South Australian Perinatal Practice Guidelines

Varicella-zoster (chicken-pox) in pregnancy

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The 'Management of Perinatal Infections' guideline for varicella-zoster (chickenpox) in pregnancy by the Australasian Society for Infectious Diseases 2002, emendations 2006 has been used to inform this practice guideline.

Literature review

- Over 85 % of women of childbearing age in industrialised countries are immune to varicella zoster virus (VZV) (Langford 2002; NHMRC 2008)
- Varicella pneumonia complicates up to 10 % of cases of VZV in pregnancy (Langford 2002)
- Perinatal varicella (chickenpox) carries a 20 to 30 % risk of transmission to the neonate (Langford 2002)
- Studies of maternal varicella in the first 20 weeks suggest a 2 – 2.8 % risk of fetal varicella syndrome. Subsequent abnormalities may include:
    - Skin scarring
    - Eye defects
    - Limb hypoplasia
    - Prematurity and low birthweight
    - Cortical atrophy, mental retardation
    - Poor sphincter control
    - Early death

  (Palasanthiran et al. 2006)

Varicella-zoster virus

- Varicella (chickenpox) is a highly contagious and notifiable disease caused by primary infection with varicella-zoster virus (VZV) (NHMRC 2008)
- 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 roots (NHMRC 2008)
- The appropriate notification form for report of notifiable disease or related death in South Australia may be downloaded and is available from URL: http://www.health.sa.gov.au/pehs/PDF-files/2008-case-reporting-form.pdf
- This form is not to be sent by email for reasons of confidentiality
- Notification should be made to the Communicable Disease Control Branch as soon as practicable and at least within 3 days of suspicion of diagnosis: Telephone (08) 8226 7177 or Facsimile (08) 8226 7187 (Department of Health 2008)

Route of transmission

- Infection with chickenpox may occur through airborne / respiratory droplet and direct contact with vesicle fluid
- Additional precautions (negative pressure room, immune staff in attendance, N95 mask) should be used when caring for a woman / baby with chickenpox
- In herpes zoster (shingles), transmission of infection usually requires contact with vesicle fluid; however, there is also evidence of respiratory spread (NHMRC 2008)

Incubation period

- 10 to 21 days (may be up to 35 days in contacts given Varicella Zoster Immune Globulin, VZIG)

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Period of infectivity

- 48 hours before the onset of rash until crusting of all lesions (usually day 6 of rash)
- Varicella (and herpes zoster) vesicles contain large numbers of virus particles. Ensure additional precautions are used and all dressing materials treated as medical waste

Susceptibility to varicella

Women and babies susceptible to infection with VZV *(may be severe or life-threatening) include*:

- No history of varicella
- Seronegative for varicella antibody (VZV-IgG negative)
- Women / newborn with compromised immunity, particularly those with impaired cellular immunity or those on immunosuppressive therapy (irrespective of history)
- Neonates (born to a susceptible mother) significantly exposed in the first 14 days of life
- Neonates born to a mother with clinical varicella beginning from 7 days before to 7 days after birth
- Pre-term neonates (born at < 28 weeks or birth weight < 1,000 g), (still in hospital care), irrespective of maternal history or serostatus

Significant Exposure

- For the purpose of infection control and prophylaxis, significant exposure of a susceptible woman who is pregnant to varicella includes:
    - Household contact
    - Playmate contact (1 hour of play indoors)
    - Classroom / midwifery care contact and other close prolonged exposure
    - Hospital contact e.g. 2 - 4 bed room
    - Prolonged face to face contact with infectious person

Management of exposure to varicella-zoster virus during pregnancy

History of previous chickenpox

- No action required

No or uncertain history of chickenpox

- Obtain serology for antibody status (VZV-IgG)

Exposure less than 96 hours earlier

- Zoster immunoglobulin (ZIG) should be given to all seronegative women
- Advise to seek medical care immediately if chickenpox develops

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Exposure more than 96 hours earlier

- Oral aciclovir 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

  (Heuchan et al. 2001)

