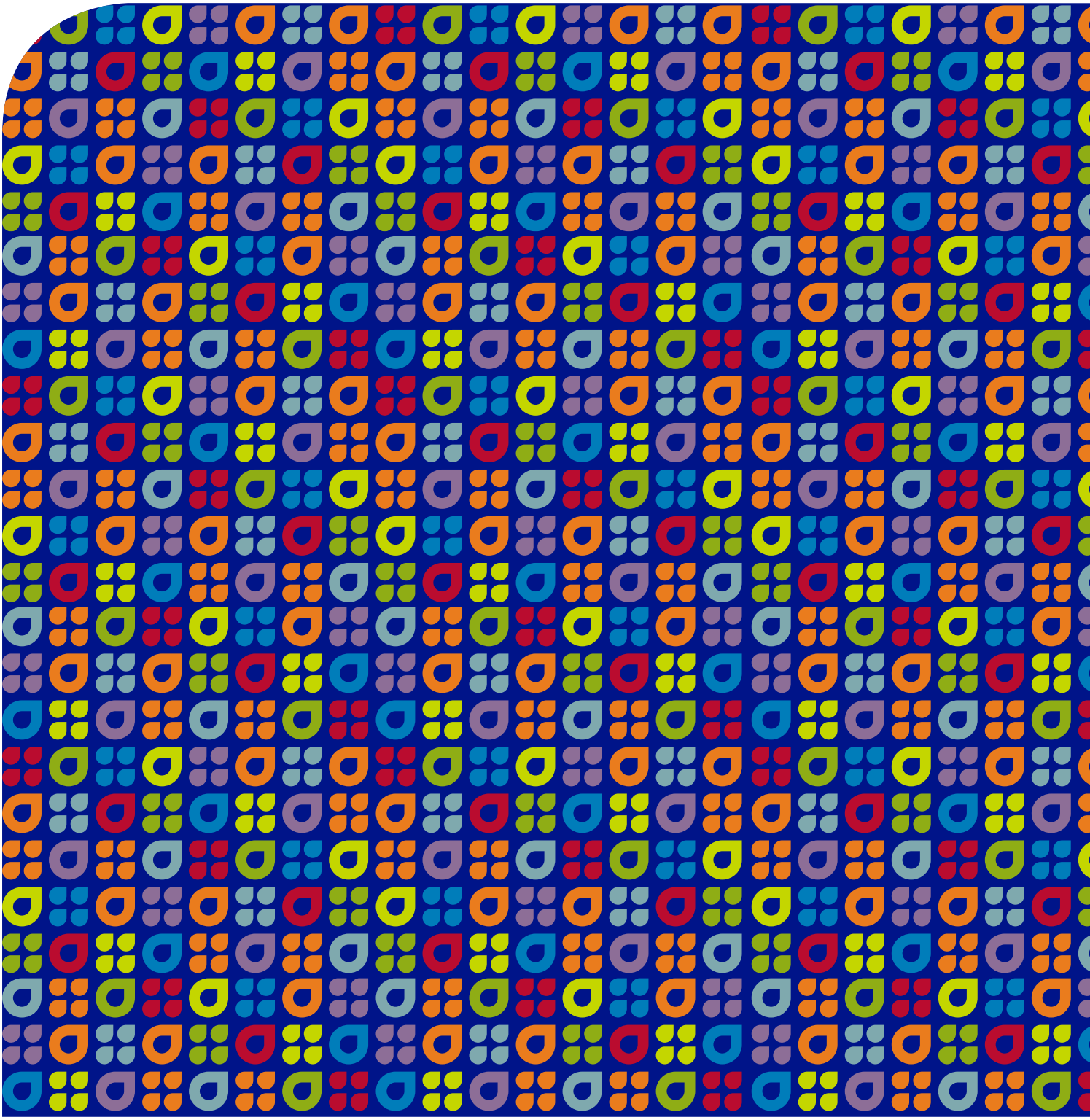
Western Cape Government

Health



Management & Post-Exposure Prophylaxis of Potential HIV and Hepatitis B Exposure in Children, Adolescents & Adults Guidelines

