

NEW ZEALAND HERPES FOUNDATION



Guidelines for the Management of Genital Herpes in New Zealand

11th Edition - 2015

Produced by the Professional Advisory Board (PAB) of the
Sexually Transmitted Infection Education Foundation

Sexually Transmitted Infection Education Foundation resources

Helpline

Website

Resources

HERPES

Tollfree 0508 11 12 13

www.herpes.org.nz

Health professionals' resources

1. Guidelines for the Management of Genital Herpes in New Zealand – 11th Edition 2015
Only available online at www.herpes.org.nz
2. Sexually Transmitted Infections – Summary of Guidelines 2015

Patient information pamphlets

1. The Facts: A guide for people with Herpes Simplex
Includes –
Genital Herpes – The Facts
Herpes and Relationships
Herpes and Pregnancy
Facial Herpes
2. Herpes: Myth vs Fact

These resources are available through the Sexually Transmitted Infection Education Foundation

Phone: 09 433 6526

Fax: 09 360 2835

Email: info@stie.org.nz

New website with information on all sexually transmitted infections:
www.justthefacts.co.nz

HPV

Tollfree 0508 11 12 13

www.hpv.org.nz

Health professionals' resources

1. Guidelines for the Management of Genital, Anal and Throat HPV Infection in New Zealand – 8th Edition 2015
Only available online at www.hpv.org.nz
2. Sexually Transmitted Infections – Summary of Guidelines 2015

Patient information pamphlets

1. Some Questions and Answers about HPV and Genital Warts
2. A Patient Guide: HPV in Perspective
3. Cervical Smears and Human Papillomavirus Infection (HPV)
4. What everyone should know about HPV (Human Papillomavirus) Infection and the HPV Vaccines
5. HPV and Men
6. HPV and Throat Cancer

New Zealand Sexual Health Society (NZSHS) resources

Comprehensive Sexually Transmitted Infection (STI) Management Guidelines and Patient Information handouts are available on www.nzshs.org/guidelines

NEW ZEALAND HERPES FOUNDATION

**Guidelines for the Management of
Genital Herpes in New Zealand**
11th Edition - 2015

Produced by the Professional Advisory Board (PAB) of the
Sexually Transmitted Infection Education Foundation

The Objectives of the NZHF are:

*To provide support, current educational material and management options
in a caring, friendly, confidential environment for people with genital herpes.*

*To liaise with health professionals, providing a support network to assist in
the responsible management of genital herpes.*

*Ultimately, to improve the social context in which people with genital herpes
live their lives.*

Table of contents

IFC	Sexually Transmitted Infection Education Foundation resources
3	About this document
3	What's new since 2013
4	Genital herpes – Common Misconceptions
5	Genital herpes – Key Points
6	EPIDEMIOLOGY AND TRANSMISSION
6	Epidemiology
7	Transmission
8	Reducing risk of transmission
9	Diagnostic tests
11	Key information to discuss with a patient who asks for a blood test
11	Table 1: Interpreting blood test results
12	MANAGEMENT OF CLINICAL EPISODES OF GENITAL HERPES
12	Management of first clinical episode
14	Treatment of first episode genital herpes
17	Treatment algorithm – Management of first episode of genital herpes
18	Management of recurrent episodes of genital herpes
20	Treatment of recurrent genital herpes
22	Genital herpes in immunocompromised individuals
23	Treatment algorithm – Management of recurrent episodes of genital herpes
24	GENITAL HERPES IN PREGNANCY
26	Management of pregnant women with first episode genital herpes
27	Treatment algorithm – Management of women with suspected genital herpes in pregnancy
28	Treatment algorithm – Management of women with history of genital herpes prior to pregnancy and women with first clinical episode greater than 6 weeks prior to delivery
29	Management of pregnant women with recurrent genital herpes
29	Treatment of genital herpes in pregnancy
30	Use of aciclovir in pregnancy and breastfeeding
30	Prematurity
30	Prevention of HSV in the neonate
31	NEONATAL HSV INFECTION
31	Transmission to the fetus and newborn
32	Disease classification
32	Table 2: Classification of neonatal disease infection
33	Management of neonatal HSV infection
35	Guidelines for talking to parents of a baby diagnosed with neonatal herpes
36	Anticipatory management of newborn infant with known risk for neonatal HSV
37	Breastfeeding and use of oral aciclovir/valaciclovir
38	GENITAL HSV INFECTION IN CHILDHOOD
39	ISSUES IN COUNSELLING
41	Key information for health professionals to give patients in counselling
42	References
45	Members of the Professional Advisory Board
IBC	International resources

About this document

These guidelines have been produced by considering available literature and by basing the recommendations on the available evidence, both local and international. The three levels of evidence used are:

GRADE A: Very strong evidence

Based on well-designed prospective randomised controlled clinical trials.

GRADE B: Fairly strong evidence

Based on evidence from case-control or cohort studies, or clinical trials lacking one or more of the above features.

GRADE C: Weak evidence or firmly held opinion

Based on published case reports, well-written reviews or consensus.

What's new since 2013

Valaciclovir

The special authority and Hospital Medicines List restriction was removed from 1 March 2016 (Pharmac).

This is recommended first line treatment.

Treatment of first episode genital herpes

- Oral valaciclovir 1g bd for 7/7.
- Oral aciclovir 400mg 3 times daily (8 hourly) for 7 days.

Treatment of recurrent genital herpes

Episodic Treatment

- Oral valaciclovir 500mg bd for 3/7.
- Oral aciclovir 800mg (2 x 400mg) 3 times daily for 2 days.

Prescribe enough tablets for patients to be able to self-initiate treatment at onset of symptoms.

Suppressive therapy

Given daily to prevent recurrences and reduce asymptomatic shedding. Recommended for people with confirmed HSV-2. Suggest prescribing for minimum of 12–18 months, followed by a break of 3 months at their convenience to see if recurrences are still frequent and/or bothersome.

- Oral valaciclovir 500mg daily (increase to 500mg BD on individual basis of clinical presentation and/or having breakthrough recurrences on 500mg daily).
- Oral aciclovir 400mg twice daily.

Treatment of HSV in people with HIV

HSV episodes in those with HIV can be successfully treated with standard antiviral regimens as for non-HIV infected individuals. However there is a higher rate of resistance to standard anti-herpes drugs.

GENITAL HERPES – COMMON MISCONCEPTIONS

Patient feedback suggests some health providers still believe that:

-
- **MYTH:** *Most, if not all, genital herpes infections are due to HSV-2.*

FACT: Genital herpes is caused by both HSV-1 and HSV-2 although HSV-1 is less likely to cause recurrent symptoms.

- **MYTH:** *Visible genital herpes infection is very typical and does not require diagnostic testing.*

FACT: Herpetic lesions are often atypical and other conditions may cause genital ulceration; genital lesions should be swabbed and tested for HSV.

- **MYTH:** *Herpes simplex virus subtype determination is unnecessary.*

FACT: As HSV-1 and -2 have different natural histories, it is important to ask for specific typing (so patients can be better informed).

- **MYTH:** *Serological testing can be used to diagnose genital herpes in the setting of an active genital ulcer.*

FACT: Serological testing is not recommended as an acute diagnostic or routine screening tool. It is recommended only in limited clinical scenarios ([see page 10](#)).

- **MYTH:** *Herpes simplex virus infection can be ruled out with negative serologic testing.*

FACT: HSV antibodies take several weeks and even months to develop after infection; false negatives and false positives are common.

- **MYTH:** *The 72 hour zoster treatment rule applies to herpes simplex.*

FACT: All first episodes of genital herpes should be treated regardless of timing of onset of symptoms ([see page 12](#)).

The purpose of this guideline is to dispel common misconceptions and hopefully improve current management of those with herpes infection.

GENITAL HERPES – KEY POINTS

- Genital herpes is a common infection caused by Herpes Simplex Virus Type One (HSV-1) and Herpes Simplex Virus Type Two (HSV-2) and as many as one in five adults in New Zealand have genital herpes due to HSV-2. Up to 50% of first episode genital herpes is due to HSV-1.
- HSV-2 incidence is higher in women than men, with cumulative incidence increasing with age.
- Genital herpes is under-recognised and under-treated. Minor lesions are common; any recurring localised genital symptoms or lesions should be investigated as possible genital herpes.
- **Laboratory confirmation of the diagnosis and typing by HSV PCR is important, but should not delay treatment.** HSV serology is not recommended as a routine diagnostic tool.
- Oral antiviral treatment is safe, effective and generic brands are very cheap.
- Oral antiviral treatment of the first clinical episode should always be offered regardless of the time of symptom onset.
- **The '72 hour' herpes zoster rule does NOT apply to first episode genital herpes infection and treatment should be given regardless of time of presentation.**
- Antiviral therapy of recurrent genital herpes may be suppressive or episodic. Many patients prefer suppressive antiviral therapy. It is particularly recommended for those with frequent and/or severe recurrences or associated psychosocial morbidity. For those choosing episodic antiviral therapy, it is more effective when patients start therapy themselves at the first signs of a recurrence; this requires anticipatory prescribing.
- Neonatal HSV infection is a rare but potentially fatal disease of babies, occurring within the first 4-6 weeks of life. Symptoms are non-specific and a high index of suspicion is required. Most neonatal HSV infections are acquired at birth, generally from mothers with an unrecognised first genital herpes infection acquired during pregnancy.
- Specialist advice on management should be sought for a woman with a history of genital herpes and active lesions at term and especially in the high risk situation of a first episode up to 6 weeks prior to delivery.
- Vaccine trials for HSV continue to be disappointing.

A diagnosis of genital herpes can have a profound effect. Patients tell us they want –

- To be given accurate up-to-date information.
- To be provided with the best treatment available.
- To be involved in decisions about treatment and management.
- To be referred for specialist care or advice when appropriate.

The NZHF has a range of resources to assist patients and clinicians.

Phone: Herpes Helpline tollfree **0508 11 12 13**

Website: www.herples.org.nz

EPIDEMIOLOGY AND TRANSMISSION

Epidemiology

KEY POINTS

- As many as one in five adults have genital herpes due to HSV-2, but most will have asymptomatic or unrecognised disease.
- Genital herpes due to HSV-1 (through oral to genital transmission) has also become common; HSV-1 is a frequent cause of primary genital herpes.
- The natural history of genital HSV-1 infection is towards significantly fewer clinically apparent recurrences and less subclinical shedding than HSV-2.

Genital herpes is an infection caused by the herpes simplex virus (HSV) and, for practical purposes, encompasses lesions on the genitals and nearby areas (i.e. buttocks, anal area and thighs). Genital herpes may be due to HSV-1 (the usual cause of orolabial herpes) or HSV-2 (more commonly associated with genital lesions). It is a very common infection that is often under-recognised, as a person may be asymptomatic or have only very minor symptoms.

HSV-2

HSV-2 prevalence varies between countries, being higher in the USA than in Europe, Australia and New Zealand. It also varies depending on the demographics of the population being tested.¹ Consistent findings between countries are that HSV-2 seroprevalence increases with:

Age: The incidence of new infections is highest amongst young adults, but as infection is lifelong, overall prevalence increases with increasing age.¹ Participants in the Dunedin Multidisciplinary Health and Development cohort study provided serum for HSV-2 antibody status at the ages of 21, 26, 32 and 38. By the age of 38, 26.8% of women had been positive for HSV-2 compared to 17.3% for men, confirming a higher biological susceptibility to infection for women. The infection rate for women was highest at age 21-26 compared to 26-32 for men and then declined in both genders with age, consistent with decreasing infectivity of long-term prevalent infections.²

HSV-1

HSV-1 seroprevalence studies cannot distinguish between oral and genital infection sites which makes it much more difficult to estimate the prevalence of genital HSV-1 infection. Clinical case data has limitations as well. That said, HSV-1 accounts for 35% of confirmed anogenital infections in Australia³ and similarly a Waikato-wide study found 30-40% of anogenital isolates are due to HSV-1 each year.⁴ In that study, HSV-1 accounted for 53% of positive isolates from under-25 year olds, 30% in the 25-35 year olds, and 26% from over-35 year olds. Likewise, an Auckland Sexual Health Clinic study in 2004 found most true primary episodes of genital herpes were HSV-1, whilst non-primary first episodes and recurrences were mostly HSV-2.⁵

Like HSV-2, HSV-1 seroprevalence increases with increasing age and tends to be more common in women.⁶

Note: Routine typing of isolates enhances a clinician's ability to give prognostic information and optimal clinical care. It is no longer accurate to assume that genital herpes is due to HSV-2 infection, as a substantial proportion of people will have HSV-1.⁷ The natural history of genital HSV-1 infection is towards significantly fewer clinically apparent recurrences and much less subclinical shedding.^{8,9} Also, prior HSV-1 infection does not alter the risk of acquisition of HSV-2, although it does attenuate the symptoms; it is important for those diagnosed with HSV-1 genital herpes to understand that they remain at risk of HSV-2 infection.

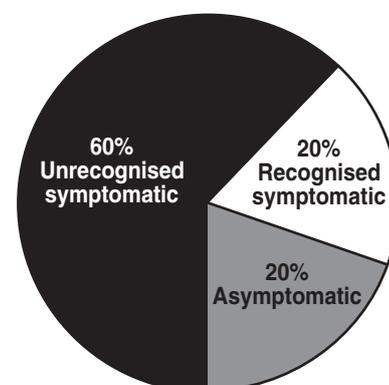


Figure 1: Prevalence, manifestations of genital herpes

Transmission

KEY POINTS

- Transmission occurs during skin-to-skin contact when virus is being shed.
- HSV-1 is commonly transmitted through oral to genital contact.
- HSV-2 is transmitted through genital to genital contact.
- Virus shedding may be symptomatic or asymptomatic.

Most infections are acquired from someone who is unaware they are infected, who may have mild or asymptomatic infection.

Herpes simplex virus enters the body, either through a break in the skin or through mucous membranes, during direct contact with infected secretions or mucosal surfaces. For genital infections, this is usually during sexual contact, with HSV-2 commonly transmitted during vaginal or anal sex and HSV-1 commonly passed on through oral-genital sex.

Transmission is most likely to occur:

- During sexual contact.
- When the skin is broken.
- When there are lesions (e.g. vesicles or ulcers) present.
- From men to women.

Therefore, sexual contact should be avoided when active lesions are present.

Transmission may occur when a partner is shedding virus asymptomatically. Most people who acquire genital herpes get it from someone who is unaware they are infected, who may have mild or asymptomatic infection.⁹

It is important to remember that not all first episodes of HSV-1 or HSV-2 represent a new or recently acquired infection. It may be a first clinically recognised episode of a previously unrecognised or asymptomatic infection acquired weeks, months or years previously.

The virus is readily inactivated at room temperature and by drying; hence, non-contact forms of spread, for example via fomites (inanimate objects) are considered unlikely. Autoinoculation resulting in spread to different anatomical sites can occur (e.g. orolabial, whitlow), although this is believed to be uncommon. **GRADE C**

Asymptomatic viral shedding

Nearly everyone, both men and women, with genital HSV-2 infection sheds virus from time-to-time without symptoms, which is why sexual transmission can occur during asymptomatic periods. These intermittent episodes of asymptomatic viral shedding are more frequent:

- With genital HSV-2 than genital HSV-1 infection.
- During the first 12 months after acquiring HSV-2.
- In those with more frequent symptomatic episodes.
- Within a week before or after a symptomatic episode.
- In those with HIV infection.

The viral load threshold for transmission from an episode of asymptomatic shedding has not been established. For a given individual it is impossible to be certain when asymptomatic viral shedding occurs, but it is important not to give the impression that people are infectious all the time.

Reducing risk of transmission

KEY POINTS

- Using condoms reduces, but does not eliminate, the risk of male to female transmission.
- Sexual contact should be avoided when oral or genital lesions are present.
- Aciclovir and valaciclovir suppress symptomatic and asymptomatic shedding by up to 80-95%.
- Prior HSV-1 means HSV-2 infection is more likely to be asymptomatic.
- Suppressive oral antiviral treatment will significantly reduce, but not eliminate, the risk of transmission.

Barrier methods

Male and female latex condoms appear impermeable to HSV-2, but in 'real-life' do not give absolute protection for a variety of reasons: condoms do not cover all affected areas, condom breakage or slippage may occur, close genital contact or contact with infectious secretions may occur during foreplay, etc.¹⁰ Nonetheless, consistent condom use offers moderate protection against HSV-2 infection in both men and women.¹¹ **GRADE B** Data on male condoms preventing transmission to men or on the efficacy of female condoms is lacking. Condom use should be discussed and left to the individual couple's choice.

Oral-genital contact

People who do not acquire HSV-1 during childhood are at risk of HSV-1 at any site, including genital infection, during adulthood. Transmission may occur whilst receiving oral sex from someone who has oral HSV-1, even if the source partner is asymptomatic. It is estimated that up to a third of persons who are HSV-1 antibody positive do not have a clinical diagnosis of oral herpes,¹² but will still shed HSV-1 virus.¹³ It is generally accepted that prior orolabial HSV-1 infection protects an individual against genital HSV-1. Possible exceptions may be those infected simultaneously at more than one site or those with very recent HSV-1 infection who have not yet seroconverted. Oral HSV-2 in isolation is uncommon.

Oral-genital contact should be avoided when oral lesions are present. **GRADE C**

Antivirals

Aciclovir, famciclovir and valaciclovir all suppress symptomatic and asymptomatic shedding, by up to 80-95%.¹⁴ Also, it has been shown that suppressive once-daily valaciclovir results in reduced transmission to the discordant partner.¹⁵ For partners, there was a 48% reduction in acquisition of HSV infection and a 75% reduction in clinical symptomatic genital herpes. Other antivirals may be similarly effective, but this has not been proven in clinical trials.

