Management & Post-Exposure Prophylaxis of Potential HIV and Hepatitis B Exposure in Children, Adolescents & Adults Guidelines
Acknowledgement goes to members of the adult and paediatric HAST policy advisory group for their valuable input and comment.
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### Acronym glossary

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3TC</td>
<td>Lamivudine</td>
</tr>
<tr>
<td>Ab</td>
<td>Antibody</td>
</tr>
<tr>
<td>ABC</td>
<td>Abacavir</td>
</tr>
<tr>
<td>ALT</td>
<td>Alanine Aminotransferase</td>
</tr>
<tr>
<td>ART</td>
<td>Antiretroviral Treatment</td>
</tr>
<tr>
<td>ARV</td>
<td>Antiretroviral</td>
</tr>
<tr>
<td>ATV</td>
<td>Atazanavir</td>
</tr>
<tr>
<td>AZT</td>
<td>Zidovudine</td>
</tr>
<tr>
<td>d4T</td>
<td>Stavudine</td>
</tr>
<tr>
<td>EFV</td>
<td>Efavirenz</td>
</tr>
<tr>
<td>ELISA</td>
<td>Enzyme-linked immunosorbent assay</td>
</tr>
<tr>
<td>FBC &amp; diff</td>
<td>Full Blood Count and Differential</td>
</tr>
<tr>
<td>FTC</td>
<td>Emtricitabine</td>
</tr>
<tr>
<td>GFR</td>
<td>Glomerular filtration rate</td>
</tr>
<tr>
<td>HAART</td>
<td>Highly active antiretroviral treatment</td>
</tr>
<tr>
<td>Hb</td>
<td>Haemoglobin</td>
</tr>
<tr>
<td>HBIG</td>
<td>Hepatitis B Immunoglobulin</td>
</tr>
<tr>
<td>HBsAb</td>
<td>Hepatitis B Surface Antibody</td>
</tr>
<tr>
<td>HBsAg</td>
<td>Hepatitis B Surface Antigen</td>
</tr>
<tr>
<td>Hep B</td>
<td>Hepatitis B</td>
</tr>
<tr>
<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
</tr>
<tr>
<td>IMI</td>
<td>Intramuscular injection</td>
</tr>
<tr>
<td>LPV</td>
<td>Lopinavir</td>
</tr>
<tr>
<td>NDoH</td>
<td>National Department of Health</td>
</tr>
<tr>
<td>NRTI</td>
<td>Nucleoside/ Nucleotide reverse transcriptase inhibitor</td>
</tr>
<tr>
<td>NNRTI</td>
<td>Non-nucleoside reverse transcriptase inhibitor</td>
</tr>
<tr>
<td>NVP</td>
<td>Nevirapine</td>
</tr>
<tr>
<td>PCR</td>
<td>Polymerase Chain Reaction</td>
</tr>
<tr>
<td>PEP</td>
<td>Post exposure prophylaxis</td>
</tr>
<tr>
<td>PHC</td>
<td>Primary Health Care</td>
</tr>
<tr>
<td>PI</td>
<td>Protease inhibitor</td>
</tr>
<tr>
<td>SAPS</td>
<td>South African Police Services</td>
</tr>
<tr>
<td>STI</td>
<td>Sexually transmitted infections</td>
</tr>
<tr>
<td>TDF</td>
<td>Tenofovir</td>
</tr>
<tr>
<td>VL</td>
<td>Viral load</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
</tbody>
</table>
1. INTRODUCTION
1.1 Background

The prevalence of both HIV and Hepatitis B is high in South Africa therefore there is a significant risk of acquiring these infections following exposure to infected material. Studies suggest that post-exposure prophylaxis (PEP) with highly active antiretroviral treatment (HAART) is highly effective in preventing HIV infection if taken correctly for the full recommended duration of 28 days, and that prophylaxis with Hepatitis B immunoglobulin and vaccination may prevent Hepatitis B infection if given soon after exposure. This update of the Western Cape guidelines for management of potentially infectious exposures is based on current evidence and guidelines issued by the WHO, NDoH and the SA HIV Clinicians Society. The key aim is to promote successful completion of the recommended ART regimen in the 28 day period of therapy, as well as prevent infection with Hepatitis B.

While the prevalence of Hepatitis C is low in South Africa, it is still a public health concern because it has been associated with the development of chronic liver disease. Transmission has mainly been associated with percutaneous or parenteral exposure to blood via intravenous drug use and blood transfusions. Sexual transmission of Hepatitis C has not been found to be a very efficient method of transmission, and is more likely to occur with repeated exposures. There is no effective therapy for prevention of Hepatitis C infection following exposure, and the aim of testing after high-risk exposure is to promote early diagnosis and linkage to appropriate care. Acute infection often resolves spontaneously within a few months, but follow-up testing is required to detect chronic infection.

Studies on the use of ART for PEP have not demonstrated conclusively that 3-drug regimens have superior efficacy to 2-drug regimens, however 3-drug ART regimens have been shown to be more effective as treatment, and therefore a 3-drug regimen is now recommended for all types of potential HIV exposure. Side-effects relating to ART are common, especially in HIV negative people, therefore attention must be given to appropriate selection of regimens, and effective monitoring and management of side-effects of therapy. In addition, the psychological aspects of unintentional HIV exposure must be addressed adequately, and PEP must be offered as part of a package of services that includes ongoing counselling and support to promote adherence.

