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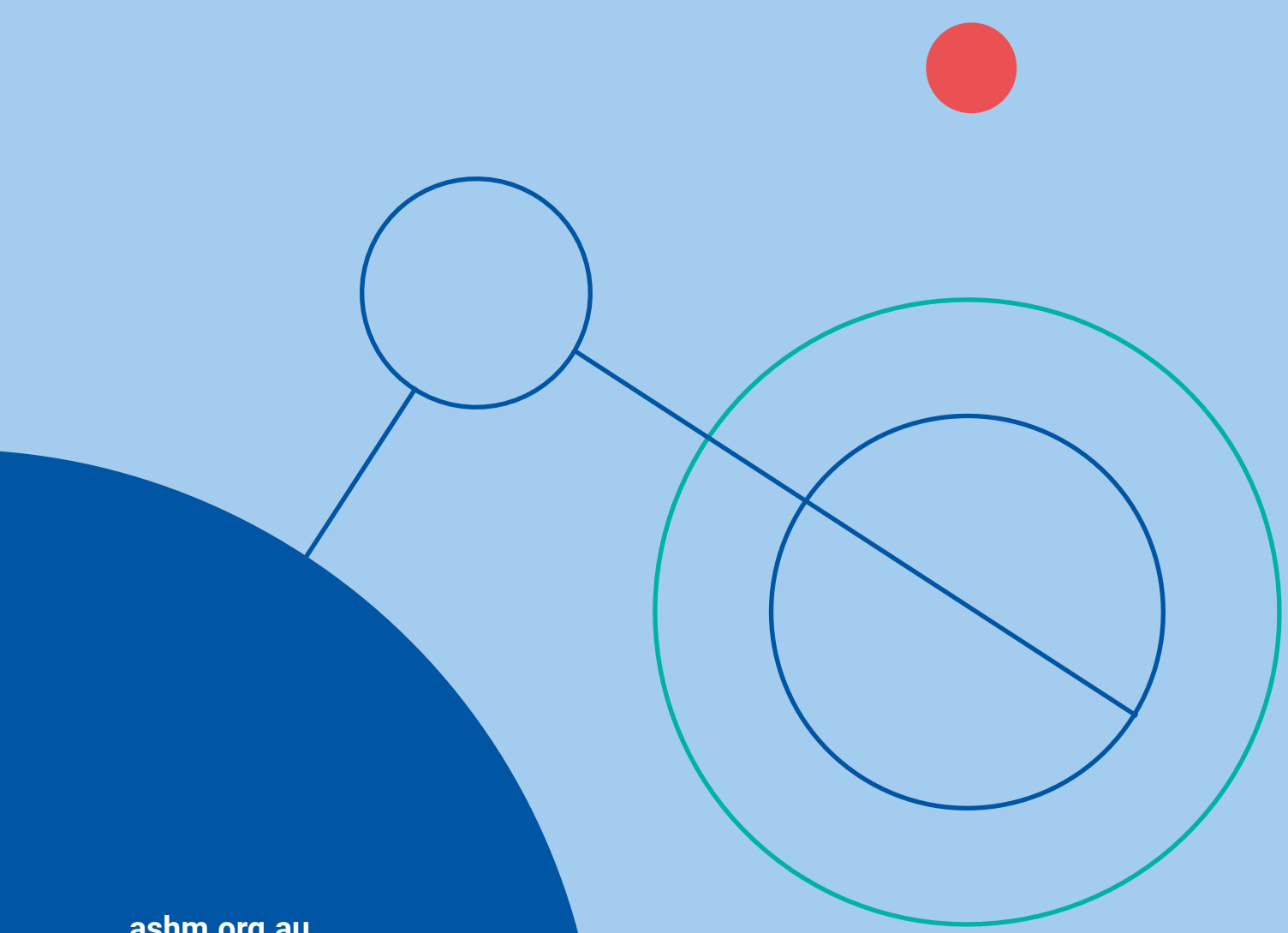
Post-Exposure Prophylaxis after non-occupational and occupational exposure to HIV

Australian National Guidelines (Third edition) 2023



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Glossary

AFP	Alpha fetoprotein
Ag/Ab	antigen/antibody test
AIDS	acquired immunodeficiency syndrome
ART	antiretroviral therapy
ARV	antiretroviral
ASHM	Australasian Society for HIV, Viral Hepatitis and Sexual Health Medicine
BBVs	blood-borne viruses
CK	creatine kinase
eGFR	estimated glomerular filtration rate
EUC	Electrolytes, Urea, Creatinine
Fbc	Full Blood Count
FTC	emtricitabine
GP	general practitioner
HBV	hepatitis B virus
hCG	human chorionic gonadotropin
HCV	hepatitis C virus
HCW	healthcare worker
HIV	human immunodeficiency virus
HPC	high-prevalence country
IAI	insertive anal intercourse
iPrEx	Pre-exposure Prophylaxis Initiative
IVI	insertive vaginal intercourse
LFT	Liver Function Test

MSM	men who have sex with men
PBS	Pharmaceutical Benefits Scheme
urinary PCR	urine protein:creatinine ratio
PEP	post-exposure prophylaxis
PrEP	pre-exposure prophylaxis
PWID	people who inject drugs
RAI	receptive anal intercourse
RVI	receptive vaginal intercourse
s100	a section of the Pharmaceutical Benefits Scheme which provides access to highly specialised drugs
Source individual	a person whose blood or other bodily substance may be a source of HIV exposure
STI	sexually transmissible infection
TAF	tenofovir alafenamide
TD	tenofovir disoproxil
TDF	tenofovir disoproxil fumarate
TGA	Therapeutic Goods Administration
U=U	undetectable equals untransmittable
Viraemic	≥ 200 copies/ml of HIV detected on a blood test
VL	viral load
WB	Western blot assay

New to the guidelines

- The recommended first-line two-drug post-exposure prophylaxis (PEP) regimen is co-formulated tenofovir disoproxil and emtricitabine, with the addition of dolutegravir 50 mg daily OR raltegravir 1200 mg daily for 28 days when three-drug PEP is recommended
- Advice on how to privately prescribe two-drug PEP at a reasonable cost is provided for general practitioners (GPs) who are not authorised to prescribe human immunodeficiency virus (HIV) s100 drugs
- Rilpivirine is no longer recommended for three-drug PEP
- PEP starter packs are discouraged; the full 28-day course should generally be provided at the initial consultation
- Because most Australian people with HIV are on antiretroviral therapy with an undetectable viral load, the prevalence of detectable HIV viraemia in the source population has been used to determine HIV transmission risk where the source HIV status is unknown
- A new source category of men who have sex with men and who inject drugs has been added in recognition of the fhigher proportion of this group who are viraemic than those men who have sex with men who do not inject drugs in Australia
- Removal of the arbitrary, non-evidence-based, numerical thresholds at which PEP was indicated and replacement with advice to guide an individual risk-benefit assessment
- Further guidance on the generally low-risk scenario of human bites is included
- All children younger than 16 years of age who qualify for HIV PEP are recommended to receive combination therapy with three drugs. This strategy differs from the risk-stratified approach used in adults, where two or three drugs may be considered depending on the risk-exposure event.
- For PEP in children, a single fixed drug-combination option is now provided (Biktarvy®) which may improve compliance.

Introduction

This guideline outlines the updated Australian recommendations for human immunodeficiency virus (HIV) post-exposure prophylaxis (PEP) following potential or known exposure to HIV in sexual, occupational, and non-occupational settings. Risk of transmission, the timing of PEP, baseline assessment, preferred regimen and follow-up are outlined, including the use of PEP in the era of the Pharmaceutical Benefits Scheme (PBS)-subsidised HIV pre-exposure prophylaxis (PrEP). This guideline is not intended to be prescriptive or replace specialist advice in the provision of PEP. Every presentation for PEP should be assessed on a case-by-case basis, balancing the potential harms and benefits of treatment.

It is anticipated that the guideline will support development of local policy and procedures, acknowledging the diverse healthcare systems in each Australian jurisdiction. The guideline recommendations generally apply to people aged 16 years or older. For paediatric PEP prescribing guidance, refer to the section: Children younger than 16 years of age. Paediatric PEP assessment and prescription require specialist advice.

Presenting for PEP and disclosing HIV risk activities can be a stressful experience. It is important that clinicians are non-judgemental when assessing patients for PEP. A patient's negative experience when requesting PEP has resulted in failure to re-present for PEP leading to subsequent HIV infections.[1,2]

To be effective, initiation of PEP must occur within 72 hours of exposure to HIV; the earlier the better, and ideally, within 24 hours.

PEP is usually provided free-of-charge via hospital (but not community) pharmacies, emergency departments, and HIV and sexual health clinics. Community pharmacy PEP costs and the ability to dispense PEP immediately will vary in each jurisdiction.

Some sections of the guideline, which are longer or more complex, have a quick reference summary under the heading *Key recommendations*.

This third edition of the National PEP guidelines is:

- revised from the second edition of the National guidelines for post-exposure prophylaxis after non-occupational and occupational exposure to HIV (2016)
- produced by the Australasian Society for HIV, Viral Hepatitis and Sexual Health Medicine (ASHM)
- available as a website resource at:
- www.pep.guidelines.org.au
- also located at: ashm.org.au/resources/post-exposure-prophylaxis-for-hiv-australian-national-guidelines/
- funded by the Commonwealth Department of Health (DoH)
- to be reviewed regularly through ASHM, for advice to the DoH
- supported by a Literature Review available upon request

Important note for general practitioners who have not previously prescribed HIV PEP

Traditionally the medication used for two-drug PEP (tenofovir disoproxil 300 mg co-formulated with emtricitabine 200 mg) has only been available by prescription by emergency departments, sexual health clinics, HIV specialists or other accredited HIV s100 prescribers. The medications used are not Therapeutic Goods Administration (TGA) approved for this indication and are not PBS listed, making the historical cost prohibitive while the drugs remained patent protected.

The availability of generic formulations of tenofovir disoproxil 300 mg and emtricitabine 200 mg, largely used for PrEP, now make it possible for any prescriber to provide a private prescription for this two-drug PEP, available at a reasonable cost (at the time of publication: approximately $40-50 for a one-month course).

