



HIV – What You Need To Know

a basic clinical guide

for non-specialist healthcare professionals & medical students

JUSTRI is a UK-based not-for-profit organisation, dedicated to providing resources and education for those with and working with HIV, viral hepatitis and tuberculosis. See our work at www.justri.org

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Additional information related to HIV is available at:
www.aidsmap.com | www.bhiva.org | www.eacsociety.org | www.hiv-druginteractions.org |
www.i-base.info | www.natap.org

Written and compiled by Dr Mike Youle

Additional contributions by Dr Tristan Barber, Dr Sanjay Bhagani, Dr Fiona Burns, Abhishek Katiyar, Dr Tabitha Mahungu and Leonie Swaden

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Design by Geoff Sheridan, www.premonition.co.uk

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SECTION ONE

Introduction

Introduction

Welcome to the JUSTRI guide for healthcare professionals (HCPs) and medical students, which gives a simple overview of what you need to know when you see someone with HIV in your specific clinical practice.

In the past, HIV disease leading to acquired immunodeficiency syndrome (AIDS) and death caused serious morbidity and mortality, with the vast majority diagnosed in the 1980's and 90's dying within a few years. However, effective antiretroviral therapy (ART), which effectively controls HIV infection, and other medical advances have changed all that.

Life expectancy for people living with HIV (PLHIV) has improved significantly, and in many settings nears normal. Now, the focus has shifted, in monitoring, treatment and care, to accommodate the overlap between HIV-related conditions and illness due to other causes. The basic message is that HIV disease is no longer complex and fatal but in most cases relatively simple to manage.

The aim of this guide is to provide practical advice for HCPs treating PLHIV for other conditions. It has been written with input by HCPs from HIV and other disciplines as well as those living with this chronic infection.

We hope that this guide will help you to have a clearer understanding of the issues, and that by sharing the information with your professional colleagues the quality of care for PLHIV will improve in all settings.

How to Use This Guide

The guide is divided into three sections. Following an introduction to the main issues, the second part covers the basics of HIV and provides information needed for anyone seeing PLHIV, but who may have limited knowledge of clinical HIV and its treatment. The third highlights the need to consider HIV as a potential diagnosis in every patient and discusses how to facilitate testing and rapid referral to specialist HIV services.

HIV is a recent and dynamic field of constantly evolving information, so we have not referenced specific scientific findings in the text. However, there are many online sources that provide a wealth of information about advances in the fields. There are many presentations, free to access, on all aspects of HIV at our on-line slide portal, www.justri.slide.com. As with all printed information please check for up-dates to the guide, especially if reading this after December 2022; the latest version will always be available at www.justri.org.

We welcome comments, corrections and ideas or suggestions for inclusion in future editions; please send them to home@justri.org.

HIV and Stigma

From the outset of the AIDS epidemic HIV has been highly stigmatised in most communities. Initially fuelled by fear of contagion and in a large part due to those who were first affected such as gay men, injecting drug users, immigrants, and other marginalised groups.

However, stigma has remained high even though effective treatment is available and transmission is known to be low in those on therapy. A sensationalist, moralistic tone was initially widespread in the press, whilst fear and loathing is still promulgated by many religious and conservative sections of many societies. Uniquely, HIV remains today, 30 years later, a highly stigmatised infection in many countries and communities. This is not a condition you easily openly discuss and may very well keep it hidden from family, partners, and even non-HIV healthcare professionals.

Positive Voices, a 2017 survey of 4,400 people, representing about 5 per cent of all PLHIV in England and Wales, showed the experience of stigma is clearly still a reality for many with HIV, even within the UK health service. One in twelve (8 per cent) felt they had been treated differently to other patients, and one in twenty (5 per cent) felt they had been refused health care or had a treatment or medical procedure delayed. Perceptions of stigma can also be damaging. One in six (16 per cent) reported feeling worried they would be treated differently to other patients because of their HIV, while one in ten (10 per cent) had avoided health care when they needed it.

‘At the GP, gastroenterologist, and endoscopy department, they seem to blame HIV for anything, even if the HIV doctor excluded it when I had other medical issues.’

Many examples of discrimination experienced by the survey participants often reveal evidence of poor understanding and communication from staff rather than intentional or malicious discrimination.

‘When I went for any operations... each time I’ve been placed at the end of the list... to me there should be no difference how a theatre is cleaned whether a patient is HIV positive, Hep C positive or a perfectly healthy patient with no infections.’

One in four people with HIV surveyed felt their GP did not know enough about their condition. A lack of expertise is understandable in a setting where few people with HIV are seen, but the majority of patients taking HIV medication should expect other health care issues to be managed in primary care, or directed to the appropriate specialist service, rather than being wrongly attributed to their HIV as the default cause.

'My GP asks me if I take illegal drugs, have multiple partners etc, even after me saying I have a boyfriend of 10 years, am monogamous and I don't even drink alcohol!'

Every year, I am still shocked but not surprised to find patients recounting clear examples of HIV discrimination

in their clinical care, even in my own University teaching hospital. This serves as a reminder that all health care professionals are not immune to stigmatising individuals, often unintentionally, and for us all to confront it when it arises through information and education.

HIV in the 21st Century

Here are some important points:

1. HIV is a totally treatable infection in most people
2. An individual with an undetectable HIV viral load (usually <50 copies/mL) cannot transmit HIV sexually (undetectable is untransmittable; U=U)
3. In the UK, 95% of people diagnosed with HIV have an undetectable viral load on treatment
4. The risk of occupational transmission of HIV is extremely low
5. If you are exposed to HIV at work (e.g. by a needlestick injury) you should contact occupational health immediately to see if post exposure prophylaxis (PEP) is indicated
6. Patients with HIV should receive exactly the same level of care and respect as those without the infection
7. Pregnant women with HIV have a negligible risk of transmitting HIV to their babies, if supported and guidelines are followed
8. Do not assume that all medical conditions are related to HIV, in treated individuals common things are common, so do not refer to an HIV physician as a default but consider other specialist referral alongside input from the HIV team
9. Discussion with the patients' HIV team (nursing, medical, pharmacy, wider multidisciplinary team) can be useful, and they are usually easy to contact
10. Adverse drug-drug interactions with some HIV and other drugs are a major problem, but simple to avoid. It is really important to check all new medications before you prescribe them at www.hiv-druginteractions.org

A wide range of clinical guidelines and up-to-date information on all aspects of HIV treatment and care can be accessed at the British HIV Association (BHIVA), www.bhiva.org and European AIDS Clinical Society, www.eacsociety.org, websites.

SECTION TWO

HIV for Non-Specialists



Basics of HIV Infection

HIV first entered humans around 1920 in central Africa, as a cross species infection from certain primates. There are two distinct viruses, HIV-1 which accounts for over 95% of infections and HIV-2, initially found in west Africa, which represented a second cross species event and seems to be less pathogenic.

The AIDS epidemic of clinical disease, marked by severe immune suppression, opportunistic infections and tumours, rapidly leading to death, began in the mid 1970's. The first clinical cases of Pneumocystis carinii pneumonia (PCP) and Kaposi's sarcoma (KS) were reported in 1981 and two years later HIV-1 was identified. HIV antibody serology tests were developed shortly thereafter, whilst measurement of

actual viral load, using HIV PCR, became possible several years later.

The hallmark of HIV infection is CD4+ cell lymphopenia and measurement of CD4 cell counts remained the mainstay of monitoring until viral load tests became available in the mid 1990's.

These two measures are still the essential tools to assess severity of disease and burden of infection.

The three stages of HIV infection

1 Acute HIV Infection (Seroconversion)

Seroconversion illness generally develops within 2 to 4 weeks after HIV infection. During this period, some individuals have flu-like symptoms, such as fever, headache and sore throat, whilst others are asymptomatic. Some may develop swollen lymph nodes and /or a rash; a small proportion exhibit neurological conditions, which may be severe. At this stage, blood HIV levels are very high, greatly increasing the risk of onward HIV transmission.



Seroconversion rash

2 Chronic HIV Infection

During this phase individuals may have no HIV-related symptoms, but until treated most remain infectious.

Without ART, chronic HIV disease usually advances to AIDS in around 5-10 years, although in some people progression is faster. As immunity declines, common HIV related conditions, such as oral candida or hairy leucoplakia, herpes zoster, folliculitis and persistent fungal infections may develop and these conditions should prompt an HIV test in all individuals.