Co-infection

In most studies, pre-existing HSV-1 infection does not decrease the risk of HSV-2 infection, but prior HSV-1 means HSV-2 infection is more likely to be asymptomatic.¹⁶ If HSV-2 genital infection is acquired first, then a new HSV-1 genital infection does not affect the frequency of recurrences.

Diagnostic tests

KEY POINTS

- Suspected genital herpes should be confirmed by appropriate laboratory tests.
- For patients with active lesions, PCR is the gold standard, or culture (depending on local laboratory availability), but not serology, are the recommended diagnostic methods.
- A negative result does not rule out HSV infection.
- Serology is not recommended as an acute diagnostic tool but may be useful in specific clinical situations ([see page 10](#)).

Clinical diagnosis alone is insensitive and inaccurate, with a 20% false positive rate.¹⁶ **Suspected genital herpes must be confirmed by appropriate laboratory tests.** Recurrent lesions, which may be atypical, likewise should be tested for HSV. **However, it is important not to delay appropriate therapy while awaiting confirmation.**

Detection of herpes simplex virus in the lesion establishes the diagnosis. Viral detection may involve culture or HSV DNA. Vesicles offer the best source of virus. However, results depend on multiple factors, including the adequacy of the specimen, and a negative result may not exclude infection. If direct HSV tests are repeatedly negative and the symptoms are recurring, the patient should be advised to have type-specific herpes serology. **GRADE B**

PCR

For patients with active lesions, PCR is the recommended diagnostic method.

HSV DNA detection by polymerase chain reaction (PCR) increases HSV detection rates compared with virus culture. This is largely because it avoids problems that may affect culture results, such as inadequate quantity of specimen, bacterial contamination and inadvertent inactivation of virus by sub-optimal handling and sample transport delays. Increasingly, PCR is being implemented as the preferred diagnostic method for genital herpes, particularly since the advent of commercially available real-time assays.

The sensitivity of HSV2 on a commercial PCR system has been demonstrated to be 98.4%-100% sensitive and with a specificity of 87% compared to an in-house PCR. For HSV-1 the sensitivity and specificity have been estimated at 96.7-100% and 95.1-99.4%.¹⁷

However, stringent quality control is necessary because of potential contamination by 'carryover' DNA from other biological samples¹⁸ and local validation is recommended. Positive results are usually reported within 2 days but occasionally take longer.

Culture

HSV isolation in cell culture has been the diagnostic gold standard for many years. Specificity of culture is virtually 100%, but sensitivity is highly dependent on the stage of the clinical lesions, with an isolation rate of over 90% from vesicular or pustular lesions, 70% from ulcerative lesions, but only 27% at the crusting stage.¹⁹ Delayed transport of the specimen to the laboratory may further reduce yield. Positive results are usually reported within 2-5 days, but occasionally may take longer.

Sample collection

The following tests have a low false positive rate. However, a negative test result does not necessarily exclude HSV infection since all methods are dependent on adequate collection of the specimen and, for culture in particular, on correct specimen handling and prompt transportation to the laboratory. It is important to be aware of locally available tests, as these may vary, so an appropriate sample is taken. If there is doubt please check with your local laboratory.

Viral typing should be requested routinely.

PCR

- PCR is the test of choice
- Check with local laboratory if HSV PCR is routinely available. If not, you may need to specify "for herpes simplex DNA" and offer clinical explanation as to why this is the preferred test over culture, e.g. CSF sample.
- Swab as for viral culture.
- Transport time to the laboratory is less important than with culture.

Culture

- Select appropriate viral transport swab (check with local lab as to which swab to use).
- Swab the lesion firmly. The aim is to collect any vesicular fluid that may be present and to collect virus-infected cells from the base of the lesion.
- Insert swab into plastic tube.
- Place on a cold source, e.g. melting ice or sliikka pad, and send chilled to the virus laboratory. The swab should arrive the same day since the virus will decay with transport time.

Serology

Serology is not recommended as a routine test for the following reasons:

- Serological tests detect antibodies to HSV in blood and indicate **past** infection.
- Type specific tests, based on glycoprotein G (gG) assays, detect antibodies to the type specific proteins gG-1 and gG-2 and detect established infection with HSV-1 and HSV-2. They do not distinguish the anatomical site of infection ([see Table 1 on page 11](#)).
- Type specific tests are used in population surveys, but their diagnostic reliability in individual patients is still debated.
- **There is no confirmatory serology testing available in New Zealand.**
- Seroconversion following initial infection is usually 2-6 weeks, but may be longer (months). Also, some do not seroconvert and reversal from seropositive to seronegative status may occur if there is minimal antigenic stimulation.
- It is a useful test in some clinical situations, but routine screening of asymptomatic individuals is currently not recommended. **GRADE B**

Situations where measurement of type-specific antibody might be helpful include:

- Management of herpes in pregnancy ([see page 27](#)).
- Where one partner in a relationship has symptomatic genital herpes. This may be important for discordant couples (a pregnant woman with a symptomatic male partner), as it may be appropriate to counsel abstinence in the last weeks of pregnancy and/or for the male partner to take suppressive antiviral therapy.
- Recurrent or atypical genital symptoms with negative HSV cultures and/or PCR. Most recurrences will be positive on PCR testing and may not require serology to be done
- For most partners of positive patients, education and not serology is recommended because of false positive/false negative serology results.

With the widespread introduction of PCR, which detects most HSV recurrences, the need for serology has decreased.

The person ordering serology should be able to supply appropriate pre- and post-test counselling. A positive HSV-2 serology result may cause significant psychological morbidity ([see page 15-16](#)).

KEY INFORMATION TO DISCUSS WITH A PATIENT WHO ASKS FOR A BLOOD TEST

- Explain whether the test is for HSV-1 and HSV-2 antibodies or just HSV-2 antibodies. If the blood test being done only tests for HSV-2 antibodies, a negative test does not rule out the possibility of the person having genital herpes caused by type 1.
- The window period for antibodies developing following infection is usually 2-6 weeks, but may be longer (months).
- Caution is needed in the interpretation of results. Because false negatives and false positives occur, the results have to be weighed together with the clinical presentation and patient's history.
- Implications for the presence of only HSV-1 antibodies need to be explained. HSV-1 is a common infection, usually acquired in childhood, and may be shed from the oropharynx by asymptomatic individuals. Infection with HSV-1 does not necessarily imply sexual exposure, but genital infection with HSV-1 is increasingly common.

Table 1: Interpreting blood test results

	HSV-2 negative	HSV-2 positive
HSV-1 negative	No antibodies detected*; consider at risk of infection to both types.	No HSV-1 antibodies detected*; consider at risk of infection to HSV-1. HSV-2 antibodies imply prior infection. Probable genital HSV-2 infection because oral and other non-genital site infections are uncommon.
HSV-1 positive	HSV-1 antibodies imply prior infection, but does not specify site of infection. No HSV-2 antibodies detected*; consider at risk of infection to HSV-2.	HSV-1 and HSV-2 antibodies imply prior infection with both. Probable genital HSV-2 infection, and oral HSV-1.

* May be within window period, may not have seroconverted or may have seroreverted.

MANAGEMENT OF CLINICAL EPISODES OF GENITAL HERPES

Definitions

Primary infection: Recently acquired infection with HSV-1 or HSV-2 with an absence of antibodies to either type on serological testing.

Non-primary infection: Recently acquired infection with a virus type in the presence of antibodies to the other virus type, e.g. HSV-2 in a person with previous antibodies to HSV-1, but absence of antibodies to HSV-2 on serological testing.

First episode: First clinical episode of genital HSV-1 or HSV2. May be a primary or non-primary or first recognised clinical expression of a previously acquired infection weeks, months or years before.

Recurrence: Previously acquired HSV-1 or HSV-2 infection with antibodies to the same type on serological testing.

Management of first clinical episode

KEY POINTS

- First clinical episode may, but does not always, reflect recent infection.
- The '72 hour' herpes zoster rule does not apply to first episode herpes.

The first clinical episode of genital HSV-1 or HSV-2 may, but does not always, reflect recent infection. It may represent a primary HSV infection or a new non-primary infection or a recurrence of a previously asymptomatic infection (see Table 2 on page 32). It is not possible to reliably distinguish between these on clinical grounds alone. Nonetheless, as the first episode genital herpes is generally more severe and/or more prolonged, **treatment should always be offered regardless of time of symptom onset. The '72 hour' herpes zoster rule does NOT apply to first episode genital herpes.**

Aciclovir prescriptions do not require specialist authorisation and the medication is available through any pharmacy. Patients are often very unwell and **therapy should be initiated regardless of how long the lesions have been present and before virological confirmation.** This is based on evidence that the virus is shed from the infected area for a median of 11 days, with systemic and local symptoms lasting 2-3 weeks if untreated. Oral antiviral therapy substantially reduces the duration and intensity of symptoms.^{20,21} **GRADE A**

Management for patients presenting with a first episode of genital herpes should encompass the following:

1. History.
2. Examination.
3. Tests:
 - (a) Virus swab for PCR or culture for diagnosis.
 - (b) Consider screening for other STIs if appropriate, although this may be deferred to a follow-up visit, as it is often too painful.
4. Treatment involving:
 - (a) Oral antiviral therapy.
 - (b) Symptomatic treatment.
 - (c) Education concerning transmission, epidemiology, etc; provide written material.
 - (d) Acknowledgement of the psychosocial impact of the disease.
 - (e) Referral to support systems – NZHF Helpline tollfree **0508 11 12 13**.
5. Appropriate follow-up arrangements.

It is not necessary or desirable to attempt to cover all these issues at the initial clinical assessment. However, recognition of the psychosocial impact of the diagnosis, and the provision of adequate information and/or referral to the Herpes Helpline, is important.

It may be helpful to discuss how results will be given, e.g. in person, over the phone. If giving results over the phone, check the person is in an appropriate situation to receive the call.

History of primary genital herpes

Symptoms may appear 2-20 days following exposure to infection with the virus. However, initial symptoms of genital herpes may not be recognised or may not occur until months to years later. Symptom severity differs markedly with severe cases having lesions lasting up to 3 weeks.

The prodrome (if experienced) is signalled by flu-like symptoms of fever, headache and general myalgia, accompanied by local tingling, irritation and/or pruritus or pain in the genital region. Rapidly, pruritic erythematous papules appear, followed by multiple small vesicles that contain clear to cloudy fluid. These vesicles rupture within 1-2 days to form painful, sloughy, shallow ulcers with irregular margins, which may become confluent. The area may be oedematous and can be extremely tender. Pain on urination is typical, particularly in women and spontaneous urination may be impossible. The ulcers dry to form crusts and later heal, leaving a transient red macule with minimal scarring (if any). Less commonly, lesions can pass through the blister phase quickly and blisters may not be noticed. Involvement of the cervix occurs but speculum examination may not be possible. Lesions may also appear extra-genitally, commonly on thighs and buttocks and less commonly on hands, lips, face and breasts. Local lymph nodes, i.e. inguinal nodes with genital infection, are usually enlarged and tender.

Women are more severely affected than men. Immunosuppressed people may develop very extensive disease.

Complications of primary genital herpes

- Neurological complications are more common with genital herpes than is often recognised. Acute, generally benign, lymphocytic meningitis may occur; HSV-2 is associated with aseptic meningitis in up to 36% of adult women and 13% of men with primary HSV-2 infection. Symptoms include neck stiffness, low-grade fever and severe headache. Diagnostic features include photophobia with CSF findings of positive HSV-2 PCR, increased white cell count and raised protein.²²
- Similarly, a diagnosis of acute radiculitis (herpetic lumbosacral radiculoneuropathy or Elsberg syndrome) tends to be overlooked, yet may cause acute urinary retention, constipation and sacral neuralgia. Referred pain can affect the saddle area distribution, S3 and 4, of the sacral nerve and the bladder detrusor muscle. Erectile dysfunction, dull or severe burning pain in the anogenital region, loss of sensation and hypersensitivity can occur down the thighs and the lower legs. The condition is usually self-limiting and tends to resolve in 1-2 weeks; in the meantime, supportive cares should be offered. Symptoms may sometimes persist for weeks and rarely severe intractable pain may require opiate analgesia.
- HSV-2 myelo-radiculitis, associated with advanced immunosuppression and AIDS, may be associated with a fatal outcome.²³
- Bells Palsy is probably caused by either VZV, HSV-1 and rarely HSV-2. Early treatment with oral steroids is effective;²⁴ the effectiveness and hence use of antiviral agents is less clear.
- Sporadic herpes simplex encephalitis is an acute necrotising viral encephalitis that is more usually caused by primary infection with HSV-1. Clinical features are often nonspecific, as is common with all forms of encephalitis, and include headache, signs of meningeal irritation, altered mental status, and seizures. Because prompt treatment of HSV encephalitis may minimise residual neurologic damage and prevent death, early consideration of this diagnosis is important.
- HSV (especially Type 1) is a common predisposing trigger for erythema multiforme, a hypersensitivity condition most often caused by infections and sometimes drugs. Many cases have no obvious precipitating cause. It develops 3-14 days following HSV infection.
- Mild forms of this condition are common and start and present as macules, papules and urticarial lesions which reach up to 3cm on extremities. They especially affect the hands and feet, dorsum of elbows and knees, and less often the trunk. Some lesions develop into the classical "target" lesion with three colour zones: central dusky erythema, surrounded by a paler oedematous zone and an outer erythematous ring with a well-defined border. Resolution within 7-10 days is the norm.
- Infrequently, HSV viraemia may result in infection of visceral organs. In most cases of disseminated infection, lesions are confined to the skin, but hepatitis, pneumonitis and other organ involvement may occur, with or without vesicular skin lesions.

A specialist should review any patient with complications.

Examination

Examination should include inspection of the genital region; speculum examination should be considered, but may need to be delayed if discomfort is anticipated.

Clinical diagnosis is insensitive and differential diagnosis needs to be considered. Nonetheless, genital herpes is the most likely cause of ulcerative genital lesions.

Diagnosis

Laboratory confirmation of the diagnosis is important, but should not delay the initiation of treatment. A negative result does not necessarily exclude a diagnosis of HSV ([see page 9](#)).

Differential Diagnosis

- Aphthous ulcers. There are fewer and larger lesions with no preceding vesicles.
- Steven Johnson syndrome. This is usually but not always associated with skin lesions. (HSV infection can cause this condition.)
- Autoimmune blistering disorders such as pemphigus and cicatrical pemphigoid, which are chronic.
- Other genital infections lack the preceding vesicular stage, apart from varicella zoster infection which is unilateral.
- Candidiasis and folliculitis produce pustules, which must be differentiated from HSV infection.

Treatment of first episode genital herpes

KEY POINTS

- **Therapy should be initiated regardless of how long the lesions have been present and before virological confirmation.** The first episode genital herpes is generally more severe and/or more prolonged; **treatment should always be offered** regardless of time of symptom onset. The '72 hour' herpes zoster rule does NOT apply to first episode genital herpes.
- Oral, not topical, antivirals should be prescribed.
- Analgesia may be required. Encourage intake of oral fluids. Patients can be advised to bathe herpetic lesions in salt water, and women advised to urinate in a warm bath or shower to help reduce pain.
- Reduced dose of oral antivirals should be considered in presence of severe renal failure.

A. Pharmacological treatment

If there is a possibility of pregnancy, please refer to [page 24](#). Refer immunocompromised patients, or those with herpetic proctitis, to an appropriate specialist, e.g. infectious diseases, sexual health.

1. Oral antiviral treatment

NB: From the 1st March 2016 the special authority restriction for valaciclovir will be removed (Pharmac). It will then become recommended first line treatment.

Recommended treatment for first episode genital herpes:

- **Valaciclovir 1g BD for 7/7.**
- **Oral aciclovir 400mg 3 times daily (8-hourly) for 7 days.**

Lesions may not completely heal over during the course of drug treatment; similarly, mild neurological symptoms may not yet have fully resolved. Nonetheless, a further course of therapy is not usually indicated unless new lesions continue to appear.

2. Intravenous antivirals

Intravenous (IV) aciclovir therapy should be considered for patients who have severe disease or complications that necessitate hospitalisation.²⁵

- For patients with severe disease requiring hospitalisation the dose for intravenous aciclovir is 5-10 mg/kg 8 hourly for 2-7 days followed by oral rx to complete at least 10 days of antiviral therapy.

3. Topical antivirals

Topical aciclovir creams are not recommended because they offer minimal clinical benefit ([see page 22](#)).

B. Symptomatic treatment

In addition to oral antivirals, other measures to control symptoms should be suggested. Paracetamol 4-hourly is usually adequate, but stronger pain relief may be necessary. Drinking fluids hourly produces dilute urine that is less painful to void. Female patients can be advised to sit in a bath or bowl of warm water to pass urine. Advice about drying lesions with the lowest setting of a hair dryer may be helpful. Bathing in salt water (e.g. half a cup of household salt in the bath or 2 teaspoons per litre of warm water for topical application) may help relieve pain and promote healing. Adequate pain relief should be provided. Topical anaesthetic jelly such as lignocaine (Xylocaine) gel applied 5 minutes before micturition helps relieve the pain. As lignocaine is a potential skin sensitizer, patients should be warned to stop application if increasing discomfort occurs after application. If catheterisation is unavoidable, a suprapubic catheter should be used to reduce the risk of ascending infection and is a less painful option. **GRADE C**

C. Education

It is important to ensure that patients receive accurate up-to-date information about genital herpes. NZHF resources are available to assist patients and clinicians with education and counselling. A range of printed materials can be downloaded from the NZHF website, or ordered (please refer to resources listed on inside front cover). Primary care practitioners should have access to these resources or be able to advise their patients on how to obtain them, e.g. www.herpes.org.nz. There is also a Herpes Helpline **0508 11 12 13**, a telephone service which is free to all New Zealanders.