Please follow the guidelines outlined in this document to assess if your patient fits the recommendation for two-drug PEP and, if unsure, contact your local PEP telephone support line. If two-drug PEP is indicated, after the baseline tests, you can write a prescription for PrEP to be used as PEP, or alternatively, write a private prescription and arrange follow-up.

As generic formulations are not currently available for the recommended third drugs in PEP, if the patient requires three-drug PEP, please consult your local specialists (Sexual Health, HIV, Infectious Disease or Immunology) for advice.

Local telephone support is available here for PEP prescribing in each Australian jurisdiction.

Background: evidence supporting the efficacy of PEP in preventing HIV acquisition

There are currently no data from randomised controlled trials that provide evidence of the efficacy of PEP in preventing HIV acquisition. Animal data have been particularly informative regarding the importance of starting PEP as early as possible following an exposure event, the 72-hour post-exposure window-period for starting PEP and the 28-day duration of the course.[3-7]

Evidence for the use of PEP has also been extrapolated from data from birth parent-to-child transmission, where PEP given to a neonate significantly reduced their risk of HIV acquisition when the birth parent was not virally suppressed on antiretroviral therapy at delivery[8,9] and following occupational exposures,[10] where the risk of HIV acquisition was reduced overall by 81% in the original case-control study of PEP.[11]

The only clinical effectiveness study of PEP in humans was performed among 200 Brazilian high-risk HIV-negative men who have sex with men (MSM). Seroincidence in the cohort was very similar to that expected in the population. There was no difference in PEP efficacy, likely due to a lack of statistical power. However, HIV seroconversions were only 1/68 in the PEP group compared with 10/132 in the group not receiving PEP.[12]

Although PEP is likely to be highly effective when initiated in a timely manner, taken as prescribed, and thus avoiding further risk exposures, there have been documented HIV seroconversions after PEP after both sexual and occupational exposures.

In Australian[13] and international[14,15] observational studies, seroconversions subsequent to a PEP course following sexual exposures were most commonly associated with ongoing risk behaviours. Other reasons for PEP failure have included delays in PEP initiation,[15,16] poor adherence to PEP[16,17] and already established HIV infection at the time of PEP initiation.[18]

The rare cases of PEP failure following occupational exposures were mostly reported over two decades ago.[11,19-21] Occupational PEP failures have been described due to resistance mutations in the virus of the source[22] and possible early primary HIV infection in an Australian healthcare worker who seroconverted after sustaining a needlestick injury from a viraemic, treatment-experienced source, despite commencing PEP only two hours later.[23] Notably, despite completing the 28-day course, the healthcare worker had stopped PEP for four days in the third week.

Completion of the 28-day PEP course has historically been low, ranging from 48% to 88%.[24] However, less tolerable older PEP regimens, particularly those containing zidovudine,[25,26] have in recent years been replaced by better-tolerated regimens, including the use of tenofovir disoproxil fumarate (TDF) as one component of the PEP backbone with an integrase inhibitor (versus a protease inhibitor) as a third drug, where required.[25,27,28]

Therefore, counselling on the importance of PEP adherence and seeking timely clinical review for PEP regimen modification if side-effects impact adherence remains a cornerstone of PEP management.

Immediate management of a person with known or suspected exposure to HIV

Advice should be given for the following blood and body fluid exposures:

Vaginal

do not douche

Rectal

do not douche

Oral cavity

spit out blood and body fluids and rinse mouth well with water

Eyes

irrigate well with clean water or normal saline

Other mucous membranes

irrigate well with water

Intact skin exposures

wash with soap and water to remove any blood or body fluid

Small skin wounds

Cleanse with an antiseptic, for example, an alcohol-based hand rub

Alcohol is virucidal to HIV, hepatitis B virus (HBV) and hepatitis C virus (HCV). Other antiseptics, such as chloroxylenol and chlorhexidine also inactivate HIV[29]

All wounds

do not squeeze to express blood

When to prescribe PEP

Table 2 details when PEP is indicated and which regimen to use (two-drug versus three-drug) for potential sexual and non-sexual exposures to HIV.

A comprehensive risk assessment should inform the decision to initiate PEP and be made on a case-by-case basis.

Situations with greater uncertainty or complexity (including known or suspected antiretroviral resistance in the source, pregnancy, lactation, or a history of renal impairment or chronic HBV in the patient presenting for PEP) should be discussed as soon as possible with a specialist (e.g. Sexual Health, Infectious Diseases, Immunology, experienced s100 prescriber general practitioner, experienced Nurse Practitioner), but should not delay initiation of PEP.

Robust evidence has proven that HIV is untransmittable by sexual activity when the source is on treatment and has an undetectable viral load,[30-32] now referred to in global health promotion programs as 'undetectable = untransmittable' or U=U[33,34] However, source information is often unavailable in PEP decision-making. If doubt exists, PEP should be initiated as outlined in Table 2 under: *Source known HIV positive. HIV VL unknown or detectable.*

In the occupational setting, an exposure means contact with potentially infectious bodily fluids or tissue that poses a risk of HIV transmission via:

a. percutaneous injury: needlestick or sharps injury contaminated with source's blood or body fluids
b. mucous membrane: splash injury to the eye or non-intact skin
c. deep or multiple bites if source likely to be HIV positive and visible blood in source's mouth

Body fluids thought to be able to transmit HIV are:[35]

- blood
- semen
- pre-seminal fluid (pre-cum)
- vaginal secretions
- anal secretions
- breastmilk
- other body fluids contaminated with visible blood.

Body fluids that may also potentially be infectious are:[35]

- cerebrospinal fluid
- synovial fluid
- pleural fluid
- peritoneal fluid
- pericardial fluid amniotic fluid.

Body fluids not considered infectious unless visibly contaminated with blood:[35]

- faeces
- nasal secretions
- saliva
- gastric secretions
- sputum
- sweat
- tears
- urine
- vomit

There are few data to support U=U in the occupational setting or for people who inject drugs after sharing needles and injecting paraphernalia. Therefore, this guideline continues to support recommending or considering PEP for occupational and other sharps exposures where indicated, as outlined in Table 2.

There is no individual or population-level evidence to inform the threshold at which PEP is indicated. In this 3rd edition, we have included four categories that were informed by the available evidence base:

1. **Recommend three-drug PEP:** the benefits of three-drug PEP are considered to outweigh the risks, and three-drug PEP should be prescribed unless contraindications exist
2. **Recommend two-drug PEP:** the benefits of two-drug PEP are considered to outweigh the risks, and two-drug PEP should be prescribed unless contraindications exist
3. **Consider two-drug PEP:** the benefits of PEP are less clear and should be balanced against the risks, including consideration of co-factors (outlined in footnotes of Table 2), which may increase risk of HIV acquisition
4. **PEP not recommended:** the risk of HIV transmission is considered negligible, and PEP should not be prescribed.

Assessment of the risk of HIV transmission

The risk of HIV transmission through a single exposure is determined by:

- The nature of the exposure with its estimated risk per exposure (Table 1)
- If the source is known to be HIV positive and viraemic (Table 2)
- The risk that the source is HIV positive and viraemic if their status is unknown (Table 2 and Appendix A)
- Additional factors which likely or potentially increase the risk of HIV transmission (outlined in footnotes of Table 2)

1.What is the estimated HIV transmission risk for occupational and non-occupational exposure?

Table 1. Estimated risk of HIV transmission by exposure[22,36-44]

Exposure	Risk
Receptive anal intercourse (RAI) - with ejaculate - with withdrawal	 1:70 1:155
Insertive anal intercourse (IAI) - index uncircumcised - index circumcised	 1:160 1:900
Receptive vaginal intercourse (RVI)	1:1250
Insertive vaginal intercourse (IVI)	1:2500
Fellatio	Negligible
Cunnilingus	Negligible
Mucous membrane/non-intact skin	1:1000
Intact skin exposure	Negligible
Human bite	Negligible
Shared injecting equipment	1:125
Occupational needle stick injury	1:440
Community needle stick from a discarded needle	Negligible*
Blood transfusion	1:1

* Worldwide, there have been no reported cases of HIV acquisition from a discarded needle in a public place.45 Very rare transmission of HBV and HCV have occurred in this situation, so these infections need to be considered.

Note: These figures are estimates derived from cohort and modelling studies, where HIV status, treatment status and HIV viral load of source or sexual partners were either self-reported or unknown. All sexual risk estimations are for condomless sexual contact. It is assumed that a similar risk is incurred when a condom fails.

2. What is the HIV status of the source individual?

When a source individual is known to have HIV, knowledge of their treatment status, last viral load (VL) and history of any antiretroviral resistance can be useful in determining whether PEP is indicated and whether a non-standard PEP regimen is required due to previous detection or suspicion of antiretroviral resistance mutations.[16] When this information is unavailable or the source is not contactable, the guidance for specific exposures in Table 2 under *Source of unknown HIV status* should be followed. Provision of PEP should not be delayed while establishing the source's HIV status, and informed consent should be sought from the source when performing an HIV test. Disclosure of a person's HIV status can be confronting for them, so their confidentiality should be assured as far as possible.

In non-occupational exposure where the source status is unknown, ideally an attempt should be made to contact the source to request an urgent HIV test. This procedure should not delay the commencement of PEP, and again, recommendations for *Source of unknown HIV status* outlined in Table 2 should be followed. In the occupational setting, the source can often be identified and tested for HIV, and, if indicated, HIV VL and a history of antiretroviral failure and resistance obtained. Nonetheless, a healthcare worker exposed to HIV should be commenced on PEP without delay, pending the result(s). If the source HIV antigen/antibody (Ag/Ab) test is negative, PEP may be discontinued or modified in discussion with the healthcare worker, noting that in very early HIV infection in the source a negative HIV test may not be accurate.

The three-drug recommendation for exposures to sources who are MSM and also people who inject drugs (PWID) is based on the calculation that the HIV infection and viraemia rate per 1000 in this population is over 13-fold higher than among MSM who do not inject drugs (Appendix A, Table 9).

Key recommendations

Provision of PEP should not be delayed while establishing the source HIV status. Informed consent should be sought from the source when performing an HIV test.

It is important to note the sensitivity of gathering information on an individual's HIV status and ensure the source individual's privacy and confidentiality.

