HIV POST-EXPOSURE PROPHYLAXIS (PEP)

Key points

1. Only consider PEP if within 72 hours of exposure
2. The first dose of PEP should be given as soon as possible - within 2 hours if possible
3. Assess risk based on type of exposure and what is known about source (consider risk of HBV and HCV also – see relevant appendices)
4. Test source if feasible
5. Discuss with senior doctor in emergency medicine or HIV specialist if unsure how to proceed
6. If PEP indicated:
    a. Counsel
    b. Test blood and urine
    c. Prescribe starter pack
    d. Arrange follow up at ID or GUM clinic before starter pack runs out
    e. Advise no unprotected sex for 3 months
7. Complete the patient management form (appendix 1) – it will serve as a checklist

Introduction

The use of post-exposure prophylaxis (PEP) against HIV infection dates back to the early 1990s, when only limited antiviral treatment for chronic infection was available. Prophylaxis was primarily used after occupational exposures.[1] A case–control study published in 1997 showed that health care workers who received zidovudine after needlestick exposures were 81% less likely to undergo seroconversion to positivity for HIV.[2] Generally, combination therapies are prescribed nowadays, so current HIV PEP may be more effective. However, PEP is not a guarantee of protection.

After exposure to HIV through sexual contact or injecting drug use, antiretroviral therapy may also be administered for prophylaxis against infection. No efficacy data are available for this strategy, but substantial safety and feasibility data have led to its widespread acceptance.[1]

General principles

HIV PEP should only be considered in patients who present within 72 hours with a significant exposure from either a known HIV positive person or a suspected high risk source. The first dose of PEP should be given as soon as possible - within 2 hours if possible.

PEP should not be offered where testing has shown that the source is HIV negative, or if the risk assessment has concluded that HIV infection of the source is unlikely.

If the HIV status of the source is unknown, a careful risk assessment should be carried out. PEP is unlikely to be justified in the majority of such exposures.[3]

Risk assessment

The risk of an individual acquiring HIV following an exposure is dependent upon the risk that the source is HIV-positive where unknown, and the risk of infection following a specific exposure from an HIV-positive individual.[4]

Risk of HIV transmission = risk that source is HIV-positive x risk of exposure*
(*including co-factors such as sexually transmitted infections, high HIV viral load and bleeding).[4]

Table 1 Risk of HIV transmission per exposure from a known HIV-positive individual not on ART
(Adapted from BASHH UK Guideline for use of HIV PEPSE 2015[4] – source references omitted from table)

Type of exposure	Estimated risk of HIV transmission per exposure from a known HIV-positive individual not on ART
Receptive anal intercourse	1 in 90
Receptive anal intercourse with ejaculation	1 in 65
Receptive anal intercourse no ejaculation	1 in 170
Insertive anal intercourse	1 in 666
Insertive anal intercourse not circumcised	1 in 161
Insertive anal intercourse and circumcised	1 in 909
Receptive vaginal intercourse	1 in 1000
Insertive vaginal intercourse	1 in 1,219
Semen splash to eye	<1 in 10,000
Receptive oral sex (giving fellatio)	<1 in 10,000
Insertive oral sex (receiving fellatio)	<1 in 10,000
Blood transfusion (one unit)	1 in 1
Needlestick injury	1 in 333
Sharing injecting equipment (includes chemsex)	1 in 149
Human bite	<1 in 10,000

NB: All sexually related risk probabilities are for unprotected sexual exposure; it is assumed similar risks will exist where condom failure has occurred

The table above is simply a guide. There are a number of factors that may increase the risk of transmission such as high viral load in the source, and intercurrent STIs, e.g. syphilis.