Informing the patient of the diagnosis can be a delicate matter. **Health providers may find it helpful to review the 3 minute PowerPoint resource on the NZHF website www.herpes.org.nz which provides information on what patients tell us they want to know at this point in their management.** A diagnosis of genital herpes can have a profound effect on patients.²⁶ They may become upset and distressed; guilt, depression, lowered self-esteem and fear of rejection are common reactions.²⁷ Although initial counselling can be provided at the first visit, it may be preferable to wait until the initial outbreak settles to discuss chronic aspects of the infection. Written materials, such as the NZHF Myth vs Fact leaflet and The Facts book, should be offered to patients at the first visit with discussion and further questions encouraged at the follow-up and subsequent visits.

See **Key Information for Health Professionals to Give Patients in Counselling** on [page 41](#). **GRADE C**

D. Counselling

Social and psychological issues should be addressed both at the first appointment and at follow-up. There are three main aspects or levels of counselling:

- Basic health counselling (which involves information concerning the disease process).
- Psychological impact of the disease on the patient and their relationships (particularly important in the long term).
- Support offered in the community (e.g. Helpline tollfree **0508 11 12 13**, support groups).

It may be appropriate to offer the opportunity for their partner to have questions answered as well.

Practice nurses or nurses who have training in this area may also be a good source of counselling support. Useful resources include the NZHF website www.herpes.org.nz, the Herpes Helpline tollfree **0508 11 12 13**, or local sexual health clinic, for both management advice and/or more information. Discussing the role of support groups is often helpful; the patient should understand the reassurance that can be gained through discussions with people who have a similar condition; such discussions can be facilitated by the NZHF. The practitioner may also choose to refer patients on to professional counselling, if this is available. Confidentiality and sensitivity are paramount; patients need to agree to a third party becoming involved.

E. Follow-up

Follow-up is important for those with first episode herpes. For most patients, one visit is insufficient to properly manage the impact of genital herpes. Counselling and advice often form the major part of a follow-up appointment and time should be allowed for this. The practitioner should be alert to the possibility of further psychological problems manifesting after a diagnosis of genital herpes.

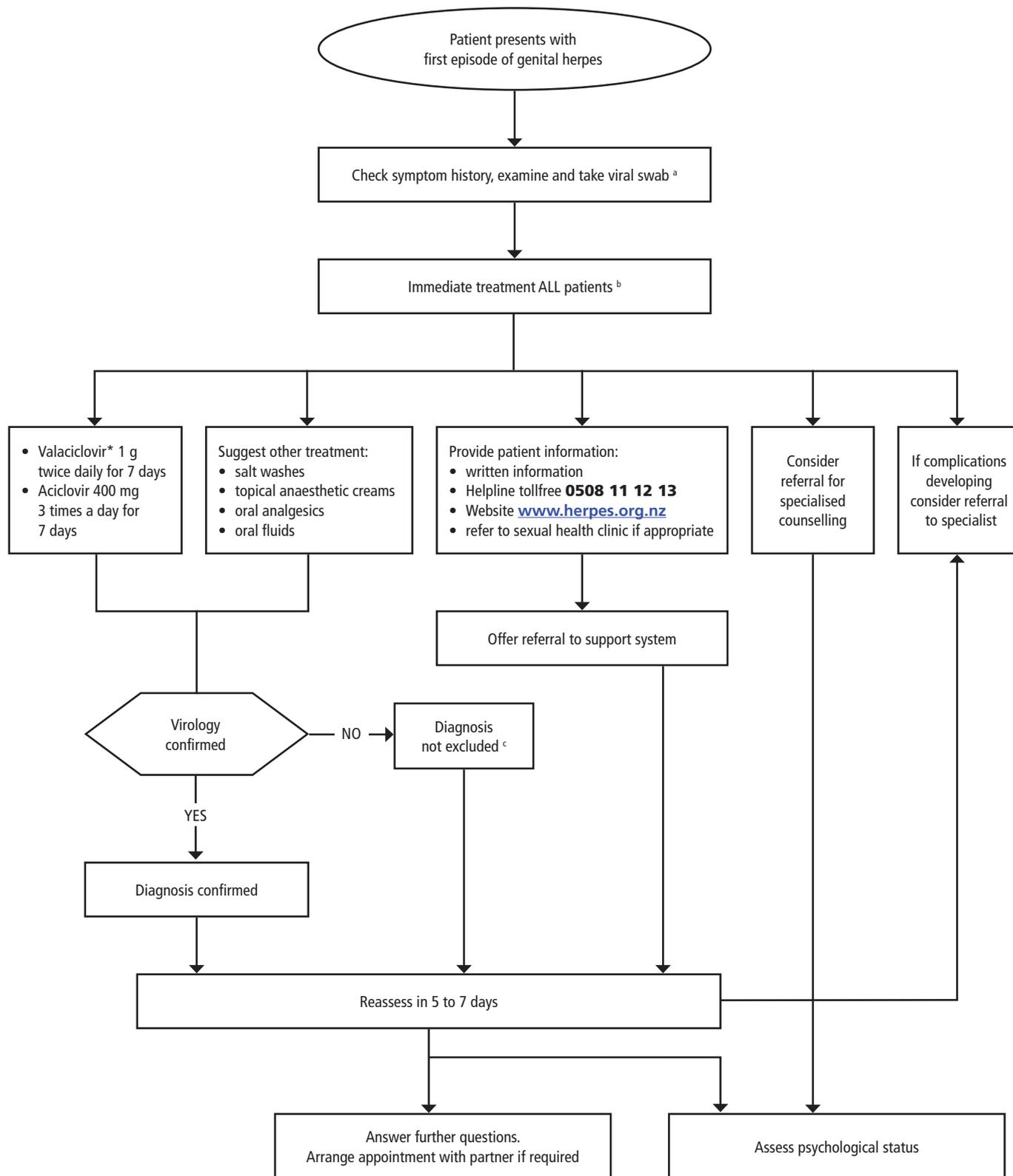
At the initial visit, a follow-up appointment should be offered for 5-7 days later, to evaluate symptoms, their psychological status, complete a full STI screen if appropriate, discuss results and answer any questions they may have. It should be noted that it might take longer than 5 days for skin lesions to heal completely. Further therapy is not usually required unless new lesions continue to appear. It is also helpful to give anticipatory advice over future management options including oral antiviral therapy; recurrent HSV episodes are usually milder than the initial episode and can be treated with either intermittent therapy (treating each episode) or suppressive therapy (treating continuously over a period of months to prevent episodes).

Suppressive antiviral therapy is recommended for those with frequent and/or severe recurrences or associated psychosocial morbidity. It is suggested that either a minimum of two recurrences or approximately 3 months without suppressive therapy is required to establish the pattern. At all times this process should be one of negotiation with the patient, as the pattern and severity of recurrent episodes is unpredictable.

For those choosing episodic antiviral therapy, this is more effective when patients start therapy themselves at the first signs of a recurrence. This needs anticipatory advice and prescribing. **GRADE A**

Recommendations on counselling and follow-up are based on internationally accepted standards of practice. **GRADE C**

Management of First Episode of Genital Herpes



* Available from 1 March 2016.

a In cases of immunocompromised patients or herpes proctitis, refer to specialist.

b Use in pregnancy requires specialist consultation.

c Recommend early presentation for viral swab if recurrence.

Management of recurrent episodes of genital herpes

KEY POINTS

- Most recurrent herpes is mild and infrequent.
- There is effective oral antiviral treatment for frequent, severe or problematic genital herpes.
- Treatment/management options should be discussed and decided in consultation with the patient.
- Individualised treatments and increased emphasis on self-management.
- Education and counselling are an extremely important part of management.

Management of recurrent herpes depends on whether there is prior virological confirmation of infection. Management of patients presenting with recurrent herpes should encompass the following:

1. History
2. Examination
3. Tests:
 - (a) V Swab for PCR for diagnosis; confirmation of diagnosis at least once is strongly recommended.
 - (b) Consider exclusion of other STIs if appropriate.
4. Treatment involving:
 - (a) Consideration of oral antiviral therapy – either intermittent episodic therapy or suppressive therapy where appropriate.
 - (b) Symptomatic treatment.
 - (c) Education concerning transmission, epidemiology, etc; provide written material.
 - (d) Acknowledgement of the psychosocial impact of the disease.
 - (e) Referral to support systems – Herpes Helpline tollfree **0508 11 12 13** or visit www.herpes.org.nz.
5. Appropriate follow-up arrangements.

Sufficient time should be allowed to address all these aspects. Shared management is important for the patient to feel a measure of control; the clinician should aim to be the facilitator of education and treatment options.

History, examination and diagnosis

- Only 10-25% of persons who are HSV-2 seropositive report a diagnosis of genital herpes, which suggests that most have unrecognised symptomatic or completely asymptomatic infections.²⁸ However, once told they are HSV-2 seropositive, more than 50% are able to identify clinically symptomatic recurrences that may have previously been thought to be due to other conditions.
- In straightforward cases with a prior laboratory-confirmed diagnosis, the clinical history is often the principal means of determining that the patient has a recurrent episode, but other genital conditions, e.g. candida (thrush), may mimic and/or coexist with recurrent herpes, and careful examination of the genitalia should always form part of the diagnostic procedure. For example, recurrent ulceration may be due to aphthous ulcers, erythema multiforme, fixed drug eruption, trauma (self-inflicted or accidental) and autoimmune blistering disease (rare). Other infections may cause genital ulcers, although not necessarily recurrent, e.g. other herpes viruses such as herpes zoster virus and Epstein-Barr virus, primary syphilis and chancroid.
- The atypical or non-ulcerative presentations of genital herpes can mimic most genital diseases, hence the need to consider more than one diagnosis at any given time. For example, lichen sclerosis results in increased skin fragility; because this condition is usually itchy, secondary scratching may cause superficial erosions and haemorrhagic bullae are not uncommon. Eczema and less commonly psoriasis complicated by scratching may cause superficial erosions. Herpes lesions may become secondarily infected with *Staphylococcus aureus* and will give the appearance of a folliculitis, similar to mild forms of hydradenitis suppurativa, primary folliculitis, or scabetic nodules. In most cases extra-genital lesions provide a useful clue to other pathology.
- All these examples serve to underpin the importance of taking a detailed history and thorough physical examination of the whole skin, including oral mucosa. Atypical presentation is not unusual and HSV should be considered in any recurrent intermittent inflammatory genital lesions regardless of appearances. **Any recurring lesion of 1-2mm in size, occurring in the same genital area, is strongly suggestive of HSV-2 infection.**
- All genital lesions not previously diagnosed should have a swab taken with an explanation to the patient why this has been done.

GRADE B

- It is desirable, but not always possible, to obtain virological confirmation. Typically, the viral load is reduced in recurrences compared with the first episode. There is a significant false-negative rate in the laboratory tests for HSV, although this is less for PCR. The best method of obtaining confirmation during a recurrence is to take a swab for PCR within 24 hours of symptoms developing. **GRADE B**
- An option is to instruct patients how to take a swab themselves and deliver direct to the laboratory. Other causes of recurrent genital lesions should be considered, but in the event of continuing recurrent lesions and viral culture swabs remaining negative, PCR testing of lesions or type-specific herpes serology testing may aid diagnosis.

Complications of recurrent genital herpes

- Recurrent herpes lesions can occur on the hands, arms, shoulders and other areas of the body, commonly around the buttocks; the diagnosis is often overlooked.
- Benign headaches.
- Lumbar sacral radiculopathy can recur, but usually with less severe symptoms than in primary infection. Recurrent, benign, aseptic meningitis, known as Mollaret's meningitis, may occur with HSV-2. Patients should be offered long-term suppressive antiviral management, which may need to be continued indefinitely.
- HSV is a common predisposing trigger for erythema multiforme. Mild forms of this condition are common and present with mildly itchy, pink-red blotches, starting on the extremities. Some of the skin patches take on the classical 'target lesion' appearance, with a pink-red ring around a pale centre. Resolution within 7-10 days is the norm. Recurrent episodes may be managed with continuous antiviral suppression treatment.
- Stevens-Johnson syndrome (erythema multiforme major) is a related, much less common, but much more serious condition. Clinically, this may be indistinguishable from toxic epidermal necrolysis and hospitalisation for supportive care is indicated.

A specialist should review any patient with complications.

Education and counselling

It is important to ensure that patients receive accurate up-to-date information about genital herpes. NZHF resources are available to assist patients and clinicians with education and counselling. A range of printed materials can be downloaded from the NZHF website or ordered – please refer to resources listed on inside front cover – primary care practitioners should have access to these resources or be able to advise their patients on how to obtain them. Written materials, such as the NZHF Myth vs Fact leaflet and The Facts book, should be offered to patients with discussion and further questions encouraged at subsequent visits. Useful resources include the NZHF website www.herpes.org.nz and the Herpes Helpline tollfree **0508 11 12 13**, or the local sexual health clinic for both management advice and/or more information.

It is important to understand the impact that a diagnosis of genital herpes may have.²⁷ Issues that should be raised with patients (and perhaps their partners) include:

- The effect of genital herpes on self-esteem and self-image.
- How herpes will affect their current relationships.
- How herpes will affect their ability to form new relationships.
- The disclosure of their condition to partners or potential partners.
- The lifelong nature of the condition and how this affects them.
- Fears concerning transmission or the infectious nature of the disease.
- Fears concerning future fertility.
- Fears concerning cancer.
- Fear of discovery.
- Alterations in social activities and lifestyle.
- Stress management.
- Feelings of isolation.
- The attitude of the general public towards this infection.
- Reassurance regarding pregnancy and very low risk of transmission.

For **Key Information for Health Professionals to Give Patients in Counselling**, see [page 41](#).

People with genital herpes may become anxious or depressed and this may unmask or amplify disorders such as phobias or obsessive-compulsive disorder. Specialist referral may be necessary for severe or complicated cases. In general, assisting the patient to take responsibility for, and control of, their disease and its treatment will help the patient overcome some of the psychological difficulties. **GRADE B**

Recommendations on education and counselling and follow-up are based on internationally accepted standards of practice. **GRADE C**

Treatment of recurrent genital herpes

KEY POINTS

- Empower people by offering individualised options and education to self-manage. No treatment is also a common and acceptable option.
- Effective episodic treatment of recurrent herpes requires prompt initiation of therapy during the prodrome or within one day of symptom onset. Sufficient quantities of medication should be prescribed with instructions to start treatment as soon as symptoms begin.
- Suppressive therapy should be considered for those with frequent and/or severe recurrences or associated psychosocial morbidity.
- Standard therapy in New Zealand for suppression of herpes recurrences is oral aciclovir 400mg twice daily. (From 1st March 2016, valaciclovir 500mg daily is first line treatment.) The recommended period of treatment is 12 months, which may be repeated year-by-year if necessary.
- Withdrawal of therapy should be for a sufficient length of time to establish whether the pattern of recurrence has changed, for example.
- Reduced dose of valaciclovir or aciclovir should be considered in the presence of severe renal failure.

Episodic antiviral therapy

The aim of episodic treatment is to reduce symptoms and duration of viral shedding during recurrences, rather than reduce the frequency of recurrences. Further, early therapy may abort episodes, that is, lesions may be prevented from progressing beyond the papular stage.^{29,30} In situations where patients have well recognised prodromes and/or have less frequent recurrences, some may find episodic treatment preferable to continuous suppressive therapy.

Effective episodic antiviral treatment of recurrent herpes requires initiation of therapy during the prodrome that precedes some outbreaks or within one day of lesion onset.^{29,30} Beyond this timeframe there is no clear benefit, so it is important that a prescription is readily available. In consultation with the patient, sufficient quantities of medication may be prescribed with instructions to start treatment as soon as symptoms begin. Shorter courses of patient-initiated therapy, e.g. single-day famciclovir³⁰ or two days of aciclovir³¹, have been shown to be as effective as a longer 5-day course. **GRADE A**

Recommended dosage regimen

If the patient is pregnant, specialist consultation is recommended ([see page 24](#)). In cases of immunocompromised patients, refer to appropriate specialist.

Episodic treatment

NB: From the 1st March 2016 the special authority restriction for valaciclovir will be removed (Pharmac). It will then become recommended first line treatment.

- Valaciclovir 500mg bd for 3/7.
- Oral aciclovir 800mg (2 x 400mg) 3 times daily for 2 days.

Prescribe 48 x 400mg tablets for patients to be able to self-initiate treatment at onset of symptoms.

Note: Famciclovir is not subsidised or marketed in New Zealand.

Suppressive antiviral therapy

Suppressive therapy is an oral antiviral taken continuously over a given period of time that effectively reduces the frequency of recurrences.^{32,33} **GRADE A**

The main aims of suppressive therapy are:

- As an effective strategy for improving the quality of life of patients with recurrent genital herpes.^{34,35}
- To empower the patient, giving them a measure of control over the disease process.
- To allow the patient to have a break from experiencing recurrences of the disease.
- To reduce the risk of transmission.
- Reduced dose of valaciclovir or aciclovir should be considered in the presence of severe renal failure.

Aciclovir, famciclovir and valaciclovir all suppress symptomatic and asymptomatic shedding, by up to 80-95%.¹⁴ Suppressive once-daily valaciclovir has been shown to reduce transmission to an uninfected partner with a 48% reduction in acquisition of HSV infection and a 75% reduction in clinical symptomatic genital herpes.¹⁵ Other antivirals may be similarly effective, but this has not been proven in clinical trials. Patients may wish to consider this as a useful adjunct to safer sex behaviour and the use of condoms for the prevention of genital herpes transmission.

Indications for suppressive therapy

KEY POINTS

- Frequent and/or severe recurrences or associated psychosocial morbidity. Consider suppressive therapy in conjunction with other management. **GRADE B**
- For HSV-2 positive male partners of pregnant women ([see page 30](#)).

With long-term suppressive therapy it is strongly advisable to have virological confirmation of the diagnosis before commencing treatment.

Patients who have suggestive symptoms but do not have virological confirmation of recurrences, or who have complications or ongoing issues relating to their herpes, should see a specialist.