The Western Cape Guidelines for the Management & Post-Exposure Prophylaxis of Potential HIV and Hepatitis B Exposure in Children, Adolescents & Adults

October 2016
Amended November 2019

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

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

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 per-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

TYPES OF EXPOSURE	HIV STATUS OF SOURCE PERSON	
	HIV NEGATIVE	HIV POSITIVE OR UNKNOWN
Percutaneous exposure to blood or other infectious materials	No PEP	3 Drug regimen
Mucous membrane or non-intact skin exposure, including sexual exposure, splash or contact with open wound, to blood or other infectious materials	No PEP	3 Drug regimen
Mucous membrane exposure, splash or contact with open wound, to non-infectious materials	No PEP	No PEP
Intact skin exposure to infectious or non-infectious materials	No PEP	No PEP

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. Dolutegravir and Raltegravir can be used as a third agent. There is a significant drug interaction with rifampicin and the DTG dose must be increased to 50mg BD whilst on rifampicin and PEP
- When choosing appropriate drugs for a PEP regimen, the following should be noted:
  - Tenofovir and Zidovudine are recommended, along with Lamivudine or Emtricitabine
  - Abacavir (ABC) is **NOT** recommended in PEP regimens due to the risk of hypersensitivity reactions
  - Stavudine is well-tolerated for short term administration. Availability in the public sector is limited
  - 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
  - Lopinavir/ ritonavir is frequently associated with gastrointestinal side-effects, which require effective management
  - Atazanavir is commonly associated with unconjugated hyperbilirubinemia that is not clinically significant but may be distressing to patients, and resolves on cessation of therapy
  - Dolutegravir is contraindicated in the first 6 weeks of pregnancy and if the woman is actively planning a pregnancy
- If the source patient is on a third line ART regimen or has confirmed resistance to an integrase 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

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

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

If exposed child <18 months of age and not known HIV positive:	If exposed child ≥18 months of age:
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: PCR result negative → Continue HIV PEP for 28 days PCR result positive → switch from PEP to ART regimen → confirm diagnosis with 2nd PCR test	Perform HIV rapid test. If negative, initiate HIV PEP if the exposure occurred within the previous 72 hours. Send blood for HIV ELISA test. If the HIV rapid screening test is positive, do a confirmatory rapid test. If the result is negative, initiate PEP and send blood for HIV ELISA test. If the ELISA result is positive, switch to ART regimen as soon as result is obtained. If ELISA is negative, continue with PEP. If both the HIV rapid tests are positive, initiate ART regimen and send blood for HIV ELISA. Assess eligibility for Hepatitis B prophylaxis.

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

DRUG	DOSAGE	FREQUENCY	ROUTE OF ADMINISTRATION	ALTERNATIVES	
Zidovudine	180-240 mg/ m^2	Twice a day	orally	If Hb <8g/dl, consult an expert	
Lamivudine	4mg/kg	Twice a day	orally		
Lopinavir/ ritonavir	300/75 mg/ m^2	Twice a day	orally	>15 – 35kg	Atazanavir 200mg/ ritonavir 100mg daily
				≥ 35kg	Atazanavir 300mg/ ritonavir 100mg daily

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.
- See table 5 below for summary of blood testing and clinical assessments

Table 5: Blood Tests & Clinical Assessments for Potential HIV-exposed Infant, Child & Early Adolescent

