

Policy

Clinical Guideline

Varicella Zoster (chicken pox) in Pregnancy Clinical Guideline

Policy developed by: SA Maternal & Neonatal Clinical Network

Approved SA Health Safety & Quality Strategic Governance Committee on:
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Summary Guideline for the management of the pregnant woman with varicella zoster (chicken pox)

Keywords Varicella zoster virus, VZV, chicken pox, zoster, shingles, aciclovir, valaciclovir, zoster immune globulin, ZIG, latent infection, clinical guideline

Policy history Is this a new policy? **N**
Does this policy amend or update an existing policy? **Y v4.0**
Does this policy replace an existing policy? **N**

Applies to All SA Health Portfolio
All Department for Health and Ageing Divisions
All Health Networks
CALHN, SALHN, NALHN, CHSALHN, WCHN, SAAS

Staff impact All Clinical, Medical, Nursing, Allied Health, Emergency, Dental, Mental Health, Pathology

PDS reference CG114

Version control and change history

Version	Date from	Date to	Amendment
1.0	23/06/2004	25/07/2005	Original version
2.0	25/07/2005	30/03/2010	Reviewed
3.0	30/03/2010	23/09/2013	Reviewed
4.0	23/09/2013	07 Sept 2015	Reviewed
5.0	07 Sept 2015	Current	

South Australian Perinatal Practice Guidelines

varicella-zoster (chickenpox)

in pregnancy

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Note

This guideline provides advice of a general nature. This statewide guideline has been prepared to promote and facilitate standardisation and consistency of practice, using a multidisciplinary approach. The guideline is based on a review of published evidence and expert opinion.

Information in this statewide guideline is current at the time of publication.

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Health practitioners in the South Australian public health sector are expected to review specific details of each patient and professionally assess the applicability of the relevant guideline to that clinical situation.

If for good clinical reasons, a decision is made to depart from the guideline, the responsible clinician must document in the patient's medical record, the decision made, by whom, and detailed reasons for the departure from the guideline.

This statewide guideline does not address all the elements of clinical practice and assumes that the individual clinicians are responsible for discussing care with consumers in an environment that is culturally appropriate and which enables respectful confidential discussion. This includes:

- The use of interpreter services where necessary,
- Advising consumers of their choice and ensuring informed consent is obtained,
- Providing care within scope of practice, meeting all legislative requirements and maintaining standards of professional conduct, and
- Documenting all care in accordance with mandatory and local requirements

Explanation of the aboriginal artwork:

The aboriginal artwork used symbolises the connection to country and the circle shape shows the strong relationships amongst families and the aboriginal culture. The horse shoe shape design shown in front of the generic statement symbolises a woman and those enclosing a smaller horse shoe shape depicts a pregnant women. The smaller horse shoe shape in this instance represents the unborn child. The artwork shown before the specific statements within the document symbolises a footprint and demonstrates the need to move forward together in unison.



Australian Aboriginal Culture is the oldest living culture in the world yet Aboriginal people continue to experience the poorest health outcomes when compared to non-Aboriginal Australians. In South Australia, Aboriginal women are 2-5 times more likely to die in childbirth and their babies are 2-3 times more likely to be of low birth weight. The accumulative effects of stress, low socio economic status, exposure to violence, historical trauma, culturally unsafe and discriminatory health services and health systems are all major contributors to the disparities in Aboriginal maternal and birthing outcomes. Despite these unacceptable statistics the birth of an Aboriginal baby is a celebration of life and an important cultural event bringing family together in celebration, obligation and responsibility. The diversity between Aboriginal cultures, language and practices differ greatly and so it is imperative that perinatal services prepare to respectfully manage Aboriginal protocol and provide a culturally positive health care experience for Aboriginal people to ensure the best maternal, neonatal and child health outcomes.

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Literature review

- > Over 85 % of women of childbearing age in industrialised countries are immune to varicella zoster virus (VZV)^{1,2}
- > Varicella pneumonia complicates up to 10 % of cases of VZV in pregnancy¹
- > Perinatal varicella (chickenpox) carries a 20 to 30 % risk of transmission to the neonate¹
- > Studies of maternal varicella from 12-28 weeks gestation suggest a 1.4% risk of fetal varicella syndrome (FVS). Subsequent abnormalities may include:
 - > Skin scarring (78%)
 - > Eye abnormalities (60%)
 - > Limb abnormalities (68%)
 - > Prematurity and low birthweight (50%)
 - > Cortical atrophy, intellectual disability (46%)
 - > Poor sphincter control (32%)
 - > Early death (29%)³