Recommended dosage regimen

If the patient is pregnant, specialist consultation is required ([see page 24](#)).

In cases of immunocompromised patients, refer to appropriate specialist.

NB: From the 1st March 2016 the special authority restriction for valaciclovir will be removed (Pharmac). It will then become recommended first line treatment.

Recommended treatment regimens for suppressive therapy include:

- Valaciclovir 500mg daily. Increase to 500mg bd on individual basis of clinical presentation and/or having breakthrough recurrences on 500mg daily.
- Oral aciclovir 400mg twice daily.

Suggest prescribing for a minimum of 12-18 months, followed by a break of 3 months at the patient's convenience to see if recurrences are still frequent or bothersome. **GRADE C**

20-25% of patients may experience recurrent episodes whilst on suppressive therapy.^{33,36} Other genital conditions may mimic and/or coexist and, even if symptoms are suggestive of breakthrough recurrences, such patients are advised to see a specialist. The usual recommended dose of valaciclovir may need to be altered if breakthrough episodes are confirmed; suppressive therapy does not alter the natural history of recurrences long term and it is common to have a recurrence soon after withdrawal of therapy. It is helpful to anticipate this and to provide sufficient medication to allow prompt self-initiated treatment of any early recurrences. It is suggested that either a minimum of two recurrences or approximately 3 months without suppressive therapy is necessary to establish the new pattern. At all times this process should be one of negotiation with the patient, as the pattern and severity of recurrent episodes is unpredictable.

Some patients may need to be on suppressive therapy for years. Valaciclovir is well tolerated and safety and efficacy data are supportive of longer-term use.³⁷ Neurotoxicity (lethargy, confusion, hallucinations and involuntary movements) has been reported in those with renal impairment.

Intermittent suppressive antiviral therapy

The use of intermittent suppressive therapy is also considered a point for negotiation with the patient. Practitioners should be aware that this type of therapy is an option, particularly for patients who are keen to avoid a recurrence during a specified period, e.g. a holiday, exams, etc. **GRADE C**

Topical antiviral therapy

Topical aciclovir creams are less effective than oral aciclovir.³⁸ Hence, use of topical treatment is not recommended. Topical antiviral creams are available over the counter, but are no longer subsidised on the pharmaceutical schedule.

Newer topical agents such as immune modulators are currently in clinical trials.

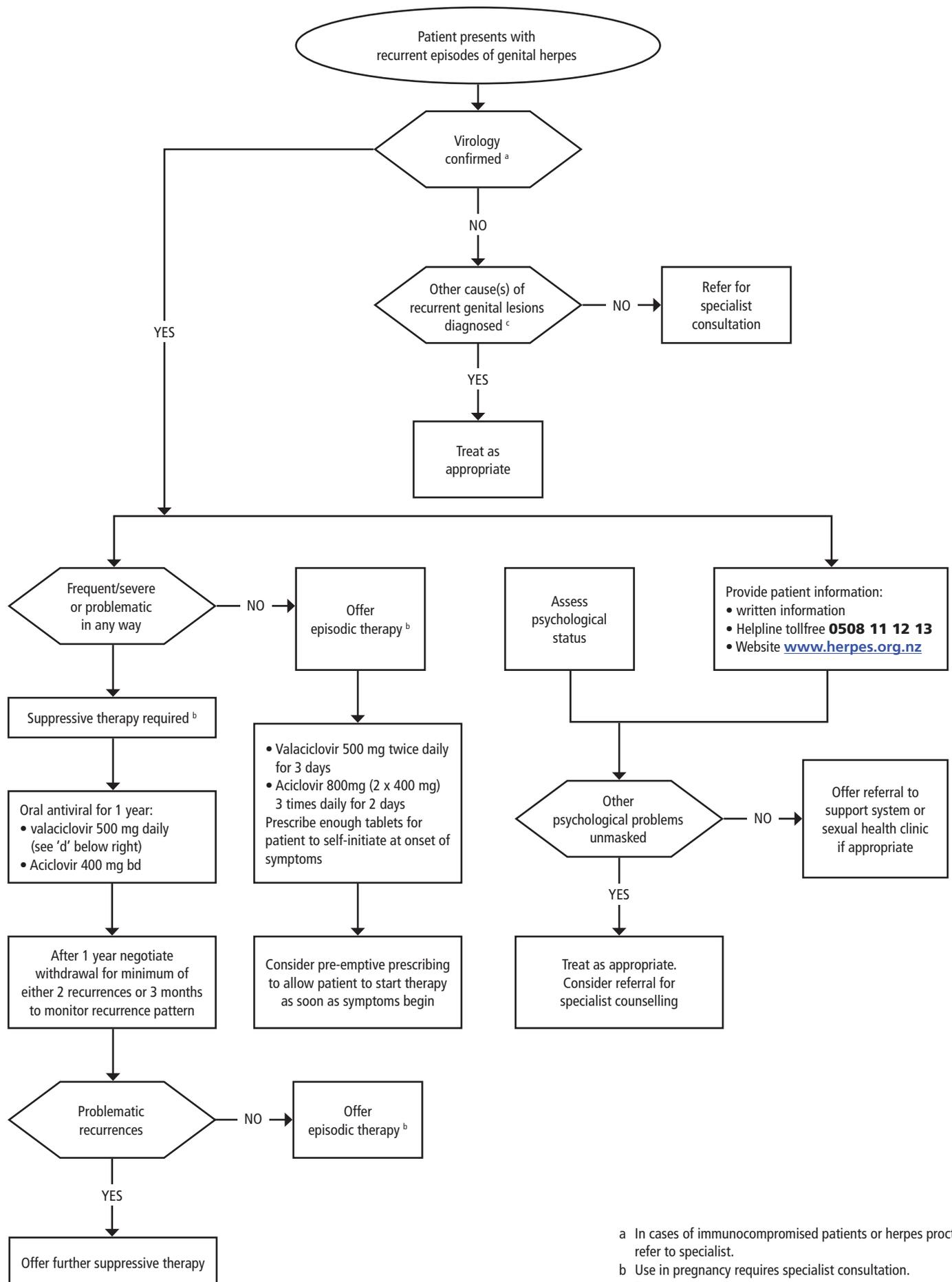
Other therapies

Evidence for other therapies (oral L-lysine, aspirin, liquorice root cream, lemon balm, aloe vera cream, etc.) is limited.

Genital herpes in immunocompromised individuals

Although rare in immunocompetent individuals, clinically refractory (large, severe and sometimes atypical) lesions due to genital HSV may occur in patients with severe immunodeficiency, including late stage HIV disease. Immunocompromised individuals need referral to specialist care.

Management of Recurrent Episodes of Genital Herpes



- a In cases of immunocompromised patients or herpes proctitis, refer to specialist.
- b Use in pregnancy requires specialist consultation.
- c Recommend self-applied swab or early presentation for viral swab if recurrence.
- d Increase to 500 mg BD on individual basis of clinical presentation and/or having breakthrough recurrences on 500mg daily

GENITAL HERPES IN PREGNANCY

KEY POINTS

- Neonatal HSV infection is a rare, but potentially fatal, disease of babies, occurring within the first 4-6 weeks of life.
- Most neonatal HSV infections are acquired at birth, generally from mothers with an unrecognised genital herpes infection acquired during pregnancy.
- All women should be asked by their primary caregiver at their first antenatal visit if they or their partner have ever had genital herpes and given information on the potential risks of transmission in pregnancy; this includes the risk of genital HSV-1 from oral-genital contact.
- Women with genital herpes lesions during their pregnancy should be referred to a specialist obstetrician and/or a sexual health physician.

Concerns around herpes infection during pregnancy tend to relate to the risk of neonatal infection. Disseminated maternal herpes in pregnancy (from genital or oro-labial infection) is rare, but may be life-threatening; viraemia in the mother during primary infection may result in neonatal multi-organ involvement with significant mortality. The diagnosis may be delayed if vesicular skin lesions are absent or sparse.^{39,40}

Neonatal herpes is a rare but potentially serious infection, which may be associated with significant morbidity and mortality. About 90% of neonatal herpes infections are acquired during labour through direct contact with infected genital secretions. In 5% of cases the infection is acquired in utero (either via ascending infection or transplacentally secondary to maternal viraemia) and in 5% of cases the infection is acquired post partum.⁴¹

Primary maternal infection before the 20th week of pregnancy may be associated with miscarriage,⁴² and in the second and third trimesters may be associated with preterm delivery. Rarely, primary maternal infection may result in disseminated infection of the fetus with skin lesions, chorioretinitis or microcephaly or hydrocephalus at birth.⁴³ The long-term outlook for these infants is very poor. A minority with late intrauterine HSV infection will present at delivery with skin or eye lesions. The prognosis for successful anti-viral therapy in these infants is far better than that for newborns with more long-standing intrauterine infection.⁴⁴ Antenatal recurrent disease, where HSV is not shed at delivery, does not have an adverse affect on neonatal outcome and the risk of intrauterine fetal infection from recurrent maternal HSV infection appears to be very low. A nested case-control serology study assessing HSV-2 antibodies in stored serum samples from 283 women with a fetal loss after 20 weeks compared to 970 randomly selected women from a large source population found no association between herpes simplex infection and fetal loss.⁴⁵

Several factors influence the risk of a newborn acquiring HSV infection at the time of delivery, the most important of which is whether the mother has newly acquired vs recurrent genital disease.^{46,47} **The greatest risk of perinatal transmission is when a previously seronegative woman has a primary first episode of genital herpes near or at the time of delivery.** Under such circumstances the risk of neonatal HSV infection is 57%, while vertical transmission rates of 25% are found in those with a non-primary first episode (infection with one virus type in the presence of antibodies to the other virus type) near or at the time of delivery.

Although reactivation of HSV-1 is less than common than that of HSV-2, there is evidence that the reactivated HSV-1 may be more readily transmitted to the neonate. Although developmental abnormalities are less common in neonatal survivors of HSV-1 infection compared to HSV-2, the mortality of disseminated infection is similar and the same strategies are required for prevention of both HSV-1 and HSV-2.⁴⁸

Transmission rates are lowest for women who acquire herpes before pregnancy, with the risk being about 0.05% for such women who have no signs or symptoms of an outbreak at delivery.^{46,49} If lesions are present at delivery, there is a small but still reasonable risk of transmission of 0.25-3% because of protection from maternal antibodies passing across the placenta⁴⁷ Specifically, the risk for transmission of reactivated HSV-2 infection appears to be less than 1%.⁵⁰

Women with HIV and HSV-2 co-infection have a greater risk of transmitting HSV-2, as HSV-2 shedding is increased in HIV co-infected women.⁵¹

Of infants with proven HSV infection, 80% have no documented history of herpes infection in either the mother or her partner.

Mode of delivery

There are no randomised controlled trials to guide optimal delivery management for pregnant women with genital herpes.

In a large prospective cohort study of women who had herpes cultures taken in labour, HSV was isolated in 202 women and, overall, neonatal transmission occurred in 10 (5%).⁴⁷ Caesarean delivery significantly reduced the HSV transmission rate in women from whom HSV was isolated (1 of 85 [1.2%] caesarean vs 9 of 117 [7.7%] vaginal). Risk factors for neonatal HSV infection included first-episode infection, HSV-1 vs HSV-2 isolation at the time of labour, the use of invasive monitoring, premature delivery and young maternal age. None of the 140 women with viral shedding due to HSV-2 reactivation infected their babies, compared to 2/11 women with HSV-1 reactivation. Of 26 first episode cases, transmission occurred in 8. There was a high caesarean section rate in those noted to have genital lesions in labour. The data from this study was pooled with two other cohorts (from the USA and Sweden) and provided further evidence that during reactivation HSV-1 may be more readily transmissible to the neonate than HSV-2. This pooled cohort study also showed that maternal HSV-1 antibody does not offer significant protection against HSV-2.⁵²

However caesarean section is not completely protective, as transmission of infection has occurred occasionally in the presence of intact membranes. Prolonged contact with infected secretions may further reduce the benefits of abdominal delivery.⁴³

No definitive studies have been carried out on the relationship between the duration of rupture of membranes in the presence of clinical lesions and the transmission of HSV to the fetus. Previously, 4 hours has been suggested as a cut-off time beyond which caesarean section may be no longer beneficial. However, the ACOG guideline states that there is no evidence that there is a duration of premature rupture of membranes beyond which the fetus does not benefit from caesarean delivery.⁵³

Because the risk of maternal-fetal transmission is high when primary infection is acquired within 6 weeks of delivery, maternal and neonatal aciclovir therapy should be considered if there has been membrane rupture for more than 4 hours or where a vaginal delivery is unavoidable.⁵⁴

In the case of recurrent genital herpes, maternal antibodies are protective and it has been argued that the benefits of caesarean section are low in this group of women, even if lesions are present at the time of delivery. Policy in the USA has been to offer delivery by caesarean section if the woman has signs or symptoms of a recurrence at the onset of labour and there is data to support this approach, as discussed above.⁴⁷

In the Netherlands, however, since 1987 it has been the policy not to offer women caesarean section in the presence of a recurrence at term and there has not been a resultant increase in the incidence of neonatal herpes (26 cases of neonatal herpes 1981-1986 compared to 19 cases 1987-1991).⁵⁵ A follow-up audit 1999-2005 concluded that a low rate of neonatal infection in the Netherlands continues despite a low caesarean section rate to prevent neonatal infection and there was therefore not a need to revise the current guidelines in that country.⁵⁶

In other countries, guidelines recommend that women who have signs or symptoms of a recurrent infection in labour should be offered caesarean section, but as a relative, rather than absolute, indication for abdominal delivery.⁵⁷⁻⁵⁹ It has also been shown that the presence of symptoms at delivery correlates relatively poorly with the detection of HSV from genital sites or lesions by culture or PCR.⁶⁰ The development of rapid PCR testing for detection at the time of labour is currently being investigated.⁴⁸

Use of prophylactic aciclovir

Small studies have shown that prophylactic use of aciclovir from 36 weeks decreases the number of clinical recurrences and reduces the need for caesarean section, but treatment does not eliminate viral shedding completely.^{55,61-63} Two meta-analyses have confirmed that there is a reduction in clinical recurrences at delivery, a reduction in caesarean section for active herpes, and a reduction in viral shedding.^{64,65} **GRADE B**

However, there are theoretical concerns that maternal aciclovir therapy may suppress the production of neutralising antibodies to the immunogen, glycoprotein D, thus having an effect on passive immunity to the fetus, and may suppress rather than treat newborn infections, thus leading to a delay in presentation of neonatal disease. In the absence of definitive data, it is recommended that prophylactic aciclovir from 36 weeks should be used selectively, rather than routinely offered, for women with a history of recurrent genital herpes, e.g. to those women who have had an episode in the current pregnancy, and that women should be given the same advice on postnatal surveillance of their babies as those who have not had suppressive therapy. This may be updated when more information on the effects of aciclovir on the neonate is available.

More frequent dosing may be required during pregnancy because of increased drug clearance. A small study of plasma levels of aciclovir at delivery in women on suppressive aciclovir at a dosage of 400mg tds from 36 weeks showed that levels were often suboptimal despite good adherence. Time since the last dose was correlated with levels rather than duration of labour. Suboptimal aciclovir levels at the time of delivery could lead to viral shedding although none of the women in the study had clinical recurrences.⁶⁶

Management of pregnant women with first episode genital herpes

First and second trimester acquisition

Management of the woman should be in keeping with her clinical condition, using aciclovir in standard doses as indicated ([see page 30](#)).

GRADE C

Provided delivery does not ensue, the pregnancy should be managed expectantly and vaginal delivery anticipated. Continuous aciclovir in the last 4 weeks of pregnancy reduces the risk of both a clinical recurrence at term and delivery by caesarean section. However, the effects on the neonate have not been fully evaluated.

For further management advice, see **Management of Pregnant Women with Recurrent Genital Herpes**, [page 29](#).