SOURCE	POTENTIAL HIV EXPOSED INFANT/ CHILD/EARLY ADOLESCENT					
At baseline	**At baseline**	**3 days**	**2 weeks**	**4 weeks**	**6 weeks**	**4 months**
		Follow-up for blood results	Follow-up clinical appt	Follow-up clinical appt		
HIV ELISA (if not known HIV pos)	HIV testing- see table 3				HIV PCR (<18months) HIV ELISA (≥18months)	HIV PCR (<18months) HIV ELISA (≥18months)
Syphilis test if sexual exposure	Syphilis test if sexual exposure					Syphilis test if sexual exposure
Anti-HCV Ab if percutaneous or parenteral exposure	Anti-HCV Ab if percutaneous or parenteral exposure				Hep C PCR if source Ab pos & exposed Ab neg	
HBsAg	Anti-HBV Ab	See section 2.5				HBsAg if source was HBsAg positive or unknown
	FBC & diff (ALT if <4/52 old or <3kg)		FBC & diff (ALT if clinically indicated)	FBC & diff (ALT if clinically indicated)		

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

AGE	DOSE OF HEP B IMMUNOGLOBULIN
<5 years of age	200 IU stat
5-9 years of age	300 IU stat
Over 10 years of age	500 IU stat

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

SOURCE	POTENTIAL HEPATITIS B EXPOSED INFANT < 14 WEEKS OLD		
At baseline	**At baseline (do not wait for source result)**	**6 weeks + 10 weeks + 14 weeks (Routine immunization)**	**4 months**
Source not available or refuses testing OR Source HBsAg positive	give HBIG 200 IU stat + Hep B vaccine give HBIG 200 IU stat + Hep B vaccine	Complete schedule of Hep B vaccine x 3 doses Complete schedule of Hep B vaccine x 3 doses	HBsAg If source was HBsAg positive

Table 8: Management of Potential Hepatitis B exposed Infant (≥14 weeks), Child or Early Adolescent

SOURCE	HEPATITIS B EXPOSED INFANT (≥14 weeks), CHILD OR EARLY ADOLESCENT			
At baseline	**At baseline**	**Within 3 days**	**4 weeks**	**8 weeks**
Source Hep B status unknown (not available or refuses testing)	Unknown vaccination status **or** not prev vaccinated **or** incomplete vaccination: give Hep B vaccine	HBsAb **titre <10IU/ml:** give HBIG stat	Hep B vaccine	Hep B vaccine
	Fully vaccinated: check HBsAb titre	HBsAb **titre <10IU/ml:** give HBIG stat + Hep B vaccine	Hep B vaccine	Hep B vaccine
		HBsAb **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	**Source HBsAg pos:** give HBIG stat	Hep B vaccine	Hep B vaccine
		Source HBsAg neg	Hep B vaccine	Hep B vaccine
	Fully vaccinated: check HBsAb titre	* HBsAb **titre <10IU/ml+ source HBsAg pos:** give HBIG stat + Hep B vaccine	Hep B vaccine	Hep B vaccine
		HBsAb **titre <10IU/ml + source HBsAg neg:** give Hep B vaccine	Hep B vaccine	Hep B vaccine
		HBsAb **titre >10IU/ml:** patient not at risk	-------	-------

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. Other major hazardous biological agents considered as medical emergencies, namely Hepatitis C and HIV, are each considered in separate medical surveillance protocols. These protocols should be read and implemented in conjunction with the current HBV medical surveillance protocol and all employees made aware of the structures and procedures in place.

Immunocompromised persons (chronic haemodialysis patients, HIV-infected persons, persons receiving immunosuppressive therapy and others who in the opinion of the medical doctor may have compromised immunity) require anti-HBs titre testing every 12 months and a booster dose if Ab titre levels decline to < 10 IU/ml. In the event of exposure, repeat anti-HBs titre testing if not done in the past 6 months.

- If anti-HBs titre < 10IU/mL manage as a non-responder
- If anti-HBs titre ≥10IU/mL manage as immunocompetent individual.

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**.

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 four months in order to protect sexual partners.