Varicella-zoster virus

- > Varicella (chickenpox) is a highly contagious disease caused by primary infection with varicella-zoster virus (VZV)² and may cause maternal mortality or serious morbidity
- > Reactivation of latent infection, usually many years after the primary infection, may result in herpes zoster (shingles), a painful vesicular eruption in the distribution of sensory nerve roots²
- > Both varicella (chickenpox) and zoster (shingles) are notifiable diseases. Notification must be made to the Communicable Disease Control Branch of SA Health as soon as possible and at least within three days of suspicion of diagnosis, by telephone or post. Telephone number: 1300 232 272⁴
- > The appropriate notification form for reporting a notifiable disease or related death in South Australia may be downloaded and is available from URL: <http://www.sahealth.sa.gov.au/NotifiableDiseaseReporting>
- > This form is not to be sent by email for reasons of confidentiality

Route of transmission

- > Infection with chickenpox is transmitted through airborne / respiratory droplets and direct contact with vesicle fluid

Incubation period

- > 10 to 21 days (may be up to 35 days in contacts given high titre zoster immunoglobulin, ZIG)

Period of infectivity

- > 48 hours before the onset of rash until crusting of all lesions (usually day 6 of rash)
 - > Infectious period may be prolonged in people with impaired immunity

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Infection control

- > Non-immune staff should not care for the woman / baby infected with chickenpox
- > Varicella (and herpes zoster) vesicles contain large numbers of virus particles. Ensure appropriate transmission based (standard, contact and airborne) precautions including:
 - > A negative pressure room with door shut (chickenpox and disseminated shingles)
 - > Immune staff in attendance
 - > Gloves, gown
 - > All dressing materials should be treated as medical waste
 - > For further information link to www.sahealth.sa.gov.au/InfectionPrevention
- > Chickenpox and disseminated shingles use standard, contact and airborne precautions
- > Localised shingles use contact precautions (only immune staff in attendance, single room, gloves, gown)
- > In herpes zoster (shingles), transmission of infection usually requires contact with vesicle fluid; however, there is also evidence of respiratory spread². Localised shingles requires standard and contact precautions (not airborne precautions)

Susceptibility to varicella

- > Women and babies susceptible to infection with VZV (*may be severe or life-threatening*) include:
 - > No history of varicella (chickenpox or shingles)
 - > Seronegative for varicella antibodies (VZV-IgG negative)
 - > No documented evidence of varicella vaccination

Significant Exposure³

- > For the purpose of infection control and prophylaxis, significant exposure of a susceptible woman who is pregnant to varicella includes:
 - > Living in the same household as a person with active varicella or herpes zoster
 - OR
 - > Direct face to face contact with a person with varicella or herpes zoster for at least 5 minutes
 - OR
 - > Being in the same room for at least 1 hour
- > Chickenpox cases are infectious from 2 days before rash until lesions crusted

Management of maternal exposure to varicella-zoster virus

History of previous chickenpox

- > No action required

No or uncertain history of chickenpox

- > Obtain serology for antibody status (VZV-IgG) (if practicable)
- > ZIG if required should be given within 96 hours. Testing should only be done if ZIG would still be able to be given, if required, within this window

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Within 96 hours from exposure

- > Zoster immunoglobulin (ZIG) should be given to all seronegative women within 96 hours (see adult dose under [ZIG dosage](#) below)
- > However there may be some limited effect out to as late as 10 days post exposure³
- > Advise to seek medical care immediately if chickenpox develops

More than 96 hours following exposure

- > Oral aciclovir or valaciclovir ([see dosage below](#)) should be considered for women:
 - > In the second half of pregnancy
 - > With a history of an underlying lung disease
 - > Who are immuno-compromised
 - > Who are smokers^{3,5}

Note: Advise women to seek medical care immediately if chickenpox develops

Management of varicella-zoster in pregnancy

Less than 24 hours since appearance of rash³

- > Oral aciclovir 800 mg 5 times a day for 7 days OR oral valaciclovir 1 g three times a day for 7 days
- > Monitor at home

More than 24 hours since onset of rash³

- > No oral aciclovir / valaciclovir and monitor at home if:
 - > No underlying lung disease
 - > Not immunocompromised
 - > Non-smoker
- > Monitor in hospital if any of the above risk factors
- > Offer appropriate fetal medicine counselling

Complications³

- > Advise to seek medical attention for the following complications:
 - > Respiratory symptoms
 - > Haemorrhagic rash or bleeding
 - > New pocks developing after 6 days
 - > Persistent fever > 6 days
 - > Neurological symptoms
- > Give aciclovir 10 mg / kg every 8 hours for 7 to 10 days (IV followed by oral [see dosage below](#)) and administer supportive therapy