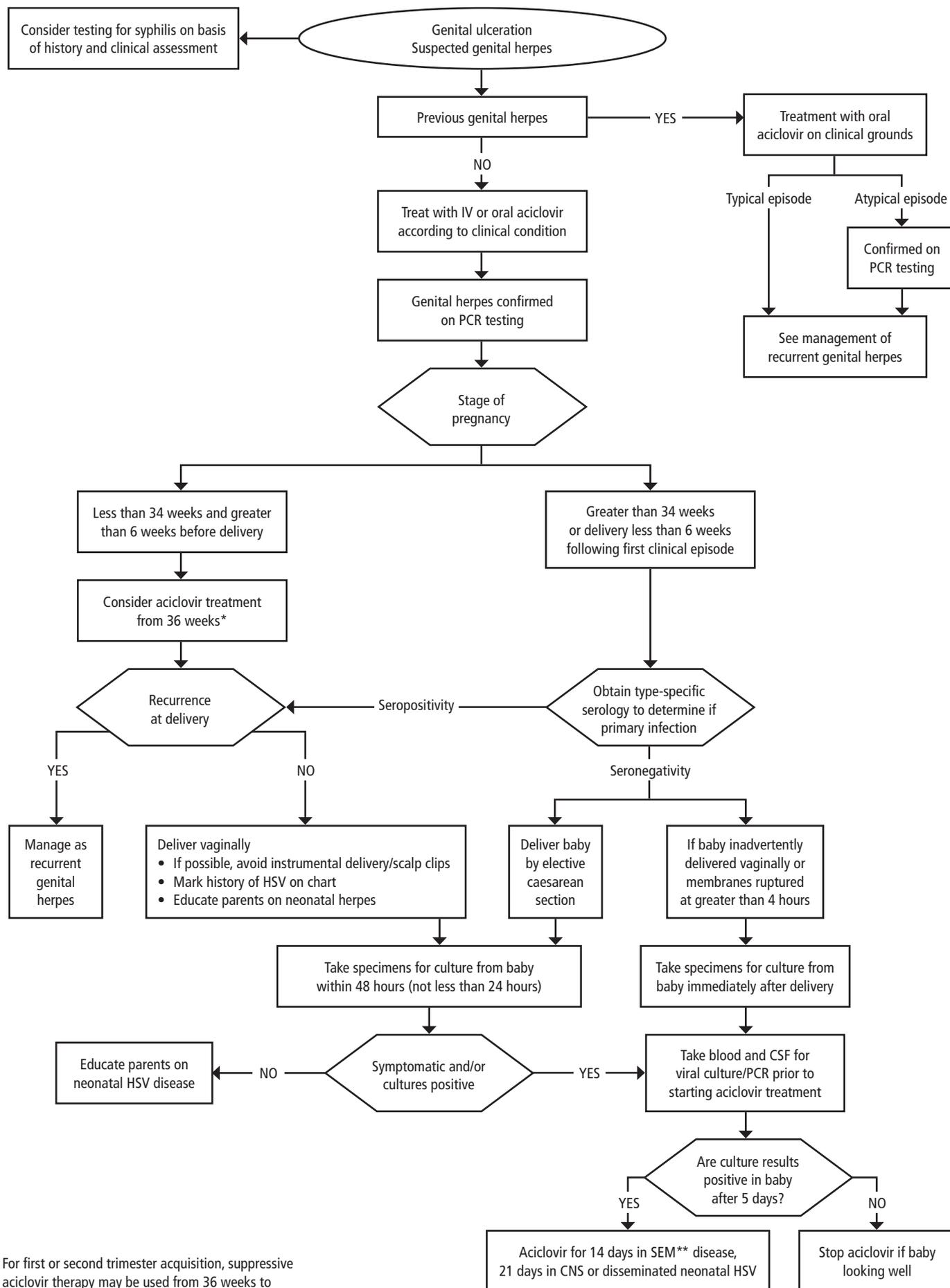
Third trimester acquisition

Note: The first clinical episode may not be due to a primary infection, as previous infection may not have been recognised. Type specific culture or PCR and serological testing in conjunction with clinical evaluation will help identify primary HSV in pregnancy. All results should be discussed with an expert knowledgeable in interpreting these results and who is aware of the sensitivity and specificity of available testing methods. Consider treatment with valaciclovir/aciclovir ([see page 30](#)).

Delivery should be by caesarean section, particularly in those women infected within 6 weeks of delivery because of high rates of asymptomatic shedding of HSV and insufficient time for a complete antibody response between infection and delivery. **GRADE B**

If vaginal delivery is unavoidable, consider treatment of mother with valaciclovir/aciclovir and request an urgent referral to a paediatrician experienced in HSV infection (see **Neonatal HSV Infection**, [page 31](#)). **GRADE C**

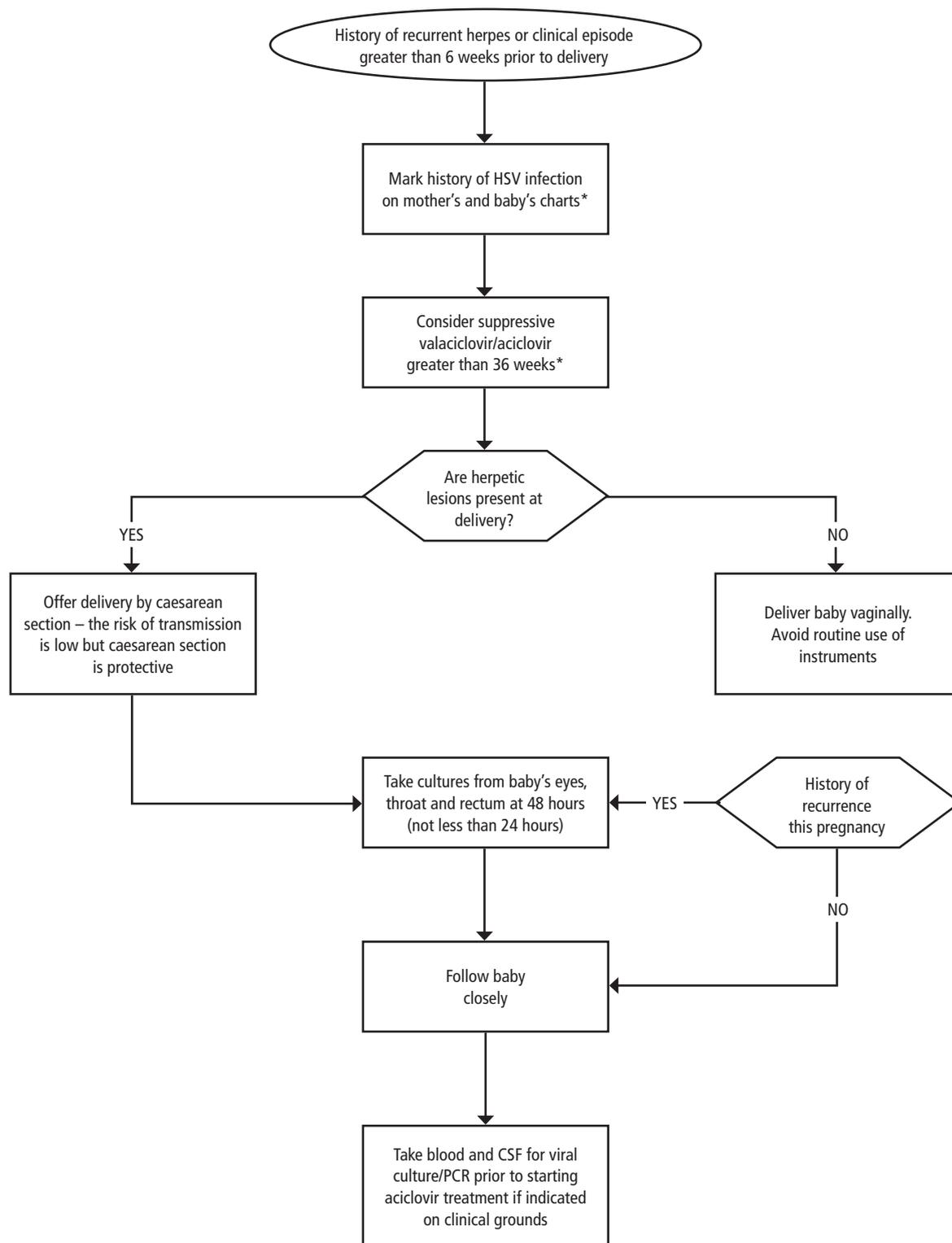
Management of women with suspected genital herpes in pregnancy (in consultation with a specialist)



* For first or second trimester acquisition, suppressive aciclovir therapy may be used from 36 weeks to reduce recurrences at term and hence the need for caesarean section. Effects on neonate have still to be determined.

** SEM – skin, eye and/or mouth lesions only.

Management of women with history of genital herpes prior to pregnancy and women with first clinical episode greater than 6 weeks prior to delivery (in consultation with a specialist)



* For women with recurrences during pregnancy, suppressive aciclovir therapy can be considered to reduce recurrence at term and hence the need for caesarean section. Effects on the neonate have still to be determined.

Management of pregnant women with recurrent genital herpes

Document the history in both mother's and infant's notes. Symptomatic recurrences during third trimester are usually brief and vaginal delivery is appropriate if no lesions are present at delivery.⁴⁴ Prophylactic use of aciclovir from 36 weeks decreases the number of clinical recurrences and reduces the need for caesarean section, but treatment does not eliminate viral shedding completely (see above) and should be used selectively rather than routinely. **GRADE B**

Sequential cultures in the third trimester to predict viral shedding at delivery are not indicated.⁶⁷ Caesarean section should not be performed in women who do not have lesions at delivery.⁴⁴ **GRADE B**

In women who have recurrent genital lesions at onset of labour:

- It is common practice to deliver by caesarean section because of the small risk of infection in the neonate.
- However, because the fetal risk is low, this must be set against the risks to the mother of caesarean section and this is therefore regarded as a relative rather than absolute indication for caesarean section.⁴⁴ **GRADE C**
- Ideally, this scenario should be discussed with the woman early in pregnancy by the primary caregiver.
- Caesarean section does not itself provide total protection.⁶⁸
- If vaginal delivery occurs, scalp electrodes and instruments should not be used unless there is a clear obstetrical indication as skin trauma may increase the risk of transmission of HSV.
- Intrapartum aciclovir may be considered based on anecdotal evidence, although there have been no trials to assess the value of such therapy.
- In women who have recurrences in late pregnancy, starting aciclovir 400mg tds should reduce the duration of symptoms and viral shedding. There are no studies documenting the duration of viral shedding in this situation, but it has been stated that vaginal delivery is safe if labour commences after 48 hours of treatment with aciclovir.⁶⁹ This recommendation is consistent with the principles of episodic treatment.

Other issues in perinatal care

Investigation and surveillance in the neonate

See **Management of Neonatal HSV Infection**, [page 33](#).

Treatment of genital herpes in pregnancy

KEY POINTS

- The risk of maternal-fetal transmission (MFT) is highest with primary genital herpes infection during labour or within 6 weeks of delivery. Caesarean section is indicated.
- Women with a past history of genital herpes and no recurrences in pregnancy can be reassured that the risk of MFT is extremely low.
- Recurrent lesions at term are a relative (not absolute) indication for caesarean section. The risk of MFT is low from recurrent lesions during labour, although may be greater with HSV-1 than HSV-2.
- Suppressive aciclovir from 36 weeks gestation may reduce the chance of a recurrence at term and hence the need for caesarean section. This should be used selectively rather than routinely, for example for women who have had an episode during pregnancy.
- Specialist obstetric and paediatric advice on management and anticipatory guidance should be sought for a woman with a history of genital herpes and active lesions at term and especially in the high risk situation of a first episode within 6 weeks of delivery (see **Neonatal HSV Infection**, [page 31](#)).

Use of aciclovir in pregnancy and breastfeeding

Data collected via the Aciclovir Pregnancy Register (1984-99) found the observed rates and types of birth defects for 1,234 pregnancies exposed to aciclovir did not differ significantly from those in the general population.⁷⁰ Some studies on the use of valaciclovir (an aciclovir prodrug) from 36 weeks gestation have addressed toxicity issues and identified no safety concerns in mothers, fetuses or neonates.^{54,71} Monitoring in the neonates included assessment of white cell counts, renal and hepatic function. The studies were underpowered to confirm safety with certainty, but the results, in conjunction with the lack of reported adverse events from other trials of prophylactic aciclovir and valaciclovir in late pregnancy, are reassuring.

While aciclovir is not licensed for use in pregnancy, there is substantial clinical evidence supporting its safety. Women who are inadvertently exposed to aciclovir in early pregnancy can be informed that the available information is reassuring and the use of aciclovir can be recommended where clinically indicated.⁷²

There are no established protocols for the use of aciclovir in pregnancy, but the following regimens are frequently used:

First episode:

- Valaciclovir.
- Aciclovir 400mg orally 3 times daily for 7 days.

First episode (severe disease) or in immunosuppressed:

- Aciclovir 5mg/kg IV (over 60 minutes) 8-hourly until able to switch to oral therapy, based on symptoms.

Recurrent disease suppressive therapy:

- Aciclovir 400mg orally 3 times daily (in consultation with a specialist; more frequent dosing indicated because of increased clearance in pregnancy).

The American Academy of Pediatrics has approved use of aciclovir for treating first episode or recurrent genital herpes in breastfeeding mothers. Although concentrations are high in breast milk and the baby, toxicity is low.⁷³ **GRADE B**

Prematurity

One study has shown expectant management of 29 women with preterm premature rupture of membranes at <31 weeks gestation, complicated by active recurrent genital herpes, was not associated with neonatal transmission. It was concluded that the risks of prematurity outweighed the risks of transmission of infection in the presence of a recurrent episode.⁷⁴ The mean duration of membrane rupture was 13.2 days (range 1-35 days), 45% were delivered by caesarean section and 8% received antiviral therapy for control of symptoms. Little data is available on the management of preterm premature rupture of membranes in association with primary herpes simplex infection.

Prevention of HSV in the neonate

All women should be asked at the first antenatal visit if they or their partner have had genital herpes. A study of 3192 pregnant women and their partners identified that 22% of women were at risk of HSV-1 or HSV-2.⁷⁵ Of 582 women susceptible to HSV-1, 14 women or 2.5% (3.5% adjusted for length of gestation) acquired HSV-1; the only independent risk factor was a history of a partner with oral herpes. Of 125 women susceptible to HSV-2 infection, 17 or 14% (20% adjusted for length of gestation) acquired HSV-2 infection. Also, the risk of becoming infected was eight times greater in relationships of a year or less, than for those in longer duration relationships. Most newly acquired infections were subclinical.

Although there is no clear evidence to support guidelines in the situation of the partner with a history of previous herpes infection, the following are recommended on theoretical grounds: **GRADE C**

- Female partners of men with genital herpes should avoid sex when lesions are present.
- Asymptomatic female partners of men with genital herpes should have serology to check their HSV status.
- Consistent use of condoms throughout pregnancy may prevent acquisition.
- Suppressing therapy should be considered in the male partner if the couple is discordant for antibodies to HSV-2.
- Pregnant women should be advised of the risk of acquisition of HSV-1 from oral-genital contact. If partner has oral herpes and HSV status unknown, avoid oral sex.
- Parents, staff and relatives/friends with active oral lesions should be advised about the risk of post-natal transmission.

Although routine serological screening in pregnancy has been recommended by some authors, universal screening is not likely to be cost effective because of the high number needed to treat to prevent a single case of neonatal herpes.⁷⁶

NEONATAL HSV INFECTION

KEY POINTS

- Neonatal HSV infection is a rare, but potentially fatal, disease of babies, occurring within the first 4-6 weeks of life. Symptoms are non-specific and a high index of suspicion is required.
- Most neonatal HSV infections are acquired at birth, generally from mothers with an unrecognised genital herpes infection acquired during pregnancy.
- Any baby developing skin vesicles or atypical bullous, pustular skin lesions, particularly on the scalp or face (vaginal deliveries) or over the buttocks (breech presentation) must be referred immediately to a paediatrician.
- Specialist obstetric and paediatric advice on management and anticipatory guidance should be sought for a woman with a history of genital herpes and active lesions at term and especially in the high-risk situation of a first episode within 6 weeks of delivery.

Neonatal HSV infection rates vary from country to country, with national surveys reporting a wide range in annual incidence. The number of cases per 100,000 live births in Western Europe (France 1.15, United Kingdom 1.65, and the Netherlands 3.2)⁷⁷⁻⁷⁹ is lower than reported for Scandinavia (Sweden 6.5)⁸⁰ and North America (USA 9.6 and Canada 5.9).^{81,82}

Marked differences in incidence can also exist within countries.⁵⁰ For example, in the United States the incidence of neonatal HSV infection in the Northeast is 8.2, in the Midwest 12.9, the South 8.9 and the West 8.8.⁸² While reliable New Zealand data are lacking, in Australia the incidence is estimated at 3.2 per 100,000 live births.⁸³

The differences in reported rates is likely multifactorial, including differences in case definition and study design as well as differences in rates of HSV acquisition amongst maternal populations. Current data collection and case definitions are inadequate to provide sufficiently accurate incidence and epidemiological data, yet these are essential to guide effective education and prevention strategies.⁸⁴

Transmission to the fetus and newborn

HSV-1 and HSV-2 can be transmitted to the fetus or newborn infant at one of three times: intrauterine, perinatally and postnatally.⁵⁰ However, 50-80% of cases of neonatal HSV result from women who acquire genital HSV-1 or HSV-2 infection at or near term.

Intrauterine infection

Intrauterine infection causes approximately 5% of neonatal HSV infection. It results from either transplacental HSV transmission or an ascending HSV infection from the cervix.

Perinatal infection

The main risk of transmission to the neonate is at delivery, where contact with HSV-infected secretions in the birth canal accounts for most neonatal HSV infection.⁵⁰ The site of entry is usually the eye, nasopharynx or an abrasion secondary to scalp electrodes or forceps. Roughly 60-80% of infants with neonatal HSV disease are born to women with unrecognised infection.⁸⁵

Several factors influence the risk of the newborn acquiring HSV infection, the most important of which is whether the mother has newly acquired or recurrent genital disease.^{46,47} **The risk is greatest when a previously seronegative woman acquires genital herpes (HSV-1 or HSV-2) near the time of delivery.** Under such circumstances the risk of neonatal HSV infection is 50%, while vertical transmission rates of 25% are found in those with a non-primary first episode (infection with one virus type, e.g. HSV-2, in the presence of antibodies to the other virus type e.g. HSV-1).

In contrast, the transmission rates are lowest for women who acquire herpes before pregnancy, with the risk being about 0.05% for such women who have no signs or symptoms of an outbreak at delivery.^{46,49} If lesions are present at delivery, there is a small but still significant risk of transmission of 0.25-3%.⁴⁷ High maternal titres of type-specific neutralising antibody are associated with a substantially lower risk and severity of neonatal infection; risk factors include invasive obstetric procedures, such as fetal scalp electrodes, method of delivery, and prolonged rupture of membranes.⁴⁷ Recent studies report an increasing proportion of genital and neonatal herpes infection from HSV-1 strains.⁸¹

Postnatal infection

Postnatal infection accounts for approximately 10% of cases. Sources of postnatal HSV infection include maternal breast milk, skin and oral lesions, and HSV lesions on fathers, other family members and medical staff.