Table 9: STI prophylaxis regimen for late adolescents & adults

DRUG	DOSAGE	FREQUENCY	ROUTE OF ADMINISTRATION
Ceftriaxone	250mg	Single dose	intramuscular injection
Macrolide	Azithromycin 1g	single dose	orally
Metronidazole	2g	single dose	orally

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). Tenofovir, lamivudine and dolutegravir is available as a fixed dose combination taken once a day which will improve adherence to PEP.

Table 10: HIV PEP regimen for late adolescents and adults

DRUG	DOSAGE	FREQUENCY	ROUTE OF ADMINISTRATION	ALTERNATIVES
Tenofovir/emtricitabine	300mg/200mg	Once a day	Orally	Zidovudine/lamivudine 300mg/150mg twice a day
AND				
*Dolutegravir	300mg/50mg	Once a day	Orally	Atazanavir/ ritonavir 300mg/100mg once a day Lopinavir/ritonavir 400mg/100mg twice a day

*if on rifampicin, increase dosage to 50mg BD;

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

SOURCE	HIV EXPOSED LATE ADOLESCENT/ADULT				
At baseline	At baseline	3 days	2 weeks	6 weeks	3 months
If available, counsel and obtain consent for blood tests	Clinical assessment	Follow-up for blood results	Follow-up clinical appointment		
HIV PCR (<18months) or HIV ELISA (≥18months) [if not known HIV pos]	If Rapid HIV neg HIV ELISA			HIV ELISA	HIV ELISA
Syphilis test (if sexual exposure)	Syphilis test (if sexual exposure)	If exposed syphilis test pos, treat according to STI guideline			Syphilis test (if sexual exposure)
Anti-HCV Ab if occupational exposure	Anti-HCV Ab if occupational exposure			Hep C PCR if source Ab status pos & exposed Ab neg	
		For HBV See section 3.5			
	Creatinine (if using TDF) FBC & diff (if using AZT)	If GFR<60 switch to AZT + do FBC & diff	Creatinine (using TDF) FBC & diff (using AZT)		

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 exposure in Occcupational Healthcare Setting

<table>
<tr><th>SOURCE</th><th colspan="4">HEPATITIS B EXPOSED HEALTH CARE WORKER</th></tr>
<tr><th>At baseline</th><th>At baseline</th><th>Within 7 days (preferably within 72 hours)</th><th>4 weeks</th><th>6 months</th></tr>
<tr><td rowspan="3">Source Hep B positive or status unknown (not available or refuses testing)</td><td>Unvaccinated or incomplete vaccination: HBsAg testing + HepB vaccination</td><td>If HBsAg neg, Give HBIG stat and complete full vaccination series</td><td>Give HBIG</td><td>HBsAg
HBsAb titre</td></tr>
<tr><td rowspan="2">Fully vaccinated:

If Documented HBsAb titre>10IU/ml: patient not at risk.

If HBsAb titre unknown, check Ab titre</td><td>* HBsAb titre <10IU/ml+ HBsAg neg, give HBIG stat</td><td>Give HBIG</td><td>HBsAg
HBsAb titre</td></tr>
<tr><td>HBsAb titre >10IU/ml: patient not at risk</td><td>---------</td><td>--------</td></tr>
<tr><td rowspan="4">Source Hep B negative</td><td>Unvaccinated or incompletely vaccinated: HBsAg testing + HepB vaccination</td><td colspan="2">If HCW HBsAg negative, complete full vaccination series</td><td>HBsAb titre</td></tr>
<tr><td rowspan="2">Fully vaccinated If Documented HBsAb titre>10IU/ml: patient not at risk.

If HBsAb titre unknown, check HBsAb titre</td><td>HBsAb titre >10IU/ml: patient not at risk</td><td>---------</td><td>--------</td></tr>
<tr><td>* HBsAb titre <10IU/ml HBsAg testing</td><td>--------</td><td>--------</td></tr>
</table>

*Manage HCW as a Hepatitis B vaccine non-responder.