Healthcare workers are a high risk population for exposure to HIV and viral hepatitis. Although the approach to occupational and non-occupational exposures is similar, occupational exposure must be regarded as potentially preventable. Therefore all healthcare facilities should have easily accessible PEP protocols and mechanisms in place for reporting of exposures. Any adverse drug reactions experienced by affected healthcare workers should also be recorded. Investigation of incidents where exposure occurred should be conducted, with the aim to improve infection control practices at the facility. Mentoring of HCWs who are particularly at high risk (such as students and interns) should be considered.
1.2 Types of potential exposure to HIV and Hepatitis B
Exposure to infectious material can occur in various settings (see box 1). The risk of transmitting Hepatitis B is higher than that of transmitting HIV in most exposures.

Box 1: Types of exposure to HIV and Hepatitis B

**Occupational exposure**
- Needle-stick injuries
- Deep percutaneous sharps injuries
- Splashes of blood or body fluids onto mucous membranes of eye/ mouth/ nose
- Exposure of non-intact skin to blood or body fluids

**Sexual exposure**
- Sexual assault involving vaginal or rectal penetration
- Consensual intercourse
- Burst condoms

**Inadvertent exposure**
- Sharing needles during recreational intravenous drug use
- Accidental injuries with improperly disposed of medical waste/ needles
- Contact with used condoms
- Human bites
- Contact sports with blood exposure
- Roadside assistance at motor vehicle accidents (contact with bodily fluid and non-intact skin)
- Expressed breast milk from another mother given to infant unintentionally, or breastfeeding of infant of another mother
- Pre-mastication of food if sores in mouth of person chewing food (this practice must be discouraged)

1.3 Modes of potential exposure to HIV and Hepatitis B
Potentially infectious exposures can occur via oral, mucosal, mucocutaneous, percutaneous or parenteral routes. It is important to differentiate between potentially infectious materials and non-infectious materials when assessing eligibility for interventions to prevent infection (see box 2).

Box 2: Infectious vs non-infectious materials

**Infectious material**
- Blood or any bloodstained fluids, tissue or other material
- Vaginal secretions or penile pre-ejaculate and semen
- Fluid from any body cavity such as pleural, pericardial, amniotic, peritoneal, synovial and cerebrospinal fluids
- Any other fluids, excretions or secretions that are visibly bloodstained
- Breast milk

**Non-infectious material**
- Tears, non-bloodstained saliva, sputum or vomitus, sweat, urine, stool
1.4 Indications for HIV Post Exposure Prophylaxis (PEP)

PEP must be offered to all individuals with exposures that pose a risk of HIV transmission. Exposure to non-infectious material and exposures via intact skin do not require HIV PEP, but support and reassurance should be given.

Table 1: Eligibility for HIV PEP

<table>
<thead>
<tr>
<th>TYPES OF EXPOSURE</th>
<th>HIV STATUS OF SOURCE PERSON</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HIV NEGATIVE</td>
</tr>
<tr>
<td>Percutaneous exposure to blood or other infectious materials</td>
<td>No PEP</td>
</tr>
<tr>
<td>Mucous membrane or non-intact skin exposure, including sexual exposure, splash or contact with open wound, to blood or other infectious materials</td>
<td>No PEP</td>
</tr>
<tr>
<td>Mucous membrane exposure, splash or contact with open wound, to non-infectious materials</td>
<td>No PEP</td>
</tr>
<tr>
<td>Intact skin exposure to infectious or non-infectious materials</td>
<td>No PEP</td>
</tr>
</tbody>
</table>

Box 3: Exposures NOT eligible for HIV PEP

- The exposed person is known to be HIV positive or tests HIV positive at the time of the exposure
- The source of the infectious material has been confirmed to be HIV negative
- Exposure to bodily fluids that do not pose significant risk of HIV transmission i.e. tears, non-blood stained saliva, sputum or vomitus, sweat, urine, stool

1.5 General Principles of HIV PEP

- Post exposure prophylaxis with antiretroviral drugs must be commenced within one hour or not later than 72 hours after the exposure, and treatment must be uninterrupted for 28 days.
- When the source individual is known, voluntary consent must be obtained to have the necessary laboratory tests performed. The source individual must receive counseling and treatment if found to be positive on any of the tests.
- If the source individual is unknown or refuses testing, the exposed individual must be treated as if the source is HIV positive.
- Starter packs are not recommended due to the risk of defaulting treatment, therefore a full 28 day supply of medication must always be given if possible.
- Side effects must be monitored and managed appropriately in order to promote adherence (e.g. anti-emetics for nausea).
- Counselling must be available on an ongoing basis to deal with side-effects of the medication.
- Emotional support and counselling must be given to address anxiety and explain risk of exposure to HIV and Hepatitis.
- Emergency contraception should be offered to adolescent girls and women if there is a risk of pregnancy.
- Condom usage for at least four months after the exposure must be emphasized to protect sexual partners.
- Occupational exposures must be regarded as preventable, and investigation must be conducted in order to strengthen prevention policies and practices at healthcare facilities.
- ART for PEP must be offered as part of a “package of care” (box 4).
Box 4: “Package of Care” offered after potentially infectious HIV/ Hepatitis B exposure