Folliculitis



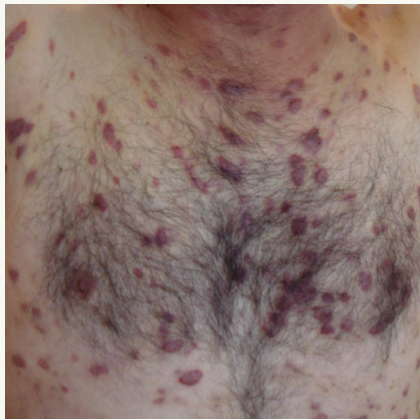
Oral hairy leukoplakia



Herpes zoster

3 AIDS

AIDS, the most severe stage of HIV infection, is diagnosed below a CD4 count of 200 cells/mm³ or when certain opportunistic infections and tumours occur. Without ART, people with AIDS survive about 3 years.



Kaposi's sarcoma



CMV retinitis

After HIV infection, an initial spike of viraemia triggers a partially effective immune response, which then wanes over time at a rate dependent on the level (or set-point) of virus during the latent (chronic) period [Figure 1].

It is a simple balance between the level of virus and the speed of CD4 cell decline. If the HIV RNA is <10,000 copies/mL the progression of disease is slow, whilst if >100,000 copies/mL progression is much faster.

CD4 cell counts correlate, although somewhat imprecisely, with HIV-related clinical disease. Between 500 and 200 cells/mm³ these events become commoner and more severe, with serious AIDS-related infections and tumours predominantly occurring

once the count falls below 200 cells/mm³, rapidly increasing in frequency and severity as CD4 cell levels decline to zero, associated with a marked rise in mortality.

However, if successful suppressive ART is given and adhered to by the individual, the viral load drops to undetectable, the CD4 count rises, clinical remission occurs and to all intents and purposes the patient is no longer infectious.

The next section deals with HIV therapy, how it is used, the important side effects of each drug and potential drug-drug interactions with other medicines, which may be severe and lead to failure of ART or affect the efficacy of the co-medication.

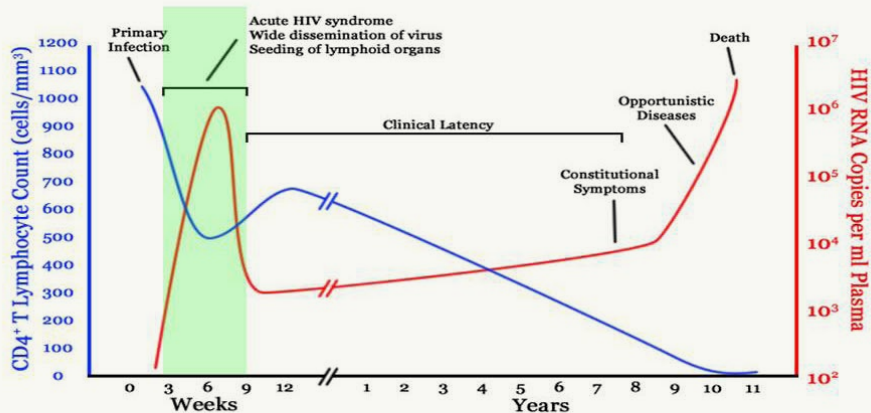


Figure 1. Stages of HIV infection

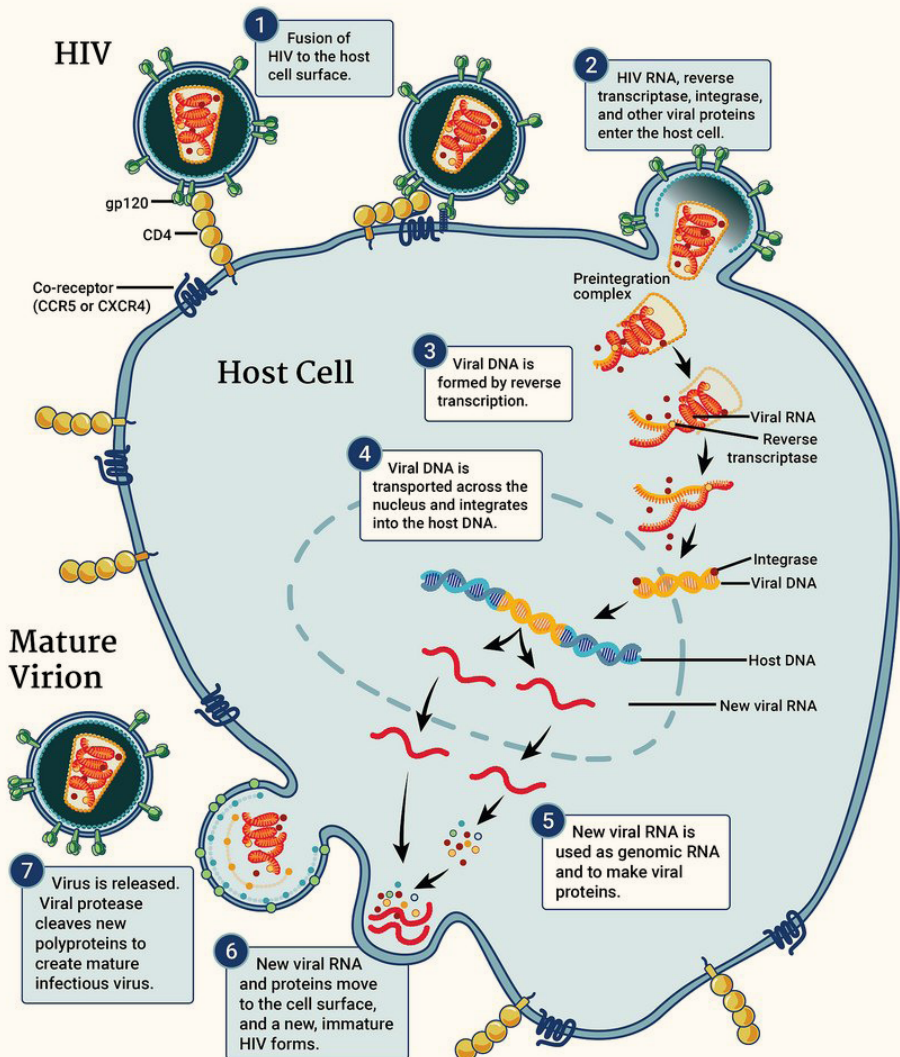


Figure 2. Life cycle of HIV within a cell

HIV Treatment - a Simple Guide

Since the first antiretroviral - zidovudine (AZT) - was given in 1986, the HIV therapy landscape has been transformed by an ever-increasing range of agents.

There are now 5 classes of drugs, acting at various stages of the HIV life cycle in the cell [Figure 2]; they include around twenty-five currently used agents, many combined into single tablet formulations. Most regimens consist of three drug combinations, however, two drug regimens are increasingly common, while some patients with HIV drug resistance will be taking more complex regimens.

Nowadays, all people diagnosed with HIV are rapidly started on ART, although therapy may be temporarily delayed with certain infections, including tuberculosis and cerebral toxoplasmosis, to reduce the risk of immune reconstitution syndromes.

Once a patient is established on ART their viral load declines to undetectable levels (usually less than 20, 40 or 50 copies/mL, depending on the assay used) and the CD4 count will rise, so they are far less likely to develop serious HIV related conditions.

In most settings, over 90% of individuals on treatment will have an undetectable viral load, which is maintained if they are adherent to the ARVs; very few newly treated individuals will now fail therapy. Consequently, most changes to treatment are made to reduce or avoid toxicity, to minimise drug-drug interactions or to simplify the regimen.

Table 1 Antiretroviral drugs: an overview

Single Agent Antiretrovirals	
1	Entry Inhibitors
1A	Fusion Inhibitor
Enfuvirtide [Fuzeon, T20]	Rarely used now, T20 is an injectable ARV that prevents HIV binding with the CD4 receptor. Main side effect of T20 is injection site reactions; can be treatment limiting. Given via subcutaneous injection at a dose of 90mg bid.
1B	CCR5 Entry Inhibitor
Maraviroc [Celsentri, MVC]	MVC blocks the CCR5 co-receptor that facilitates viral entry into cells and is only active against CCR5-using ('CCR5 tropic') virus. HIV can be of several strains, using CCR5 (R5) receptors only, CXCR4 (X4) receptors only, be 'mixed' (using R5 or X4) or be 'dual' (able to use both). So, before using MVC a tropism blood test must be performed. Main side effect of MVC is hypotension but this is uncommon. Depending on the other ARVs given, dosed at 150/300/600mg od or bid.

