South Australian Perinatal Practice Guidelines

HIV in pregnancy

Introduction

- From 1985 until June 2010, 1232 South Australians have been diagnosed with human immunodeficiency virus (HIV). Only 134 of them were female (Waddell et al. 2010)[1]
    - Both incidence and prevalence of HIV among pregnant women in South Australia are very low
- The care of the pregnant HIV infected women is complex and requires a multidisciplinary approach by health care providers who have current knowledge and expertise in this area
- Specialist advice should always be sought for each woman with HIV, especially when recommendations may be inconsistent and / or evidence is lacking
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Preconception counselling (pre-existing HIV)

HIV physician

- Preconception counselling
- Fertility management
- Sexual health assessment
- Social assessment
- Referral to infectious diseases consultant or sexual health physician for medical care

Obstetric consultant

- Counselling should ideally occur with an obstetric consultant with specialist knowledge of the pregnant HIV infected woman

Discuss obstetric management strategies

- Aim for a stable, maximal suppression of the woman's viral load before pregnancy
- Educate about the side effects of anti-retroviral therapy, including hyperglycaemia, anaemia and hepatic toxicity
- Commence folic acid 5 mg daily (increased bone marrow turnover with zidovudine [AZT])
- Encourage a healthy diet

Assess

- Sexual health - screen for and treat any infectious or sexually transmitted diseases (e.g. rubella, hepatitis B, hepatitis C, syphilis, varicella, toxoplasmosis, cytomegalovirus, herpes simplex virus)
- Cervical cytology
- Social assessment - screen for maternal psychological issues and substance abuse and refer as appropriate
- Consider case conference early in the third trimester for the purpose of early notification of all clinical areas who may be impacted to allow planning and risk minimisation strategies
- Refer to infectious disease consultant for information about HIV / Hepatitis C counselling services

HIV screening and notification

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- HIV screening is offered to all women at their first antenatal visit with the option to decline. Screening must be:
  - Voluntary and confidential
  - Accompanied by adequate pre test counselling

HIV notification

- HIV is a notifiable disease. Ensure the woman is informed of the medical officer's obligation to notify the relevant authorities of the diagnosis
- The attending medical officer or infectious diseases consultant should see the woman to inform her of her 'antibody' status and the need for precautions for both her baby and health care workers, and the need for testing of sexual partners
- The notifying medical officer should explicitly state their obligation to protect patient confidentiality
  - Notify the director of obstetrics (or nominee), infection control coordinator and infectious diseases consultant
  - The alert sheet in the case notes should indicate that a woman has HIV
  - The infection control coordinator (or midwife area shift coordinator in her absence) will coordinate the management of the woman in the hospital and inform all relevant departments where appropriate

Confidentiality

- Information about HIV status should be given to staff in contact with the woman, her baby and any biological specimens derived from them, while maintaining reasonable confidentiality
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Maternal to newborn transmission of HIV

- Vertical transmission of HIV from an HIV positive mother to baby may occur at any time during pregnancy, birth and breastfeeding, although most vertical transmissions occur during labour and birth (ASHM 1996)[2]
- Perinatal HIV transmission rates have been reduced by more than 70 % through:
  - Treatment of the mother and baby with Antiretroviral Treatment (ART)
  - Elective caesarean section
  - **Not** breastfeeding (Palasanthiran et al. 2006)[3,4]
- Rates of transmission are increased in case of:
  - Advanced maternal illness
  - High maternal viral load (due to advanced infection or viral activity)
  - Poor maternal immune status e.g. low CD4 count (also known as T cell count)
  - Rupture of membranes > 4 hours before birth
  - Preterm birth
  - Breastfeeding
  - Procedures that may jeopardise the integrity of natural barriers (e.g. fetal scalp electrodes, vigorous suctioning, injections through unwashed skin)