If the source is contactable and

- discloses they are HIV positive:
  - consent should be requested to seek further information from their treating physician
  - information requested should include source treatment status, last HIV viral load and history and suspicion of any antiretroviral resistance

- is HIV negative and confirmed to be taking HIV PrEP as prescribed:
  - PEP is not indicated

- chooses not to disclose their HIV status or have an HIV test:
  - PEP should be considered based on the risk exposure outlined in Table 2 under *Source of unknown HIV status*

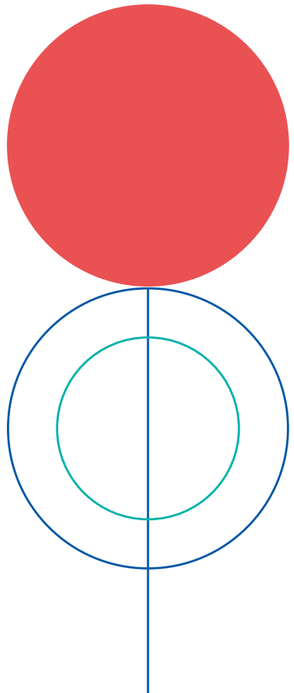
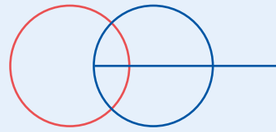


Table 2. Recommendations for PEP

Note: PEP is not recommended for any exposure when source is from a low prevalence population* or, where source is taking HIV pre-exposure prophylaxis (PrEP).



	Source [A] known HIV positive (Refer to tables in Appendix A)		**Source of unknown HIV status** (Refer to tables in Appendix A)	
	HIV VL unknown or detectable	HIV VL undetectable	**Very high** prevalence population [B] (MSM who injects drugs)	**High** prevalence population [B] (MSM or from HPC)
Sexual exposure [C,D]				
Receptive anal sex	3 drug	NR	3 drug	2 drug
Insertive anal sex Uncircumcised	3 drug	NR	3 drug	2 drug
Insertive anal sex Circumcised	3 drug	NR	3 drug	NR
Receptive vaginal sex	3 drug	NR	N/A	NR
Insertive vaginal sex	3 drug	NR	3 drug	NR
Fellatio	NR[#]	NR	NR[#]	NR[#]
Cunnilingus	NR	NR	NR	NR
Semen splash into eye	NR	NR	NR	NR
Occupational and other exposures [E]				
Shared injecting equipment	3 drug	Consider 2 drug	3 drug	2 drug
Occupational needle-stick injury	3 drug	Consider 2 drug	3 drug	NR
Mucosal exposure/splash injury to infectious fluids	3 drug	NR	3 drug	NR
Human bite [F]	NR	NR	NR	NR
Community needle-stick injury	NR	NR	NR	NR

HPC: high-prevalence country (defined as population prevalence above 1%)
MSM: men who have sex with men;
VL: HIV viral load;

* A low prevalence population is defined as a population or specific subgroup of the population with an HIV prevalence below 1% (e.g. men other than MSM, general population of Australia who do not inject drugs).

[#] Consider two-drug PEP only where receptive fellatio WITH ejaculation AND significant visible oral mucosal trauma, or dental and gum disease.

[A] The person whose blood or other bodily substance may be a source of HIV exposure.

[B] 'Very high' and 'high' prevalence populations are those with a significant likelihood that the source is HIV positive and may be viraemic. In Australia, this is principally MSM who inject drugs, MSM who do not inject drugs, people who inject drugs from high-risk countries especially from central Asia and Eastern Europe (see: The Gap Report 2014 – People Who Inject Drugs) and migrants from areas of high HIV prevalence, particularly sub-Saharan Africa (see: AIDSinfo UNAIDS). Recommendations for PEP have been separated in this version of the guidelines given that in Australian populations, the HIV infection and viraemia rates per 1000 population are estimated to be over 13-fold higher among MSM who inject drugs versus MSM who do not inject drugs: currently 156/1000 compared to 12.0/1000 respectively[46-49] (Appendix A, Table 9).

[C] Sexual exposure assumes no condom use or condom failure. Sexual exposures also include those in female and male sex workers in Australia. Rates of HIV infection and viraemia in these people are similar to the populations they belong to.
Note: The rates of HIV infection and viraemia in female sex workers in other parts of the world (for example, Southeast Asia) may be significantly higher, and PEP may be considered.

[D] Co-factors that may influence decision-making following sexual exposures: (a) breaches in the mucosal barrier such as genital ulcer disease and anal or vaginal trauma following sexual assault or first intercourse; (b) multiple episodes of exposure within a short period of time e.g. group sex; (c) a sexually transmissible infection (STI) in either partner.

[E] Co-factors that may influence decision-making following occupational exposures: (a) deep trauma; (b) bolus of blood injected.

[F] PEP should only be considered after a bite if: (a) the biter's saliva or mouth had visible blood, AND (b) there was a high suspicion that the biter was viraemic and not on treatment, AND (c) the bite has resulted in severe, deep or multiple tissue injuries.

Definitions
3 drug: three-drug PEP recommended
2 drug: two-drug PEP recommended
Consider two-drug PEP: the benefits of PEP are less clear and should be balanced against the risks, including consideration of co-factors (see footnotes of Table 1), which may increase risk of HIV acquisition
NR: PEP not recommended
N/A: not applicable

Clinical assessment

The following should be discussed and documented in the patient's medical record:

1. **Information about the source, where available** (as outlined in section: Assessment of the risk of HIV transmission)
2. **Information about the exposure**
   a. Date and time of exposure
   b. Type of exposure, including sites(s) involved, blood or body fluids involved, trauma, first aid measures applied and any contributing factors which may affect the risk assessment (See Table 2)
   c. If the act during which exposure occurred was consensual or non-consensual.
3. **Information about the exposed person**
   a. Most recent HIV test and result
   b. Previous use of PEP, frequency of PEP courses, tolerability of previous PEP courses
   c. Current use of PrEP (see Table 5 for the interface between PEP and PrEP)
   d. Other potential HIV risk exposures in the last three months
   e. Symptoms of a sexually transmissible infection (STI)
   f. Evaluation of current blood-borne viruses (BBVs). If known HBV-positive status, further discussion with a specialist in HBV management should occur as outlined in section: Management of possible exposure to other conditions: Hepatitis B However, this discussion should not delay the commencement of PEP
   g. Current pregnancy and gestation, pregnancy risk, use of contraception (consider emergency contraception) and current lactation
   h. Medical history.

4. HIV – informed consent for testing
HIV testing must be performed before prescribing PEP, see Table 4.

- Informed consent is required for all pathology testing (including HIV) and can be given verbally. Written consent is not required.
- Informed consent must include the clinician providing information and checking the patient understands the test, the reasons for being tested, and the potential implications of not being tested.

For more information on HIV testing, see the National HIV Testing Policy.

Prescribing PEP

Initiation of PEP should occur within 72 hours of exposure to HIV; the earlier the better, and ideally, within 24 hours.

While anecdotal reports suggest potential benefits of emergency starter packs, including clinical review within the first week to ensure completed baseline pathology and to allow modification of inappropriate or poorly tolerated PEP regimens, there is some contradictory evidence when PEP is prescribed in a specialist setting. A systematic review and meta-analysis of outcomes of PEP initiation using starter packs (versus dispensing the full 28-day course) suggested that starter packs do not improve acceptance and may negatively affect completion of PEP, with almost 30% of those provided with a starter pack not returning for follow-up.[25,50]

Pre-packaged PEP starter packs of 5-7 days remain an option for emergency department presentations, especially presentations in rural and remote settings where timely specialist advice may not be available. In rural and remote settings, if the prescriber is uncertain how many PEP drugs should be prescribed (Table 2), it is recommended that the patient ideally be prescribed a three-drug starter pack. If a third recommended drug is not available, a two-drug starter pack may be prescribed. The PEP course can be ceased or modified once a specialist has been consulted. Otherwise, given the high tolerability of current PEP regimens, a complete 28-day supply should be prescribed at first presentation.

At the follow-up consultation, a discussion regarding HIV PrEP should occur (see the National PrEP Guidelines). If exposures are not isolated but ongoing, clinicians should consider offering PrEP immediately. If the person needs a three-drug PEP regimen, the PEP should be prescribed initially and then the individual should be supported to transition to PrEP after 28 days of three-drug PEP. The patient should be referred to an appropriate PrEP prescriber (PrEP prescribers can be located here).

If the source tests negative on a fourth generation laboratory assay and has had no risk exposures for the previous six weeks, then PEP cessation can be discussed with the patient.

Information to provide to patients when initiating PEP

- The lack of definitive evidence for the efficacy of PEP
- With timely initiation, strict medication adherence for 28 days, and avoidance of repeat risk exposures, PEP is likely to provide a high level of protection against HIV acquisition
- Possible mild and short-lived side-effects include nausea, vomiting, diarrhoea, abdominal pain, fatigue and headaches
- Possible drug interactions (see Drug-Drug Interactions with PEP medications)
- The importance of clinical follow-up, including HIV, STI, BBV and pregnancy testing (Table 4)
- The symptoms of HIV seroconversion (fever, sore throat, night sweats, lymphadenopathy, muscular aches and pains, and rash), with advice to urgently access specialist advice if these or any other symptoms occur
- Recommendation to adopt risk-reduction practices (including condoms for vaginal and anal intercourse and sterile injecting paraphernalia) until final HIV testing is complete post PEP completion
- Availability of psychosocial support
- Option for transitioning from PEP directly onto PrEP for those at ongoing risk

Key recommendations

- PEP should be initiated as soon as possible and started no later than 72 hours after the exposure, ideally within 24 hours.
- The complete 28-day course of PEP should generally be prescribed and taken daily.
- A five-seven day PEP starter pack remains an option for emergency department presentations.
- In rural and remote settings and other settings where timely specialist advice is unavailable and the clinician cannot determine if, or how many, PEP drugs to prescribe after reviewing Table 2, patients should ideally be prescribed a three-drug starter pack. Where both third recommended PEP drugs are unavailable, prescribe a two-drug starter pack and seek timely specialist review.
- Referral of patients for an in-person or telephone consultation with a specialist PEP provider or prescribing clinician should occur as soon as possible and at least within four weeks of commencing PEP.