The overall number of HIV cases in the UK diagnosed in HCWs following occupational exposures is five documented cases and 31 probable cases, eight of these probable cases being diagnosed prior to 1997.[5]

Table 2 Estimated risk of HIV transmission by type of exposure where source HIV status is unknown

Type of exposure	Population group (% HIV prevalence)	Risk of HIV transmission - source HIV status unknown	Rounded off estimated risk per exposure (compared with risk if source known HIV+)
Receptive anal sex MSM*	MSM in Ireland (8%)[6]	8/100 x 1/90 = 1/1125	1/1000 (1/90)
Insertive anal sex MSM*	MSM in Ireland (8%)[6]	8/100 x 1/666 = 1/8325 (overall) 8/100 x 1/161 = 1/2012 (not circumcised)	1/8000 (1/666) 1/2000 (1/161)
Receptive oral sex MSM*	MSM in Ireland (8%)[6]	8/100 x 1/10,000 = 1/125,000	1/100,000 (<1/10,000)
Receptive vaginal sex	Heterosexuals in Ireland (0.15%)[7,%]	0.15/100 x 1/1000 = 1/666,666	1/700,000 (1/1000)
NSI[†] from unknown non high risk hospital pt	Heterosexuals in Ireland (0.15%)[7,%]	0.15/100 x 1/333 = 1/222,000	1/200,000 (1/333)
NSI[†] from community source	PWID[‡] in Ireland (5 to10%)[8,9,§,&]	5/100 x 1/333 = 1/6660 to 10/100 x 1/333 = 1/3330	1/7000 to 1/3000 (1/333)

*MSM=men who have sex with men
[%]Of note, the prevalence of diagnosed HIV varies geographically in Ireland with crude prevalence of 2.0/1000 amongst 17-78 year olds in Dublin. (Patients Accessing Ambulatory Care for HIV-infection: Epidemiology and Prevalence Assessment. Tuite H et al. Ir Med J. 2015 Jul-Aug;108(7):199-202).
[†]NSI=needlestick injury
[‡]PWID=people who inject drugs
[§]Personal communications: Dr Shay Keating, Drug Treatment Centre Board and Dr Jean Long, Alcohol and Drug Research Unit, Health Research Board.
[&]Of note there has been an increase in the number of recent HIV infections diagnosed amongst PWID in Dublin (http://www.hpsc.ie/A-Z/HIVSTIs/HIVandAIDS/HIVPeoplewhoinjectdrugs/MainBody,15231,en.html)

It is generally recommended that HIV PEP is only offered when the estimated transmission risk is 1 in 1000 or greater, but all cases are considered on a case-by-case basis.[4] PEP can be considered in those with a risk of between 1 in 1,000 and 1 in 10,000 only in very exceptional circumstances.

Table 3 HIV PEP recommendations by type of exposure and source status
(Adapted from BASHH UK Guideline 2015[4] – modified to take account of higher prevalence of HIV in PWID population in Ireland compared to UK. The last two rows are not contained in the BASHH Guideline table)

	Source HIV status			
	HIV positive		Unknown HIV Status	
	HIV VL unknown / detectable	HIV VL undetectable	From high prevalence country / risk-group*	From low prevalence country / group
Receptive anal sex	Recommend	Not recommended[&] *Provided source has confirmed HIV VL<200c/ml for >6 months*	Recommend	Not recommended
Insertive anal sex	Recommend	Not recommended[&]	Consider[†]	Not recommended
Receptive vaginal sex	Recommend	Not recommended[&]	Consider[†]	Not recommended
Insertive vaginal sex	Consider[%]	Not recommended[&]	Consider[†]	Not recommended
Fellatio with ejaculation [‡]	Not recommended[**]	Not recommended	Not recommended	Not recommended
Fellatio without ejaculation[‡]	Not recommended	Not recommended	Not recommended	Not recommended
Splash of semen into eye	Not recommended	Not recommended	Not recommended	Not recommended
Cunnilingus	Not recommended	Not recommended	Not recommended	Not recommended
Sharing of injecting equipment	Recommend	Not recommended	Consider[†]	Not recommended
Human bite[§]	Consider in very limited circumstances[***] (see Bite algorithm, appendix 6)	Not recommended	Not recommended	Not recommended
Needlestick from a discarded needle in the community			Consider in very limited circumstances[***] (see Needlestick/Sharps algorithm, appendix 3)	Not recommended
Needlestick direct from source[***]	Recommend	Not recommended	Consider[†]	Not recommended
Blood splash to non-intact skin, eye or mouth[***]	Consider	Not recommended	Not recommended	Not recommended