Disease classification

Intrauterine HSV infection

This is rare and usually occurs after primary herpes infection in pregnancy. Transplacental transmission before the 20th week of pregnancy may cause spontaneous abortion in as many as 25% of cases. In contrast to neonatal herpes infection, the signs of intrauterine HSV infection are present at delivery and may include intrauterine growth retardation, hydranencephaly, chorioretinitis and skin scarring. The long-term outlook for these infants is very poor. A minority with intrauterine HSV infection will present at delivery with skin or eye lesions. There is frequently a history of prolonged rupture of membranes, often as long as 2 weeks. The prognosis for successful anti-viral therapy in these infants is far better than that for newborns with more long-standing intrauterine infection and complications such as hydranencephaly.⁴⁴

Neonatal HSV infection

There is no clear pattern of signs and symptoms that identifies babies with neonatal HSV disease, meaning a high index of suspicion is required.

Presenting symptoms of neonatal HSV infection include fever, lethargy, seizures and respiratory distress. Vesicles may be present in only 40% at presentation and some infants will have no vesicles at any time during the course of their illness.^{86,87} Fever may be absent initially.⁸⁵ Mortality is highest in those with an altered conscious state, seizures, disseminated intravascular coagulation, and prematurity.^{44,68}

The usual age for onset of symptoms in neonatal HSV infection is between 5 and 21 days of life, but there may be a delay in presentation if the significance of the symptoms is not initially recognised. Physicians caring for sick infants in the first 6 weeks of life should always be aware that neonatal HSV infection remains a possibility, even when no parental history of herpes infection is given.⁸¹

Presentation is divided into three categories (Table 2), each of which has different clinical symptoms and outcomes.

Table 2: Classification of neonatal HSV infection⁵⁰

Type (% of total)	Mortality		Mean age at presentation	Normal outcome	
	Untreated	Treated		Untreated	Treated
SEM (45%)	< 1% (70% progress)	0%	10-11 days	62%	98%
CNS (30%)	50%	6%	16-19 days	33%	31%
DIS (25%)	90%	30%	9-11 days	50%	83%

SEM = Skin, Eyes and/or Mouth; CNS = Central Nervous System; DIS = Disseminated

Disseminated disease (DIS)

Disseminated disease develops in about one-quarter of neonates with HSV infection. It is more common in preterm infants and carries the worst prognosis. Symptoms generally develop in the first 14 days of life. Clinical findings include a sepsis-like presentation with respiratory distress, haemodynamic instability, jaundice, hepatomegaly, elevated liver enzymes, bleeding with associated coagulopathy, and seizures with signs of meningitis or encephalitis. Vesicular skin lesions may not be present in up to 50% of cases. Mortality in untreated patients is approximately 90% and even with antiviral therapy, may still be as high as 20-30%.

Central nervous system (CNS) disease

Almost one-third of neonates with HSV infection will have only encephalitis. Infants usually present between 10 days and 4 weeks of age with symptoms of fever or temperature instability, lethargy and irritability, followed by seizures, a bulging fontanelle and focal neurological signs. Cerebrospinal fluid (CSF) findings typically include 50-100 white blood cells x 10⁶ per litre, predominantly mononuclear cells, and elevated protein concentrations, both of which increase over the first few days. At presentation many are devoid of skin lesions. Untreated, the mortality rate approaches 50% with most survivors suffering severe neurological impairment. Morbidity is higher among infants with HSV-2 infection than among those with HSV-1 infection.⁵⁰ Even with the use of high dose aciclovir, morbidity has shown little improvement. Relapses may occur.

Skin, eyes and/or mouth (SEM) infection

Nearly half of neonates with HSV infection will present with lesions confined to the skin, eyes or mucous membranes. This is the most readily recognised form of the disease, with most babies having vesicular skin lesions at sites of trauma, such as over the presenting body part, fetal scalp electrode sites and eyelid margins. Lesions usually appear between one and two weeks of age but are sometimes evident shortly after birth when prolonged rupture of membranes has been present. Typically vesicles overlie an erythematous base and contain clear or slightly cloudy fluid.

Although rarely fatal if lesions are confined to skin and mucosal sites, without antiviral treatment many neonates progress to either the disseminated or CNS forms of the disease. In addition, more than one-third of those with untreated localised SEM lesions develop signs of major neurological impairment such as microcephaly, spastic quadriplegia or sensory loss by 12 months of age. A study of infants with presumed SEM disease reported that 24% had HSV DNA detected in their CSF by PCR testing, suggesting that HSV can infect the CNS without overt neurological symptoms.⁸⁸

There are data to suggest that three or more recurrences of cutaneous vesicles in the first 6 months of life are predictive of poor neurological outcome.⁸⁹ Specifically the likelihood of developing normally is nearly 100% when there are fewer than three recurrences within the first 6 months of life compared with only 79% when three or more recurrences occur during this period. At the time of such episodes PCR detection of HSV-DNA in the CSF may explain the emergence of new neurological deficits.⁹⁰

Differential diagnosis for neonatal HSV

Bacterial pathogens responsible for neonatal sepsis, sometimes with skin lesions that may be mistaken for disseminated or CNS HSV infection, include group B streptococcus, *Listeria monocytogenes* and gram-negative bacilli. Cutaneous infections resulting in vesicular lesions similar to neonatal HSV are bullous impetigo, varicella zoster, enteroviruses and disseminated CMV infection. Other infectious agents that might be considered are toxoplasmosis, rubella and syphilis. Finally, non-infectious cutaneous disorders that could be confused with neonatal HSV infection include erythema toxicum, neonatal pustular melanosis, acropustulosis and incontinentia pigmenti.

Management of neonatal HSV infection

Evaluation

The poor prognosis associated with untreated neonatal HSV infection means that every effort should be made to obtain a diagnosis as early as possible. This includes prompt communication with the mother's lead maternity caregiver. Many cases present with a sepsis-like clinical picture without identifiable risk factors; many with disseminated or CNS disease will initially lack skin lesions to assist in a timely diagnosis.

Management of suspected neonatal HSV infection

Successful management relies on a high index of suspicion of HSV infection and early institution of therapy. Only about 40% of affected neonates will initially have skin lesions and most lack a parental history of genital herpes.^{50,86,87}

Consequently, most physicians should consider neonatal HSV infection when confronted with an infant younger than 6 weeks of age who has vesicular or atypical bullous, pustular skin lesions or a progressive febrile illness without a bacterial cause. Particular alerting symptoms are a progressive febrile illness without a confirmed bacterial cause, which is unresponsive to antibiotics and associated with one or more of the following: skin vesicles, hepatomegaly, liver dysfunction, pneumonitis, thrombocytopenia, coagulopathy, or seizures. Other factors recently suggested to be of diagnostic importance in a neonate without a rash are maternal fever, respiratory distress requiring mechanical ventilation and CSF pleocytosis.⁹¹

Skin and oral lesions must be carefully looked for on a daily basis, particularly on the scalp and face (vaginal deliveries) or over the buttocks (breech presentation) as these may develop later in the course of disseminated and CNS disease. The index of suspicion is heightened by progressive abnormalities of liver function, particularly during the first week of life. When neonatal HSV infection is considered likely, undertake diagnostic tests and administer aciclovir immediately, before the results of definitive investigations are available.⁹² **GRADE A** Aciclovir should be considered for an unwell infant without clinical improvement and negative bacterial cultures at 48-72 hours.⁹³

Diagnosis

In the presence of vesicular lesions, the base of the lesion should be scraped and sent for PCR; it requires operator expertise in obtaining an adequate specimen and a negative result should be interpreted with caution.

As neonatal HSV infection may occur in the absence of skin lesions, other diagnostic specimens are required. In addition to testing any cutaneous lesions, swabs of the throat, conjunctiva, umbilicus, rectum **plus** urine should be performed. Swabs are best deferred until 24-48 hours of age (i.e. not at birth or within the first 24 hours of life because of possible contamination by maternal cervico-vaginal secretions).

CSF should be taken for HSV PCR testing as well as usual parameters of cell count, protein and glucose. Whole blood PCR should also be performed to assist with diagnosis of neonatal HSV infection.

PCR is a rapid, highly sensitive and specific technique, which detects minute quantities of viral DNA. It is more reliable than viral culture for CNS infections. However, although the presence of a positive PCR is highly predictive of infection, a negative result does not eliminate the possibility of disease.⁹⁴ A negative CSF PCR should be evaluated in conjunction with the entire clinical picture including other diagnostic modalities, and should not be used on its own to exclude CNS herpes disease. **GRADE A**

Liver function tests, including serum transaminases may indicate HSV hepatitis and a CXR may diagnose pneumonitis.^{88,95} These tests are performed on **all** infants suspected of neonatal HSV infection. **GRADE A**

An ophthalmology consultation should be sought in suspected or confirmed cases of neonatal HSV infection, to help identify and monitor ocular complications that may arise during the illness. **GRADE C**

In addition, a sexual history from the parents is taken. The mother's lead maternity caregiver is asked to obtain cultures or PCR of maternal genital secretions and to perform type-specific HSV serology. This is important, even when the presentation is weeks after the delivery.

Treatment

Intravenous aciclovir (20mg/kg every 8 hours) decreases the mortality and morbidity of neonatal HSV infections (see Table 2 on [page 32](#)).^{88,92,96} Early therapy improves neurological outcome. The treatment duration is 14 days for SEM disease and a minimum of 21 days for CNS and disseminated infections.⁹⁶ The recommendation for the longer course of aciclovir also includes those infants with SEM disease with abnormal CSF parameters, including HSV DNA detected by PCR. **GRADE A & B**

All infants with HSV CNS involvement should have a lumbar puncture at the end of aciclovir therapy to determine if the CSF is PCR negative for HSV. Those who remain PCR positive should continue receiving intravenous aciclovir until viral DNA in the CSF is no longer detected.^{68,88} **GRADE B** Aciclovir-resistant neonatal HSV remains rare.

A double-blind placebo-controlled study found that infants surviving neonatal HSV disease with CNS involvement had improved neurodevelopmental outcomes when they received suppressive therapy with oral aciclovir, 300mg/m²/dose administered 3 times daily for 6 months.⁹⁷ Use of oral aciclovir suppressive therapy also reduced skin recurrences in infants. Regular monitoring of neutrophil count needs to occur while on suppressive aciclovir therapy, with 20-25% of study patients developing neutropaenia while receiving aciclovir.⁹⁸ **GRADE A**

General management points

A monocytic leukocytosis in the CSF is suspicious of CNS HSV infection.⁴⁴ Treatment with aciclovir should be instituted before cultures or PCR results are available. After 5 days, aciclovir can be discontinued if an alternative diagnosis has been established or the clinical course is no longer compatible with HSV CNS disease, all cultures (including PCR) are negative and a CT or MRI head scan is normal or does not suggest HSV encephalitis. Be aware, however, that a negative initial CSF culture or PCR result does not exclude CNS disease. It is well established that neonatal HSV CNS infection may occur despite the findings of normal CSF counts and biochemistry, and that a negative CSF HSV PCR result may occur, especially if the lumbar puncture was performed early in the course of the illness.^{88,99} Consequently, repeat lumbar puncture is recommended when microbiological tests are negative but clinical suspicion remains high. **GRADE B & C**

Empirical treatment with aciclovir is recommended if, after 48 hours, an infant remains critically ill despite antibiotic therapy and disseminated HSV cannot be excluded, if bacterial cultures are negative, or there are signs of progressive liver dysfunction with coagulopathy.¹⁰⁰ **GRADE C**

In addition to the administration of aciclovir, other important aspects of the infant's management include:

- Respiratory support.
- Control of circulation.
- Management of seizures.

- Maintenance of fluid and electrolyte balance.
- Correction of coagulopathy.
- Administration of antibiotics for concomitant bacterial infections.

Infants with neonatal HSV disease should be managed by contact precautions throughout the course of their illness.¹⁰¹ **GRADE C**

Follow-up of neonatal HSV infection

Long-term follow-up in survivors is instituted to monitor for sequelae and should include assessment of hearing, vision and neurodevelopment. **GRADE C**

When a cutaneous recurrence occurs full clinical examination should be performed. If any evidence of systemic involvement is present, e.g. fever and especially irritability, a CSF examination, including HSV DNA PCR, should be performed. A low level of suspicion should be used to initiate parenteral aciclovir therapy. Abnormal result should lead to a further course of intravenous aciclovir being administered, followed by suppressive oral aciclovir until at least 6 months of age. **GRADE C**

Counselling

Neonatal HSV infection causes considerable stress within the family. The experience of many is that most couples eventually separate.¹⁰² This is because of concern over a critically ill infant, exacerbated by guilt over transmission of the virus and the demands of the long term care of an often severely impaired child. **Because of this, expert education and counselling is required.** **GRADE C**

GUIDELINES FOR TALKING TO PARENTS OF A BABY DIAGNOSED WITH NEONATAL HERPES

Being comfortable with discussing the diagnosis (what, why, how, etc.) is critical to the parents' ability to understand and come to terms with what has happened. The following points are additional to **Key Information for Health Professionals to Give Patients** (see page 41).

- Parents are likely to be shocked, and feeling both grief and shame, which may be expressed as anger and/or withdrawal from staff.
- A crisis of this nature may well trigger a relationship crisis and health professionals can act most usefully by listening and not attributing blame to either parent.
- Parents need to know that staff do not blame them for the baby contracting HSV (attitudes are conveyed verbally and non-verbally).
- Although one or other parent may have had previous knowledge that they have HSV, it is most common for people not to know and be undiagnosed.
- Most neonatal herpes happens when a woman experiences a 'silent' (asymptomatic) primary episode in late pregnancy.
- Many people do not realise that cold sores are caused by HSV and may be passed through oral sex. A primary HSV-1 episode of genital herpes in late pregnancy creates a high risk for neonatal transmission.
- Given the social stigma of STIs, parents may be unable to initiate a conversation with staff or ask the questions that are worrying them. Health professionals need to take the initiative in addressing possible concerns. An opening line such as, "many parents wonder about... is this a concern for you?" is useful for normalising parental queries.
- Health professionals need to convey that they are comfortable talking about adult sexuality; that intercourse and oral sex are normal practices when a woman is pregnant and that HSV may have been transmitted during sexual activity in pregnancy.
- Health professionals may need to initiate a conversation about sexual transmission, e.g. "would it be helpful if I explained to you how the virus is passed?"
- It is very important for health professionals to address transmission; how the baby did and did not become infected. Parents may prefer to believe that the baby was infected from contaminated medical equipment or a staff member with a cold sore to mitigate the burden of parental responsibility for the baby's infection.
- Advise parents regarding any transmission precautions with regard to other siblings and family members, otherwise parents may initiate precautions they imagine to be necessary.

See page 41 for Key Information for Health Professionals to Give Patients and consider referring to the NZHF Helpline tollfree 0508 11 12 13.

Anticipatory management of newborn infant with known risk for neonatal HSV¹⁰³

High risk

This category involves a subgroup of infants born to mothers with their first episode of genital herpes during late pregnancy, that is, those women infected near or at term. A paediatrician experienced in identifying the signs of neonatal HSV infection should examine these newborn infants. **GRADE C**

Women with first episode genital HSV infection associated with either genital lesions or subclinical shedding at delivery have a 25-57% chance of transmitting HSV to their babies if they deliver by the vaginal route.⁴⁶ Although not completely protective against neonatal HSV disease, elective caesarean section significantly reduces the risk of transmission and is recommended for pregnant women who have a known or presumed first episode of genital herpes within 6 weeks of delivery, even if receiving suppressive anti-viral therapy.⁴⁶ **GRADE B**

Because of the high risk of infection, an asymptomatic infant inadvertently delivered vaginally from a woman with active first episode genital lesions should be managed as for suspected neonatal HSV infection. This means the immediate collection of specimens, including CSF, for cell count, chemistry and PCR testing, HSV blood PCR, liver function tests and HSV surface cultures and PCR, at 24 hours or earlier if clinically indicated. Anticipatory aciclovir therapy should be initiated. Duration of aciclovir will depend on surface cultures and CSF results. Also check the mother's total and type-specific HSV serological status, to confirm that this is a first episode of genital herpes and not a recurrence. **GRADE C**

Similarly, when the woman has active first episode genital lesions and is febrile, or has ruptured membranes for more than 4 hours, or when fetal scalp electrodes or forceps have been used, irrespective of the mode of delivery, the infant should be managed as for suspected neonatal HSV infection. **GRADE C**

Anticipatory aciclovir therapy can be discontinued if the neonate remains well, viral cultures and molecular diagnostic testing have not identified HSV, and the CSF studies including PCR results are normal. If the culture or PCR of surface swabs only is positive and the neonate remains clinically well aciclovir treatment should continue for 10 days.¹⁰⁴ Treatment is continued for 14 days when HSV is identified but CSF results are normal, and for 21 days if there is an abnormal CSF finding.¹⁰⁵ **GRADE B & C**

Low risk

Within this category are most infants born to mothers with their first episode of genital herpes during pregnancy and those with recurrent genital lesions at the time of delivery. A paediatrician experienced in identifying the signs of neonatal HSV infection should examine these newborn infants. **GRADE C**

Anticipatory guidance including surveillance cultures, but no empiric aciclovir, is reserved for well appearing infants without skin or mucosal lesions at birth and born to mothers within the following categories: **GRADE B & C**

1. First episode genital herpes more than 6 weeks before delivery.
2. First episode genital herpes within 6 weeks of delivery where the mother has delivered by elective caesarean section.
3. Active recurrent genital herpes at delivery.
4. History of recurrent genital herpes during this pregnancy.

The examining paediatrician should undertake the following:

Anticipatory guidance

- Document risk of neonatal HSV infection on infant's chart.
Notify the infant's lead maternity caregiver and general practitioner of risk.
- Advise mothers about hand washing and caution those with vesicular breast lesions not to breastfeed while vesicles are present. Particular care when handling the baby must be taken by those with recently acquired or reactivated oral or other skin lesions. In addition to hand washing, this includes covering skin sites and, for herpes labialis or stomatitis, wearing a surgical mask and not kissing the baby until the lesions have crusted and dried.
- Educate parents on risks of HSV and instruct them to report signs of fever, respiratory distress, jaundice, lethargy or irritability, poor feeding, skin, eye or oral mucosal lesions.
- If clinical symptoms, skin, eye or mucosal lesions appear, manage as for suspected neonatal HSV infection.