- Patients with ongoing HIV acquisition risk and who are agreeable should either be prescribed PrEP immediately or if 3-drug PEP has been prescribed, transitioned immediately from PEP to PrEP.
- If the source individual tests HIV negative on a fourth generation laboratory assay and has had no risk exposures for six weeks, then consideration can be given to discontinue the PEP course.
- Inform all patients of:
  - lack of definitive evidence for the efficacy of PEP
  - the likelihood that PEP may provide a high level of protection if taken daily for 28 days and initiated promptly
  - possible mild transient side-effects and drug-drug interactions
  - the importance of follow-up (see Table 4)
  - the symptoms of HIV seroconversion and the need for immediate specialist review if they occur
  - risk-reduction practices (condoms, clean injecting equipment) until final HIV test completed
  - availability of psychosocial support
  - transitioning from PEP directly onto PrEP for those at ongoing risk.

1. Recommended PEP regimens

The recommended first-line two-drug regimen is co-formulated tenofovir disoproxil and emtricitabine because it is:

- now available in affordable, generic forms,
- available on private script if not dispensed from hospital or specialist clinic
- well tolerated
- one-tablet daily
- has good anogenital tissue penetration.[51]

There is no direct nor compelling indirect evidence to support the greater efficacy of three- over two-drug regimens; rather, it has been extrapolated from evidence that a higher number of drugs and combination of drug classes has historically achieved better treatment outcomes for HIV. A summary of the evidence for three-drug versus two-drug PEP is provided in Appendix B.

Where a third drug is recommended, either dolutegravir or raltegravir can be used. Comparison of their characteristics is shown in Table 3.

Table 3. Characteristics of dolutegravir versus raltegravir when used as the third agent for HIV PEP[52]

	Dolutegavir	Raltegravir
Cost per 28-day course (Appendix C)	$630	$570
Pill burden	1 X 50 mg taken once per day	2 X 600 mg taken once per day
Shelf-life	5 years	2 years
Anogenital tissue penetration[53]	Generally poorer[a]	Generally better[a]
Pregnancy category	B3	B3
Pregnancy dosage[54]	1 X 50mg taken ONCE per day	1 X 400mg taken TWICE per day
Food restrictions[54]	None	None
Crush/dissolve	Yes	Yes
Adverse events (AEs)[27,28,55-57]	Generally mild	Generally mild
Prevalence of AEs[27,28,55-57]	Similar	Similar

[a] **Note:** reported in-vivo differences in anogenital tissue penetration between drugs have not resulted in any clinically significant differences in studies of treatment as prevention, so it is assumed their efficacy would be comparable for PEP

Figure 1: Recommended regimens for PEP

Key recommendations

- The recommended first-line two-drug regimen is co-formulated tenofovir disoproxil and emtricitabine.
- There is no evidence to support the greater efficacy of three- over two-drug regimens, although we continue to recommend three-drug regimens in certain situations based on evidence that a higher number of drugs or combination of drug classes has historically achieved better treatment outcomes for HIV.
- Where a third drug is recommended, either dolutegravir or raltegravir can be used.
- In renal impairment, dosing adjustment of drugs may be necessary (Figure 1).
- No dose adjustment is necessary for any recommended PEP drugs in hepatic impairment.

2. Antiretroviral agents not generally recommended for PEP

For two-drug PEP, the following is not generally recommended:

Zidovudine. Co-formulated tenofovir disoproxil and emtricitabine is better tolerated.[25]

For three-drug PEP regimens, the following are not generally recommended:

Boosted regimens containing ritonavir or cobicistat
- due to the potential for drug-drug interactions with multiple prescription and over-the-counter medications (refer to Liverpool HIV Drug Interactions checker website)

Boosted protease inhibitors such as ritonavir and lopinavir
- associated with more adverse events
- associated with lower adherence compared with raltegravir as a third PEP drug[55]

Co-formulated tenofovir alafenamide, emtricitabine, cobicistat and elvitegravir (Genvoya®)
- one tablet daily, reported to be well tolerated for PEP with high completion rates[59-61]
- not generally recommended due to drug interactions with cobicistat, and cost (see Drug-Drug Interactions and Appendix C).

Efavirenz
- Poorly tolerated due to neuropsychiatric side-effects[24]

Rilpivirine
- shown to be well tolerated, with high adherence and completion rates for three-drug PEP in combination with tenofovir disoproxil and emtricitabine[62,63]
- combination three-drug single tablet (Eviplera®) now discontinued
- not generally recommended for PEP due to the necessity to take with a meal
- the potential interactions with other prescribed and over-the-counter medications (most notably antacids for gastric reflux which constitute over 10% of all over-the-counter medications dispensed in Australia).[64]

3. Side-effects of recommended PEP medications

In general, tenofovir disoproxil and emtricitabine with both dolutegravir and raltegravir are well tolerated when taken as PEP.[17,24,25,27,28,56,65]

If a patient reports intolerable or serious side-effects from a previous PEP course:
- an alternative PEP regimen should ideally be prescribed
- in emergency (out of hours) situations (unless previously reported side-effects were serious) the available PEP regimen starter pack should be prescribed with urgent specialist follow-up arranged to monitor the PEP regimen.

Proximal renal tubular dysfunction (including Fanconi syndrome) has been reported among people with with HIV on tenofovir disoproxil-containing therapy,[66] but has not been reported among patients prescribed a 28-day PEP course.

Myopathy or severe rhabdomyolysis has been reported, albeit rarely, with use of dolutegravir and raltegravir.[67-70] It is advised that:
- patients on PEP should be monitored for symptoms
- caution should be taken among those with a past history of myopathy, or co-administration with medications such as statins,[71] which may also cause myopathy
- creatine kinase (CK), renal function and urinary myoglobin should be checked in patients who report myalgia.

4. Drug-drug interactions with PEP medications

A comprehensive medication history (including over-the-counter medications, vitamin and mineral supplements and recreational drugs) is essential before initiating PEP.

Potential drug-drug interactions can be checked using the Liverpool HIV Drug Interactions checker website.

Tenofovir disoproxil and emtricitabine
- no significant drug-drug interactions
- caution and consideration of more frequent renal monitoring if co-administered with other potentially nephrotoxic agents, although a short PEP course is unlikely to cause significant issues.

Lamivudine
- no significant drug-drug interactions.

Raltegravir
- few significant drug-drug interactions
- binds to polyvalent cations such as iron, aluminium, magnesium and calcium which results in lower absorption; more pronounced when administered once versus twice daily
- avoid use of metal cation-containing antacids, iron supplements and multivitamins with ONCE DAILY dosing; separate by at least four hours with TWICE DAILY dosing
- metabolised primarily via the gene UGT1A1
- caution with strong inducers of UGT1A1 (e.g. rifampicin, carbamazepine, phenytoin)
- if co-administration is unavoidable, do not use once-daily raltegravir 1200 mg; may use twice-daily raltegravir 400 mg
- dose modification is unnecessary with less potent UGT1A1 inducers (e.g. rifabutin, glucocorticoids, St John's wort, pioglitazone).

Dolutegravir
- few significant drug-drug interactions
- binds to polyvalent cations such as iron, aluminium, magnesium and calcium which results in lower absorption
- avoid use of metal cation containing antacids, iron supplements and multivitamins; if co-administration necessary, dolutegravir should be administered two hours before or six hours after
- metabolised primarily via the gene UGT1A1
- caution with strong inducers of UGT1A1 (e.g. rifampicin, carbamazepine, phenytoin)
- if co-administration is unavoidable, double the dose of dolutegravir (to 50 mg twice daily)
- dolutegravir increases plasma levels of metformin; a dose reduction of metformin and close monitoring of blood glucose are likely to be required;[72] consider using raltegravir instead.

Discuss any concerns about drug interactions or co-morbidities with a specialist pharmacist.
For more information on drug dosing and adverse events, please refer to the Australian Commentary on the US DHHS Guidelines for the use of Antiretroviral Agents in HIV-1 Infected Adults and Adolescents.

5. Laboratory testing for HIV PEP recipients

After a potential exposure to HIV, people should have baseline and follow-up testing for HIV, STIs and other BBVs.

Table 4 sets out the recommended routine testing schedule for those who are prescribed PEP.

Table 4. Laboratory assessment of people who are prescribed PEP

Test	Baseline	Week 4-6 [i]	Week 12
HIV (HIV Ag/Ab test) [a]	X	X	X
Hepatitis B (HBV) (HBsAg, Anti-HBs and Anti-HBc) [b,c]	X		X
Hepatitis C (HCV) antibody ± HCV RNA Qual PCR [d]	X X	 X	X
Chlamydia and **gonorrhoe** [e]	X	X	X
Syphilis serology [f]	X	X	X
EUC (including eGFR) [h]	X	See [h]	
Pregnancy test [g]	X	X	

[a] 4th generation HIV antigen/antibody combination test
[b] HBsAg –HBV surface antigen; Anti-HBs – HBV surface antibody; Anti-HBc – HBV core antibody
[c] See section: Management of possible exposure to other conditions: HBV
[d] HCV RNA Qual PCR – Qualitative HCV RNA polymerase chain reaction (PCR) – reflex testing by laboratories following positive HCV Ab test should occur at baseline only if history of past HCV; consider PCR at 4-6 weeks for all occupational exposures, for medico-legal purposes including sexual assault, or for percutaneous exposures if source HCV status is positive or unknown
[e] See section: Management of possible exposure to other conditions: STIs
[f] Chemiluminescent Microparticle Immunoassay (CMIA) or Enzyme Immunoassay (EIA); if reactive, laboratories generally perform reflex confirmatory testing and Rapid Plasma Reagin (Venereal Disease Research Laboratory) (RPR [VDRL]) staging
[g] Repeat EUC if abnormal at baseline and/or clinically indicated; eGFR should ideally be calculated using the Cockcroft Gault method[73]
[h] Assess for risk of pregnancy, perform BHCG serology and consider emergency contraception
[i] At a week-4 visit, assess for transition directly to HIV PrEP.