*High prevalence groups within this recommendation are those where there is a significant likelihood of the source individual being HIV-positive. Within Ireland at present, this is likely to be men who have sex with men, and individuals who have immigrated from areas of high HIV prevalence (particularly sub-Saharan Africa) (See map of global HIV prevalence, appendix 26)

[&] Provided source's HIV viral load is undetectable for >/= 6 months. Where there is uncertainty about results or medication adherence, PEP should be offered

[†]More detailed knowledge of local prevalence of HIV within communities may change these recommendations from *consider* to *recommend* in areas/groups of particularly high HIV prevalence

[%]Where source HIV viral load is high (e.g. recent seroconversion) or where there is evidence of genital ulceration

[‡]PEP is not recommended for individuals receiving fellatio, i.e. inserting their penis into another's oral cavity

[**]Consider where recent seroconversion or evidence of oropharyngeal ulceration or trauma.

[§]A bite is assumed to constitute breakage of the skin with passage of blood

[***]Denotes parts of table that differ from BASHH Guideline

Estimating probability that source is HIV positive

In the case of a significant exposure, every effort should be made to ascertain the HIV status of the source.

If the source is known, the exposure should be outlined to the source and consent requested for blood to test for HIV Ag/Ab (and HBsAg, anti-HBc and anti-HCV)(appendices 29 & 30).

- ***The source is considered HIV negative*** if there is a recent HIV negative result within the past 3 months *plus* no clinical indication of a retroviral/ seroconversion-like illness, and source is not considered to be at high risk of infection.
- ***The source is considered HIV positive*** if they have a positive HIV result, or a physician has diagnosed HIV or the source self-reports a diagnosis of HIV. A low or undetectable HIV viral load greatly diminishes but does not completely eliminate the risk of transmission. PEP should be discussed with the treating ID consultant if the source is on anti HIV medication. If not contactable, commence standard PEP.

If the exposure involves a source person with either unknown HIV status or unknown identity it is not possible to give reassurance that the risk of HIV infection is zero. However, it may be possible to estimate risk, e.g. is the source from a high risk group such as PWID, MSM or from a country of high prevalence.

(See appendices 25 & 26 on HIV epidemiology and risk of transmission, and maps of global HIV prevalence and prevalence in PWID).

Counselling

If the risk of HIV is estimated to be high and PEP is being considered, the recipient should receive counselling on the risks and benefits of PEP. The counselling should cover:

- The estimated HIV risk
- The potentially serious adverse reactions to PEP which must be balanced against the risk of HIV infection
- The possible requirement to inform insurer of a positive test result, as is applicable for an existing policy or for a new application
- The benefits of early identification versus the implications of a positive result
- The window period.

Give the recipient an information leaflet about significant exposures (appendix 28).

Decision not to give PEP

If PEP is not to be given, explain why. Arrange for follow-up to be carried out by a GP, occupational health service or STI clinic as appropriate (appendix 35).

Decision to give PEP

If a decision is taken to prescribe PEP, the recipient should be advised:

- How to take the medication
- The importance of adhering to the prescribed medication
- The expected side effects
- That only a starter pack is being prescribed.

Give the recipient a HIV PEP information leaflet (appendix 31)

Baseline investigations of recipient prior to prescribing HIV PEP

Baseline investigations prior to prescribing PEP are outlined in table 4. Blood samples should be labelled "Possible BBV exposure – recipient".