2	Reverse Transcriptase Inhibitors	
2A	Nucleoside Reverse Transcriptase Inhibitors [NRTIs]	
	Lamivudine [Epivir, 3TC]	One of the most commonly used ARVs, 3TC is also active against hepatitis B virus (HBV). Generally, well tolerated, an uncommon side effect is peripheral neuropathy (PN). It is dosed at 300mg od or 150mg bid.
	Abacavir [Ziagen, ABC]	Usually co-formulated with 3TC as Kivexa (see below). Can cause a hypersensitivity reaction (HSR) in susceptible individuals and genetic testing for the HLAB5701 allele is recommended before use of this medicine. HLAB5701 positivity implies a higher risk of HSR and ABC should not be given. Common side effects of ABC include nausea and headache, some choose to avoid the drug over concerns about cardiovascular risk. Single agent dosed at 600mg od or 300mg bid.
	Emtricitabine [Emtriva, FTC]	Although not entirely the same, this NRTI is clinically comparable to 3TC and usually combined with tenofovir as Truvada or Descovy (see below). Generally, well tolerated, uncommon side effects include PN and skin pigmentation. Single agent dosed at 200mg od.
	Tenofovir	This ARV is widely used and is active against both HIV and HBV and is the main antiviral used to treat the latter. Available in two molecular forms:
	▪ Tenofovir Disoproxil Fumarate [Viread, TDF]	Usually co-formulated with FTC as Truvada (see below). Side effects are renal (proximal tubulopathy and rarely Fanconi's syndrome) and loss of bone mineral density (BMD). In practice serious toxicity to TDF occurs uncommonly. Single agent dosed at 245mg od.
	▪ Tenofovir Alafenamide [TAF]	Only available co-formulated with FTC as Descovy (see below), it appears to have less renal and bone toxicity than TDF. It is dosed at 10mg od with ARV regimens containing ritonavir or cobicistat and 25mg od with all others.
	Zidovudine [Retrovir, AZT]	This ARV is now rarely used due to significant toxicity (anaemia, nausea and body shape changes). It may be used for specific reasons (e.g. pregnancy, ART resistance or central nervous system penetration). It is dosed at 250mg bid.
	Stavudine [Zerit, D4T] Didanosine [Videx, DDI]	These are two older NRTIs, which should not now be used due to adverse events, including severe PN, liver and pancreatic damage.

Table 1 **Antiretroviral drugs** (*Single Agent Antiretrovirals continued*)

2B	Non-Nucleoside Reverse Transcriptase Inhibitors [NNRTIs]
Efavirenz [Sustiva, EFV]	Whilst effective, EFV has many side effects including rash (occasionally Stevens-Johnson syndrome), mood change, psychosis, cognitive problems, sleep disturbance (insomnia, abnormal dreams), dizziness, nausea, hypothyroidism, gynaecomastia and vitamin D deficiency. Most of these are short-lived but may persist in a significant proportion of users. Some effects may be sub clinical with improvement in those that stop the drug. It is dosed at 600mg od.
Nevirapine [Viramune, NVP]	NVP is effective but has potentially serious toxicities within the first few weeks of use. These include toxic epidermal necrolysis and fulminant hepatic failure, commoner in those of African heritage and women especially when pregnant. Once people are stable on NVP it is very well tolerated. It is dosed at 200mg bid or 400mg od as an extended release formulation.
Rilpivirine [Edurant, RPV]	RPV is generally well-tolerated. Rash and mood disturbance are reported less commonly than with EFV but still occur. It is dosed at 25mg od and must be taken with food.
Etravirine [Intelence, ETR]	ETR is active against most NNRTI resistant viruses. Although generally well tolerated, it has a chalky formulation which many find unpalatable and its use is uncommon. It is dosed at 200mg bid, although often given as 400mg od.
Doravirine [Pifeltro, DOR]	DOR is active against many NNRTI resistant viruses and is well tolerated, although CNS disturbance does occur. It is dosed at 100mg od. It is most commonly used co-formulated with 3TC and TDF, as Delstrigo (see below).
3	Integrase Strand Transfer Inhibitors [INSTIs]
Raltegravir [Isentress, RAL]	RAL is a well-tolerated drug, although moderate transaminitis has been seen when initiating and mood and sleep disorders do occur. It is dosed at 400mg bid (original formulation), or now more commonly in a newer formulation at 1200mg od (as two 600mg tablets).
Elvitegravir [EVG]	EVG is not available as a stand-alone agent and is only given in co-formulated single tablet regimens with a boosting agent (see below).
Dolutegravir [Tivicay, DTG]	DTG is a potent INSTI and is generally well tolerated, although it may cause sleep disturbance, headache and nausea. Mood disturbance and neuropsychiatric side effects occur in a minority of users. It is also co-formulated with 3TC as Dovato, ABC and 3TC as Triumeq and rilpivirine as Juluca (see below). Single agent dosed at 50mg od (50mg bid in those with INSTI resistance).
Bictegravir [BIC]	BIC is not available as a stand-alone agent but only co-formulated with Descovy as Biktarvy (see below). It has a similar side effect profile as DTG.

Table 1 **Antiretroviral drugs** (*Single Agent Antiretrovirals continued*)

4	Protease Inhibitors [PIs]
Boosting agents	Protease inhibitors are usually co-formulated with a low-dose boosting agent which blocks cytochrome p450 and serum level of the PI given. Note that all boosted PIs increase serum lipid levels to a varying degree and by association may alter cardiovascular risk. There are two available boosting agents:
▪ Ritonavir [Norvir, RTV]	Well tolerated but can cause diarrhoea and nausea. It is dosed, as a booster, either as 100mg od or 100mg bid (depending on the PI) and is depicted as '/r'.
▪ Cobicistat [Tybost, cobii]	Cobi is not independently active against HIV and has a side effect profile that is like RTV. It is dosed at 150mg od or bid and it is depicted as '/c'.
Atazanavir [Reyataz, ATZ]	ATZ is usually well tolerated, but leads in most people to a clinically insignificant unconjugated hyperbilirubinemia. This can present as jaundice of the skin and sclera, which can distress the patient and unnecessarily concern the non-HIV clinician. More seriously, but less common, are kidney stones, gall stones and sludge in the gall bladder, all due to crystals of drug. It is dosed at 300mg od boosted with either 100mg RTV od (separate tablets) or cobii (150mg co-formulated, see below). ATZ may also be given unboosted (less common) at 400mg od.
Darunavir [Prezista, DRV]	DRV is a potent and generally well-tolerated PI. It is sulphonamide based and thus rash can be a problem, especially if sulphonamide allergy is known, when it is contraindicated; it also causes diarrhoea and weight gain in some individuals. It is dosed at 800mg od or now rarely 600mg bid twice daily (boosted with either RTV (100mg, separate tablet with each dose) or cobii (150mg co-formulated, see below).
Lopinavir/ritonavir [Kaletra, LPV/r] Fosamprenavir/ritonavir [Telzir, FPV/r] Saquinavir/ritonavir [Invirase, SQV/r] Tipranavir/ritonavir [Aptivus, TPV/r]	These are older PIs now used less commonly. All can cause diarrhoea and hyperlipidaemia as their main side-effects.

Table 1 **Antiretroviral drugs** (*Single Agent Antiretrovirals continued*)

Co-formulation	
1	Single Tablet Regimens (STRs)
These comprise whole ARV regimens. Side effects are predictable by looking at the individual components listed above.	
Atripla: EFV/TDF/FTC Odefsey: RPV/FTC/TAF Eviplera: RPV/TDF/FTC Delstrigo: DOR/TDF/3TC Genvoya: EVG/c/TAF/FTC Symtuza: DRV/c/TAF/FTC Stribild: EVG/c/TDF/FTC	Dovato: DTG/3TC Triumeq: DTG/ABC/3TC Juluca: DTG/RPV <i>(switch patients only; not first line therapy)</i> Biktarvy: BIC/TAF/FTC
2	Fixed Dose Combinations (FDCs)
These are generally given with other ARVs. Side effects are as for the individual components listed above. All are dosed od except Combivir and Trizivir which are given bid and now rarely prescribed.	
NRTIs	PI
Truvada: TDF/FTC Kivexa: ABC/3TC Descovy: TAF/FTC Combivir: AZT/3TC Trizivir: AZT/3TC/ABC	Evotaz: ATZ/c Rezolsta: DRV/c

Table 1 Antiretroviral drugs (Co-formulation)

Polypharmacy and Drug Interactions

Polypharmacy in HIV is a significant problem. So, it is vital to not just blindly treat each condition you diagnose without considering the problems that might arise from drug-drug interactions (DDIs).