Table 13: Management of the Potential Hepatitis B exposed Late Adolescent & Adult Sexual and Inadvertent

SOURCE	HEPATITIS B EXPOSED LATE ADOLESCENT/ADULT			
At baseline	**At baseline**	**Within 7 days (preferably within 72 hours)**	**6 weeks**	**3 months**
Source Hep B status unknown (not available or refuses testing)	Unknown vaccination status **or** not prev vaccinated **or** incomplete vaccination: give Hep B vaccine Check HBsAb titre	HBsAb **titre <10U/ml:** Give HBIG stat schedule	Hep B vaccine	Hep B vaccine
		HBsAb **titre >10IU/ml:** patient not at risk	-------	-------
	Fully vaccinated: check HBsAb titre	HBsAb **titre <10U/ml: Give HBIG stat** Hep B vaccine stat	Hep B vaccine	Hep B vaccine
		HBsAb **titre >10IU/ml:** patient not at risk	-------	-------
Source available and consents for testing: do HBsAg	Unknown vaccination status **or** not prev vaccinated **or** incomplete vaccination: give Hep B vaccine Check HBsAb Titre	**Source HBsAg pos:** HBsAb **titre <10U/ml:** Give HBIG stat	Hep B vaccine	Hep B vaccine
		HBsAb **titre >10IU/ml:** patient not at risk	_____	_____
	Fully vaccinated: check HBsAb titre	* HBsAb **titre <10IU/ml+ source HBsAg pos:** give HBIG stat give Hep B vaccine	Hep B vaccine	Hep B vaccine
		HBsAb **titre <10IU/ml + source HBsAg neg:** give Hep B vaccine	Hep B vaccines	Hep B Vaccine
		HBsAb **titre >10IU/ml:** patient not at risk	-------	-------

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

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

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/m_2/dose orally 12 hourly for 28 days
To calculate the surface area of the baby: BSA (m_2) = (0.05 x WT in kg) + 0,05

NOTE: Serious adverse events have been associated with Kaletra use < 42weeks gestational age. Discuss with paediatric ID specialist, if any concerns.