- Assessment for eligibility for HIV PEP
- Hepatitis B testing & prophylaxis
- Hepatitis C testing if indicated
- Emergency contraception (age appropriate) if indicated
- Prophylaxis & treatment of sexually transmitted infections if sexual exposure occurred
- Contraceptive advice
- Advice and referral for compensation if occupational exposure occurred
- Emotional support, counselling & psychological interventions
- Monitoring and management of side-effects of medication

- A 3-drug ART regimen is recommended for PEP of all potential HIV exposures
- The use of a 2-drug regimen should only be considered in exceptional cases, where there is severe intolerance or unavailability of a third appropriate drug.
- When choosing appropriate drugs for a PEP regimen, the following should be noted:
  o Tenofovir and Zidovudine are recommended, along with Lamivudine or Emtricitabine
  o Abacavir (ABC) is NOT recommended in PEP regimens due to the risk of hypersensitivity reactions
  o Stavudine is well-tolerated for short term administration
  o Nevirapine (NVP) and Efavirenz (EFV) are also generally not recommended in HIV PEP regimens due to the potential hepatotoxicity, hypersensitivity reactions and neurological toxicity as well as the possibility of exposure to NNRTI resistant HIV
  o Lopinavir/ ritonavir is frequently associated with gastrointestinal side-effects, which require effective management
  o Atazanavir is commonly associated with unconjugated hyperbilirubinemia that is not clinically significant but may be distressing to patients, and resolves on cessation of therapy
- If the source patient is on a third line ART regimen or have confirmed resistance to a protease inhibitor, consult an ID specialist.
2. MANAGEMENT OF POTENTIAL EXPOSURE TO HIV AND HEPATITIS B IN INFANTS, CHILDREN AND EARLY ADOLESCENTS (10 – 15 YEARS)

2.1 Management Of Specific Exposures

2.1.1 Sexual assault

Sexual offences victims must be regarded as medical emergencies. The provision of PEP must be based on the allegation or suspicion of sexual assault, and NOT on clinical findings. All cases of suspected or alleged rape/sexual abuse involving a child must be reported to the relevant authorities (SAPS) and a case must be opened and ensure adequate documentation in medical notes. Counsel caregiver and child (if age-appropriate) on the risks of the exposure and obtain consent for HIV test unless known to be HIV infected.

Following sexual assault, there is a risk of the child acquiring other sexually transmitted infections including bacterial vaginosis, candidiasis, gonorrhea, chlamydia, trichomonas vaginalis, gardnerella vaginalis or syphilis. These infections may be diagnosed at presentation or follow up using standard microbiological tests and treatment instituted as necessary and do not form part of a PEP protocol. Give STI prophylaxis (see table 2) and refer to hospital for further clinical and medicolegal care.

Table 2: STI prophylaxis regimen for infants, children and early adolescents

<table>
<thead>
<tr>
<th>DRUG</th>
<th>DOSAGE</th>
<th>FREQUENCY</th>
<th>ROUTE OF ADMINISTRATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceftriaxone</td>
<td>80mg/kg (max 250mg)</td>
<td>stat</td>
<td>intramuscular injection</td>
</tr>
<tr>
<td>Macrolide</td>
<td>&lt;45 kg: Azithromycin 20mg/kg (max 1g)</td>
<td>single dose</td>
<td>orally</td>
</tr>
<tr>
<td></td>
<td>≥45 kg: Azithromycin 1g</td>
<td>single dose</td>
<td>orally</td>
</tr>
<tr>
<td>Metronidazole</td>
<td>1-3 years: 500mg</td>
<td>single dose</td>
<td>orally</td>
</tr>
<tr>
<td></td>
<td>3-7 years: 600-800mg</td>
<td>single dose</td>
<td>orally</td>
</tr>
<tr>
<td></td>
<td>7-10 years: 1g</td>
<td>single dose</td>
<td>orally</td>
</tr>
<tr>
<td></td>
<td>&gt;10 years: 2g</td>
<td>single dose</td>
<td>orally</td>
</tr>
</tbody>
</table>

2.1.2 Inadvertent exposures

Determine whether reported exposure is eligible for PEP (see section 1.2 & 1.3). Counsel caregiver and child (if age-appropriate) on the risks of acquiring HIV infection from the exposure and obtain consent for HIV test unless known to be HIV infected. If possible, establish whether the child has received 6, 10 and 14 weeks of age vaccination against Hepatitis B (recorded in Road to Health Booklet).

In the case of an infant being exposed to another mother’s breastmilk in the post-natal period (excludes donor breastmilk via a milk bank), aspiration of the milk via a gastric tube should be performed immediately. Report the incident to paediatric ward/ “on-call” doctor, the sister in charge and senior clinician. Counsel the mother of the child and the source breastfeeding mother about the small, but possible risk of HIV and Hepatitis B transmission and assure the source breastfeeding mother that confidentiality will be maintained. Carefully document details of the incident in the folder.
2.2 HIV testing for exposed children & early adolescents

See table 3 for choice of appropriate HIV test for the exposed child.