Constant clear communication between all HCPs about what individual PLHIV are prescribed and why is very important, as changes may occur frequently and this increases the risk of drug drug interactions, a major cause of morbidity and hospital admission.

Regular checks with the patient of all medications, what each one is for and how to take them should be undertaken by all HCPs, if possible in conjunction with an HIV pharmacist. This ensures correct dosing, which may reduce possible side effects and avoid potential drug-drug interactions.

The best source of up to date information on HIV drug interactions is the University of Liverpool HIV drug interactions website, www.hiv-druginteractions.org.

HIV Drugs	Co-medications	Drug Interactions
<input type="text" value="Search HIV drugs"/>	<input type="text" value="Search co-medications..."/>	<input type="checkbox"/> Check HIV/ HIV drug interactions
<input type="radio"/> A-Z <input type="radio"/> Class <input type="radio"/> Trade	<input type="radio"/> A-Z <input type="radio"/> Class <input type="radio"/> Trade	<input type="button" value="Switch to table view"/>
<input checked="" type="checkbox"/> Abacavir (ABC)	<input checked="" type="checkbox"/> Acarbose	<input type="button" value="Reset Checker"/>
<input checked="" type="checkbox"/> Abacavir (ABC)	<input type="checkbox"/> Abacavir (ABC)	<div>No Interaction Expected</div>
<input type="checkbox"/> Albuvirtide (ABT)	<input type="checkbox"/> Acamprosate	<div>Abacavir (ABC)</div>
<input type="checkbox"/> Atazanavir alone (ATV)	<input checked="" type="checkbox"/> Acarbose	<div>Acarbose</div>
		<div>More Info</div>

It is simple to use, on-line or as an app, and is a vital tool in the monitoring of drug therapy in PLHIV. It contains, constantly updated:

- **Interaction Charts:** providing an overview of interactions between HIV drugs and an extensive list of co-medications, including supplements.
- **Treatment Selector Charts:** which show interactions between key antiretrovirals and drugs used to treat a range of common conditions (e.g. cancers) or specific patient populations (e.g. contraception).
- **Fact Sheets:** containing information on the pharmacokinetics, metabolism and disposition of HIV drugs.

Important HIV Drug-Drug Interactions

Whilst no HIV drug class is entirely without significant DDIs, the most important ones occur with some NNRTI's and cobicistat or ritonavir boosted drugs, i.e. boosted protease inhibitors and elvitegravir (Stribild/Genvoya).

Common medications that interact with some antiretrovirals include certain statins, prescribed drugs and over

the counter medicines that reduce stomach acid, warfarin and direct oral anticoagulants (DOACs), and many steroid preparations such as nasal sprays [Table 2]. It's vital to check potential interactions before prescribing these agents as some interactions result in serious morbidity and /or failure of therapy due to reduction in drug levels.



Table 2 **Commonest potential serious drug-drug interactions with ARVs**

<i>Drug</i>	<i>Boosted PIs, Stribild, Genvoya</i>	<i>NNRTIs</i>	<i>Unboosted INSTIs</i>
Antacids			
PPIs	Contraindicated with ATZ No interaction with other boosted PIs	Contraindicated with RPV No interaction with EFV, NVP, ETR or DOR	No interaction
Ranitidine	Use ATZ 12 hours apart No interaction with other PIs	Use RPV 12 hours apart No interaction with EFV, NVP, ETR or DOR	No interaction
Anticholinergics			
Oxybutynin	Levels increased	Levels decreased with EFV, NVP and ETR No interaction with RPV or DOR	No interaction
Solifenacin	Levels increased Maximum dose 5mg od	Levels decreased with EFV and NVP; increased with ETR No interaction with RPV or DOR	No interaction
Tolterodine	Levels increased	Levels decreased with EFV, NVP and ETR; caution with RPV as both prolong QTc interval No interaction with DOR	No interaction

KEY

Red - serious interaction - use contraindicated

Orange - drug levels affected, dose changes may be required

Green - no clinically significant interaction

ATZ: atazanavir

DOR: doravirine

RAL: raltegravir

BIC: bictegravir

EFV: efavirenz

RPV: rilpivirine

COBI: cobicistat

ETR: etravirine

RTV: ritonavir

DTG: dolutegravir

NVP: nevirapine

Drug	Boosted PIs, Stribild, Genvoya	NNRTIs	Unboosted INSTIs
Anticoagulants/DOACs			
Warfarin	Levels may be increased or decreased; monitor INR	Levels may be increased or decreased with EFV, NVP and ETR; monitor INR No interaction with RPV or DOR	No interaction
Low molecular weight heparins	No interaction	No interaction	No interaction
Edoxaban	Levels increased	No interaction	No interaction
Rivaroxaban	Contraindicated	Levels decreased with EFV, NVP and ETR No interaction with RPV or DOR	No interaction
Apixaban	Contraindicated	Levels decreased with EFV, NVP and ETR No interaction with RPV or DOR	No interaction
Dabigatran	Contraindicated with COBI Can be used with RTV 100mg	Levels increased with ETR and RPV No interaction with EFV, NVP or DOR	No interaction
Anti-Nausea agents			
Metoclopramide and cyclizine	No interaction	No interaction	No interaction
Ondansetron	No interaction	No interaction with EFV, NVP and ETR Caution with RPV as both prolong QTc interval	No interaction
Domperidone* <i>*Domperidone is not recommended in patients with high cardiovascular risk</i>	Contraindicated	Levels decreased with EFV, NVP and ETR; caution with RPV as both prolong QTc interval No interaction with DOR	No interaction

Drug	Boosted PIs, Stribild, Genvoya	NNRTIs	Unboosted INSTIs
Anti-Platelets			
Clopidogrel	Contraindicated	Contraindicated with EFV, NVP and ETR No interaction with RPV or DOR	No interaction
Ticagrelor	Contraindicated	Decreased exposure with EFV, NVP and ETR No interaction with RPV or DOR	No interaction
Prasugrel	No interaction	No interaction	No interaction
Corticosteroids			
Prednisolone and methylprednisolone	Levels increased	Levels decreased with EFV, NVP and ETR No interaction with RPV or DOR	No interaction
Fluticasone, triamcinolone and mometasone	Contraindicated	Levels decreased with EFV, NVP and ETR No interaction with RPV or DOR	No interaction
Dexamethasone	Levels increased	Contraindicated with RPV Levels decreased with EFV, NVP, ETR and DOR	No interaction
Diabetes drugs			
Metformin	No interaction	No interaction	Levels increased with DTG and BIC No interaction with RAL
Gliclazide	Levels decreased with RTV No interaction with COBI	Levels increased with EFV and ETR No interaction with NVP, RPV or DOR	No interaction
Sitagliptin	No interaction	Levels decreased with EFV, NVP and ETR No interaction with RPV or DOR	No interaction

Drug	Boosted PIs, Stribild, Genvoya	NNRTIs	Unboosted INSTIs
Dopamine Antagonists			
Haloperidol	Levels increased	Levels decreased with EFV, NVP and ETR; caution with RPV as both prolong QTc interval No interaction with DOR	No interaction
Olanzapine	Levels decreased with RTV No interaction with COBI	Levels decreased with EFV No interaction with NVP, ETR, RPV or DOR	No interaction
Quetiapine	Contraindicated	Levels decreased with EFV, NVP and ETR; caution with RPV as both prolong QTc interval No interaction with DOR	No interaction
Risperidone	Levels increased.	Levels decreased with EFV, NVP and ETR. No interaction with RPV or DOR	No interaction
Erectile Dysfunction (ED)			
Sildenafil	Contraindicated for Pulmonary Hypertension ED - maximum dose 25mg every 48 hours	Levels decreased with EFV, NVP and ETR No interaction with RPV or DOR	No interaction
Tadalafil	ED - maximum dose 10mg every 72 hours	Levels decreased with EFV, NVP and ETR No interaction with RPV or DOR	No interaction
Vardenafil	Contraindicated	Levels decreased with EFV, NVP and ETR No interaction with RPV or DOR	No interaction