Follow-up of indeterminate HIV test results[74,75]

Although rare, indeterminate HIV test results may occur. These results most commonly occur when the fourth generation HIV screening test is reported as reactive, and the definitive diagnostic HIV western blot (WB) is negative or indeterminate. This situation is complex and requires the input of a laboratory with expertise in HIV testing and may require additional or different tests.

Circumstances in which this situation may occur include:

- true biological false-positive result on the fourth generation HIV Ag/Ab test
- early and evolving HIV infection.

When a baseline HIV Ag/Ab result is positive and an HIV WB result is delayed, negative or indeterminate, the clinician should undertake the following:

- assess for HIV seroconversion symptoms most commonly (in order of decreasing prevalence): fever, fatigue, myalgia, skin rash, headache, pharyngitis, cervical adenopathy, arthralgia, night sweats, and diarrhoea[76]
- seek immediate advice from or referral to an HIV specialist to minimise the potential risk of developing antiretroviral resistance if taking two-drug PEP[74]
- add one of the recommended third PEP drugs to two-drug PEP regimens; or continue three-drug PEP regimens
- refer for or provide psychological support
- advise the patient they may be at risk of transmitting HIV and provide advice on actions that can be taken to reduce the risk of onward transmission including condom use and sterile injecting paraphernalia.

Commencing antiretroviral therapy early during acute HIV infection has been found to delay the development of both positive HIV antibodies and HIV WB tests.[77] Therefore, a 28-day course of PEP also has the potential to delay seroconversion. In such situations, it is recommended, first, to repeat the HIV test.

A high HIV VL usually occurs in early HIV infection. Low VL test results (usually below 3000 copies/mL) have been reported among people without HIV infection.[78] Low-level HIV viraemia using quantitative HIV VL RNA has also been observed among people exposed to HIV who were taking PEP and did not acquire HIV, which may represent aborted infection rather than a false-positive test.[79]

If, at two weeks, the HIV Ag/Ab result remains positive, and there is a delay with the HIV WB result, or it is negative or indeterminate, follow the advice of an HIV specialist or HIV specialist laboratory that may recommend testing for HIV pro-viral DNA (Note: this test is not Medicare subsidised nor widely available).

Key recommendations

- After potential exposure to HIV, people should have baseline and follow-up testing for HIV, STIs and other BBVs as outlined in Table 4.
- Where HIV testing results are indeterminate, repeat HIV testing should occur one to two weeks later.
- When baseline HIV Ag/Ab result is positive and the HIV WB result is delayed, negative or indeterminate:
  - assess for HIV seroconversion symptoms
  - seek immediate advice from or referral to an HIV specialist
  - add one recommended third drug to two-drug PEP regimen or continue three-drug PEP regimen
  - provide or refer for psychological support.
- Advise patient they may be at risk of transmitting HIV and provide advice on actions that can be taken to reduce the risk of onward transmission.
- If two-week HIV Ag/Ab result remains positive or the HIV WB result is delayed, negative or indeterminate follow advice of HIV specialist or specialist laboratory who may recommend testing for HIV pro-viral DNA, which is not Medicare subsidised nor widely available.

Management of possible exposure to other conditions

1. Hepatitis B virus (HBV)

All patients presenting for PEP should be assessed for HBV (see Table 4).

HBV-negative individuals

- Individuals with evidence of previous immunity to HBV (HBsAb ≥ 10 IU ever documented following complete vaccination course, or past cleared infection who are immunocompetent) require no further follow-up
- Non-immune people (anti-HBc and HBsAb and negative) require HBV immunisation and follow-up (to six months)
- If the person is non-immune (HBsAb and HBcAb negative) and the source is known to have chronic HBV (HBsAg positive), follow Australian Immunisation Handbook guidelines.

HBV-positive (HBsAg-positive) people

- People known to have or newly diagnosed with HBV infection on baseline testing can be safely commenced on HIV PEP
- Refer to ASHM Decision Making in Hepatitis B tool.
- As soon as possible after chronic HBV is identified, collect additional blood for:
  - HBeAg and anti-HBe
  - HBV DNA (quantitative)
  - Full blood count
  - Liver function test (LFT), international normalised ratio (INR) test and alpha fetoprotein (AFP) tumour marker test
- Refer to a clinician experienced in managing HBV as soon as possible (and before completion of the 28-day HIV PEP course) for a decision about treatment discontinuation and follow-up.

2. Sexually transmissible infections (STIs)

For all people presenting for PEP following a sexual exposure, refer to Table 4.

Although a two-week PEP visit is not generally recommended following sexual exposures, an approximately 5% prevalence of new infections has been reported at two weeks, which were not detected on baseline testing.[80,81]

The following recommendations regarding STI testing are recommended for those presenting for PEP:

- asymptomatic patients should be tested for gonorrhoea and chlamydia at site(s) of sexual exposure
- asymptomatic MSM, should have three-site testing of first pass urine, anorectum and pharynx as per national guidelines
- some trans and gender-diverse patients may be at increased risk of STIs, especially if they have sex with MSM and three-site testing should be offered as per national guidelines
- patients should also be advised to re-present if they experience any anogenital symptoms such as dysuria, abnormal anogenital discharge, anal discomfort (including itch, pain, bleeding) or anogenital ulcers
- if STI symptoms are present at the time of initiation of PEP, further tests, empirical treatment, and follow-up are required.

For further advice, refer to the Australian STI Management Guidelines for Use in Primary Care

3. Hepatitis C virus (HCV)

There is no current evidence to support any mode of PEP in preventing HCV acquisition following exposure to HCV.[82]

People presenting for PEP who may be at risk of HCV, either from prior risk exposures or from the risk exposure which prompted the presentation for HIV PEP, include:

- people who have shared needles and other injecting paraphernalia[83]
- occupational needle-stick or other sharps injury[82]
- MSM[84]
- people who have been sexually assaulted[85]
- those currently or previously incarcerated.[93]

For all such people, refer to Table 4.

Patients potentially at risk of HCV acquisition require baseline and follow-up testing for HCV.

The incubation period for HCV ranges from two weeks to six months, and approximately 80% of people do not exhibit any symptoms. If symptoms develop, they may include fever, fatigue, decreased appetite, nausea, vomiting, abdominal pain, dark urine, pale faeces, joint pain and jaundice. Patients should be informed about these symptoms of acute HCV with advice to seek specialist review if these occur.[83]

Highly effective antiviral treatments are available, and early treatment is recommended if HCV seroconversion is detected.[83]

For further advice, see the National Hepatitis C Guidelines.

4. Pregnancy and lactation

In pregnancy

The risk of HIV acquisition is increased and the viraemia that occurs during HIV seroconversion leads to an increased risk of intrauterine HIV transmission.[86] Timely specialist consultation is recommended, however PEP should not be delayed or withheld in people who are pregnant.

- If three-drug PEP is indicated either dolutegravir 50 mg daily or raltegravir 400 mg twice daily can be used (see Table 3)
- All patients with the potential to conceive presenting for PEP should:
  - have a contraceptive and reproductive history taken to assess risk of pregnancy
  - be offered pregnancy testing (ideally serum beta hCG)
  - be offered emergency contraception if indicated (refer to RACGP Australian Family Physician. Emergency contraception: oral and intrauterine options)[87]
- When indicated, follow-up pregnancy testing should occur three to four weeks post-exposure
- Points to discuss when initiating HIV PEP in a person who could be or is pregnant:
  - risks and benefits of HIV PEP in pregnancy
  - risk of vertical transmission and higher risk of HIV acquisition in pregnancy
  - if indicated, counselling on pregnancy options, or discussion of long-term contraceptive options.

In lactation

Timely specialist consultation is recommended however PEP should not be delayed or withheld in people who are lactating and nursing infants.

Antiretrovirals taken during lactation can enter breast milk and be ingested by the infant. The antiretroviral exposure to the infant varies with several factors, including stage of lactation, dosage taken by the birth parent, pharmacokinetics of drugs and nursing pattern of the infant.[88]

Most published experience with tenofovir disoproxil fumarate is for HIV therapy and prophylaxis. Exposure of the nursing infant to tenofovir is negligible in both HIV-positive and HIV-negative birth parents taking HIV prophylaxis or treatment for HBV infection.[89]

Emtricitabine has been relatively well studied during lactation when used as HIV PrEP. Infants receive only about 0.5% of a therapeutic dose of emtricitabine and with long-term use of emtricitabine by the birth parent, these infants usually have undetectable blood concentrations.[90]

For lamivudine, a meta-analysis reported exposure of the exclusively lactation-fed infant to 10% of the weight-adjusted infant dose.[91]

In a randomised trial of dolutegravir or efavirenz-containing antiretroviral therapy in the third trimester and until two weeks post-partum, lactation feeding led to significant plasma exposures in the infant, despite low plasma dolutegravir concentrations.[92]

For raltegravir, the levels in milk are low and blood levels in a lactation-fed infant were barely detectable, thus there does not appear to be any concern for raltegravir in human milk.[93]

For further information on use of antiretrovirals in pregnancy and lactation refer to the Australian Commentary on the US DHHS Guidelines for the use of Antiretroviral Agents in HIV-1 Infected Adults and Adolescents.

5. Tetanus

Patients who sustain wounds or abrasions should have their tetanus status assessed and be offered immunisation as indicated.

For further information, refer to the Australian Immunisation Handbook.

Specific clinical situations for PEP

1. People who miss a PEP dose

Recommendations on whether and when to discontinue PEP after missed doses is largely empirical, informed by the biological and pharmacological properties of each agent, as well as expert opinion. Advice provided to those who miss dose(s) will depend on both the time since the last dose, as well as the number of missed doses. Maintenance of therapeutic levels of PEP differ due to varying pharmacokinetic properties of each PEP agent[68,94,95]

What to advise patients who miss PEP dose(s):

- Take the next dose as soon as possible, unless it is time for the next dose
- If it is time for next dose, skip the missed dose and return to regular schedule
- Do not take a double dose to make up for a forgotten dose
- if 72 hours or more has elapsed since the last dose, discontinue PEP
- if interruption of PEP (for less than 72 hours since the last missed dose) is related to side-effects, seek urgent specialist advice
- depending on the likelihood of which agent is most likely to be causing specific side-effects, advice may be to stop the third drug and continue two-drug PEP or consider alternative agents.