Surveillance HSV cultures

- Cultures should be taken at 24-48 hours of age (not at birth or within the first 24 hours of life, because of possible contamination by maternal cervico-vaginal secretions).
- Cultures should be obtained from eyes (conjunctiva), mouth, nasopharynx, umbilicus, urine and rectum.
- Further clinical and laboratory evaluation, as for suspected neonatal HSV infection, followed immediately by aciclovir therapy is mandated, if cultures are positive.⁹² **GRADE A**

Breastfeeding and use of oral aciclovir/valaciclovir

The American Academy of Pediatrics has approved use of aciclovir for treating first episode or recurrent genital herpes in breastfeeding mothers. Although concentrations are high in breast milk and the baby, toxicity is low.⁷³ **GRADE B**

GENITAL HSV INFECTION IN CHILDHOOD

KEY POINTS

- All children with suspected genital herpes infection should be referred for specialist assessment and management.
- Genital herpes is less common in childhood than in adulthood, but can occur.
- When assessing a child or young person with genital ulcers the diagnosis of herpes simplex should be considered, but not presumed.
- Ulcers can occur as a manifestation of aphthosis in response to acute illness.¹⁰⁶ The appearance of aphthous genital ulcers is also usually preceded by a history of fever, malaise and headache, but viral cultures are negative.
- Epstein-Barr virus and cytomegalovirus infections have also been reported to cause genital ulceration.
- Any genital ulcers should therefore be swabbed and cultured before decisions are made about management.

Pre-adolescent children

Genital herpes infection may present in pre-adolescent children. When it does it is important to explore carefully in the history the aetiology of the herpes infection. Possible sources of transmission include an orolabial lesion or a herpetic whitlow in another family member and autoinoculation. For example genital herpes in a child under one year of age may result from kissing 'all over' by a pre-school aged sibling with orolabial herpes.

If an obvious source of the infection cannot be identified then sexual transmission should be considered. The diagnosis must be confirmed by culture or PCR with typing of the herpes virus. The presence of HSV-1 does not rule out sexual transmission, but a non-sexual route of transmission should be carefully sought, especially if there are no other pointers to suggest sexual abuse. Also the presence of HSV-2 in the genital area does not automatically imply sexual contact, but does mean that sexual abuse, as a cause of the infection, must be seriously considered. In a recent local review of 2,162 children who had an examination in the context of allegations of sexual abuse, eight of the 1,909 children who underwent laboratory screening for sexually transmitted infections were positive for HSV and a sexual transmission was thought likely for six of these children.¹⁰⁷

Because of these very difficult issues in diagnosis, all children with suspected genital herpes infection should be referred to a paediatrician for assessment and treatment. The paediatrician may in turn seek advice from a DSAC (Doctors for Sexual Abuse Care) doctor with special training in the area of recognition of child sexual abuse.

Adolescents

If genital herpes is present, a history suggesting aetiology should be carefully documented as for pre-adolescent children. During the interview it is important to ensure privacy. Confidentiality and the limitations of confidentiality, where there are concerns about safety, need to be discussed. The adolescent should be asked whether they are sexually active and whether their involvement in sexual activity has been consensual. If non-consensual activity is reported and they are under the age of 17, it is recommended that a referral be made to Child Youth & Family (CYF) and the Police. It is preferable that the referral be discussed with the adolescent and, where appropriate, the parents. Any referral to CYF for safety concerns of a child or adolescent can be made under the protection of the Children & Young Persons Act. In adolescents over 17 years of age, discuss with them the option of reporting to the Police. If further advice is required, contact the local DSAC doctor.

The above is based upon internationally accepted standards of practice. **GRADE C**

ISSUES IN COUNSELLING

KEY POINTS

- Providing accurate up-to-date information in a non-judgmental way is key to assisting a person to understand and come to terms with herpes.
- The psychological morbidity of a diagnosis often far outweighs physical symptoms.
- Recommended resource for patients www.herpes.org.nz or the Herpes Helpline tollfree **0508 11 12 13**.

Genital herpes is a common and, medically speaking, usually a relatively minor condition in people who are sexually active. However, conditioning and social values contribute to individuals having a range of emotional responses when given a diagnosis of genital herpes.¹⁰⁸⁻¹¹¹

EMOTIONS RELATED TO THE DIAGNOSIS OF GENITAL HERPES

- Grief (includes anger, guilt, fear, shock and denial, sense of injustice).
- Stigma (includes confusion, dirtiness, embarrassment, sense of isolation, loss of assertiveness, unworthiness).

Good therapeutic management acknowledges these emotional responses and addresses the patient's feelings and concerns. The patient who presents with genital herpes for the first time is very vulnerable. Acknowledge how difficult it must have been for the patient to present for treatment.¹¹²

Often the diagnosis is unexpected. Never be dismissive of the patient's emotional responses to the infection. For some patients a diagnosis of genital herpes may be the most challenging health disruption they have ever experienced, given the stigma associated with sexually transmitted infections. Empathise with the patient and allow the patient to talk. Initiate questions and information about topics that may be difficult for patients to raise, but are common concerns, such as the impact of the diagnosis on sexual relationships.^{113,114} Aim for unhurried counselling at the patient's pace. The diagnosing clinician addresses the acute issues at the first presentation, even if the patient is referred elsewhere for counselling.²⁶ Not all patients will take up the offer of initial counselling and support. It is very important to advise all patients of resources as these are often accessed at a later date, for example, when establishing a new relationship or wanting to conceive.

It is important that counselling and education about genital herpes take place in the appropriate setting. Incorporate the following points:

- Comfortable setting
- Patient dressed
- Minimal interruptions
- Confidentiality assured
- Adequate time
- Attentive listening
- Avoidance of pejorative and prejudicial terms
- Empathic attitude
- Written information to take away and read
- Encouragement to return with list of questions

Education may include answering questions about the natural history of the infection, including likely triggers for reactivation. Few solid data exist, but patient experience suggests that stress appears to be associated with recurrences in some patients.¹¹⁵ Carefully advise about how to manage stress and lead a healthy lifestyle (exercise, good diet and complementary medicines). An emphasis on lifestyle may be stressful for the patient, heightening feelings of guilt and beliefs that recurrent symptoms are self-inflicted.

Correct management of genital herpes is time-intensive. The assessment of the likely impact of the diagnosis on the patient's wellbeing depends in part on the following: whether a grief reaction is triggered, the person's coping strategies, level of social support and underlying beliefs about sexuality and sexual health. Psychological issues and concerns should start to be addressed at the first session. Patients may have numerous worries: about the acquisition of HIV or other STIs, that they are seen as promiscuous and that the doctor has a low opinion of them.¹¹⁶ In all cases (whether primary, non-primary or first symptomatic reactivation), the emotional consequences and perceived social stigma of the infection need to be addressed. No matter the time since diagnosis, do not assume that another clinician has spoken with the person about genital herpes.^{113,117} The diagnosis of genital herpes will provoke a grief reaction in many patients and cause feelings such as guilt, anger, confusion and a sense of isolation. Patients with genital herpes are usually very concerned about the diagnosis, and its potential impact on their relationships and reputation amongst family and friends. Common concerns of patients relate to social stigma, transmission, fear of rejection upon telling potential sexual partners, and how herpes will affect their sex life and social activities.^{110,118}

The above section on counselling is based on internationally accepted standards of practice. **GRADE C**

PATIENTS' CONCERNS ARE PREDOMINANTLY ABOUT RELATIONAL ISSUES

- Fear of discovery
- Intimate relationships and sex life affected
- Social activities and lifestyle altered
- Social stigma of STI
- Condition is 'incurable'
- Fear of transmission or contagion
- Fear of disclosure and subsequent rejection
- Inaccurate online material may exacerbate above points

Reassure patients that they are not alone in having genital herpes. The clinician or counsellor is encouraged to offer information about local herpes support groups and/or the NZ Herpes Foundation (Helpline tollfree **0508 11 12 13**) or refer for specialist counselling to the local sexual health clinic. Advise about reputable Internet resources and stress that the online 'cure' claims are not scientifically supported.

KEY INFORMATION FOR HEALTH PROFESSIONALS TO GIVE PATIENTS IN COUNSELLING

The following information contributes significantly to people being able to normalise the meaning of a viral STI. The challenge for health professionals is to convey that they understand that a relatively innocuous infection in medical terms may, however, be experienced as life changing for the person. The following points are most likely to be effective when they are incorporated into the acknowledgement of the above psychosocial points:

- Herpes simplex virus (HSV) causes cold sores on the mouth and cold sores (herpes) on the genitals. It is 2 strains of the same virus. HSV-1 causes most oral cold sores and causes 50% of genital herpes (through oral to genital transmission). HSV-2 mostly causes genital herpes.
- It is a very common, relatively medically insignificant infection, but can cause significant psychosocial morbidity when it causes genital symptoms.
- Up to one in three people have genital herpes, but only 20% of them experience symptoms (this includes genital herpes caused by both HSV-1 and HSV-2).
- Most people (80%) who become infected with genital herpes will not have any symptoms, or have such mild symptoms that they will not be recognised or diagnosed as genital herpes. 75% of herpes is acquired from partners unaware they have it.
- For most people who experience symptoms, genital herpes is a sometimes-recurring cold sore on the genitals. It does not affect your overall health or longevity of life.
- A small percentage of people who get genital herpes may experience problematic recurrences. If this happens there is effective treatment available.
- People who experience a first episode of genital herpes will get better, lesions will heal and there will be no evidence of the initial lesions left.
- Most people who experience a first episode of HSV-2 will have recurrences, but they are generally milder than the first episode. HSV-1 tends to cause fewer recurrences than HSV-2.
- Getting genital herpes in a long-term relationship does not mean that the other partner has been unfaithful. However, a full sexual health screen may be reassuring.
- Oral to genital transmission of HSV-1 is very common through oral sex. This can happen when cold sores are not causing symptoms.
- Genital herpes does not affect your fertility or stop you having children. Vaginal delivery is usual for most women with a history of genital herpes.
- Genital herpes does not stop you having sex.
- Anybody with genital herpes, whether they get symptoms or have never had symptoms, may shed the virus from time to time with no symptoms present.
- There is no evidence that genital herpes causes cancer of the cervix.
- Condoms reduce the risk of transmission. The use of condoms in a long-term relationship should be a matter of discussion between the individuals. It is advisable to avoid genital-to-genital contact, even with a condom, until any lesions are completely healed.
- Even if the virus is passed on, the most likely outcome is that the person will never experience symptoms.
- Ensure patients have access to the NZHF patient pamphlets and/or the Helpline tollfree **0508 11 12 13**, or www.herpes.org.nz.

Herpes in pregnancy

- Neonatal herpes is serious but extremely rare; one in 10,000 live births.
- The commonest cause of neonatal herpes is a woman experiencing a first episode (often asymptomatic) in the last trimester. Early medical management will minimise the risk.
- Recurrent herpes in pregnancy has a much lower risk of transmission. Maternal antibodies contribute to protecting the baby and viral shedding in recurrences is low. It is important to notify the health professional(s) managing the pregnancy of the previous history.
- Vaginal delivery is usual for most women with a history of genital herpes.
- While neonatal herpes is rare, it is important that parents are instructed on which symptoms to look out for if there is any possibility of transmission. Knowledge of the early symptoms of neonatal herpes will enable such infants to present early and will increase the likelihood of a good outcome for the infant.

References

1. Looker KJ, Garnett GP, et al. An estimate of the global prevalence and incidence of herpes simplex virus type 2 infection. *Bull World Health Org*, 2008;86:805-12A.
2. Dickson N, Righarts A, et al. HSV-2 incidence by sex over four age periods to age 38 in a birth cohort. *Sexually Transm Infect*, 2014;90:243-5.
3. Haddow L. Increase in rates of herpes simplex virus type 1 as a cause of anogenital herpes in western Sydney, Australia, between 1979 and 2003. *Sexually Transm Infect*, 2006 Jun 1;82(3):255-9.
4. Gray R, Morgan J, et al. Herpes simplex type 1 versus herpes simplex type 2 in anogenital herpes; a 10 year study from the Waikato region of New Zealand. *NZ Med J*, 2008 Apr 4;121(1271):43-50.
5. Perkins N. Personal communication. In; 2006.
6. Gorfinkel S. Seroprevalence of HSV-1 and HSV-2 antibodies in Canadian women screened for enrolment in a herpes simplex vaccine trial. *Int J STD AIDS*, 2013 May;24(5):345-9.
7. Nguyen N, Burkhart CN, et al. Review: Identifying potential pitfalls in conventional herpes simplex virus management. *Int J Dermatol*, 2010;49(9):987-93.
8. Corey L, McCutchan A, Ronald AR, et al. Evaluation of new anti-infective drugs for the treatment of genital infections due to herpes simplex virus. *Clin Infect Dis*, 1992;15(Suppl.1):S99-S107.
9. Wald A. Herpes simplex virus type 2 transmission: risk factors and virus shedding. *Herpes*, 2004 Aug;11 Suppl 3:130A-7A.
10. Langenberg A. Interrupting herpes simplex virus type 2 transmission: the role of condoms and microbicides. In: *Herpes*; 2004:147A-54A.
11. Wald A, Langenberg AG, et al. The relationship between condom use and herpes simplex virus acquisition. *Ann Intern Med*, 2005 Nov 15;143(10):707-13.
12. Cowan FM, Johnson AM, et al. Relationship between antibodies to herpes simplex virus (HSV) and symptoms of HSV infection. *J Infect Dis*, 1996 Sep;174(3):470-5.
13. da Silva LM, Guimaraes AL, et al. Herpes simplex virus type 1 shedding in the oral cavity of seropositive patients. *Oral Dis*, 2005 Jan;11(1):13-6.
14. Wald A, Corey L, et al. Frequent genital herpes simplex virus 2 shedding in immunocompetent women. Effect of acyclovir treatment. *J Clin Invest*, 1997 Mar 1;99(5):1092-7.
15. Corey L, Wald A, et al. Once-daily valacyclovir to reduce the risk of transmission of genital herpes. *N Engl J Med*, 2004 Jan 1;350(1):11-20.
16. Langenberg AGM, Corey L, et al. A prospective study of new infections with herpes simplex virus type 1 and type 2. *N Engl J Med*, 1999 November 4, 1999;341(19):1432-8.
17. Van der Pol B, et al. Type-specific identification of anogenital herpes simplex virus infections by use of a commercially available nucleic acid amplification test. *J Clin Microbiol*, 2012 Nov;50(11):3466-71v.
18. Post JC, Ehrlich GD. The impact of the polymerase chain reaction in clinical medicine. *JAMA*, 2000 March 22, 2000;283(12):1544-6.
19. Scoular A. Using the evidence base on genital herpes: optimising the use of diagnostic tests and information provision. *Sex Transm Infect*, 2002 Jun 1;78(3):160-5.
20. Bryson Y, Dillon M, et al. Treatment of first episodes of genital herpes simplex virus infection with oral acyclovir. A randomized double-blind controlled trial in normal subjects. *N Engl J Med*, 1983 April 21, 1983;308(16):916-21.
21. Mertz GJ, Critchlow CW, et al. Double-blind placebo-controlled trial of oral acyclovir in first-episode genital herpes simplex virus infection. *JAMA*, 1984 Sep 1;252(9):1147-51.
22. Berger JR, Houff S. Neurological complications of herpes simplex virus type 2 infection. *Arch Neurol*, 2008 May;65(5):596-600.
23. Corey L, Adams HG, et al. Genital herpes simplex virus infections: clinical manifestations, course, and complications. *Ann Intern Med*, 1983 Jun;98(6):958-72.
24. Engstrom M, Berg T, et al. Prednisolone and valaciclovir in Bell's palsy: a randomised, double-blind, placebo-controlled, multicentre trial. *Lancet Neurol*, 2008 Nov;7(11):993-1000.
25. Beauman JG. Genital herpes: a review. *American Family Physician*, 2005 Oct 15;72(8):1527-34.
26. Carney O, Ross E, et al. A prospective study of the psychological impact on patients with a first episode of genital herpes. *Sex Transm Infect*, 1994 February 1, 1994;70(1):40-5.
27. Green J. Psychosocial issues in genital herpes management. *Herpes*, 2004 Dec 1;11(3):60-2.
28. Wald A, Zeh J, et al. Reactivation of genital herpes simplex virus type 2 infection in asymptomatic seropositive persons. *N Engl J Med*, 2000 Mar 23;342(12):844-50.
29. Tyring SK, Douglas JM, et al. A randomized, placebo-controlled comparison of oral valacyclovir and acyclovir in immunocompetent patients with recurrent genital herpes infections. The Valaciclovir International Study Group. *Arch Dermatol*, 1998 Feb 1;134(2):185-91.
30. Aoki FY, Tyring S, et al. Single-day, patient-initiated famciclovir therapy for recurrent genital herpes: a randomized, double-blind, placebo-controlled trial. *Clin Infect Dis*, 2006 Jan 1;42(1):8-13.
31. Wald A, Carrell D, et al. Two-day regimen of acyclovir for treatment of recurrent genital herpes simplex virus type 2 infection. *Clin Infect Dis*, 2002 Apr 1;34(7):944-8.
32. Mertz GJ, Jones CC, et al. Long-term acyclovir suppression of frequently recurring genital herpes simplex virus infection. A multicenter double-blind trial. *JAMA*, 1988 July 8, 1988;260(2):201-6.
33. Kaplowitz LG, Baker D, et al. Prolonged continuous acyclovir treatment of normal adults with frequently recurring genital herpes simplex virus infection. The Acyclovir Study Group. *JAMA*, 1991 Feb 1;265(6):747-51.
34. Patel R, Tyring S, et al. Impact of suppressive antiviral therapy on the health related quality of life of patients with recurrent genital herpes infection. *Sex Transm Infect*, 1999 Dec 1;75(6):398-402.
35. Romanowski B, Marina RB, et al. Patients' preference of valacyclovir once-daily suppressive therapy versus twice-daily episodic therapy for recurrent genital herpes: a randomized study. *Sex Transm Dis*, 2003 Mar 1;30(3):226-31.
36. Tyring SK, Diaz-Mitoma F, et al. Oral famciclovir for the suppression of recurrent genital herpes: the combined data from two randomized controlled trials. *J Cutan Med Surg*, 2003 Nov-Dec;7(6):449-54.
37. Tyring SK, Baker D, et al. Valacyclovir for herpes simplex virus infection: long-term safety and sustained efficacy after 20 years' experience with acyclovir. *J Infect Dis*, 2002 Oct 15;186 Suppl 1:S40-6.
38. Trotter L, Owen H, et al. Are all aciclovir cream formulations bioequivalent? *Int J Pharm*, 2005 Nov 4;304(1-2):63-71.
39. Frederick DM, Bland D, et al. Fatal disseminated herpes simplex virus infection in a previously healthy pregnant woman. A case report. *J Reprod Med*, 2002 Jul;47(7):591-6.
40. Thurman RH, König K, et al. Fulminant herpes simplex virus hepatic failure in pregnancy requiring liver transplantation. *Aus & NZ J Obstet & Gynaecol*, 2010;50(5):492-4.
41. Garland SM. Neonatal herpes simplex: Royal Women's Hospital 10-year experience with management guidelines for herpes in pregnancy. *Aust N Z J Obstet Gynaecol*, 1992 Nov;32(4):331-4.
42. Brown ZA, Gardella C, et al. Genital herpes complicating pregnancy. *Obstet Gynecol*, 2005 Oct;106(4):845-56.
43. Corey L, Wald A. *Sexually Transmitted Diseases*. 3rd ed: McGraw-Hill; 1999.
44. Arvin A, Whitley RJ, Gutierrez KM. Herpes simplex infections. In: Remington JS, KJWC, Baker CJ, ed. *Infectious diseases of the fetus and newborn infant*. 6th ed. Philadelphia: Elsevier Saunders; 2006:845-66.
45. Eskild A, Jeansson S, et al. Herpes simplex virus type-2 infection in pregnancy: no risk of fetal death: results from a nested case-control study within 35,940 women. *BJOG*, 2002 Sep;109(9):1030-5.
46. Brown ZA, Selke S, et al. The acquisition of herpes simplex virus during pregnancy. *N Engl J Med*, 1997 August 21, 1997;337(8):509-16.
47. Brown ZA, Wald A, et al. Effect of serologic status and cesarean delivery on transmission rates of herpes simplex virus from mother to infant. *JAMA*, 2003 Jan 8;289(2):203-9.
48. Gardella C, Brown Z. Prevention of neonatal herpes. *BJOG*, 2011;118(2):187-92.
49. Randolph AG, Washington AE, et al. Cesarean delivery for women presenting with genital herpes lesions. Efficacy, risks, and costs. *JAMA*, 1993 July 7, 1993;270(1):77-82.
50. Corey L, Wald A. Maternal and neonatal herpes simplex virus infections. *N Engl J Med*, 2009;361(14):1376-85.