Table 2 **Commonest potential serious drug-drug interactions with ARVs**

Drug	Boosted PIs, Stribild, Genvoya	NNRTIs	Unboosted INSTIs
NSAIDs			
Ibuprofen	No interaction	Levels increased with EFV and ETR No interaction with NVP, RPV or DOR	No interaction
Diclofenac* <i>*Diclofenac is not recommended in patients with high cardio vascular risk</i>	No interaction	Levels increased with EFV and ETR No interaction with NVP, RPV or DOR	No interaction
Naproxen	No interaction	Levels increased with EFV and ETR No interaction with NVP, RPV or DOR	No interaction
Opiates			
Morphine	Levels increased, monitor for opiate toxicity	Levels increased with EFV and ETR, monitor for opiate toxicity No interaction with NVP, RPV or DOR	No interaction
Codeine and dihydrocodeine	No interaction	No interaction	No interaction
Tramadol	Levels increased	Levels decreased with EFV and NVP No interaction with ETR, RPV or DOR	No interaction
Oxycodone	Levels increased	Levels decreased with EFV, NVP and ETR No interaction with RPV or DOR	No interaction

<i>Drug</i>	<i>Boosted PIs, Stribild, Genvoya</i>	<i>NNRTIs</i>	<i>Unboosted INSTIs</i>
Sedatives			
Diazepam and other benzodiazepines	Levels increased	Levels decreased with EFV and NVP; increased exposure with ETR No interaction with RPV or DOR	No interaction
Temazepam	No interaction	No interaction	No interaction
Zopiclone	Levels increased	Levels decreased with EFV, NVP and ETR No interaction with RPV or DOR	No interaction
Statins			
Simvastatin	Contraindicated	Contraindicated with EFV, NVP, ETR, and RPV No interaction with DOR	No interaction
Rosuvastatin	Levels increased Maximum dose 10mg od	No interaction	No interaction
Atorvastatin	Levels increased Maximum dose 20mg od	Levels decreased with EFV, NVP and ETR No interaction with RPV or DOR	No interaction

DISCLAIMER

Note that the above table does not include all drug-drug interactions.

Further information is available on the following websites:

- www.hiv-druginteractions.org
- www.eacsociety.org/guidelines/eacs-guidelines/eacs-guidelines.html

Due to the rapidly changing nature of information about HIV treatment and therapies, readers are advised to recheck the information contained in this publication with the above websites before applying it to patient care. If you require further information on drug-drug interactions, please seek help from a local specialist HIV pharmacist.

HIV Monitoring Tests

All HIV patients should undergo regular testing to monitor their HIV condition and to assess treatment failure, drug toxicities and potential co-morbidities. The range and frequency of tests may vary by local guidelines:

Six monthly tests

- HIV viral load
- Full blood count
- Liver enzymes and kidney function
- Syphilis and other sexually transmitted infections (STIs)
- Tests related to other conditions requiring on-going treatment
- Urine protein:creatinine ratio (uPCR) if taking tenofovir disoproxil (TDF)

Annual tests

- CD4 count
- Serum lipid levels
- Hepatitis B and C status (the latter only in those at risk)
- Cervical and anal cancer screening in women
- Anal cancer screening in men-who-have sex with men (MSM)

Other testing and screening programmes should be as for the general population.

Common Co-morbidities in HIV

MOUTH, SKIN AND HAIR

HIV infection can give rise to oral conditions, especially when CD4 counts are <500. These include, oral candida (thrush) and angular cheilitis responsive to clotrimazole/hydrocortisone cream, hairy leucoplakia which can be treated with acyclovir 800mg tds for 3 weeks, and mouth ulcers. Gingivitis, gum recession and reduced saliva are common with HIV. All dental procedures, including tooth replacement, are safe to perform in people with HIV infection. However, if a general anaesthetic is required it is important the dentist is aware of the ART, as some significant interactions exist.

Skin conditions associated with HIV, such as folliculitis, seborrhoeic eczema, psoriasis and bacterial skin infections tend to improve once the CD4 count rises on antiretroviral therapy but may

still require standard treatments. Herpes zoster (shingles) is common at all stages of HIV disease and should be treated aggressively. Some viral infections, such as warts and molluscum contagiosum, may worsen as immunity returns. Many antiretrovirals (ARVs) can result in allergic drug rashes and occasionally Stevens Johnson syndrome [Table 1]. Skin cancers occur more frequently in HIV and are treated as for the general population.

Foot-care complications of HIV include peripheral neuropathy, fungal infections, and verrucae, which can be quite resistant to treatment.

Alopecia occurs with partial or total hair loss and as a patchy form with syphilis, a common sexually transmitted infection in MSM with HIV.

HEART AND BLOOD VESSELS

Cardiovascular disease in HIV can occur at an earlier age than in non-HIV-infected individuals. It is vital to address modifiable risk factors, especially hypertension and smoking, which are commoner in those with HIV. Cardiovascular risk assessment tools such as Q-risk 3 and Framingham may underestimate risk in HIV patients, but are still valuable.

Extreme care must be taken to choose statins or anti-platelet agents that do not

interact with ART [Table 2], as these are some of the commonest serious drug-drug interactions seen in HIV treated individuals.

Hypertension is associated with HIV infection, especially if the viral load is high, the person is of African heritage and/or has diabetes. Both hypertension and diabetes are treated as for the general population with reference to possible drug-drug interactions [Table 2].

LUNGS

HIV treatment has led to an impressive reduction in serious or fatal lung infections, such as *Pneumocystis pneumonia* (PCP), so now most chest infections in PLHIV are community acquired. Individuals with CD4 cell counts <200 will usually be given oral cotrimoxazole or inhaled pentamidine prophylaxis against PCP.

PLHIV have high rates of chronic obstructive airways disease (COPD). Factors, such as predisposition to recurrent chest infections and higher rates of smoking in HIV-infected individuals play a role, as does HIV-related immune activation. Serious and avoidable drug-drug interactions can occur between several ARVs and some steroid inhalers [Table 2].

Influenza (flu) seems to cause more severe illness in people with HIV, especially in those with low CD4 counts and flu vaccination in HIV prevents more death and illness than in any other group. Inactivated flu vaccine are given by injection to HIV patients, irrespective of CD4 count or age, but the live-attenuated nasal spray vaccine should not be used.

Pneumococcal infections are commoner in HIV patients than the general population, especially in those with low CD4 counts, even on ART. Vaccination against pneumococcus is recommended for everyone with HIV, irrespective of age; it works better in people with a CD4 count >200. Current BHIVA vaccination policy can be found at

www.bhiva.org/vaccination-guidelines.

HIV infection increases the likelihood of developing tuberculosis (TB) disease, and the risk of becoming ill is greater in those with very low CD4 counts. ART greatly reduces the risk of active TB, but it remains important to screen people from TB endemic countries and those with low CD4 counts. Treatment is as for the general population but care is important regarding drug-drug interactions with certain ARVs [Table 2].

Lung cancer is 2-3 times commoner in people living with HIV and rates rise with age. As smoking is strongly associated, it's unclear if this increased risk is due to HIV itself or higher rates of smoking. Lung masses or shadows in PLHIV can be caused by conditions other than lung cancer and should be investigated promptly.

KIDNEYS

Kidney disease in HIV is like that seen in the general population, with a few exceptions. Untreated HIV may present, especially in those of African heritage, with HIV-associated nephropathy (HIVAN) which should be treated by commencing HIV therapy. Some ARVs cause kidney stones, consisting of

drug crystals and others a proximal tubulopathy and sometimes Fanconi syndrome [Table 1].

Anyone with HIV and serious kidney disease should be seen jointly with a nephrologist. HIV, when treated, is not a barrier to transplantation.

BONES AND JOINTS

HIV can be associated with both osteopenia and osteoporosis, with fractures occurring at an earlier age than usual. The reason for this is unclear, but the longer a person is infected the greater the risk. Women with HIV may have early menopause, increasing their risk of osteoporosis, and men with hypogonadism, commonly seen in HIV infection, are also at increased risk of bone loss. The value of FRAX scores and how frequently DEXA scans should be performed in those with HIV is unclear, although guidance from the HIV uninfected population studies suggests it should be based on the severity of osteoporosis when first measured. Treatment is as for the general population.

Research has shown that almost a third of HIV-positive patients are vitamin D deficient, associated with low CD4 cell counts, as well as poor exposure to sunlight and/or darker skin. Certain antiretrovirals are implicated in this deficiency [Table 1]. Replacement therapy is advised.