Consider caesarean section if:³

- > Signs of significant fetal compromise
- > Evidence of maternal respiratory failure exacerbated by advanced pregnancy

varicella-zoster (chickenpox) in pregnancy

Risk of fetal varicella syndrome (FVS) after maternal VZV

Timing of maternal infection	
Less than 12 weeks gestation	0.55%
12-28 weeks gestation	1.4%
More than 28 weeks gestation	No cases of FVS reported

Refer to maternal fetal specialist for prenatal diagnosis and counselling

- > Detailed fetal ultrasound for anomalies is recommended at least five weeks after primary infection
- > Repeat ultrasounds until delivery. If abnormal may consider fetal MRI
- > VZV fetal serology is unhelpful
- > Amniocentesis not routinely advised if ultrasound normal, because risks of FVS low but negative VZV PCR may be reassuring

Ultrasound and amniocentesis findings	
Risk of FVS low	VZV PCR on amniotic fluid positive but ultrasound normal at 17-21 weeks and remote if ultrasound normal at 23-24 weeks
Risk of FVS very high	VZV PCR positive on amniotic fluid and ultrasound shows features of FVS
Risk of FVS negligible	VZV PCR on amniotic fluid negative and ultrasound normal at 23 weeks
No case reported	No case of FVS reported in recent series when amniotic fluid VZV PCR negative

Management of infants exposed to maternal varicella zoster

Maternal chickenpox > 7 days before delivery^{2,3}

- > No zoster immunoglobulin (ZIG) required
- > No isolation required
- > Encourage breastfeeding
- > No other interventions even if baby has chickenpox at or very soon after birth unless preterm < 28 weeks gestation or low birth weight < 1,000 g
 - > Very preterm infants (\leq 28 weeks gestation) born with chickenpox should receive intravenous aciclovir 20 mg / kg / dose every 8 hours as a slow infusion (1-2 hours)

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Maternal chickenpox 7 days before to 2 days after birth^{2,3}

- > High titre varicella-zoster immunoglobulin (ZIG) is available from the Australian Red Cross Blood Service on a restricted basis (SA Red Cross telephone: 8422 1200)
- > The medical practitioner should contact the Australian Red Cross Blood Service to request supply
- > Give newborn zoster immunoglobulin (ZIG) 200 IU (one vial) intramuscularly (IM) immediately
 - > ZIG should be given less than 24 hours after birth but may be given up to 72 hours after birth
 - > Discharge term infants as soon as possible
 - > No isolation required
 - > Encourage breastfeeding

Maternal chickenpox > 2 to 28 days after birth^{2,3}

- > Some experts give ZIG 200 IU (one vial) IM when mothers develop chickenpox to term babies who are more than 2 to 28 days of age but little data to support this
 - > Due to the increased risk of severe varicella in newborns of seronegative women (if the mother has no personal history of infection with VZV), give ZIG to neonates exposed to varicella between 2 to 28 days of age
- > If infant < 28 weeks gestation or 1,000g birth weight give ZIG (preferably within 96 hours but can be given up to 10 days post-maternal rash)
- > Discharge term infants as soon as possible
- > No isolation required
- > Encourage breastfeeding

Zoster (Shingles)

- > Herpes zoster in an otherwise healthy pregnancy is not associated with intrauterine infection, even when the dermatomes innervating the uterus (T10-L1) are involved⁶
- > Maternal herpes zoster is not an indication for ZIG administration to the baby

Management of term infants exposed to VZV³

Significant exposure ([see definition above](#)) either in postnatal ward or at home

- > Evidence to inform protection conferred to the newborn by maternal VZV vaccination is limited. Expert opinion is that if the mother has a history of a complete course of age-appropriate doses of VZV vaccine, she is considered immune and thought to confer protection to the newborn irrespective of measured antibody levels. Most experts would not recommend ZIG be given to the newborn in this setting
- > Opinions vary as to the need to administer ZIG to term infants of seronegative mothers who are exposed to chickenpox, as there is limited evidence to suggest increased risk of severe disease

Maternal history of chickenpox or has had an age appropriate course of VZV vaccine

- > No intervention required
- > No isolation from affected sibling required
- > Review if baby develops chickenpox

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No or uncertain maternal history of chickenpox and no VZV vaccine course

- > Check maternal serology urgently
- > If seropositive:
 - > No intervention required
 - > No isolation from affected sibling required
 - > Review if baby develops chickenpox
- > If seronegative or serology unavailable:
 - > *Consider* administration of ZIG to infant (ideally within 96 hours post exposure but can be given up to 10 days later)
 - > No isolation from sibling required
 - > Medical review if infant develops chickenpox

Management of infants who develop varicella (chickenpox)