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Anti-retroviral treatments

- The Paediatric AIDS Clinical Trial Group (PACTG 076) study showed that administration of zidovudine alone, or in combination with other retroviral drugs, to HIV infected women and their newborn, reduces the risk of perinatal transmission by approximately two thirds (from 25.5 % to 8.3 %)
    - Therefore, for prevention of perinatal HIV transmission, combined antepartum, intrapartum, and infant antiretroviral prophylaxis is recommended (Connor, Sperling 1994; Panel on Treatment of HIV-Infected Pregnant Women and Prevention of Perinatal Transmission 2010)[4,9]

Antepartum care

- Antiviral treatment should be prescribed in consultation with an infectious diseases specialist to ensure that it is appropriate for the woman's situation and commensurate with the latest evidence
- Zidovudine should be included in the antenatal antiretroviral regimen unless there is severe toxicity or documented resistance, or the woman is already on a fully suppressive regimen
- The woman should be fully informed about the known potential benefits versus risks of antiviral treatment. Obtain written consent before commencing treatment (Burdge et al. 2003)[5]
- **NB: Ensure zidovudine is available in the hospital at the point of care of intended delivery**
- Referral to high risk management in a tertiary centre with a multidisciplinary team approach including:
    - HIV physician, specialist obstetrician, infectious disease consultant, infectious diseases coordinator, paediatrician, anaesthetist, midwife and allied health services as appropriate (e.g. social worker, perinatal substance use team, perinatal mental health team, pharmacist)

Bloods

- Routine antenatal bloods
- If HIV diagnosis is known, serology for syphilis, hepatitis B and C, cytomegalovirus, herpes simplex virus and toxoplasmosis should be conducted as part of the routine antenatal bloods (see Appendix I: HIV management summary chart)
- CD4 cell count and viral load at diagnosis
    - A CD4 count < 200 increases the likelihood of opportunistic infections. Consider prophylaxis against Pneumocystis jeroveci (previously carinii) pneumonia (PCP) infection
- Take the following bloods two weeks after initiation of anti-retroviral treatment (zidovudine) and repeat every 4 weeks:
    - Venous blood for hepatic enzymes, electrolytes and blood picture (liver function tests, electrolytes, urea, creatinine, amylase, lactate, HIV viral load, complete blood picture, CD4 / CD8 absolute numbers and percentages)

Swabs and urine screening

- Low peri-anal swab for GBS screening at 36 weeks of gestation

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- Consider a low vaginal swab for genital and other sexually transmitted infections (gonorrhoea / chlamydia) and first void urine for Chlamydia:
  - In early pregnancy
  - At 28 weeks
- If detected, treat bacterial vaginosis with:
  - Clindamycin 300 mg orally, every 12 hours for 7 days (category A) or Metronidazole 400 mg orally, every 12 hours for 5 days (category B2) (Bacterial vaginosis has been associated with preterm birth and a higher rate of mother to child HIV transfer) (Moore et al. 2002)[6]
- If detected, Chlamydia trachomatis should be treated with a single 1 g oral dose of Azithromycin (category B1)

Ultrasound

- Dating and 19 week ultrasound
- Cervical smear (high risk of intra-epithelial neoplasia secondary to Human Papilloma Virus (HPV) infection)

Referral

- Arrange early paediatrician referral
- Regular HIV physician review

Multidisciplinary team meeting by 36 weeks of gestation

- Recommendations for the mode of delivery should be based on the viral load and the health status of the mother
- Elective caesarean section may reduce mother to child transmission of HIV
  - However, if a pregnant woman is already on ART, the added benefit of caesarean section may be marginal particularly if her viral load is undetectable (i.e. < 400 copies HIV RNA per mL by non-ultra sensitive assays)
  - Elective caesarean section is recommended for women who have HIV RNA levels > 1,000 copies / mL near the time of delivery[3,4] (Palasanthiran et al. 2006; Panel on Treatment of HIV-Infected Pregnant Women and Prevention of Perinatal Transmission 2010)
- Confirm mode of delivery and management plan for both mother and baby and document in case notes
- Educate mother about the need to commence antiretroviral treatment early in labour and advise woman to present to hospital as soon as contractions begin
- Ensure post-exposure prophylaxis guidelines for staff that may have a significant exposure to the woman's blood and body fluids are inserted in the case notes.
- Notify pharmacy to ensure adequate supply of ART for both mother and baby