HIV infection joint problems are common and related to inflammation and infection. Diagnosis and treatment is as for the general population. However, it is vital that possible drug interactions with ARVs are considered when steroids, either oral, intraocular or injected, are given [Table 2].

BLOOD DISORDERS AND CANCERS

Anaemia and thrombocytopaenia are common in HIV and may be associated with co-trimoxazole used for treating or preventing PCP.

HIV suppresses the immune system, rendering it less able to monitor and kill cancerous cells, consequently, the risk of developing many cancers increases and they often occur at an earlier age. In the past, people with HIV infection and a very damaged immune system typically got three types of cancer: Kaposi's sarcoma (KS), non-Hodgkin's lymphoma and invasive cervical cancer in women. These are referred to as AIDS-related cancers and are all virally mediated. KS is often missed or misdiagnosed, see images at www.hiv.va.gov/provider/image-library/ks-hhv-8.asp.

Several, non-AIDS defining cancers appear commoner in HIV, although this may be related to higher rates of smoking and co-infection with oncogenic herpes or hepatitis viruses. They include: lung cancer; Hodgkin's lymphoma; anal cancer, in both men and women and liver cancer (hepatocellular carcinoma) especially in those co-infected with hepatitis B and hepatitis C. Kidney and skin cancers, as well as leukaemia and head and neck cancers, are twice as common in those with HIV infection.

PLHIV should follow UK cancer screening programmes through their GP surgery and if possible access anal intraepithelial neoplasia (AIN) screening services through their HIV clinic.

LIVER DISEASE AND VIRAL HEPATITIS

Liver disease is often seen in patients living with HIV. Chronic viral infections with Hepatitis B and C are the commonest causes, but drugs (both ARVs and non-ARVs, including over-the-counter and herbal medications), alcohol misuse, recreational drug use and obesity-associated non-alcoholic fatty liver disease are increasingly being recognised as important causes of liver morbidity. Some opportunistic infections (e.g. mycobacterial infections, visceral leishmaniasis and disseminated CMV) and their treatment may also cause liver disease.

Any elevation in liver enzymes must prompt investigation, in conjunction with the local hepatology team, to ascertain the cause and to determine the extent of liver inflammation and fibrosis. In most cases this can be achieved by a non-invasive test (hepatic elastography, APRI, FIB-4), but occasionally a liver biopsy may be required. In the case of drug-induced liver injury the offending drug(s) will need to be stopped.

- **Hepatitis A (HAV)** is common in HIV infected MSM, if antibodies are not present, then vaccination to prevent future infection is important.
- **Hepatitis B (HBV)** infected individuals should be looked after jointly with a hepatologist, if possible. All HBV patients should be tested for HIV as some antivirals used for HBV also have anti-HIV activity and their use alone could result in suboptimal HIV suppression [Table 1]. Vaccination against HBV should be given to those who have no immunity.
- **Hepatitis C (HCV)**: if antibodies are present, a HCV RNA viral load should be performed, and if detectable the individual referred for curative treatment to a hepatologist with HIV expertise.

HORMONES AND LIPODYSTROPHY

Thyroid disorders do not appear to be significantly greater in HIV, although hypothyroidism has been associated with some ARVs [Table 1].

Women with HIV infection may experience irregularities in their cycles and are at risk of an early menopause (under 45 years). There is limited research in the use of hormone replacement therapy (HRT) in HIV-positive women and commonly used forms may interact with ARVs; see information at liverpool-hiv-hep.s3.amazonaws.com/prescribing_resources/pdfs/000/000/028/original/TS_HRT_2019_Oct.pdf?1571043505. Those women who continue to be sexually active, throughout and beyond the menopause, should be encouraged to practice safer sex and to screen for sexually transmitted infections. All women should continue to have regular cervical screening to the age of 65, and to be breast aware at all ages. HIV and some ARVs may cause changes in the breast, making them larger and lumpier; these lumps are usually benign cysts of breast tissue.

In HIV infected men testosterone deficiency often occurs at an early age and is commoner with a low CD4 count, or in those who have taken androgenic steroids (testosterone supplements); replacement therapy works in most cases. Painful gynaecomastia can occur in men with HIV, caused by some ARVs [Table 1], recreational use of anabolic steroids or hormone imbalances. An ultrasound should be performed and referral made to an endocrinologist.

Frequency and interest in sex diminishes with age to varying degrees in different PLHIV; specifically, in women it may occur suddenly with the onset of the menopause. In men erectile dysfunction (ED), problems with ejaculation and inability to reach orgasm may occur, both with ageing and HIV infection, and is associated with certain HIV medications, especially protease inhibitors, some antidepressants and antihypertensive drugs.

In addition to age-related body shape changes, HIV-associated lipodystrophy presents itself as lipoatrophy (fat loss) or lipohypertrophy (fat gain), sometimes seen together in the same individual; see images at www.hiv.va.gov/provider/image-library/lipodystrophy.asp. Factors thought to contribute are: some ARVs (including a number no longer used), nadir CD4 count, poor diet, family history and smoking. Facial lipoatrophy of the cheek fat pads and the temple area is now seen, by some, as a hallmark of HIV infection and can lead to stigma and loss of self-esteem. HIV-related lipoatrophy can mimic the fat loss that occurs with ageing on the arms, legs, feet and buttocks.

Lipohypertrophy is the accumulation of fat that occurs within the body around the internal organs and, more obviously, in the breasts and around the waistline of both men and women. It can be difficult to distinguish lipohypertrophy from simple weight gain and there is no single test to determine this. Starting ART leads to a 'return to health' and this often results in weight gain, not always

in the right places. Evidence about which drugs are better or worse for lipodystrophy is constantly emerging with new published data.

Cosmetic treatments (skin fillers) for facial lipoatrophy in HIV can be used

successfully to reduce the obvious signs of facial fat loss. Lipoatrophy involving the buttocks may make certain sitting positions uncomfortable and sleeping and bathing may be difficult. Excess lipoatrophy in women may require breast reduction.

NERVES AND BRAIN

HIV itself can affect both the central and peripheral nervous systems, while opportunistic infections such as cerebral toxoplasmosis, CMV encephalitis, cryptococcal or tuberculous meningitis and primary brain lymphoma are often the initial presentation of HIV disease. Severity of brain disease is worse and can be fatal in untreated HIV and in those with low CD4 cell counts.

Since the advent of ART, the prevalence of HIV dementia has declined. However, some neurocognitive disorders remain in those whose HIV is not well controlled or who have previous brain disease.

Peripheral neuropathy, common in PLHIV, may be due directly to some ARVs [Table 1], other medications, vitamin deficiencies, diabetes and excessive alcohol.

EYES

Once the immune system has been restored with ART there are no specific ocular conditions that appear to be associated with HIV itself. Yellowing of sclera and/or skin can be caused by atazanavir and Evisphar due to

unconjugated hyperbilirubinaemia, which is of no consequence although other reasons for jaundice should be considered. Monitoring and treatment of eye conditions should be as for the general population.

SECTION THREE

Don't miss HIV as a new diagnosis

The need to diagnose HIV effectively

HIV testing is simple and essential to achieve access to HIV prevention, treatment, care, and support. It is vital that clinical pathways are in place to improve HIV testing and that all health care professionals know when an HIV diagnosis is a possibility, and then offer testing.

In Europe it is estimated that a third of HIV is undiagnosed and around 50% of newly diagnosed HIV-positive individuals enter care late (i.e. with a CD4 count <350), often resulting in avoidable severe clinical disease and increased risk of death.