Table 4 Baseline recipient investigations prior to prescribing PEP

Safety bloods	**FBC, U&E, LFTs, Bone profile**	**Must be reviewed prior to discharge home**
Pregnancy test	**Urine strip**	
Urinalysis	**Dipstick for proteinuria**	
HIV testing	HIV Ag/Ab	
Hepatitis	HBsAg, anti-HBc, anti-HCV	
Syphilis	If sexual exposure	

Prescribing HIV PEP

Key points

- Discuss with senior doctor in emergency medicine or infectious diseases if unsure how to proceed.
- Only start PEP within 72 hours of the risk event.
- The first dose of PEP should be given as soon as possible - within 2 hours if possible. It is not necessary to wait for blood results on the recipient (table 4) or the source.
- Ensure baseline safety bloods are within normal limits before discharge. If there is renal impairment or proteinuria, see special prescribing situations below.
- In general, dolutegravir should not be used in early pregnancy or in women of childbearing potential.
- PEP should be discontinued immediately if a HIV test on the source is found to be negative, unless the source is at high risk of recent infection, in which case, continuation of PEP should only be on the explicit advice of a HIV physician.
- It is important to note that antiretrovirals are unlicensed in Ireland for PEP. However, there are no licensed alternatives and they are widely used internationally and accepted as best practice.

Drug-drug Interactions

Overall the drugs chosen for HIV PEP pose a relatively low risk for drug-drug interactions but as with all prescribing, complete a full medication history (including herbal remedies, vitamins/minerals, over the counter medicines and recreational drugs) before prescribing HIV PEP.

Truvada: There are no significant drug-drug interactions with Truvada.

Raltegravir: Advise patient to stop antacids and multivitamins (products containing metal cations e.g. magnesium/ aluminium, which can reduce the absorption of raltegravir) during PEP. Prescribe a PPI/H2 antagonist if required.

Increase the dose of raltegravir to 800mg 12 hourly if co-administration with rifampicin is required. Other cytochrome P450 inducers can be used with the standard dose of raltegravir.

Dolutegravir: Advise patients to take calcium and iron supplements, multivitamins and aluminium and magnesium containing antacids (which reduce the absorption of dolutegravir) at least 2 hours after or 6 hours before Dolutegravir.

Increase the dose of dolutegravir to 50mg 12 hourly if co-administration with rifampicin, phenytoin, phenobarbital, carbamazepine, oxcarbazepine or St. John's Wort is required.

Dolutegravir increases the concentration of metformin and a dose adjustment should be considered when starting and stopping dolutegravir to maintain glycaemic control.

Dolutegravir is contra-indicated with dofetilide due to potential life-threatening toxicity caused by high dofetilide concentrations.

Additional resources include the product insert for the drug, the British National Formularly, www.hiv-druginteractions.org and www.medicines.ie.

Medications - Adults

Standard 3-5 day Starter Pack (ED/SATU):
Truvada® (tenofovir/emtricitabine) one blue tablet daily, plus Isentress® 400mg (raltegravir) 1 pink tablet twice daily, a total of 3 tablets/day.

Truvada®		Isentress®
Once daily 	**PLUS**	Morning 
		Evening 

Truvada® should be taken with food as this improves tenofovir absorption and may reduce nausea. If patients have difficulty in swallowing, Truvada® can be dispersed in approximately 100ml of water or orange juice and taken immediately. Isentress® tablets however, should be swallowed whole and not chewed, broken or crushed (Isentress® SmPC, www.medicines.ie)

All medications must be reviewed by an ID/HIV specialist or a clinician with significant experience in managing HIV PEP before the starter pack runs out. A leaflet explaining the contents of the pack, the possible side effects and brief advice on how to deal with them should be provided to the patient (appendix 31).

Standard Regimen STI/ID clinic:
Truvada® (tenofovir/emtricitabine) one blue tablet daily, plus Isentress® 400mg (raltegravir) 1 pink tablet twice daily, a total of 3 tablets/day.