Table 3: HIV testing for an exposed child

<table>
<thead>
<tr>
<th>If exposed child &lt;18 months of age and not known HIV positive:</th>
<th>If exposed child ≥18 months of age:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Send blood for HIV-PCR test and initiate HIV PEP if the exposure occurred within the previous 72 hours. Follow up on the result of the PCR HIV test within 48 hours:</td>
<td>Perform HIV rapid test. If negative, initiate HIV PEP if the exposure occurred within the previous 72 hours. Send blood for HIV ELISA test.</td>
</tr>
<tr>
<td>PCR result negative</td>
<td>PCR result positive</td>
</tr>
<tr>
<td>Continue HIV PEP for 28 days</td>
<td>switch from PEP to ART regimen</td>
</tr>
<tr>
<td>confirm diagnosis with 2nd PCR test</td>
<td></td>
</tr>
</tbody>
</table>

2.3 Drug dosing of HIV PEP in Children

Doses of ARVs in children are dependent on body weight or body surface area. Children ≥28 days of age and ≥3kg body weight should be dosed according to the ARV dosing chart (Annexure 1 & 2). For neonates (<28 days of age) who are < 2 weeks of age or <42 weeks gestational age (premature neonates), discuss drug selection and dosing with a paediatrician as lopinavir/r is contraindicated. If exposed infant is nil per mouth, start intravenous AZT early after discussion with paediatrician. Older children who are able to swallow tablets, should be prescribed a fixed-dose combination tablet (Lamzid) if dosages allow it.

Table 4: HIV PEP regimen for infants, children and early adolescents

<table>
<thead>
<tr>
<th>DRUG</th>
<th>DOSAGE</th>
<th>FREQUENCY</th>
<th>ROUTE OF ADMINISTRATION</th>
<th>ALTERNATIVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zidovudine</td>
<td>180-240 mg/ m²</td>
<td>Twice a day</td>
<td>orally</td>
<td>If Hb &lt;8g/dl, use stavudine</td>
</tr>
<tr>
<td>Lamivudine</td>
<td>4mg/kg</td>
<td>Twice a day</td>
<td>orally</td>
<td></td>
</tr>
<tr>
<td>Lopinavir/ritonavir</td>
<td>300/75 mg/ m²</td>
<td>Twice a day</td>
<td>orally</td>
<td>&gt;40kg: Atazanavir/ritonavir 300mg/100mg daily</td>
</tr>
</tbody>
</table>
2.4 Baseline investigations, monitoring and follow-up

- Baseline tests include HIV test (table 3), Syphilis test (if sexual exposure), hepatitis B serology, FBC & diff and ALT. Ensure that all baseline laboratory results have been received and acted upon within 3 days. Arrange for appropriate counselling of exposed individual and caregiver.
- Follow up after 2 weeks for clinical assessment and repeat FBC & diff and ALT. Enquire about psychological well-being of exposed individual and caregiver and side effects of PEP, and assess adherence. Arrange for further counselling if required.
- Follow up again at 4 weeks for clinical assessment and repeat FBC & diff and ALT.
- Repeat HIV testing at 6 weeks and 4 months after exposure.
- Do Hepatitis C PCR test at 6 weeks if source confirmed to have Hepatitis C infection.
- Arrange for repeat doses of Hepatitis B vaccine if required and follow-up Hepatitis B testing.
- See table 5 below for summary of blood testing and clinical assessments.

<table>
<thead>
<tr>
<th>SOURCE</th>
<th>POTENTIAL HIV EXPOSED INFANT/CHILD/EARLY ADOLESCENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>At baseline</td>
<td>At baseline</td>
</tr>
<tr>
<td>HIV ELISA (if not known HIV pos)</td>
<td>HIV testing-see table 3</td>
</tr>
<tr>
<td>Syphilis test if sexual exposure</td>
<td></td>
</tr>
<tr>
<td>Anti-HCV Ab if percutaneous or parenteral exposure</td>
<td>Anti-HCV Ab if percutaneous or parenteral exposure</td>
</tr>
<tr>
<td>HBsAg</td>
<td>HBsAg</td>
</tr>
<tr>
<td>FBC &amp; diff (ALT if &lt;4/52 old or &lt;3kg)</td>
<td>FBC &amp; diff (ALT if clinically indicated)</td>
</tr>
</tbody>
</table>
2.5 Post-exposure prophylaxis for Potential Hepatitis B exposure in Infants, Children & Early Adolescents

Administration of Hepatitis B immunoglobulin within the first 72 hours of Hepatitis B exposure in non-immune individuals is highly effective in preventing Hepatitis B infection. A child who is HIV positive is eligible for Hep B prophylaxis. Paediatric dosages of Hepatitis B immunoglobulin are shown in table 6. Management of exposed neonates is shown in table 7. Note that neonates born to mothers known to be infected with hepatitis B are eligible for post-exposure prophylaxis of Hepatitis B. Neonates exposed to another mother’s milk should also be managed as potentially Hepatitis B exposed. For older exposed infants, young children and early adolescents, try to establish whether the child has received vaccination against Hepatitis B at 6, 10 and 14 weeks of age (recorded in Road to Health Booklet), and manage according to table 8.