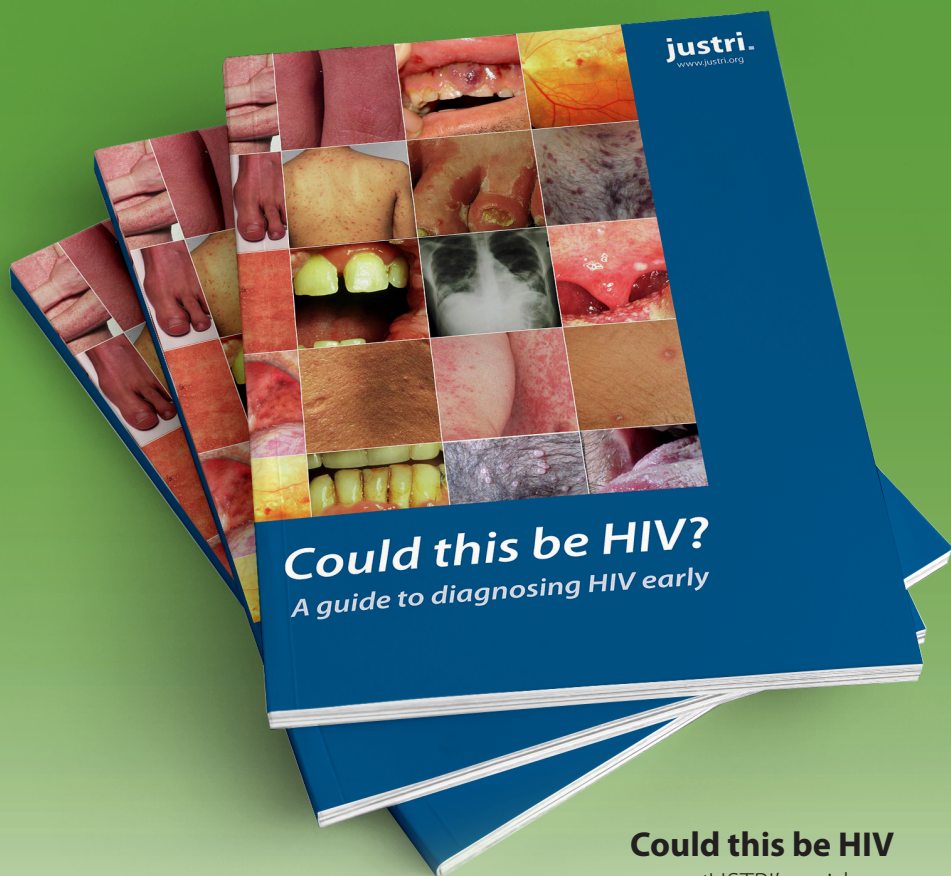
This section is for practical use by doctors and nurses, delivering care to individuals who may have undiagnosed HIV infection, including general practitioners (GPs), staff in Accident and Emergency departments, and general medical and nursing staff in non-HIV specialities. It provides the basis for diagnosing HIV in a wide range of settings, so not all aspects will be relevant to your particular practice.

Regardless of HIV acquisition route, underutilization of testing results in later diagnosis and the risk of serious, possibly irreversible, disease and avoidable deaths. Early diagnosis reduces onward

transmission and improves health outcomes, thereby decreasing the morbidity and mortality from HIV associated disease.

Barriers to testing include low perception of being at risk, difficulty in disclosing risk for fear of stigma or discrimination and failure of health care professionals to offer HIV testing as part of routine care, or to assess or understand risk factors or clinical presentations of suspected HIV.

A significant proportion of those eventually diagnosed have often presented to health care settings, such as Accident and Emergency or GP surgeries, multiple times with symptoms and signs suggestive of HIV infection. It is this group that this section is especially focussed on in order to improve their medical care by offering early testing for HIV.



Could this be HIV

JUSTRI's guide to
diagnosing HIV early, see
www.justri.org/could-this-be-hiv

Who to target for HIV testing?

HIV testing rates are highest in settings where the test is presented as part of routine care, such as sexual health or antenatal clinics. Research has consistently shown that regardless of where it is offered, people do not mind being offered an HIV test. A proactive opportunistic offer of an HIV test should always be considered every time someone has a blood test and definitely when seeing people at higher risk of HIV. These include:

1. Sexual partners or children of those known to be HIV positive
2. Those with a sexually transmitted infection
3. Men who have sex with men
4. Being from a place with high HIV prevalence (>0.1%) such as all of sub-Saharan Africa and South London
5. With a history of injecting drug use
6. Having a history of sex-work
7. Requesting an HIV test
8. Sustaining a needle-stick injury or blood exposure
9. Presenting with an indicator condition (*see below*)

INDICATOR CONDITIONS

There is strong evidence that it is beneficial to use indicator conditions (Appendices 1 and 2) to target patients who should be offered testing. Three groups of indicator conditions have been identified by HIV in Europe www.hiveurope.eu/Portals/0/Guidance.pdf (Appendix 1) as relevant to consider testing individuals with:

- 1. Conditions which are AIDS-defining** (not testing is clearly bad clinical practice)
- 2. Conditions associated with an undiagnosed prevalence of >0.1%** (testing should be strongly recommended)
- 3. Conditions where not identifying the presence of HIV-infection would be detrimental for the individual's clinical**

management, such as the use of immunosuppressant therapy
(testing recommended)

Until recently, the need for extensive pre-test counselling and written consent has been a barrier to some providers' willingness to offer testing. Evidence has shown that the more junior a doctor is, the more likely they are to offer testing. Nurses are often best placed to assess information needs, provide resources on transmission, prevention, treatment, and support, and to discuss HIV testing.

A significant benefit of identifying an indicator condition is that it can trigger the provider to recommend HIV testing, thereby helping to normalise the process, although HIV testing should be offered to all patients when first seen in general practice and specialist clinics.

How to implement testing?

The way you conduct HIV testing will be specific to your setting and to which local services exist. Below are some general issues to be considered.

It is important that you have a plan for how to deal with an individual who presents to your service with an indication of HIV. If in a hospital, you may wish to refer to your in-house HIV service or in general practice to your local HIV testing providers or a local hospital. However, whatever the plan, there must

be a clear pathway to offer testing, to assess the results and to act on them. Of course it would be best if you can offer prompt testing in your service and then liaise immediately with your local HIV service but that may not always be possible.

HIV TESTS

The type of HIV tests you use for diagnosis will vary and it is best to discuss which are most appropriate for you to use with your local diagnostic laboratory.

EDUCATION AND TRAINING

If you offer testing in your service it is important that the staff that provide testing are well-trained and proficient at discussing testing and performing it. This training can usually be provided by

your local HIV services. It should be in the competence of any doctor or trained nurse to offer an HIV test and the more you test the easier and more routine it becomes.

Offering an HIV Test

Plan, in advance, how to offer testing, which should be performed in a confidential environment. Be explicit in your language when offering the test. A good example would be to say: "You have been diagnosed with [name the indicator condition] and we routinely do

some tests, which includes one for HIV, in everyone who has this condition. Is that OK?" Written information on testing must be available and the patient should be given ample time to ask questions and discuss concerns.

FREQUENTLY ASKED QUESTIONS:

Q *Do you think I have HIV?*

A I don't know, but we routinely recommend an HIV test to everyone with this condition.

Q *Who will know that I have been tested?*

A As with all tests we do, the HIV test is confidential and only the clinical team looking after you will know

you have been tested.

Q *I am not at risk of HIV – why do I need a test?*

A Many people are at risk of infection without knowing it; unless you tested recently we would recommend all with this condition to have an HIV test to find out what is wrong with your health.

WHEN A PATIENT DECLINES

If the patient declines a test, reasons should be explored to ensure that this is not based on incorrect beliefs about the virus or the consequences of being tested. The potential risks in terms of complications to the condition they have should be explained. They should

not be pressurised into being tested but opportunities for testing at a later date or clinic visit should not be missed, and/ or referral made to the local sexual health or HIV services if your concerns are high. Often those who refuse testing know that they are positive already.

POST-TEST DISCUSSION:

This will depend on the result.

If the HIV test is negative:

...discussion will need to cover the window period if HIV is highly suspected, such as with a seroconversion-like illness, where prompt referral for assessment and HIV RNA testing is best. There is an opportunity for health promotion and the level of this will be determined by the setting of the testing. Plans should be in place for onward signposting of patients for support and provision of information (e.g. websites or other healthcare professionals).

If the HIV test is positive:

...it is vital that the healthcare setting has a clear agreed written policy on how to manage an HIV positive diagnosis. Important issues to consider are, how the test result is to be given and where and by whom. Like all important health related communication, giving an HIV positive result should be handled with empathy and a clear plan of what will happen next. Arrangements for swift referral or transfer to the appropriate HIV services, as would be the case for any serious health condition, must be in place and clear. The individual should be informed of the necessity to protect current and future sexual and/or needle sharing partners and partner notification should be discussed.