Or (Note: In general, dolutegravir is not recommended in early pregnancy or in women of childbearing potential)

Truvada® (tenofovir/emtricitabine) one blue tablet daily, plus Tivicay® 50mg (dolutegravir) one yellow tablet once daily, a total of 2 tablets/day. (Dolutegravir with tenofovir disoproxil fumarate-emtricitabine as HIV post-exposure prophylaxis in gay and bisexual men. McAllister J et al. Available at http://programme.aids2016.org/Abstract/Abstract/1203)

Truvada®		Isentress®		Tivicay®
Once daily 	**PLUS**	Morning 	**OR**	Once daily 
		Evening 		

Patients who have been started on the standard starter pack, may continue on this regimen to complete the 4 weeks of treatment or may have the Isentress® switched to Tivicay® when they attend the ID/HIV or STI clinic for follow-up. The decision will be dictated by a number of factors, including potential drug-drug interactions between Tivicay® and other concomitant medications.

Truvada® should be taken with food as this improves tenofovir absorption and may reduce nausea. If patients have difficulty in swallowing, Truvada® can be dispersed in approximately 100ml of water or orange juice and taken immediately. Isentress® tablets, however should be swallowed whole and not chewed, broken or crushed. Tivicay® can be taken with or without food.

Potential Side Effects:
Truvada® and Isentress®: GI side effects are common. Headache is common. Severe side effects are uncommon, but include rash, renal impairment and hepatoxicity. Patients experiencing side effects should contact their doctor. Tivicay®: Headache, dizziness and GI disturbance are reported as very common side effects. Insomnia, abnormal dreams, depression, rash, pruritus, elevations in ALT and CK are reported as common side effects. Patients experiencing side effects should contact their doctor. Further information on dosing and potential side effects and drug-drug interactions can be found in the relevant summary of product characteristics (Truvada® SmPC, Isentress® SmPC and Tivicay® SmPC all available at www.medicines.ie)

Special Prescribing situations

1. Source is known to be HIV positive and on antiretroviral drugs: Discuss with ID/HIV specialist. If not contactable, commence standard starter pack and ensure follow up with ID/HIV specialist urgently.

2. Renal impairment or proteinuria: Give first dose of Truvada® and discuss with ID/HIV specialist regarding the need for dose adjustment. Isentress®can be given. Tivicay® may alter creatinine excretion leading to an increase in serum creatinine but does not cause renal impairment or need to be dose adjusted in renal impairment.

3. Pregnancy: If indicated, commence same PEP. In general, dolutegravir is not recommended in early pregnancy or in women of childbearing potential. Ensure urgent specialist follow up

4. Breastfeeding: Breastfeeding is generally not recommended while taking PEP. If the patient is currently breastfeeding or considering breastfeeding, this should be discussed with an obstetrician or an ID/HIV specialist.

5. Patients unable to tolerate 3-drug PEP: In exceptional circumstances the regimen can be switched to Truvada® alone. This should always be discussed first with an ID/HIV specialist.

Precautions
Advise the recipient to adopt safe sex practices (i.e. use condoms) for 3 months. See section 6.2 of main guidelines regarding precautions.

Follow-up
A recipient started on HIV PEP should be monitored by a clinician specialising in HIV treatment or a clinician with significant experience in managing HIV PEP. An urgent referral should be made to ensure that this visit takes place before the starter pack runs out (appendix 34). Note: Starter packs are not used in paediatrics. The doctor should complete the patient management form (appendix 1). This will serve as a referral form for the specialist clinic. Follow-up arrangements should be recorded in the patient's notes.

Medications - Children

(Adapted from Post Exposure Prophylaxis (PEP) Guidelines for children and adolescents potentially exposed to HIV. Our lady's Children's Hospital, Crumlin, February 2016)
The risk assessment should be as per adults. The treatment is outlined below.
Counsel and advise the family, and provide information leaflets outlining side effects of medication.