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

Management of varicella-zoster in pregnancy

Less than 24 hours since appearance of rash

- Oral aciclovir 20 mg / kg / dose (to a maximum of 800 mg) 5 times a day for 7 days
- Monitor at home
- Advise to seek medical attention for the following complications:
  - Respiratory symptoms
  - Haemorrhagic rash
  - Persistent fever > 6 days
  - New pocks developing after 6 days

More than 24 hours since onset of rash

- No aciclovir 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

Complications

- Give intravenous aciclovir 10 mg / kg (to a maximum of 500 mg / dose) every 8 hours for 7 to 10 days and administer supportive therapy

Consider caesarean section if:

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

Management of infants exposed to maternal varicella zoster

Maternal chickenpox > 7 days before delivery

- No zoster immunoglobulin (ZIG) required
- No isolation required
- Encourage breastfeeding
- Very preterm infants (≤ 28 weeks gestation) born with chickenpox should receive intravenous aciclovir 10 / kg / dose every 12 hours

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Maternal chickenpox ≤ 7 days before delivery

- High titre varicella-zoster immunoglobulin (ZIG) is available from the Australian Red Cross Blood Service on a restricted basis. (SA Red Cross tel: 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 hour 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 0 – 28 days after delivery

- Give neonate zoster immunoglobulin (ZIG) 200 IU (one vial) IM immediately
- ZIG should be given < 24 hours after development of maternal rash but may be given up to 72 hours after the appearance of maternal rash.
- Discharge term infants as soon as possible
- No isolation required
- Encourage breastfeeding

Management of infants with varicella (chickenpox)

≤ 28 weeks

- Intravenous aciclovir 10 mg / kg / dose every 12 hours
- Administer zoster immunoglobulin
- Use additional precautions
- Ventilated cases require strict isolation.
- Isolate in negative pressure room until all lesions are crusted

Term infant

- May be at home or on postnatal ward
- Admit to paediatric unit (negative pressure room)

Mild case and ZIG given < 24 hours after birth

- Observe
- Only give intravenous aciclovir 10 mg / kg / dose every 8 hours if respiratory symptoms develop

Severe case or ZIG given > 24 hours after birth

- Give intravenous aciclovir 10 mg / kg / dose every 8 hours
- Administer supportive care

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Health care workers

- Only health care workers known to be immune either on history or antibody status 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

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 subjects (NHMRC 2008)
- 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) (NHMRC 2008)
- 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

- Aciclovir is an antiviral agent with some efficacy against varicella zoster virus (Yoshikawa et al. 1998)
- Aciclovir has few side effects (rash, nausea, vomiting, headache), and no evidence of teratogenicity
- Although classified as a Category B3 drug, an aciclovir Pregnancy Registry, kept from 1984 to 1998 did not show any increase in birth defects over the normal background rate

Aciclovir dosage

Neonate

- The use of oral aciclovir in the neonate is not recommended

< 34 weeks gestation

- o Intravenous aciclovir 10 mg / kg / dose every 12 hours over 7 days (also administer this dose to infants with evidence of decreased renal function)

≥ 34 weeks gestation

- o Administer intravenous aciclovir 10 mg / kg / dose every 8 hours

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Adult

Intravenous

- Administer intravenous aciclovir 10 mg / kg / dose every 8 hours (to a maximum of 500 mg / dose) for 7 days

Oral

- Administer oral aciclovir 20 mg / kg / dose (to a maximum of 800 mg) 5 times a day for 7 days

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5. Yoshikawa T, Suga S, Kozawa T Kawaguchi S, Asano Y. Persistence of protective immunity after postexposure prophylaxis of varicella with oral aciclovir in the family setting. Arch Dis Child 1998; 78:61-63 (Level III-2).
6. MIMS. MIMS full prescribing information for aciclovir intravenous infusion. Antiviral agents. MIMS Annual 2003; Section 8 (i): 800-802

Useful web sites:

Organisation of teratology information specialists. Chickenpox (varicella) and the vaccine and pregnancy. Available from URL:
http://www.otispregnancy.org/pdf/chickenpox.pdf

South Australian Health – You've got what. Chickenpox and shingles. Available from URL:
http://www.health.sa.gov.au/PEHS/ygw/chickenpox-pehs-sahealth-2009.pdf

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Abbreviations

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

Version control and change history

PDS reference: OCE use only

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1.0	23 June 04	25 July 05	Original version
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