Education

- Counsel the woman on the risks associated with breastfeeding and advise against breastfeeding
- Discuss the known evidence on the benefits and risks associated with vaginal birth versus elective caesarean section in relation to the woman's individual circumstances
- Document discussion and agreement by the woman regarding planned mode of delivery
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Intrapartum care[9-12]

- An intravenous infusion of zidovudine is recommended for all known HIV infected women before vaginal birth or caesarean section. (see infusion regimen below)
- **NB: Ensure zidovudine is available in the hospital at the point of care of intended delivery**

Vaginal birth

- Commence zidovudine infusion once labour has started (see regimen below)
- Notify the consultant obstetrician in charge of labour ward and the infection control coordinator when the woman is admitted in labour
- Notify the Neonatologist and Infectious Diseases physician at time of birth
- Deliver the baby gently, with minimal aerial dispersion of vaginal secretions
- Clean the eyes of the baby with saline at delivery of the head
- Clamp cord as soon as possible
- Avoid procedures that may inoculate the baby, for example:
    - Fetal scalp monitoring
    - Fetal blood sampling
- Avoid where possible:
    - Forceps, ventouse
    - Vigorous aspiration or oral suction of baby

Elective caesarean section

- Commence zidovudine infusion 4 hours before planned birth (see regimen below)
- Notify theatre staff of woman's imminent admission for surgery
- The team should be limited to essential members
- The consultant obstetrician and midwife in charge of the woman must ensure that there is strict adherence to ALL standard precautions and operating room infection control management guidelines
- NB: No pre-operative shaving of the woman (clipping is acceptable if deemed necessary)

At birth

- Protective eyewear (goggles, mask or face shield), gown / apron, gloves and boots / overshoes should be worn by ALL persons having direct contact with the woman and baby before, during and after delivery

Infection control precautions

- Standard precautions
- Staff with known broken skin or dermatitis should not assist

Prevention of injuries

- Special care must be taken when handling needles, scalpels and other sharp instruments. The USER is responsible for their safe disposal into a designated "sharps" container

Operating room techniques

- The principle of "confine and contain" should always be applied

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- Avoid passing needles, blades, or other sharp instruments from hand to hand. A dish for disposal must be placed nearby
- Closed wound drainage systems should be used
- Wound dressings should be of the type that will contain exudate inside an impervious outer covering
- Suction apparatus used should be disposable

Reprocessing of equipment

- Staff must wear adequate protective clothing when cleaning instruments and equipment
- Instruments should be rinsed in cold water to remove blood, followed by thorough cleaning with detergent before being sterilised
- Pasteurisation or chemical disinfection may be necessary for some items of equipment. Non disposable equipment, operating trolley, barouche and the floor should be cleaned thoroughly with detergent and wiped over with sodium hypochlorite (White King)

Waste disposal

- All “medical” infectious waste must be put into yellow biological plastic bags and securely tied before disposal into a designated bin

Zidovudine infusion regimen

- Zidovudine IV 10 mg / mL - available in vial 200 mg / 20 mL
- NB: Zidovudine is obtained via the Special Access Scheme (SAS). Supply needs to be arranged in advance. If outside normal working hours, notify on-call pharmacist for the location of SAS drug to expedite treatment
- Give intravenously via infusion pump
- Dilute zidovudine with 0.9 % sodium chloride to a concentration of 1 mg / mL and administer by slow intravenous infusion over a one hour period

Set up

- Withdraw 100 mL sodium chloride 0.9 % from a 1000 mL sodium chloride 0.9 % bag

Add 1000 mg (100 mL zidovudine 10 mg / mL vials) to the bag to give a total dose of 1000 mg in 1000 mL (i.e. 1 mg / mL)