2. People at risk of HIV acquisition who decline PEP

There may be several reasons a patient may decline PEP, including:

- personal risk assessment not based on current evidence, or clinician recommendation
- concern about medication side-effects
- concern about longer-term toxicity
- lack of awareness about the use and likely efficacy of PEP.

If the exposure is one where PEP is recommended, clinicians should discuss patient concerns and provide information, including:

- the likelihood of HIV acquisition from the exposure (Appendix A)
- the presumed high rate of efficacy against acquiring HIV when taken soon after exposure and as prescribed
- the usually mild and short-lived side-effects with current recommended PEP medications
- the available option of stopping or modifying PEP agents if side-effects do occur
- the current need for lifelong antiretroviral therapy if diagnosed with HIV, in contrast to 28 days of PEP
- the lack of evidence of long-term toxicity associated with a 28-day course of PEP
- the need to consistently use condoms until the patient has a negative follow-up HIV test.

Advice for tor those who still decline PEP following a high-risk exposure:

- the maximum 72-hour window-period for starting a PEP course
- have follow-up HIV testing (see National HIV Testing Policy)
- monitor for HIV seroconversion symptoms: most commonly (in order of decreasing prevalence): fever, fatigue, myalgia, skin rash, headache, pharyngitis, cervical adenopathy, arthralgia, night sweats, and diarrhoea[96]
- return for assessment if any symptoms are present.

Additionally, the clinician should:

- provide contact information for access to medical care if the exposed person decides to pursue PEP
- offer a referral for psychological support
- clearly document the refusal of PEP in the exposed person's medical record.

3. People at negligible risk of HIV transmission who request PEP

This response may relate to anxiety and fear about a negligible exposure or to undisclosed, more serious risk behaviours.

Clinicians should follow this advice:

- the decision to prescribe PEP should be based on the risk of HIV acquisition
- discussing the low risk of the exposure (Appendix A) may reassure people who may have overestimated the risk
- caution should be taken not to dismiss low risk people, particularly those from high-prevalence countries or who may be fearful of stigma and discrimination when disclosing risk
- referral to a counsellor or psychologist if significantly distressed is recommended
- effective HIV prevention methods should be discussed with patients, including:
  - correct use of condoms
  - HIV PrEP (refer to National PrEP Guidelines)
  - undetectable equals untransmittable (U=U), referring to the fact that people who take antiretroviral therapy as prescribed and maintain an undetectable VL cannot sexually transmit HIV (refer to the U=U ASHM Guidance for Healthcare Professionals)

4. People who re-present for PEP after completion of a PEP course

Disproportionately higher rates of HIV acquisition occur among people who have previously used PEP.[13-15]

It is recommended that clinicians follow this guidance:

- patients who present for repeat PEP should be treated in a non-judgemental manner
- each presentation should be assessed as per the risk assessment process described in this guideline (see section: Assessment of the risk of HIV transmission)
- unless the exposure is isolated (e.g. an isolated condom failure, high-risk sexual assault), transitioning immediately onto PrEP after the PEP course should be discussed and recommended for repeat PEP presenters in most circumstances
- consider referral to a counsellor or psychologist for supported decision-making.

5. People who re-present with additional high-risk exposure(s) while taking a PEP course

Two-drug PEP and PrEP consist of the same medication, and a subsequent exposure that occurs while someone is on a current course of PEP is similar to an exposure that occurs while taking PrEP. When used for PrEP, co-formulated tenofovir-disoproxil and emtricitabine is proven to prevent HIV acquisition.[97,98]

From the ANRS Prévenir trial of daily versus on-demand PrEP, extending the treatment for 48 hours after the last exposure is now known to be highly efficacious for the prevention of HIV acquisition via sex in MSM.[99]

The iPrEx PrEP trial enrolled the highest number of transgender women to date and no HIV infections were observed in transgender women whose blood levels were compatible with taking four or more doses of PrEP weekly.[100] However, on stratification, PrEP did not provide a benefit for transgender women compared to the overall reduction in HIV incidence in the active study arm.

Tenofovir levels decline rapidly after cessation in the vagina and neovagina,[51,101,102] so PEP should be continued for seven days after the last high-risk exposure.

There is no empirical evidence to guide clinicians managing people who inject drugs who have a repeat HIV-risk injecting drug use exposure during the PEP course. Therefore, extending the course by a further 28 days from repeat exposures is recommended in this situation.

We recommend clinicians follow this advice:

- cis-gendered MSM with further risk exposure over 48 hours before completion of the 28-day PEP course (day 1–26)
  - do not extend the PEP course.
- cis-gendered MSM with further risk exposure under 48 hours before completion of the 28-day PEP course on either two- or three-drug PEP (day 27-28)
  - take two-drug PEP for a further 48 hours, ensuring two days with no condomless anal sex before ceasing PEP
  - assess for PrEP.
- cis-gendered women, trans and gender diverse people having receptive penile -vaginal/neovaginal/front hole sex (day 21-28)
  - continue prescribed (two- or three-drug) PEP for an additional seven days
  - assess for PrEP.
- people who inject drugs
  - continue prescribed (two- or three-drug) PEP for an additional 28 days
  - assess for PrEP.

6. People who are on PrEP

People taking PrEP as prescribed would generally not be eligible for PEP. However, those at risk of HIV acquisition taking PrEP may present for PEP in the context of suboptimal adherence to PrEP.[103]

Clinical[104] and pharmacokinetic data[101,105,106] provide good evidence of levels of adherence to PrEP required to effectively prevent HIV acquisition via anal and vaginal sex.

There are few data regarding front hole sex in trans men or neovaginal sex in trans women but levels of adherence required can be extrapolated from

protective tissue concentrations in peripheral blood mononuclear cells.[106] Time to protection of tenofovir disoproxil is shortest in lower gastrointestinal tract tissues, followed by peripheral blood mononuclear cells and then female genital tract tissues. Due to persistence of tenofovir and emtricitabine in rectal tissues, levels of PrEP adherence required for protection of HIV acquisition from anal sex are lower than those required for vaginal, front hole or neovaginal sex.

Evaluating the need for PEP involves an assessment of the:

a. site and nature of exposure
b. number and timing of PrEP doses taken in the seven days before the risk exposure
c. correct dosage and timing of on-demand PrEP taken before and after the exposure.

Refer to Table 5 for guidance.

Table 5. PEP in the context of PrEP

Anal sex and other exposures (includes vaginal, frontal or neovaginal sex and percutaneous exposures)		
Risk exposure (refer to: Table 1)	**Adherence to PrEP**	**Recommendations**
Requires 3-drug PEP	**Anal sex:** At least 4 doses in the 7 days immediately before the risk exposure(s) **Other exposures:** At least 6 doses in the 7 days immediately before the risk exposure(s)	Continue PrEP Test for HIV at clinic presentation and 3 months
Requires 3-drug PEP	**Anal sex:** Fewer than 4 doses in the 7 days immediately before the risk exposure(s) OR Incomplete adherence to on-demand PrEP before or after exposure **Other exposures:** Fewer than 6 doses in the 7 days immediately before the risk exposure(s)	Transition to three-drug PEP if last risk exposure is within the 72-hour PEP window Assess context of adherence difficulty, intervene and consider increased frequency of monitoring *If usually taking on-demand PrEP but was not taken as required before or after most recent exposure, consider recommending daily PrEP to improve adherence* ***(NOTE: ON-DEMAND PrEP IS NOT RECOMMENDED FOR PEOPLE HAVING VAGINAL, FRONT HOLE OR NEOVAGINAL SEX)*** Test for HIV at PEP initiation and completion Re-commence PrEP on completion of 28 days of PEP
Requires 2-drug PEP	**Anal sex:** At least 4 doses in the 7 days immediately before the risk exposure(s) **Other exposures:** At least 6 doses in the 7 days immediately before the risk exposure(s)	Continue PrEP Test for HIV at clinic presentation and 3 months
Requires 2-drug PEP	**Anal sex:** Fewer than 4 doses in the 7 days immediately before the risk exposure(s) OR Incomplete adherence to on-demand PrEP before or after exposure **Other exposures:** Fewer than 6 doses in the 7 days immediately before the risk exposure(s)	Immediately commence daily TDF-FTC as PEP for at least 28 days, if last risk exposure is within the 72-hour PEP window; consider recommending ongoing DAILY PrEP to improve adherence Assess context of adherence difficulty, intervene and consider increased frequency of monitoring. *If usually taking on-demand PrEP but was not taken as required before or after most recent exposure, consider recommending daily PrEP to improve adherence* ***(NOTE: ON-DEMAND PrEP NOT RECOMMENDED FOR PEOPLE HAVING VAGINAL, FRONT HOLE OR NEOVAGINAL SEX)*** Test for HIV at PEP initiation and completion Re-commence PrEP on completion of 28 days of PEP

7. People who are transitioning from PEP to PrEP

Many patients who present for PEP have ongoing risk factors for HIV acquisition and so should be recommended to commence PrEP on completion of PEP, either daily or on-demand or event driven.

Note: on-demand and event-driven PrEP is only efficacious for anal sex, and not for vaginal, front hole or neovaginal sex.[100]

Comprehensive information on patient assessment, the prescription of PrEP and follow-up is available in the National PrEP guidelines.

Briefly:

- PrEP can be prescribed by medical and nurse practitioners
- daily PrEP can be commenced immediately following PEP
- at baseline PEP visit:
  - assess for the need for PrEP post-PEP
  - ensure an appointment is booked in the final week of the 28-day PEP course
- HIV serology and other recommended tests should be checked as the patient transitions from PEP to PrEP as per the National PrEP Guidelines.

PEP in specific populations

1. Gender identity and history

Disclosure of gender identity and history is not necessary for the provision of PEP and should always be optional. This is particularly important for patients with transgender experience, non-binary, or fluid gender identities.

Evidence for HIV prevalence and risk among trans and gender-diverse people in Australia is poor due to limitations with data collection and recording of trans and gender-diverse status.[107,108]

Internationally, trans and gender-diverse people are often disproportionally affected by HIV.[109] The focus of the PEP risk assessment needs to be knowledge of the potential HIV risk of the source, and type of exposure, rather than the patient's gender identity.