Table 6: Dosages of HBIG dose IMI (200 IU/2ml) for Potential Hepatitis B exposed Infant, Child or Early Adolescent

<table>
<thead>
<tr>
<th>AGE</th>
<th>DOSE OF HEP B IMMUNOGLOBULIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;5 years of age</td>
<td>200 IU stat</td>
</tr>
<tr>
<td>5-9 years of age</td>
<td>300 IU stat</td>
</tr>
<tr>
<td>Over 10 years of age</td>
<td>500 IU stat</td>
</tr>
</tbody>
</table>

Table 7: Management of Potential Hepatitis B exposed infant <14 weeks old

<table>
<thead>
<tr>
<th>SOURCE</th>
<th>POTENTIAL HEPATITIS B EXPOSED INFANT &lt; 14 WEEKS OLD</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>At baseline</td>
<td>At baseline (do not wait for source result)</td>
<td>6 weeks + 10 weeks + 14 weeks (Routine immunization)</td>
</tr>
<tr>
<td>Source not available or refuses testing</td>
<td>give HBIG 200 IU stat + Hep B vaccine</td>
<td>Complete schedule of Hep B vaccine x 3 doses</td>
</tr>
<tr>
<td>Source available and consents for testing: do HBsAg</td>
<td>give HBIG 200 IU stat + Hep B vaccine</td>
<td>Complete schedule of Hep B vaccine x 3 doses</td>
</tr>
</tbody>
</table>
Table 8: Management of Potential Hepatitis B exposed Infant (≥14 weeks), Child or Early Adolescent

<table>
<thead>
<tr>
<th>SOURCE</th>
<th>HEPATITIS B EXPOSED LATE ADOLESCENT/ADULT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>At baseline</td>
</tr>
<tr>
<td>Exposed HBsAg pos: refer for treatment</td>
<td></td>
</tr>
<tr>
<td>Unknown vaccination status or not prev vaccinated or did not get 3 doses of vaccine: give Hep B vaccine</td>
<td></td>
</tr>
<tr>
<td>Exposed HBsAg neg: give HBIG stat</td>
<td>Hep B</td>
</tr>
<tr>
<td></td>
<td>vaccine</td>
</tr>
<tr>
<td>*Ab titre&lt;10IU/ml: give HBIG stat</td>
<td>Hep B</td>
</tr>
<tr>
<td></td>
<td>vaccine</td>
</tr>
<tr>
<td>Ab titre&gt;10IU/ml: patient not at risk</td>
<td></td>
</tr>
<tr>
<td>Fully vaccinated: check HBsAb titre</td>
<td></td>
</tr>
<tr>
<td>*Ab titre&lt;10IU/ml: source HBsAg pos: give HBIG stat</td>
<td>Hep B</td>
</tr>
<tr>
<td></td>
<td>vaccine</td>
</tr>
<tr>
<td>Exposed HBsAg neg + source HBsAg pos: give HBIG stat</td>
<td>Hep B</td>
</tr>
<tr>
<td></td>
<td>vaccine</td>
</tr>
<tr>
<td>Fully vaccinated: check HBsAb titre</td>
<td></td>
</tr>
<tr>
<td>*Ab titre&lt;10IU/ml + source HBsAg pos: give HBIG stat + Hep B vaccine</td>
<td>Hep B</td>
</tr>
<tr>
<td></td>
<td>vaccine</td>
</tr>
<tr>
<td>Ab titre&gt;10IU/ml + source HBsAg neg: give Hep B vaccine</td>
<td></td>
</tr>
<tr>
<td>Ab titre&gt;10IU/ml: patient not at risk</td>
<td></td>
</tr>
</tbody>
</table>

Source Hep B status unknown (not available or refuses testing):

Source available and consents for testing: do HBsAg

*Give second dose of HBIG after 4 weeks to known Vaccine Non-responders (HBsAb titre remains <10IU/ml after receiving three dose HepB vaccine series on two separate occasions).
3. MANAGEMENT OF POTENTIAL EXPOSURE TO HIV AND HEPATITIS B IN LATE ADOLESCENTS & ADULTS

3.1 Management of Specific Exposures

3.1.1 Occupational Exposures in Workers in Healthcare Settings
Occupational exposure to potentially infectious material must be treated as a medical emergency. PEP must be commenced as soon as possible and within 72 hours of the exposure. Clean the exposed area or wound immediately with soap and water. Should contamination involve the mouth or eyes, rinse the mouth and irrigate eyes thoroughly with water. Counsel exposed healthcare worker and obtain consent for HIV test if HIV status negative or unknown. If the source person is present, counsel and do the blood tests as per table 11. Counsel healthcare worker about potential side-effects of PEP, and advise them to report immediately if they occur. Provide emotional support and address anxiety regarding exposure to HIV. Advise condom use for at least four months in order to protect sexual partners. Refer for ongoing counselling and enquire about side effects and emotional well-being.