1. Young people from 10 years of age and over 35Kg who are able to swallow tablets should receive PEP as for adults: Raltegravir 400mg (Isentress®) 1 tablet twice daily + Truvada® 1 tablet daily.

2. Young people 10 years of age or older with renal insufficiency should not receive Tenofovir and should therefore be given : Raltegravir 400mg (Isentress®) 1 tablet twice daily + fixed dose combination of Lamivudine 150mg/Zidovudine 300mg (Combivir®) 1 tablet twice daily.

3. Tenofovir TDF should be avoided in the context of renal impairment at any age if at all possible (seek expert advice).

4. Although Raltegravir is currently licensed in children younger than 6 years and weighing>11Kg, experience of use in children in this age group is limited. Kaletra® remains an alternative in children under 6 years of age with chewable Raltegravir as first line. (seek expert advice).

Regimens
Accurate weight and height measurements should be used to calculate doses.
Surface area calculation:

$$BSA(m^2) = \sqrt{\frac{weight\ (kg) \times height\ (cm)}{3600}}$$

Paediatric starter packs are not in use and not recommended as drugs are dispensed according to the individual's body surface area. It is recommended that all centres with paediatric units should have paediatric HIV PEP preparations in stock or have formal arrangements in place whereby the drugs can be promptly sourced from another centre.

Table 5 Suggested PEP regimens[10] (see dosing Table 2 below)

Age (years)	Preferred PEP	Alternative PEP	Notes
10+	Raltegravir (Isentress®) + Truvada® (emtrictabine 200mg / tenofovir disoproxil fumarate (TDF) 300mg NB if under 35KG, we would recommend age and weight appropriate dosing of raltegravir + TDF + Lamivudine	1. Raltegravir (Isentress®) + Lamividune 150mg/ Zidovudine 300mg (Combivir®) combined tablet	As per adult guideline with an alternative for Tenofovir in those with renal insufficiency
6-9	Raltegravir (Isentress®) + Lamivudine (Epivir®) + Zidovudine (Retrovir®)	1. Kaletra® (lopinavir/Ritonavir) + Lamivudine (Epivir®) + Zidovudine (Retrovir®) 2. Raltegravir (Isentress®) or Kaletra® (Lopinavir/Ritonavir) + Tenofovir TDF (Viread®) + Lamivudine (Epivir®)	Adult dose of Raltegravir for children >25Kg. Note the chewable formulation of raltegravir is not bioequivalent to the tablets (See table of preparations available below)
2- <6	Raltegravir (Isentress®) + Lamivudine (Epivir®) + Zidovudine (Retrovir®)	1. Kaletra® (Lopinavir/Ritonavir) + Lamivudine (Epivir®) + Zidovudine (Retrovir®) 2. Raltegravir (Isentress®) or Kaletra® (Lopinavir/Ritonavir) + Tenofovir TDF + Lamivudine (Epivir®)	Use Raltegravir (Isentress® chewable tablets) when available
<2	Kaletra® (Lopinavir/Ritonavir) + Lamivudine (Epivir®) + Zidovudine (Retrovir®)		Liquid formulations

Table 6: HIV PEP Drugs, Doses and Side Effects[10]

Dosing is correct as per date of guideline publication but for updated dosing see CHIVA ART dosing table http://www.chiva.org.uk/

Generally, medicines are well tolerated with the exception of minor, initial gastrointestinal disturbance and possible headache.