< 37 weeks

- > Only give intravenous aciclovir if the infant is preterm < 28 weeks OR low birth weight < 1,000g ([see dosage below](#))
- > Greater than 28 weeks gestation and birthweight more than 1,000g (but < 37 weeks gestation), discuss with infectious diseases consultant on a case by case basis
- > Use transmission based precautions (for further information link to <http://www.sahealth.sa.gov.au/InfectionPrevention>)
- > Ventilated cases require strict isolation
- > Isolate in negative pressure room until all lesions are crusted (only immune staff should care for the infant)

Term infant (≥ 37 weeks)³

- > May be at home or on postnatal ward
- > Admit to paediatric unit (negative pressure room with transmission [contact and airborne] based precautions)

Mild case and ZIG given < 24 hours after birth³

- > Observe
- > Only give intravenous aciclovir if respiratory symptoms develop ([see aciclovir dosage below](#))

Severe case or ZIG given > 24 hours after birth³

- > Give intravenous aciclovir ([see aciclovir dosage below](#))
- > Administer supportive care

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Health care workers

- > Only health care workers known to be immune on history, antibody status or documented evidence of varicella vaccination should care for women / babies with clinical varicella (chickenpox) between day 10-21 of a significant exposure (10-35 days if patient given ZIG) or with zoster (shingles)
- > If unsure of immune status, exposed health care workers should arrange to have a varicella antibody test performed
- > No further action is needed if the antibody test is positive
- > If the antibody test is negative, these health care workers should not have contact with the woman / baby from days 10 to 21 after their first contact
- > All health care workers are encouraged to establish their immune status through individual hospital risk management services. If seronegative, health care workers are encouraged to receive varicella vaccine

Zoster immune globulin

- > High titre varicella zoster immune globulin (ZIG) is available from the Red Cross Blood Transfusion Service in Australia on a restricted basis for the prevention of varicella in high risk subjects²
- > Zoster immunoglobulin (human): Vials contain 200 IU in 1 to 2 mL Varicella antibody for intramuscular injection (16 % solution of gammaglobulin fraction of human plasma from donors with high titre of varicella-zoster antibodies + thiomersal 0.01 % w/v)²
- > Administer at room temperature

ZIG dosage

Neonate

- > Intramuscular injection of 200 units (1 vial) per dose regardless of the weight of the newborn

Adult

- > Intramuscular injection of 600 units (3 vials)

Aciclovir^{3,7,8}

- > Aciclovir is an antiviral agent with some efficacy against varicella zoster virus⁷
- > Aciclovir has few side effects (rash, nausea, vomiting, headache), and no evidence of teratogenicity
- > An aciclovir Pregnancy Registry, kept from 1984 to 1998 has not shown any increase in birth defects over the normal background rate
- > Oral valaciclovir (Valtrex[®]) can be used as an alternative to aciclovir during pregnancy. For further information see <http://www.mothersbaby.org/files/acyclovir.pdf>

Aciclovir dosage^{3,9}

Less than 37 weeks^{3,9}

- > Give intravenous acyclovir 20 mg / kg / dose every 8 hours as a slow infusion

Greater than or equal to 37 weeks^{3,9}

Mild case and ZIG given < 24 hours after birth,^{3,9}

- > Only give intravenous aciclovir 20 mg / kg / dose every 8 hours if respiratory symptoms develop (see dosage according to gestational age below)

Severe case or ZIG given > 24 hours after birth^{3,9}

- > Give intravenous aciclovir 20 mg / kg / dose every 8 hours

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Adult*Oral*

> Administer oral aciclovir 800 mg dose 5 times a day for 7 days

Intravenous

> Administer intravenous aciclovir 10 mg / kg / dose every 8 hours for 7 days

Intravenous dosage adjustment for renal impairment:

CrCl 25 to 50 mL/min/1.73 m²: 100 % of normal dose every 12 hours

CrCl 10 to 25 mL/min/1.73 m²: 100 % of normal dose every 24 hours

CrCl less than 10 mL/min/1.73 m²: 50 % of normal dose every 24 hours

Read more at <http://www.drugs.com/dosage/acyclovir.html#ci6ojw4lbdmpAJ3k.99>

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Useful web sites:

Mother to baby. Chickenpox (varicella) and the vaccine and pregnancy.

Available from URL: <http://www.drugs.com/dosage/acyclovir.html#ci6ojw4lbdmpAJ3k.99>

South Australian Health – You’ve got what. Chickenpox and shingles.

Available from URL:

www.sahealth.sa.gov.au/YouveGotWhat

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Abbreviations

et al.	And others
FVS	Fetal varicella syndrome
IM	Intramuscular
IU	International units
kg	Kilogram(s)
mg	Milligram(s)
mL	Millilitre(s)
NHMRC	National Health and Medical Research Council
SA	South Australia
URL	Uniform resource locator
VZIG	Varicella Zoster Immune Globulin, VZIG
VZV	Varicella zoster virus

Version control and change history

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