The incident must be recorded appropriately and reported immediately to the relevant supervisor or manager. Failure to report and record an accidental exposure within 48 hours will not only delay treatment, but also affect occupational compensation in the event of transmission occurring. PEP should also be offered to staff that refuse testing. They must however be informed that if they refuse testing they may lose the right to compensation and risk developing resistance to ARV’s. Refer to the COID (compensation of injuries & diseases) act for further information.

3.1.2 Sexual assault
If there is an acute (within 72 hours) history of sexual assault, treat as a medical emergency. Counsel exposed person and obtain consent for HIV test if HIV status negative or unknown. If unable to counsel due to injuries or emotional status, arrange follow-up for counselling within 48 hours or refer for appropriate support and counselling. Do not delay PEP. Counsel exposed person and obtain consent for HIV test if HIV status negative or unknown.

Give STI prophylaxis as shown in table 9. Offer pregnancy test if patient at risk of pregnancy, and give emergency contraception if pregnancy excluded: LEVONORGESTREL 1.5mg stat, orally. Advise condom use for at least 3 months in order to protect sexual partners.

Table 9: STI prophylaxis regimen for late adolescents & adults

<table>
<thead>
<tr>
<th>DRUG</th>
<th>DOSAGE</th>
<th>FREQUENCY</th>
<th>ROUTE OF ADMINISTRATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceftriaxone</td>
<td>250mg</td>
<td>single dose</td>
<td>intramuscular injection</td>
</tr>
<tr>
<td>Macrolide</td>
<td>Azithromycin 1g</td>
<td>single dose</td>
<td>orally</td>
</tr>
<tr>
<td>Metronidazole</td>
<td>2g</td>
<td>single dose</td>
<td>orally</td>
</tr>
</tbody>
</table>

3.1.3 Inadvertent exposures
Determine whether reported exposure is eligible for PEP (see Box 1). Counsel exposed person on the risks of the exposure and obtain consent for HIV test if HIV status negative or unknown. Counsel exposed person about potential side-effects, and advise them to report immediately if they occur. Advise condom use for at least four months in order to protect sexual partners. Give STI prophylaxis (table 9) if applicable. Offer pregnancy test if patient at risk of pregnancy, and give emergency contraception if pregnancy excluded: LEVONORGESTREL 1.5mg stat, orally.
3.2 HIV Testing for Exposed Late Adolescents & Adults

Counsel the exposed person, and then do Rapid HIV test.
- If NEGATIVE: initiate PEP if within 72 hours of exposure and send blood for HIV ELISA and baseline tests (table 11)
- If POSITIVE: repeat rapid antibody test. If both tests positive, send blood for HIV ELISA test, pre-ART tests and other baseline tests (table 11). Assess eligibility for Hepatitis B prophylaxis.
- If screening test is POSITIVE and confirmatory NEGATIVE: do baseline tests (table 11), initiate PEP and send blood for HIV ELISA. If ELISA test result also positive, switch to ART regimen. If negative, continue PEP.

3.3 Drug Regimens for PEP in Late Adolescents & Adults

A suitable PEP regimen should be individualized, and should include 3 drugs for all types of exposures. This should consist of 2 NRTIs and a third recommended drug. Suitable NRTIs are tenofovir (TDF), emtricitabine (FTC) and lamivudine (3TC). Stavudine (d4T) may be used in cases where TDF cannot be tolerated (eg. renal impairment). The third drug should be a ritonavir-boosted PI such as lopinavir (LPV) or Atazanavir (ATV), ritonavir-boosted Atazanavir is considered safe to use during pregnancy.

Table 10: HIV PEP regimen for late adolescents and adults

<table>
<thead>
<tr>
<th>DRUG</th>
<th>DOSAGE</th>
<th>FREQUENCY</th>
<th>ROUTE OF ADMINISTRATION</th>
<th>ALTERNATIVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tenofovir/emtricitabine</td>
<td>300mg/200mg</td>
<td>Once a day</td>
<td>Orally</td>
<td>Stavudine/lamivudine 30mg/150mg twice a day OR Zidovudine/lamivudine 300mg/150mg twice a day</td>
</tr>
<tr>
<td><strong>AND</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Atazanavir/ritonavir</td>
<td>300mg/100mg</td>
<td>Once a day</td>
<td>Orally</td>
<td>Lopinavir/ritonavir 400mg/100mg twice a day* if unable to tolerate any of the PIs, discuss with an ID specialist</td>
</tr>
</tbody>
</table>

3.4 Baseline investigations, monitoring and follow-up

- Baseline tests include HIV testing (section 3.2), syphilis testing (if sexual exposure), hepatitis B & C tests, creatinine if starting on tenofovir and FBC & diff if starting on zidovudine. Ensure that all baseline laboratory results have been received and acted upon within 72 hours. Refer for counselling.
- Follow up after 2 weeks for clinical assessment. Enquire about psychological well-being and side effects of PEP, and assess adherence. Arrange for further counselling if required.
- Repeat HIV testing at 6 weeks and 4 months after exposure.
- Do Hepatitis C PCR test at 6 weeks if source confirmed to have Hepatitis C infection.
- Arrange for repeat doses of Hepatitis B vaccine if required and follow-up Hepatitis B testing at 4 months after exposure (see section 3.5).
### Table 11: Blood tests & Clinical Assessments for Potential HIV exposed Late Adolescent & Adult