51. Ozouaki F, Ndjoyi-Mbiguino A, et al. Genital shedding of herpes simplex virus type 2 in childbearing-aged and pregnant women living in Gabon. *Int J STD AIDS*, 2006 Feb 1;17(2):124-7.
52. Brown EL, Gardella C, et al. Effect of maternal herpes simplex virus (HSV) serostatus and HSV type on risk of neonatal herpes. *Acta obstetrica et gynecologica Scandinavica*, 2007;86(5):523 - 9.
53. ACOG. ACOG practice bulletin. Management of herpes in pregnancy. Number 8 October 1999. Clinical management guidelines for obstetrician-gynecologists. *Int J Gynaecol Obstet*, 2000 Feb;68(2):165-73.
54. Smith JR, Cowan FM, et al. The management of herpes simplex virus infection in pregnancy. *Br J Obstet Gynaecol*, 1998 Mar;105(3):255-60.
55. Wald A. Genital herpes. *Clin Evid*, 2002 Dec(8):1608-19.
56. Hemaar S, et al. Neonatal herpes infections in The Netherlands in the period 2006-2011. *J Matern Fetal Neonatal Med*, 2014 Jul;11:1-5.
57. RCOG. Management of Genital Herpes in Pregnancy. In; 2002.
58. AHMF. Herpes Simplex in Pregnancy. In; 2009.
59. BASHH. 2007 National Guideline for the Management of Genital Herpes. BASHH, 2008 Jan 5:1-26.
60. Gardella C, Brown ZA, et al. Poor correlation between genital lesions and detection of herpes simplex virus in women in labor. *Obstet Gynecol*, 2005 Aug 1;106(2):268-74.
61. Scott L, Sanchez P, et al. Acyclovir suppression to prevent cesarean delivery after first-episode genital herpes. *Obstet Gynecol*, 1996 January 1, 1996;87(1):69-73.
62. Brocklehurst P, Kinghorn G, et al. A randomised placebo controlled trial of suppressive acyclovir in late pregnancy in women with recurrent genital herpes infection. *Br J Obstet Gynaecol*, 1998 Mar 1;105(3):275-80.
63. Watts DH, Brown ZA, et al. A double-blind, randomized, placebo-controlled trial of acyclovir in late pregnancy for the reduction of herpes simplex virus shedding and cesarean delivery. *Am J Obstet Gynecol*, 2003 Mar 1;188(3):836-43.
64. Sheffield JS, Hollier LM, et al. Acyclovir prophylaxis to prevent herpes simplex virus recurrence at delivery: a systematic review. *Obstet Gynecol*, 2003 Dec 1;102(6):1396-403.
65. Ramsey P, Andrews W. Antiviral suppression to prevent recurrence of herpes simplex virus (HSV) infections in pregnancy: a meta analysis. *Am J Obstet Gynecol*, 2003;189(6):S98.
66. Leung DT, Henning PA, et al. Inadequacy of plasma acyclovir levels at delivery in patients with genital herpes receiving oral acyclovir suppressive therapy in late pregnancy. *J Obstet Gynaecol Can*, 2009 Dec;31(12):1137-43.
67. Arvin A, Hensleigh P, et al. Failure of antepartum maternal cultures to predict the infant's risk of exposure to herpes simplex virus at delivery. *N Engl J Med*, 1986 September 25, 1986;315(13):796-800.
68. Kimberlin DW, Lin CY, et al. Natural history of neonatal herpes simplex virus infections in the acyclovir era. *Pediatrics*, 2001 Aug 1; 108(2):223-9.
69. Sauerbrei A, Wutzler P. Herpes simplex and varicella-zoster virus infections during pregnancy: current concepts of prevention, diagnosis and therapy. Part 1: herpes simplex virus infections. *Med Microbiol Immunol*, 2007 Jun 1;196(2):89-94.
70. Stone KM, Reiff-Eldridge R, et al. Pregnancy outcomes following systemic prenatal acyclovir exposure: Conclusions from the international acyclovir pregnancy registry, 1984-1999. *Birth Defects Res A Clin Mol Teratol*, 2004 Apr;70(4):201-7.
71. Andrews WW, Kimberlin DF, et al. Valacyclovir therapy to reduce recurrent genital herpes in pregnant women. *Am J Obstet Gynecol*, 2006 Mar 1;194(3):774-81.
72. Pasternak B, Hviid A. Use of acyclovir, valacyclovir, and famciclovir in the first trimester of pregnancy and the risk of birth defects. *JAMA*, 2010 August 25, 2010;304(8):859-66.
73. Sheffield JS, Fish DN, et al. Acyclovir concentrations in human breast milk after valacyclovir administration. *Am J Obstet Gynecol*, 2002 Jan 1;186(1):100-2.
74. Major CA, Towers CV, et al. Expectant management of preterm premature rupture of membranes complicated by active recurrent genital herpes. *Am J Obstet Gynecol*, 2003 Jun 1;188(6):1551-4; discussion 4-5.
75. Gardella C, Brown Z, et al. Risk factors for herpes simplex virus transmission to pregnant women: a couples study. *Am J Obstet Gynecol*, 2005 Dec 1;193(6):1891-9.
76. Cleary KL, Pare E, et al. Type-specific screening for asymptomatic herpes infection in pregnancy: a decision analysis. *BJOG*, 2005 Jun 1;112(6):731-6.
77. Braig S, Chanzy B. Management of genital herpes during pregnancy: the French experience. *Herpes*, 2004 Aug;11(2):45-7.
78. Tookey P, Peckham CS. Neonatal herpes simplex virus infection in the British Isles. *Paediatr Perinat Epidemiol*, 1996 Oct;10(4):432-42.
79. Poeran J, Wildschut H, et al. The incidence of neonatal herpes in The Netherlands. *J Clin Virol*, 2008 Aug 1;42(4):321-5.
80. Malm G, Berg U, et al. Neonatal herpes simplex: clinical findings and outcome in relation to type of maternal infection. *Acta Paediatr*, 1995 Mar 1;84(3):256-60.
81. Kropp RY, Wong T, et al. Neonatal herpes simplex virus infections in Canada: results of a 3-year national prospective study. *Pediatrics*, 2006 Jun;117(6):1955-62.
82. Flagg EW, Weinstock H. Incidence of neonatal herpes simplex virus infections in the United States, 2006. *Pediatrics*, 2011 January 1, 2011;127(1):e1-e8.
83. Morris A, Ridley GF, et al. Australian Paediatric Surveillance Unit : progress report. *J Paediatr Child Health*, 2002 Feb;38(1):8-15.
84. Gardella C, Handsfield HH, et al. Neonatal herpes - the forgotten perinatal infection. *Sexually Transm Dis*, 2008 Jan 1;35(1):22-4.
85. Kimberlin DW. Herpes simplex virus infections of the newborn. *Seminars in perinatology*, 2007 Jan 1.
86. Elder DE, Minutillo C, et al. Neonatal herpes simplex infection: keys to early diagnosis. *J Paediatr Child Health*, 1995 Aug;31(4):307-11.
87. Whitley RJ. Neonatal herpes simplex virus infections. *J Med Virol*, 1993;Suppl 1:13-21.
88. Kimberlin DW, Lakeman FD, et al. Application of the polymerase chain reaction to the diagnosis and management of neonatal herpes simplex virus disease. National Institute of Allergy and Infectious Diseases Collaborative Antiviral Study Group. *J Infect Dis*, 1996 Dec;174(6):1162-7.
89. Whitley R, Arvin A, et al. Predictors of morbidity and mortality in neonates with herpes simplex virus infections. The National Institute of Allergy and Infectious Diseases Collaborative Antiviral Study Group. *N Engl J Med*, 1991 Feb 14;324(7):450-4.
90. Kimberlin D, Powell D, et al. Administration of oral acyclovir suppressive therapy after neonatal herpes simplex virus disease limited to the skin, eyes and mouth: results of a phase I/II trial. *Pediatr Infect Dis J*, 1996 Mar 1;15(3):247-54.
91. Caviness AC, Demmler GJ, et al. Clinical and laboratory features of neonatal herpes simplex virus infection: a case-control study. *Pediatr Infect Dis J*, 2008 May 1;27(5):425-30.
92. Whitley R, Arvin A, et al. A controlled trial comparing vidarabine with acyclovir in neonatal herpes simplex virus infection. Infectious Diseases Collaborative Antiviral Study Group. *N Engl J Med*, 1991 Feb 14;324(7):444-9.
93. Caviness AC, Demmler GJ, et al. The prevalence of neonatal herpes simplex virus infection compared with serious bacterial illness in hospitalized neonates. *J Pediatr*, 2008 Aug 1;153(2):164-9.
94. Kimberlin DW. Neonatal herpes simplex infection. *Clin Microbiol Rev*, 2004 Jan 1.
95. Diamond C, Mohan K, et al. Viremia in neonatal herpes simplex virus infections. *Pediatr Infect Dis J*, 1999 Jun 1;18(6):487-9.
96. Kimberlin DW, Lin CY, et al. Safety and efficacy of high-dose intravenous acyclovir in the management of neonatal herpes simplex virus infections. *Pediatrics*, 2001 Aug 1;108(2):230-8.
97. Kimberlin D, Whitley R, et al. Oral aciclovir suppression and neurodevelopment after neonatal herpes. *N Engl J Med*, 2011; 365:1284-92.
98. Gutierrez K, Arvin AM. Long term antiviral suppression after treatment for neonatal herpes infection. *Pediatr Infect Dis J*, 2003 Apr;22(4):371-2.
99. De Tiege X, Heron B, et al. Limits of early diagnosis of herpes simplex encephalitis in children: a retrospective study of 38 cases. *Clin Infect Dis*, 2003 May 15;36(10):1335-9.
100. Scott LL. Perinatal herpes: current status and obstetric management strategies. *Pediatr Infect Dis J*, 1995 Oct 1;14(10):827-32; discussion 32-5.
101. Sakaoka H, Saheki Y, et al. Two outbreaks of herpes simplex virus type 1 nosocomial infection among newborns. *J Clin Microbiol*, 1986 Jul;24(1):36-40.
102. Kimberlin DW. Neonatal HSV infections: the global picture. *Herpes*, 2004 Aug;11(2):31-2.

103. Ed., Palasanthiran P, Starr M, et al. Management of perinatal infections; 2014.
104. Kimberlin D, Baley J, et al. Management of asymptomatic neonates born to women with active genital herpes lesions. *Pediatrics*, 2013;131:e635-46.
105. Jones C. Vertical transmission of genital herpes: prevention and treatment options. *Drugs*, 2009;69:421-34.
106. Huppert JS, Gerber MA, et al. Vulvar ulcers in young females: a manifestation of aphthosis. *J Pediatr Adolesc Gynecol*, 2006 Jun; 19(3):195-204.
107. Kelly P, Koh J. Sexually transmitted infections in alleged sexual abuse of children and adolescents. *J Paediatr Child Health*, 2006 Jul-Aug; 42(7-8):434-40.
108. Fortenberry JD, McFarlane M, et al. Relationships of stigma and shame to gonorrhea and HIV screening. *Am J Public Health*, 2002 March 1, 2002;92(3):378-81.
109. Fortenberry JD. The effects of stigma on genital herpes care-seeking behaviours. *Herpes*, 2004 Apr;11(1):8-11.
110. Green J, Ferrier S, et al. Determinants of disclosure of genital herpes to partners. *Sexually Transm Infect*, 2003 Feb 1;79(1):42-4.
111. Patel R. Supporting the patient with genital HSV infection. *Herpes*, 2004;11(3):87-92.
112. Sankar P, Jones NL. To tell or not to tell: primary care patients' disclosure deliberations. *Arch Intern Med*, 2005 Nov 14; 165(20):2378-83.
113. Cook C. 'Nice girls don't': Women and the condom conundrum. *J Clin Nurs*, 2014 Sept;23(17-18):2691.
114. Romanowski B, Zdanowicz YM, et al. In search of optimal genital herpes management and standard of care (INSIGHTS): doctors and patients perceptions of genital herpes. *Sexually Transm Infect*, 2008 February 1, 2008;84(1):51-6.
115. Merin A, Pachankis JE. The psychological impact of genital herpes stigma. *J Health Psych*, 2011 January 1, 2011;16(1):80-90.
116. Cook C. 'About as comfortable as a stranger putting their finger up your nose': Speculation about the (extra)ordinary in gynaecological examinations. *Culture, Health & Sexuality*, 2011 Aug;13(7):767-80.
117. Gott M, Galena E, et al. Opening a can of worms: GP and practice nurse barriers to talking about sexual health in primary care. *Family Practice*, 2004 October 1, 2004;21(5):528-36.
118. Barnack-Tavlaris JL, Reddy DM, et al. Psychological adjustment among women living with genital herpes. *J Health Psych*, 2011 January 1, 2011;16(1):12-21.

Members of the Professional Advisory Board (PAB) of the Sexually Transmitted Infection Education Foundation 2015

Sexual Health Physicians

Dr Min Lo (Editor in Chief, HPV Guidelines)

Dr Jane Morgan

Dr Edward Coughlan

Dr Nicky Perkins

Dr Heather Young

NZ Dermatological Society

Dr Darion Rowan

NZ Committee of the Royal Australian and New Zealand College of Obstetrics and Gynaecology

Dr Anne Robertson

Dr Richard Speed

Paediatric Society of New Zealand

Dr Lesley Voss

NZ College of General Practitioners

Dr Phil Jacobs

NZ Society of Otolaryngology, Head and Neck Surgery

Dr Julian White

Family Planning

Dr Christine Roke

Counselling

Catherine Cook

Nursing

Claire Hurst

Georgina McPherson (NZHPV Project)

Jessie Crawford

Patient Advocate

Jo Patrick

Project Co-ordinator

Claire Hurst, PO Box 2437, Auckland

Tel: 09 433 6526 Fax: 09 360 2835 Email: info@hpv.org.nz

International resources

The International Herpes Management Forum (IHMF)

Established in 1993 to improve the awareness, understanding, counselling and management of HSV infections.

The IHMF website publicises IHMF activities, press releases and disseminates information published in the *Management Strategies in Herpes* series.

For further information contact:

**IHMF Secretariat
Wicker House
High Street
Worthing
West Sussex, BN11 1DJ
UNITED KINGDOM**

**Tel: +44 (0) 1903 288188
Fax: +44 (0) 1903 210296
www.ihmf.org**

Sexually Transmitted Infection Education Foundation Ltd

Secretariat:

PO Box 2437, Auckland 1140, New Zealand

Phone 09 433 6526

info@herpes.org.nz
www.herpes.org.nz

info@justthefacts.co.nz
www.justthefacts.co.nz



Supported by an educational grant from New Zealand District Health Boards