Drug	Formulation	Dose	Potential Side Effects*
Raltegravir (RAL) (Isentress®) Note: Formulations are not bioequivalent; use chewable tablets for children 11-25Kg and children >25Kg who cannot swallow tablets	**Tablet:** 400mg **Chewable Tablet:** 25mg, 100mg (can be chewed or swallowed)	**Tablet:** From 25Kg 400mg BD **Chewable Tablet:** 11-14Kg: 75mg BD 14-20Kg: 100mg BD 20-28Kg: 150mg BD 28-40Kg: 200mg BD >40Kg: 300mg BD Take with or without food.	Rash, nausea, hepatitis
Zidovudine (AZT, ZDV) (Retrovir®)	**Capsule:**100mg **Liquid:**10mg/mL	**Capsule or liquid:** 180mg/m^2/Dose BD to a maximum dose of 250mg BD (max. 300mg BD when used in combination products) Preferably on an empty stomach. If nausea occurs can be taken with food.	Granulocytopenia and/or anaemia, nausea, headache, myopathy, hepatitis, neuropathy
Lamivudine (3TC) (Epivir®)	**Tablet:** 150mg **Liquid:**10mg/mL	**Tablet or Liquid:** 4mg/Kg/dose BD to a maximum of 150mg BD Take with or without food.	Peripheral neuropathy, nausea, diarrhoea, headache
Truvada® **Do not use if known renal impairment**	**Combined tablet:** (Tenofovir TDF 300mg / Emtricitabine FTC 200mg)	**Combined tablet:** >35Kg: 1 tablet daily	Headache nausea, vomiting, diarrhoea, renal tubular, dysfunction bone demineralization
Tenofovir TDF (Viread®) Note: 300mg Tenofovir disoproxil fumarate (TDF) = 245mg Tenofovir disoproxil (TD) All doses expressed as TDF	**Tablet TDF (TD)** 300mg (245mg) **For paediatric use:** **the tablet: TDF (TD) 300mg (245mg) disperses in 10mL water within 5 minutes**	**Tablet:** >35Kg: 1 tablet daily 2-12 years: 8mg (6.5mg)/Kg once daily 10-12Kg: 80mg(66mg)= 2.7mL 12-14Kg: 100mg(83mg)= 3.4mL 14-17Kg:120mg(99mg)= 4mL	Do not use if known renal impairment
Continued: Tenofovir TDF (Viread®) Note: 300mg Tenofovir disoproxil fumarate = 245mg Tenofovir disoproxil (TD) All does expressed as TDF(TD)	**Tablet: TDF (TD)** 300mg (245mg) **For paediatric use:** **the tablet: TDF (TD) 300mg (245mg) disperses in 10mL water within 5 minutes**	Continued: 17-19Kg:140mg(116mg)= 4.7mL 19-22Kg:160mg(132mg)= 5.4mL 22-24Kg: 180mg(149mg)= 6.1mL 24-27Kg: 200mg(165mg)= 6.7mL 27-29Kg: 220mg(182mg)= 7.4mL 29-32Kg: 240mg(198mg)=8.1mL 32-34Kg: 260mg(215mg)= 8.8mL 34-35Kg: 280mg(231mg)= 9.4mL ≥35Kg: 300mg(245mg)= 10mL The dose can be diluted in orange juice to improve taste	Do not use if known renal impairment
Combivir®	**Combined tablet:** Lamivudine 150mg (3TC) / Zidovudine (ZDV) 300mg	**Combined tablet:** >30Kg: 1 tablet twice daily	As for ZDV and 3TC
Kaletra® 2 adult tablets = 4 paediatric tablets = 5mL of liquid **All doses are based on Lopinavir (LPV)**	**Liquid:** Lopinavir (LPV) 80mg/ Ritonavir (RTV) 20mg per mL **Paediatric tablet:** (pale yellow) Lopinavir (LPV)100mg/ Ritonavir (RTV) 25mg **Adult tablet:** (yellow) Lopinavir (LPV)200mg/ Ritonavir (RTV) 50mg	**Liquid:** 300mg/m^2/dose BD Dose in mls = (300 x **BSA**) / 80 **Paediatric tablet:** 15-25Kg: 2 tablets BD 25-35Kg: 3 Tablets BD >35Kg: 4 Tablets BD **Adult tablet:** >35Kg: 2 Tablets BD	Diarrhoea, abdominal pain, nausea, vomiting, headache

*This list of side effects is not exhaustive – refer to product datasheet for detailed information on side effects, interactions with other medicines and other cautions for use.

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