It is important for clinicians not to make assumptions about a patient's gender identity, the type of sex they have, or the level of risk associated with that sex. As for any person presenting for PEP, the risk assessment should be based on the risk of the source being HIV positive, on treatment and being virally suppressed, the sexual contact which occurred and led to the presentation for PEP and any co-factors which may increase the risk (see Table 2).

Clinical practice tips include:

- clinicians should ask patients their preferred name, pronouns, and preferred names for anatomical sites (e.g. this could be front hole rather than vagina)
- use open-ended questions to allow patients to choose what information they disclose about the types of sexual interaction they engage in
- guidance for people who have receptive vaginal, frontal or neovaginal intercourse who are taking PEP or PrEP is outlined in sections: People who re-present with additional high risk exposure(s) while taking a PEP course, Table 5, and People who are transitioning from PEP to PrEP.
- all recommended PEP regimens are expected to have no significant drug-drug interactions with gender-affirming hormones. Where there is need for an alternative PEP regimen, interactions with antiretroviral therapy and gender-affirming hormones can he found on the Liverpool HIV Drug Interactions checker website.

For further advice, refer to:

- Transhub
- Australian STI Management Guidelines for Use in Primary Care

2. Adult sexual assault (>16 years of age)

Most sexual assault victims who present to medical-forensic services in Australia are women who have experienced vaginal penetration only by the penis of a sole, presumed heterosexual, male.[110] The risk of HIV acquisition in such a situation is estimated to be 1: 3,000,000 (Appendix A: Table 7) and thus would not be an indication for PEP. In such situations, raising the possibility of HIV acquisition may have adverse psychological consequences for the already traumatised victim. A PEP risk assessment following an acute sexual assault should generally not differ from that following the same type of consensual sexual exposure.

Concerns have also been raised that anogenital or oral injuries from a sexual assault may further increase the risk of HIV acquisition. Given the very low risk of acquiring HIV from a receptive penile-vaginal assault, any additional increase in risk from anogenital injuries or other co-factors in a low HIV-prevalence and low viraemic population would not raise the risk estimate to that in which PEP would be considered.

An assessment for PEP should occur in situations where there may be a risk of HIV acquisition from the assault, including penile-anal assaults, penile-vaginal assaults when the assailant is known or suspected to be from a high-prevalence country or an MSM, and assailants known to be HIV positive and known or suspected not to be either on antiretroviral therapy or viraemic.

If a victim raises concerns regarding HIV, they should be informed of the estimated risk (Appendix A). If they are still anxious after being informed of an estimated (low) risk of transmission and still requesting PEP, the clinician should provide a starter pack and arrange specialist follow-up. People with the potential to conceive should be offered emergency contraception (refer to RACGP Australian Family Physician. Emergency contraception: oral and intrauterine options).[87]

People who present to a non-forensic healthcare facility seeking PEP following sexual assault should immediately be offered a referral for a forensic examination if within the forensic timeframe of no more than seven days.[111,112] A healthcare worker with knowledge of the forensic examination should explain the reasons and benefits of a timely forensic assessment to the victim. However, PEP, if indicated, should not be delayed pending referral.

If the victim is under 16 years of age, refer to section: Children younger than 16 years of age.

Key recommendations

- PEP risk assessment following an acute sexual assault should not generally differ from that of a consensual sexual exposure.
- Most victims presenting to Australian sexual assault services have suffered receptive penile-vaginal intercourse by a sole, presumed heterosexual man, the risk of which is estimated to be 1:3,000,000.
- An assessment for PEP should occur in situations where there is likely to be a risk of HIV acquisition from the assault, including:
  - penile-anal assaults
  - penile-vaginal assault when assailant is known or suspected to be from a high-prevalence country or an MSM
  - assailants known to be HIV positive and known or suspected not to be either on antiretroviral therapy or viraemic.
- Consider referral for a forensic examination if less than seven days since the assault, but do not delay initiation of PEP if indicated.
- If victim raises concerns regarding HIV, they should be informed of the estimated risk. If low risk and victim still requests PEP, provide starter pack and arrange specialist follow-up.
- Offer emergency contraception to those with the potential to conceive.

3. Children younger than 16 years of age

Few randomised controlled trials of HIV PEP in children have been conducted.[113] Recommendations are largely informed by data outlined in section: Background: evidence supporting the efficacy of PEP in preventing HIV acquisition, and expert opinion which includes the collective experience of the Australian and New Zealand Paediatric Infectious Diseases group (ANZPID) in using antiretroviral therapy in children with chronic HIV.

All children presenting following a potential HIV exposure should be immediately assessed for PEP, ideally in conjunction with a paediatric infectious diseases specialist. Potential HIV exposures include following alleged sexual assault, human bites and splash injuries. Parents should ideally be involved in discussions regarding the management of their children, especially if the child is younger than 16 years. There may be situations between ages 14 and 16 years where it is appropriate not to engage parents in these discussions, such as if care and protection issues exist or if a qualified physician deems the child to be Gillick competent.

Mandatory notifications to the relevant authority vary between Australian jurisdictions. Further information can be found for each jurisdiction in the Federal Government's Reporting child abuse and neglect information sheet for service providers.

Among minors engaging in consensual HIV risk behaviours presenting for PEP, consideration should be given to the immediate transition to PrEP following completion of the 28-day PEP course (see section: People who are transitioning from PEP to PrEP). Inappropriate administration of PEP in cases where it is not required is costly, increases the risk of medication-related adverse events, and can increase the stress experienced by an acutely traumatised child.

All children younger than 16 years who qualify for HIV PEP are recommended to receive combination therapy with three drugs. This strategy differs from the risk-stratified approach used in adults, where two *or* three drugs may be considered depending on the risk-exposure event. A three-drug regimen is routinely recommended in children because observational data support a higher risk in younger age groups. The heightened risk is postulated to be due to the frequent presence of anogenital trauma, repeated episodes of assault by the same HIV-positive perpetrator, and thinner prepubertal vaginal mucosa and cervical ectopy.[114] As for adults, it is recommended that the full 28-day PEP course be provided at the time of initial presentation.[50]

Key recommendations

- Immediately assess all children presenting following a potential HIV exposure for PEP, ideally in conjunction with a paediatric infectious diseases specialist
  - includes following alleged sexual abuse, human bites and splash injuries.

- Consider whether a forensic examination is indicated, and if so, refer to your local child protection unit in a timely manner for a multidisciplinary assessment. Ensure a mandatory notification has been made if required.
- Recommend that all children younger than 16 years who qualify for HIV PEP receive combination therapy with three drugs at appropriate dosages:
  - the full 28-day PEP course should be provided at the time of initial presentation
  - in children younger than 6 years OR weighing less than 25 kg, the preferred PEP regimen is lamuvudine + zidovudine + dolutegravir OR raltegravir
  - in children older than 6 years, the preferred regimen is:
    - IF weighing more than 35 kg, emtrictabine + tenofovir disoproxil + dolutegravir OR raltegravirIF weighing more than 25 kg , Biktarvy®.
- Consider the risk of hepatitis B (refer to Australian Immunisation Handbook).
- Baseline PEP testing: EUC and LFTs for all children; FBC for children prescribed zidovudine.
- Consider empiric azithromycin and ceftriaxone if STI testing or follow-up is not guaranteed.

4. People living in correctional or detention facilities

People living in correctional or detention facilities who are potentially exposed to HIV have the same right to assessment and PEP provision as the general population. This guideline, including consent, confidentiality and scope of testing, applies equally to this population.

People living in correctional or detention facilities who are potentially exposed to HIV sexually, through injecting drug use, or through other means require assessment for PEP as soon as possible after exposure.

HIV point prevalence in Australian correctional facilities is estimated at below 0.1%,[115] although this figure was obtained from small, potentially biased samples and should be interpreted with caution.

Timely disclosure of exposure is a limiting factor in these circumstances. The provision of risk assessment and PEP in correctional facilities should be available across all jurisdictions.

5. People who commenced PEP overseas

People who started PEP while overseas may have been prescribed antiretroviral drugs which are not recommended in Australia. Frequently, they may not have had all recommended baseline tests as recommended in Table 4.

All baseline tests recommended in this guideline should be completed as soon as possible.

If not originally prescribed, the person should transition to one of the recommended Australian PEP regimens (See Figure 1).

This recommended regimen change may cause anxiety and should be carefully explained, and the patient reassured.

Phone support for clinicians

Refer to the table below for relevant support on PEP prescribing in your jurisdiction.

ACT	**Canberra Sexual Health Centre** T 02 5124 2184 Mon – Fri: 8:30 am – 5 pm
	Canberra Afterhours Locum Medical Service T 1300 422 567 Mon – Fri: 6 pm – 8:30 am *Weekends and Public Holidays, 24 hours*
NSW	**NSW PEP hotline** T 1800 737 669 (1800 PEP NOW) 7 days, 24 hours
NT	**Clinic 34 sexual health services at:** nt.gov.au Refer to your closest clinic Mon – Fri: 8:30am – 4:30pm
QLD	**Contact the public health unit closest to you** Find your closest public health unit at: health.qld.gov.au Times will vary
SA	**South Australian HIV PEP Hotline** T 1800 022 226 7 days, 24 hours
TAS	**Sexual Health Service Tasmania** T 03 6166 2672 Mon – Fri: 8:30 am – 5 pm
	Health Direct T 1800 022 222 Outside of business hours
VIC	**Alfred Health Victorian NPEP Hotline** T 1800 889 887 Mon – Fri: 9 am – 5 pm

Local information on PEP prescribing may be found on the health department websites in each jurisdiction. For information on PrEP, refer to the ASHM National PrEP Guidelines.

Information for patients

Patient information about PEP is available from the Get PEP website.

Local AIDS councils and health departments can also provide further information. Link to AIDS councils are available via Health Equity Matters (HEM .formerly AFAO).

A brief one-page patient summary of PEP is contained here in multiple languages.

