acyclovir: a controlled trial. Journal of the American Medical Association. 1984; 251: 2103-2107.
- 25. Stone K, Whittington W.Treatment of genital herpes. Review of Infectious Diseases. 1990; 12: 610-619.
- 26. Wald A, Carrell D, Remington M, et al. Two-day regimen of acyclovir for treatment of recurrent genital herpes simplex virus type 2 infection. Clinical Infectious Diseases. 2002; 34: 944-948.
- 27. Leone PA, Trottier S, Miller JM. Valaciclovir for episodic treatment of genital herpes: a shorter 3-day treatment course compared with 5-day treatment. Clinical Infectious Diseases. 2002; 34: 958-962.
- 28. Lebrun-Vignes B, Bouzamondo A, Dupuy A, et al.A meta-analysis to assess the efficacy of oral antiviral treatment to prevent genital herpes outbreaks. Journal of the American Academy of Dermatology. 2007; 57: 238-246.
- 29. Leone P, Warren T, Hamed K, et al. Famciclovir reduces viral mucosal shedding in HSV-seropositive persons. Sexually Transmitted Diseases. 2007; 34: 900-907.
- 30. Handsfield HH, Warren T, Werner M, et al. Suppressive therapy with valacyclovir in early genital herpes: a pilot study of clinical efficacy and herpes-related quality of life. Sexually Transmitted Diseases. 2007; 34: 339-343.
- 31. Fife KH, Crumpacker CS, Mertz GJ.Recurrence and resistance patterns of herpes simplex virus following stop of 6 years of chronic suppression with acyclovir. Journal of Infectious Diseases. 1994; 169: 1338-1341.
- 32. Longo D, Koehn K.Psychosocial factors and recurrent genital herpes: a review of prediction and psychiatric treatment studies. International Journal of Psychiatry in Medicine. 1993; 23: 99-117.
- 33. Wald A, Langenberg A, Link K, et al. Effect of condoms on reducing the transmission of herpes simplex virus type 2 from men to women. Journal of the American Medical Association. 2001; 285: 3100-3106.
- 34. Vera EG, Orozco HH, Soto SS, et al. Condom effectiveness to prevent sexually transmitted diseases. Ginecología y Obstetricia de México. 2008; 76: 88-96.
- 35. Wald A, Langenberg AG, Krantz E, et al. The relationship between condom use and herpes simplex virus acquistion. Annals of Internal Medicine. 2005; 143: 707-713.
- 36. Corey L, Langenberg AG, Ashley R, et al.Recombinant glycoprotein vaccine for the prevention of genital HSV-2 infection: two randomised controlled trials. Journal of the American Medical Association. 1999; 282: 331-340.
- 37. Stanberry LR, Sprunace SL, Cunningham AL, et al.Glycoprotein-D-adjuvant vaccine to prevent genital herpes.New England Journal of Medicine. 2002; 347: 1652-1661.
- 38. National Collaborating Centre for Women's and Children's Health.Caesarean section.November 2011. Clinical guideline 13. Available at http://www.nice.org.uk/cg132 (accessed on 15 December 2013).

- 39. Royal College of Obstetricians and Gyanecologists. Management of genital herpes in pregnancy. September 2007. Green-top guideline 30. Available at http://www.rcog.org.uk/files/rcog-corp/uploaded-files/GT30GenitalHerpes2007.pdf (accessed on 15 December 2013).
- 40. Hollier LM, Wendel GD. Third trimester antiviral prophylaxis for preventing maternal genital herpes simplex virus (HSV) recurrences and neonatal infection In: The Cochrane Library. Wiley, Chichester, UK.
- 41. Sheffield JS, Hollier LM, Hill JB, et al. Aciclovir prophylaxis to prevent herpes simplex virus recurrence at delivery: a systematic review. Obstetrics and Gynecology. 2003; 102: 1396-1403.
- 42. Andrews WW, Kimberlin DF, Whitley R, et al. Valacyclovir therapy to reduce recurrent genital herpes in pregnant women. American Journal of Obstetrics and Gynecology. 2006; 194: 774-781.
- 43. Romanowski B, Aoki FY, Martel AY, et al. Efficacy and safety of famciclovir for treating mucocutaneous herpes simplex infection in HIV-infected individuals. AIDS. 2000; 14: 1211-1217.
- 44. Conant MA, Schacker TW, Murphy RL, et al. Valaciclovir versus aciclovir for herpes simplex virus infection in HIV-infected individuals: two randomized trials. International Journal of STD and AIDS. 2002; 13: 12-21.
- 45. Delany S, Mlaba N, Clayton T, et al.Impact of aciclovir on genital and plasma HIV-1 RNA in HSV-2/HIV-1 co-infected women: a randomized placebo-controlled trial in South Africa.AIDS. 2009; 23: 461-469.
- 46. DeJesus E, Wald A, Warren T, et al. Valaciclovir for the suppression of recurrent genital herpes in human immunodeficiency virus-infected subjects. Journal of Infectious Diseases. 2003; 188: 1009-1016.

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