Vaginal birth

- Commence zidovudine 2 mg / kg IV over 60 minutes, at the onset of labour, followed by a maintenance dose of 1 mg / kg per hour IV until the umbilical cord is clamped

Caesarean section

- Commence zidovudine 2 mg / kg IV over 60 minutes, starting four hours before the anticipated caesarean section, followed by a maintenance dose of 1 mg / kg per hour IV until the umbilical cord is clamped

Maternal dose calculation guide

Maternal weight (kg)	Loading dose (over 60 minutes)	Maintenance dose

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Care of the newborn

- A neonatologist must be notified of impending birth
- Protective gown, gloves and eyewear should be worn
- Collect cord blood for HIV status, after the cord is carefully wiped clean to avoid contamination with maternal blood
- Seal the cord blood specimen in a plastic specimen bag and mark the Clinical Notes box on the request form with “Maternal HIV Positive”. The Request box should state “HIV PCR.” Ensure maximum achievable volume of cord blood is collected in an EDTA tube
- The baby should remain in the birthing room until transfer to the ward unless transfer to the nursery is indicated
- After birth, wash all maternal blood from the baby
    - Consider washing any visible blood from hair or skin before contact with extended family
- The skin at the injection site should be cleaned with soap and water or with an alcohol swab before administering hepatitis B vaccine, immunoglobulin or Konakion® (vitamin K)
- Breast feeding should be actively discouraged

Anti-retroviral treatment

- Treatment needs to be coordinated between neonatologist (paediatrician) and infectious diseases specialist
- Zidovudine – 2 mg / kg orally 6 hourly or 4 mg / kg orally 12 hourly, after clamping of umbilical cord or within 6 to 8 hours of delivery, and continue for 6 weeks (or 4 weeks if maternal viral load is undetectable in last month of pregnancy)[de Ruiter et al. 2008].[12]
- Zidovudine Syrup 10 mg / mL is not SAS, and is available on a normal prescription. Supply needs to be pre-arranged
- Further follow-up in consultation with the infectious diseases consultant is required

Postpartum care

- Breast feeding (and expressed breast milk feeding) should be actively discouraged
- Consider lactation suppression with cabergoline (Dostinex®) 1 mg oral stat dose[12]
- ART should be prescribed in consultation with an infectious diseases specialist
- Contraception advice before discharge

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Useful web sites:

You've got what? SA Health
http://www.health.sa.gov.au/pehs/ygw/hiv-pehs-sahealth-2009.pdf

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Australasian Society for HIV Medicine
http://www.ashm.org.au/default.asp?active_page_id=1

AIDS info site
http://www.aidsinfo.nih.gov/

Abbreviations

AIDS	Acquired immune deficiency syndrome
ART	> Antiretroviral treatment
ASHM	Australasian Society for HIV Medicine
AZT	Zidovudine, Azidothymidine
CD4	A type of lymphocyte
CMV	Cytomegalovirus
EBV	Epstein Barr virus
EDC	Estimated date of confinement
e.g.	For example
et al.	And others
GBS	Group B streptococcus
HCV	Hepatitis C virus
HIV	Human Immunodeficiency Virus
HLA	Human Leukocyte Antigen
HPV	Human Papilloma Virus
HSV	Herpes simplex Virus
ID	Infectious disease
LMP	Last menstrual period
mg	Milligram(s)
mL	Millilitre(s)
NNRTI	Non-Nucleoside Reverse Transcriptase Inhibitors
PACTG 076	Paediatric AIDS Clinical Trial Group
PCP	Pneumocystis jeroveci (previously carinii) pneumonia
%	Percent
PI	Protease Inhibitor
PHSTF	Public Health Service Task Force
RNA	Ribonucleic acid
TB	Tuberculosis

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Version control and change history

PDS reference: OCE use only

Version	Date from	Date to	Amendment
1.0	15 Apr 04	26 Jul 11	Original version
2.0	26 Jul 11	current	

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