ANTIRETROVIRAL DRUG DOSING CHART FOR CHILDREN 2019

Department: Health
REPUBLIC OF SOUTH AFRICA

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

	Abacavir (ABC)		Lamivudine (3TC)		Zidovudine (AZT)	Lopinavir/ritonavir (LPV/r)	Lopinavir/ritonavir when on Rifampicin (& for 2 weeks after stopping Rifampicin) Choose only one option:			#Atazanavir (ATV) + Ritonavir (RTV)	Dolutegravir (DTG)	Dolutegravir when on Rifampicin	Efavirenz (EFV)	
Target dose	8 mg/kg/dose **TWICE daily** **OR** **If ≥10kg**: 16 mg/kg/dose **ONCE daily**		4 mg/kg/dose **TWICE daily** **OR** **If ≥10kg:** 8 mg/kg/dose **ONCE daily**		180-240 mg/m²/dose **TWICE daily**	300/75 mg/m²/dose LPV/r **TWICE daily**	**LPV/r std dose + super-boosting with Ritonavir (RTV)** solution **TWICE daily** (≥0.75xLPV dose bd) **OR**	**LPV/r std dose + super-boosting with Ritonavir (RTV)** powder **TWICE daily** (≥0.75xLPV dose bd) **OR**	**Double-dose LPV/r tabs ONLY if able to swallow whole LPV/r tabs TWICE daily**	By weight band **ONCE daily**	By weight band **ONCE daily**	By weight band **TWICE DAILY**	By weight band **ONCE daily**	**Target dose**
Available formulations	Sol. 20 mg/ml Tabs 60 mg (scored, dispersible), 300 mg (not scored), FDC: ABC/3TC 600/300 mg		Sol. 10 mg/ml Tabs 150 mg (scored), FDC: ABC/3TC 600/300 mg		Sol. 10 mg/ml, Tabs 100, 300 mg (not scored), FDC: AZT/3TC 300/150 mg	Sol. 80/20 mg/ml Adult tabs 200/50 mg Paed tabs 100/25 mg **TABLETS MUST BE SWALLOWED WHOLE**	Sol. 80 mg/ml	Oral powder 100 mg/packet	Adult tabs 200/50 mg, Paed tabs 100/25 mg	ATV caps 150, 200 mg; RTV tabs 100 mg **ATV CAPSULES AND RTV TABLETS MUST BE SWALLOWED WHOLE**	Tabs 50mg, FDC: TLD 300/300/50 mg	Tabs 50 mg	Caps/tabs 50,200, 600 mg; FDC: TEE 300/200/600 mg **TABLETS MUST BE SWALLOWED WHOLE**	**Available formulations**
Wt. (kg)	**Consult with a clinician experienced in paediatric ARV prescribing for neonates (<28 days of age) and infants weighing <3kg**													**Wt. (kg)**
3-3.9	2 ml bd		2 ml bd		6 ml bd	*1 ml bd	1 ml bd	100 mg (1 packet) bd	Do not use double-dose LPV/r tabs	Avoid ATV capsules when <15 kg or <6 years	Not currently recommended: dosing & formulations not available	Not currently recommended: dosing & formulations not available	Avoid using when <10 kg or <3 years	**3-3.9**
4-4.9														**4-4.9**
5-5.9	3 ml bd		3 ml bd			*1.5 ml bd	1.5 ml bd							**5-5.9**
6-6.9					9 ml bd									**6-6.9**
7-7.9	4 ml bd		4 ml bd		12 ml bd **OR** 1x100 mg tab bd									**7-7.9**
8-8.9														**8-8.9**
9-9.9														**9-9.9**
10-10.9	Choose only one option: 6 ml bd **OR** 2x60 mg tabs bd	12 ml od **OR** 4x60 mg tabs od	Choose only one option: 6 ml bd	12 ml od		Choose only one option: 2 ml bd **OR** 2x100/25 mg **paed tabs** am + 1x100/25 mg **paed tab** pm	1.5 ml bd		3x100/25 mg paed tabs bd				1x200 mg cap/ tab nocte	**10-10.9**
11-13.9														**11-13.9**
14-14.9	8 ml bd **OR** 2.5x60 mg tabs bd	5x60 mg tabs od **OR** 1x300 mg tab od **OR** 15 ml od	½x150 mg tab bd **OR** 8 ml bd	1x150 mg tab od **OR** 15 ml od	2x100 mg tabs am + 1x100 mg tab pm **OR** 15 ml bd	Choose only one option: 2.5 ml bd **OR** 2x100/25 mg **paed tabs** bd **OR** 1x200/50 mg **adult tab** bd	2 ml bd	200 mg (2 packets) bd	4x100/25 mg paed tabs bd **OR** 2x200/50 mg adult tabs bd				1x200 mg cap/ tab + 2 x 50 mg caps/tabs nocte	**14-14.9**
15-16.9														**15-16.9**
17-19.9														**17-19.9**
20-22.9	10 ml bd **OR** 3x60 mg tabs bd	1x300 mg tab + 1x60 mg tab od	1x150 mg tab bd **OR** 15 ml bd	2x150 mg tab od **OR** 30 ml od	2x100 mg tabs bd **OR** 20 ml bd	Choose only one option: 3 ml bd **OR** 2x100/25 mg **paed tabs** bd **OR** 1x200/50 mg **adult tab** bd	2.5 ml bd			ATV 1x200 mg cap od + RTV 1x100 mg tab od	1x50 mg tab od	1x50 mg tab bd		**20-22.9**
23-24.9		1x300 mg tab + 2x60 mg tabs od												**23-24.9**
25-29.9	1x300 mg tab bd	2x300 mg tabs od **OR** 1xABC/3TC 600/300 mg tab od	1x150 mg tab bd	2x150 mg tabs od **OR** 1xABC/3TC 600/300 mg tab od	1x300 mg tab bd **OR** 1xAZT/3TC 300/150 mg tab bd	Choose only one option: 3.5 ml bd **OR** 3x100/25 mg **paed tabs** bd **OR** δ1x200/50 mg **adult tab** bd + 1x100/25 mg **paed tab** bd	3 ml bd	300 mg (3 packets) bd	6x100/25 mg paed tabs bd **OR** 3x200/50 mg adult tabs bd				2 x 200 mg caps/tabs nocte	**25-29.9**
30-34.9						Choose only one option: 5 ml bd **OR** 4x100/25 mg **paed tabs** bd **OR** 2x200/50 mg **adult tabs** bd	4 ml bd	400 mg (4 packets) bd	8x100/25 mg paed tabs bd **OR** 4x200/50 mg adult tabs bd	ATV 2x150 mg caps od + RTV 1x100 mg tab od	1x50 mg tab od **OR** FDC: TLD if eligible od	1x50 mg tab bd **OR** FDC: TLD if eligible od + 50 mg 12 hours after TLD dose		**30-34.9**
35-39.9														**35-39.9**
≥40													1x600 mg tab nocte **OR** FDC: TEE if eligible od	**≥40**