Appendix A:

Estimated HIV acquisition risk if source is viraemic, by population group

Table 6. Risk of HIV acquisition by exposure event with an HIV viraemic source: Australian-born heterosexual population who do not inject drugs

	Exposure event								
SOURCE: HIV infection and viraemia rate per 1000	RAI ejaculate	RAI no ejaculate or withdrawal	IAI uncircum-cised	IAI circumcised	RVI	IVI	Shared injecting equipment	Mucous membrane /non intact skin	Occupational needle stick injury
Heterosexual male: 0.35	1:200,000	1:400,000			1:3,000,000			1:2,000,000	1:1,000,000
Heterosexual female: 0.04			1:4,000,000	1:20,000,000		1:60,000,000		1:25,000,000	1:11,000,000

IAI: insertive anal intercourse
IVI: insertive vaginal intercourse
RAI: receptive anal intercourse
RVI: receptive vaginal intercourse

Table 7. Risk of HIV acquisition by exposure event with an HIV viraemic source: non-Australian heterosexual population who do not inject drugs

	Exposure event								
SOURCE: HIV infection and viraemia rate per 1000	RAI ejaculate	RAI no ejaculate or withdrawal	IAI uncircum-cised	IAI circumcised	RVI	IVI	Shared injecting equipment	Mucous membrane /non intact skin	Occupational needle stick injury
Latin American male: 1.22	1:50,000	1:100,000			1:1,000,000			1:800,000	1:300,000
Latin American female: 1.22			1:100,000	1:700,000		1:2,000,000		1:800,000	1:300,000
Sub-Saharan male: 1.0	1:70,000	1:100,000			1:1,000,000			1:1,000,000	1:400,000
Sub-Saharan female: 1.0			1:100,000	1:900,000		1:2,000,000		1:1,000,000	1:400,000
South-East Asian male: 1.05	1:60,000	1:100,000						1:1,000,000	1:400,000
South-East Asian female: 1.05			1:100,000	1:900,000		1:2,000,000		1:1,000,000	1:400,000

IAI: insertive anal intercourse
IVI: insertive vaginal intercourse
RAI: receptive anal intercourse
RVI: receptive vaginal intercourse

Table 8. Risk of HIV acquisition by exposure event with an HIV viraemic source: heterosexual people who inject drugs population

	Exposure event								
SOURCE: HIV infection and viraemia rate per 1000	RAI ejaculate	RAI no ejaculate or withdrawal	IAI uncircum-cised	IAI circumcised	RVI	IVI	Shared injecting equipment	Mucous membrane /non intact skin	Occupational needle stick injury
Male: 2.45	1:20,000	1:60,000			1:500,000		1:50,000	1:400,000	1:170,000
Female: 2.45			1:60,000	1:300,000		1:1,000,000		1:50,000	1:170,000

IAI: insertive anal intercourse
IVI: insertive vaginal intercourse
RAI: receptive anal intercourse
RVI: receptive vaginal intercourse

Table 9. Risk of HIV acquisition by exposure event with an HIV viraemic source: population who do not inject drugs and MSM who inject drugs

	Exposure event								
SOURCE: HIV infection and viraemia rate per 1000	RAI ejaculate	RAI no ejaculate or withdrawal	IAI uncircum-cised	IAI circumcised	RVI	IVI	Shared injecting equipment	Mucous membrane /non intact skin	Occupational needle stick injury
MSM: 11.68	1:5,000	1:10,000	1:13,000	1:70,000	1:100,000			1:80,000	1:30,000
MSM PWID: 156.45	1:400	1:900	1:1,000	1:5,000	1:7,000		1:700	1:6000	1:2,000

MSM: men who have sex with men
PWID: people who inject drugs
RAI: receptive anal intercourse
IAI: insertive anal intercourse
RVI: receptive vaginal intercourse
IVI: insertive vaginal intercourse

- A **viraemic person** is defined as a person with HIV with a viral load of 200 copies/mL or above
- **Ejaculate** is defined as ejaculation inside vagina or anus of the person presenting for PEP
- **Withdrawal** is defined as the withdrawal of penis before ejaculation inside vagina or anus of the person presenting for PEP
- **Uncircumcised** or **circumcised** refers to the circumcision status of the person presenting for PEP.

Note:
The viraemia rate per 1000 for Australian MSM who inject drugs was calculated as follows:

- Estimated MSM population = 132,203[48]
- Estimated MSM population who inject drugs = 6,213[49]
- HIV seroprevalence in MSM PWID is 44.7% = 2,777[49]
- 79% (2193) of MSM PWID who have HIV are virally suppressed = 584 not virally suppressed[49]
- 14% MSM who inject drugs are undiagnosed and therefore viraemic = 388
- Total number of MSM who inject drugs who have HIV infection and are viraemic = 584 (diagnosed but not virally suppressed) + 388 (undiagnosed and therefore viraemic) = 972
- 972 not virally suppressed/total population of 6213 MSM who inject drugs = 972/6213 X 1000 = viraemic rate of 156.44 per 1000 Australian MSM who inject drugs

Appendix B:
Evidence for three-drug versus two-drug PEP regimens

PEP regimens may consist of two or three antiretroviral drugs. There is no direct nor compelling indirect evidence to support the greater efficacy of three- over two-drug regimens; rather, it has been extrapolated from evidence that a higher number of drugs or combination of drug classes have historically achieved better treatment outcomes for HIV. In previous years, three-drug combinations were recommended for the treatment of HIV. However, more recently, dual HIV therapy including an integrase strand transfer inhibitor (INSTI), or non-nucleoside reverse transcriptase inhibitor (NNRTI) has shown non-inferiority to previously recommended three-drug regimens.[116,117]

A systematic review and meta-analysis of animal PEP studies found no difference in efficacy between single nucleoside/nucleotide reverse transcriptase inhibitor (NRTI) or INSTI PEP, dual NRTI PEP or triple NRTI and protease inhibitor (PI) PEP, although several of the included studies were not powered to detect a difference.[7]

For neonatal PEP, a large randomised controlled trail found similar reductions in intrapartum HIV transmission for two drugs (zidovudine + nevirapine) and three drugs (zidovudine, lamivudine and nelfinavir), although both multi-drug regimens further reduced intrapartum HIV transmission by 50% over zidovudine given alone.[9]

There are only two published studies on tenofovir alafenamide used in combination with cobicistat and elvitegravir, both of which reported good tolerability, adherence, and completion rates.[118,119] However, we do not generally recommend elvitegravir for PEP due to its requirement of pharmacokinetic boosting by cobicistat and its higher likelihood of drug-drug interactions than other INSTIs.[54]

Where a third drug is recommended, either dolutegravir or raltegravir can be used. Comparison of their characteristics is shown in Table 3.

Appendix C:
Cost of PEP regimens

Cost of PEP regimens[a]

Regimen	Approximate cost / 28-day course (AUD $)
Tenofovir disoproxil (TD)/emtricitabine (FTC)	40
TD + lamivudine 300 mg	80
TD/FTC with raltegravir[b]	600
TD/FTC with dolutegravir	670
Tenofovir alafenamide (TAF)/FTC	700
TAF/FTC with raltegravir	1270
TAF/FTC with dolutegravir	1330
TAF/FTC/cobicistat/elvitegravir	960

[a] costs correct as at 22 September 2022
[b] cost unchanged irrespective of dosage or whether taken daily or twice daily

Appendix D:
Methods

A multidisciplinary Expert Reference Group (see Acknowledgements) was convened by the Australasian Society for HIV, Viral Hepatitis and Sexual Health Medicine (ASHM) in March 2022. The updated guideline is based on a comprehensive literature review conducted by a trained librarian from an Expert Reference Group member's Institution (Walter McGrath Library, St Vincent's Hospital, Sydney).

The search included dates from January 2015 to January 2022 and for literature in English. Databases searched were: the Cochrane Library, EMBASE (Ovid) and Medline 1996 - (Ovid). Public search engines such as Google were used to locate documents on the management of HIV exposures nationally and internationally. Keywords searched were 'post-exposure prophylaxis' or 'post exposure prophylaxis' or 'PEP' or 'nPEP' or 'oPEP' or 'occupational exposure and HIV' or 'nonoccupational exposure and HIV'.

The formal review process was further informed by searches of the reference lists from publications of interest; grey literature and citations were also reviewed. The grey literature included: conference presentations, project reports, government reports, policies and strategies, and healthcare organisation publications. PEP guidelines and reference lists from the UK (2021),[120] the US Centers for Disease Control (2016),[121] and the World Health Organisation (2014)122 were also reviewed.

Expert Reference Group member, John McAllister, calculated the risk of viraemia in various subpopulations in Australia (Appendix A), on which PEP recommendations for a person following exposure with a source was calculated using available data, including Australian Census data and National HIV surveillance data.[47-50,123-127]

Final recommendations were developed following five meetings and regular email correspondence between Expert Reference Group members on original drafts, comments and recommendations. David Templeton drafted the, Introduction, Background: evidence supporting the efficacy of PEP in preventing HIV acquisition, Evidence for two-drug versus three-drug PEP regimens, Antiretroviral agents not generally recommended for PEP, Side-effects of recommended PEP medications, Drug-drug interactions with PEP medications, Management of possible exposure to other conditions: Pregnancy and lactation and Adult sexual assault (>16 years of age). Charlie McLeod, Brendan McMullen and David Templeton drafted Additional Clinical Management Issues: Children younger than 16 years of age. Anna Pierce drafted Management of possible exposure to other conditions: Hepatitis B and Hepatitis C. Caroline Thng drafted Specific clinical situations for PEP: People who re-present for PEP after completion of a PEP course, People who re-present with additional high-risk exposure(s) while taking a PEP course and People who are on PrEP. Charlotte Bell drafted Clinical assessment and Specific clinical situations for PEP: People at negligible risk of HIV transmission who request PEP. David Lee drafted Management of possible exposure to other conditions: Sexually transmissible infections. Donna Tilley drafted Laboratory testing for HIV PEP recipients, Prescribing PEP, Specific clinical situations for PEP: People at risk of HIV acquisition who decline PEP and People who are transitioning from PEP to PrEP. John McAllister drafted Assessment of the risk of HIV transmission and When to Prescribe PEP. Louise Owen, Sarah Martin and Anna Pierce drafted Important note for general practitioners who have not previously prescribed HIV PEP. David Templeton was responsible for checking the accuracy of supporting references and writing the final version of the revised guideline.

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