APPENDICES

Indicator Conditions

Appendix 1: Definitions of indicator conditions and recommendations for HIV testing

STRONGLY RECOMMEND TESTING FOR:

Conditions which are AIDS defining*

Neoplasms:

- Cervical cancer
- Non-Hodgkin lymphoma
- Kaposi's sarcoma

Viral infections

- Cytomegalovirus retinitis
- Cytomegalovirus, other (except liver, spleen, glands)
- Herpes simplex, ulcer(s) >1 month/ bronchitis/pneumonitis
- Progressive multifocal leucoencephalopathy

Parasitic infections

- Cerebral toxoplasmosis
- Cryptosporidiosis >1 month
- Isosporiasis >1 month
- Atypical disseminated leishmaniasis
- Reactivation of American trypanosomiasis (meningoencephalitis or myocarditis)

Bacterial infections

- Mycobacterium tuberculosis, pulmonary or extrapulmonary
- Mycobacterium avium complex (MAC) or Mycobacterium kansasii, disseminated or extrapulmonary
- Mycobacterium, other species extrapulmonary/ disseminated
- Pneumonia, recurrent (2 or more episodes in 1 year)
- Salmonella septicaemia, recurrent

Fungal infections

- Pneumocystis carinii pneumonia
- Candidiasis, oesophageal
- Pulmonary candidiasis
- Cryptococcosis, extra-pulmonary
- Histoplasmosis, disseminated/ extra pulmonary
- Coccidioidomycosis, disseminated/ extra pulmonary
- Penicilliosis, disseminated

* Based on CDC and WHO classifications

STRONGLY RECOMMEND TESTING FOR:

Conditions associated/likely to have an undiagnosed HIV prevalence of >0.1%

- Sexually transmitted infections
- Malignant lymphoma
- Anal cancer/dysplasia
- Cervical dysplasia
- Herpes zoster
- Hepatitis B or C (acute or chronic)
- Mononucleosis-like illness
- Unexplained leucopenia / thrombocytopenia lasting >1 month
- Seborrheic dermatitis/exanthema
- Invasive pneumococcal disease
- Unexplained fever
- Candidaemia
- Visceral leishmaniasis
- Pregnancy (implications for the unborn child)
- Primary lung cancer
- Lymphocytic meningitis
- Oral hairy leukoplakia
- Severe or atypical psoriasis
- Guillain–Barré syndrome
- Mononeuritis
- Subcortical dementia
- Multiplesclerosis-like disease
- Peripheral neuropathy
- Hepatitis A
- Unexplained:
 - » weightloss
 - » lymphadenopathy
 - » oral candidiasis
 - » chronic diarrhoea
 - » chronic renal impairment
- Community-acquired pneumonia
- Candidiasis

SUGGEST TESTING FOR:

Conditions where not identifying the presence of HIV infection may have significant adverse implications for the individual's clinical management despite that the estimated prevalence of HIV is most likely lower than 0.1%

- Conditions requiring aggressive immuno-suppressive therapy:
 - » Cancer
 - » Transplantation
 - » Auto-immune disease treated with immunosuppressive therapy
- Primary space occupying lesion of the brain.
- Idiopathic/thrombotic thrombocytopenic purpura

Appendix 2: Indicator conditions by speciality

KEY: ➡ AIDS-defining ⇨ Conditions associated/likely to have an undiagnosed HIV prevalence of >0.1% – Strongly recommend testing
→ Conditions where not identifying the presence of HIV infection may have significant adverse implications for the individual's clinical management

ONCOLOGY

- ➡ Lymphoma, non-Hodgkin
- ➡ Kaposi's sarcoma
- ⇨ Primary lung cancer
- ⇨ Anal cancer/dysplasia
- Cancer requiring aggressive immuno-suppressive therapy

RHEUMATOLOGY

- Auto-immune disease treated with aggressive immuno-suppressive therapy

GASTROENTEROLOGY/HEPATOLOGY

- ➡ Cryptosporidiosis diarrhoea, >1 month
- ➡ Microsporidiosis, >1 month
- ➡ Isosporiasis, >1 month
- ➡ Candidiasis, oesophageal
- ⇨ Hepatitis B or C (acute or chronic)
- ⇨ Unexplained chronic diarrhoea

NEPHROLOGY

- ⇨ Unexplained chronic renal impairment

DENTISTRY

- ➡ Candidiasis, oral and oesophageal
- ➡ Kaposi's sarcoma
- ⇨ Oral hairy leukoplakia

EAR NOSE THROAT

- ➡ Candidiasis tracheal/oesophageal
- ⇨ Mononucleosis-like illness

HEMATOLOGY

- ➡ Lymphoma, non-Hodgkin
- ⇨ Malignant lymphoma
- ⇨ Unexplained leukocytopenia/thrombocytopenia lasting >4 weeks
- ⇨ Unexplained lymphadenopathy
- Thrombotic thrombocytopenic purpura

RESPIRATORY/PULMONOLOGY

- ➔ Tuberculosis
- ➔ Pneumocystis carinii pneumonia
- ➔ Pneumonia, recurrent
- ➔ MAC lung disease
- ➔ Histoplasmosis, disseminated/extra pulmonary
- ➔ Herpes simplex bronchitis/pneumonitis
- ➔ Candidiasis bronchial/lungs
- ⇒ Community-acquired pneumonia

DERMATOLOGY / DERMATOVENEREOLOGY / GENITOURINARY MEDICINE

- ➔ Kaposi's sarcoma
- ➔ Herpes Simplex ulcer(s)
- ➔ Atypical disseminated leishmaniasis
- ➔ Penicilliosis, disseminated
- ⇒ Seborrheic dermatitis/exanthema
- ⇒ Herpes zoster
- ⇒ Sexually transmitted infections
- ⇒ Hepatitis B or C (acute or chronic)
- ⇒ Severe or recalcitrant psoriasis
- ⇒ Candidaemia
- ⇒ Candidiasis

OPHTHALMOLOGY

- ➔ Cytomegalovirus retinitis

NEUROLOGY AND NEUROSURGERY

- ➔ Cerebral toxoplasmosis
- ➔ Cryptococcosis, extrapulmonary
- ➔ Progressive multifocal leucoencephalopathy
- ➔ Reactivation of American trypanosomiasis (meningoencephalitis or myocarditis)
- ⇒ Guillain–Barré syndrome
- ⇒ Mononeuritis
- ⇒ Subcortical dementia
- ⇒ Multiple sclerosis-like disease
- ⇒ Peripheral neuropathy
- Primary space occupying lesion of the brain

GYNECOLOGY/ OBSTETRICS

- ➔ Cervical cancer
- ⇒ Sexually transmitted infections
- ⇒ Hepatitis B or C (acute or chronic)
- ⇒ Pregnancy (implications for the unborn child)
- ⇒ Cervical dysplasia

GENERAL PRACTICE & EMERGENCY MEDICINE

Symptomatology fitting *any* of the listed conditions

INFECTIOUS DISEASES/INTERNAL MEDICINE

- ➔ Tuberculosis
- ➔ Mycobacterium Tuberculosis, pulmonary or extrapulmonary
- ➔ Mycobacterium avium complex (MAC) or Mycobacterium kansasii, disseminated or extrapulmonary
- ➔ Mycobacterium, other species or unidentified species, disseminated or extrapulmonary
- ➔ Pneumonia, recurrent (2 or more episodes in 12 months)
- ➔ Pneumocystis carinii pneumonia
- ➔ Cryptococcosis, extrapulmonary
- ➔ Salmonella septicaemia
- ➔ Cytomegalovirus, other (except liver, spleen, glands)
- ➔ Herpes Simplex ulcer(s) >1 month/ bronchitis/pneumonitis
- ➔ Candidiasis bronchial/tracheal/lungs.
- ➔ Candidiasis, oesophageal
- ➔ Atypical disseminated leishmaniasis
- ➔ Histoplasmosis, disseminated/ extrapulmonary
- ➔ Coccidioidomycosis, disseminated/ extra pulmonary
- ➔ Reactivation of American trypanosomiasis (meningoencephalitis or myocarditis)
- ➔ Penicilliosis, disseminated
- ⇒ Sexually transmitted infection
- ⇒ Hepatitis B or C (acute or chronic)
- ⇒ Mononucleosis-like illness
- ⇒ Invasive pneumococcal disease
- ⇒ Herpes zoster
- ⇒ Lymphocytic meningitis
- ⇒ Visceral leishmaniasis
- ⇒ Unexplained weightloss
- ⇒ Unexplained fever
- ⇒ Unexplained chronic diarrhoea
- ⇒ Unexplained lymphadenopathy
- ⇒ Unexplained leukocytopenia/ thrombocytopenia lasting >4 weeks

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