<table>
<thead>
<tr>
<th>SOURCE</th>
<th>HIV EXPOSED LATE ADOLESCENT/ADULT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>At baseline</td>
</tr>
<tr>
<td>If available, counsel and obtain consent for blood tests</td>
<td>Clinical assessment</td>
</tr>
<tr>
<td>HIV PCR (&lt;18months) or HIV ELISA (≥18months) [if not known HIV pos]</td>
<td>If Rapid HIV neg → HIV ELISA</td>
</tr>
<tr>
<td>Syphilis test (if sexual exposure)</td>
<td>Syphilis test (if sexual exposure)</td>
</tr>
<tr>
<td>Anti-HCV Ab if occupational exposure</td>
<td></td>
</tr>
<tr>
<td>HBsAg</td>
<td>HBsAg</td>
</tr>
<tr>
<td>Creatinine (if using TDF) FBC &amp; diff (if using AZT)</td>
<td>If GFR&lt;60 switch to AZT + do FBC &amp; diff</td>
</tr>
</tbody>
</table>
3.5 Post-exposure prophylaxis for Hepatitis B in Late Adolescents & Adults

Administration of Hepatitis B immunoglobulin within the first 72 hours of Hepatitis B exposure in non-immune individuals is highly effective in preventing Hepatitis B infection. A person who is HIV positive is eligible for Hepatitis B prophylaxis.

Table 12: Management of the Potential Hepatitis B exposed Late Adolescent & Adult

<table>
<thead>
<tr>
<th>SOURCE</th>
<th>HEPATITIS B EXPOSED LATE ADOLESCENT/ADULT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>At baseline</td>
</tr>
<tr>
<td>Exposed HBsAg pos: refer for treatment</td>
<td>------</td>
</tr>
</tbody>
</table>

**Source Hep B status unknown (not available or refuses testing)**

- Unknown vaccination status or not prev vaccinated or did not get 3 doses of vaccine: give Hep B vaccine
- Exposed HBsAg neg: give HBIG stat
- *Ab titre<10IU/ml: give HBIG stat* |

**Fully vaccinated; check HBsAb titre**

- *Ab titre>10IU/ml: patient not at risk* |

**Source available and consents for testing: do HBsAg**

- Unknown vaccination status or not prev vaccinated or did not get 3 doses of vaccine: give Hep B vaccine
- Exposed HBsAg neg + source HBsAg pos: give HBIG stat
- *Ab titre<10IU/ml+ source HBsAg pos: give HBIG stat + Hep B vaccine* |

**Fully vaccinated; check HBsAb titre**

- *Ab titre>10IU/ml + source HBsAg neg: give Hep B vaccine* |

*Give second dose of HBIG after 4 weeks to known Vaccine Non-responders (HBsAb titre remains <10IU/ml after receiving three dose HepB vaccine series on two separate occasions).*
ANNEXURE 1: Drug dosing of ARVs for PEP in infants

A. Zidovudine (AZT)

Use intravenous AZT if oral drugs are contraindicated (NEC; Intestinal obstruction; gut anomaly). Discuss with Paediatric ID specialist.

Table 4: Oral dosing of Zidovudine for PEP in HIV-exposed infants

<table>
<thead>
<tr>
<th>Zidovudine (AZT) syrup (10mg/ml)</th>
<th>Birth weight / gestational age</th>
<th>Age at exposure</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>If gestational age &lt;35 weeks</td>
<td>Birth to 6 weeks</td>
<td>2 mg/kg/dose 12 hourly (0.2 ml/kg/dose 12 hourly)</td>
<td></td>
</tr>
<tr>
<td>&lt;3 kg and &gt;35 weeks</td>
<td>Birth to 6 weeks</td>
<td>4 mg/kg/dose 12 hourly (0.4 ml/kg/dose 12 hourly)</td>
<td></td>
</tr>
<tr>
<td>&gt;3 kg and &gt;35 weeks</td>
<td>Birth to 6 weeks</td>
<td>12 mg 12 hourly (1.2 ml 12 hourly)</td>
<td></td>
</tr>
<tr>
<td>&gt;3 kg</td>
<td>&gt;6 weeks</td>
<td>Dose according to weight-based dosing chart (2013)</td>
<td></td>
</tr>
</tbody>
</table>

B. Lamivudine (3TC):
- <28 days of age: 2mg/kg/dose orally every 12 hours for 28 days
- >28 days of age: 4mg/kg/dose orally every 12 hours for 28 days (if ≥3 kg, refer to weight-based dosing chart (Annexure B)

C. Lopinavir/Ritonavir (Kaletra®): 300mg/m²/dose orally 12 hourly for 28 days
To calculate the surface area of the baby: BSA (m²) = (0.05 x WT in kg) + 0.05

NOTE: Serious adverse events have been associated with Kaletra use < 42 weeks gestational age. Discuss with paediatric ID specialist, if any concerns.
### ANNEXURE 2: Antiretroviral drug dosing chart for children 2013