* Avoid LPV/r solution in any full-term infant <14 days of age and any premature infant <42 weeks post conceptual age (corrected gestational age) or obtain expert advice.
δ Children weighing 25-29.9 kg may also be dosed with LPV/r 200/50 mg adult tabs: 2 tabs am + 1 tab pm.
Atazanavir + ritonavir should not be used in children/adolescents on treatment with Rifampicin, obtain expert advice.
No dosage adjustments are required for children receiving treatment with Efavirenz and Rifampicin.

od = once a day; nocte = at night; bd = twice a day; am = in the morning; pm = in the evening; std = standard; FDC = fixed dose combination; TLD = tenofovir/lamivudine/dolutegravir; TEE = tenofovir/emtricitabine/efavirenz

Weight (kg)	3-5.9	6-13.9	14-24.9	≥25
Cotrimoxazole Dose	2.5 ml od	5 ml or ½ tab	10 ml or 1 tab	2 tabs od
Multivitamin Dose	2.5 ml od	2.5 ml od	5 ml od	10 ml od

REFERENCES

1. World Health Organisation: Guidelines on post-exposure prophylaxis for HIV and use of co-trimoxazole prophylaxis for HIV-related infections among adults, adolescents and children: Recommendations for a public health approach: December 2014 supplement to the 2013 consolidate ARV guidelines. Geneva: World health Organisation; 2014
2. Moorhouse M, Bekker LG, Black V, et al. Guideline on the management of occupational; and non-occupational exposure to the human immunodeficiency virus and recommendations for post-exposure prophylaxis: 2015 Update; S Afr J HIV Med. 2015; 16 (1)
3. National Department of Health (South Africa). Standard Treatment Guidelines and Essential Medicines List for South Africa- Primary Health Care Level, 2019 edition
4. South African Hepatitis C Management Guidelines 2019. The South African Gastroenterology Review April 2010
5. Karoney MJ & Siika AM. Hepatitis C virus (HCV) infection in Africa: a review. Pan African Medical Journal. 2 013;14(44)
6. Mosley JW, Operskalski EA, Tobler LH, et al. Viral and Host Factors in Early Hepatitis C Virus infection. Hepatology 42 (1) 2005
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
8. Department of Health- Western Cape: Circular H77/ 2014- New guideline on post-exposure prophylaxis in adults
9. Department of Health- Western Cape: Circular H123/ 2014- New guideline for paediatric post exposure prophylaxis (PEP) for HIV & Hepatitis B

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