**Compiled by the Child and Adolescent Committee of the SA HIV Clinicians Society in collaboration with the Department of Health**

#### Antiretroviral Drug Dosing Chart for Children 2013

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dosing Chart</th>
<th>Available Formulations</th>
<th>Target Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abacavir (ABC)</td>
<td>3-12kg: 2ml bd</td>
<td>Oral suspension, tablets</td>
<td>3-12kg: 2ml bd</td>
</tr>
<tr>
<td>Lamivudine (3TC)</td>
<td>3-12kg: 2ml bd</td>
<td>Oral suspension, tablets</td>
<td>3-12kg: 2ml bd</td>
</tr>
<tr>
<td>Efavirenz (EFV)</td>
<td>3-12kg: 2ml bd</td>
<td>Oral suspension, tablets</td>
<td>3-12kg: 2ml bd</td>
</tr>
<tr>
<td>Lopinavir/ritonavir (LPV/r)</td>
<td>3-12kg: 2ml bd</td>
<td>Oral suspension, tablets</td>
<td>3-12kg: 2ml bd</td>
</tr>
<tr>
<td>Ritonavir boosting (RTV)</td>
<td>3-12kg: 2ml bd</td>
<td>Oral suspension, tablets</td>
<td>3-12kg: 2ml bd</td>
</tr>
<tr>
<td>Stanazol (ddI)</td>
<td>3-12kg: 2ml bd</td>
<td>Oral suspension, tablets</td>
<td>3-12kg: 2ml bd</td>
</tr>
<tr>
<td>Didanosine (ddI)</td>
<td>3-12kg: 2ml bd</td>
<td>Oral suspension, tablets</td>
<td>3-12kg: 2ml bd</td>
</tr>
<tr>
<td>Nevirapine (NVP)</td>
<td>3-12kg: 2ml bd</td>
<td>Oral suspension, tablets</td>
<td>3-12kg: 2ml bd</td>
</tr>
<tr>
<td>Zidovudine (AZT)</td>
<td>3-12kg: 2ml bd</td>
<td>Oral suspension, tablets</td>
<td>3-12kg: 2ml bd</td>
</tr>
</tbody>
</table>

**Available Formulations**

- Oral suspension, tablets
- Capsules 100mg, 300mg
- Tablets 100mg, 300mg
- Adult tablets 300mg, 600mg
- Pediatric tablets 100mg, 200mg

**Consult with a clinician experienced in paediatric ARV prescribing for neonates (<28 days of age) and infants weighing <3kg**

#### Currently available tablet formulations of abacavir (except 60mg)

<table>
<thead>
<tr>
<th>Weight (kg)</th>
<th>Abacavir (ABC)</th>
<th>Lamivudine (3TC)</th>
<th>Efavirenz (EFV)</th>
<th>Lopinavir/ritonavir (LPV/r)</th>
<th>Ritonavir boosting (RTV)</th>
<th>Stanazol (ddI)</th>
<th>Didanosine (ddI)</th>
<th>Nevirapine (NVP)</th>
<th>Zidovudine (AZT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3</td>
<td>2ml bd</td>
<td>2ml bd</td>
<td>2ml bd</td>
<td>2ml bd</td>
<td>2ml bd</td>
<td>2ml bd</td>
<td>2ml bd</td>
<td>1.5ml bd</td>
<td>1.5ml bd</td>
</tr>
<tr>
<td>4-6</td>
<td>3ml bd</td>
<td>3ml bd</td>
<td>3ml bd</td>
<td>3ml bd</td>
<td>3ml bd</td>
<td>3ml bd</td>
<td>3ml bd</td>
<td>3ml bd</td>
<td>3ml bd</td>
</tr>
<tr>
<td>7-9</td>
<td>4ml bd</td>
<td>4ml bd</td>
<td>4ml bd</td>
<td>4ml bd</td>
<td>4ml bd</td>
<td>4ml bd</td>
<td>4ml bd</td>
<td>5ml bd</td>
<td>5ml bd</td>
</tr>
<tr>
<td>≥10</td>
<td>5ml bd</td>
<td>5ml bd</td>
<td>5ml bd</td>
<td>5ml bd</td>
<td>5ml bd</td>
<td>5ml bd</td>
<td>5ml bd</td>
<td>5ml bd</td>
<td>5ml bd</td>
</tr>
</tbody>
</table>

**Aid**

**Avoid**

- Avoid LPV/r solution in any full-term infant <4 days of age and any premature infant <14 days after their date of delivery (40 weeks post conception) in certain expert advice.
- Children 2-5kg may also be dosed with LPV/r 200/50mg adult tablet. 2 tablets per dose.
REFERENCES


7. Schillie S, Murphy TV, Sawyer M, et al. CDC Guidance for Evaluating Health-Care Personnel for Hepatitis B Virus Protection and for Administering Postexposure Management: Recommendations and Reports. December 20, 2013 / 62(RR10);1-19


9. Department of Health- Western Cape: Circular H123/ 2014- New guideline for paediatric post exposure prophylaxis (PEP) for HIV & Hepatitis B