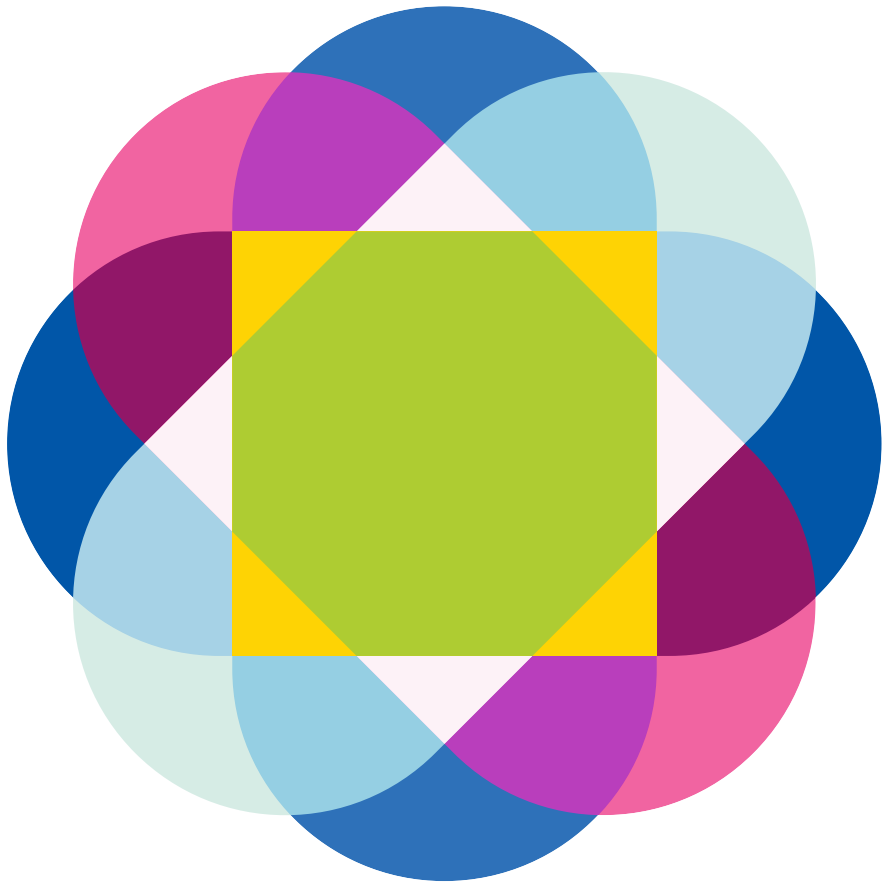


Introduction to ART

June 2022



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Watch for out-of-date info

First questions
You and your doctor
Adherence and resistance
Treatment choices

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Written and compiled for i-Base by Simon Collins. Original cover design by No Days Off.

Thanks to the medical and community advisors for support and comments.

Disclaimer: this booklet is meant to be used in discussions with your doctor.

24th edition, May 2022.

i-Base run a treatment info service on all aspects of HIV treatment.

Phoneline 0808 800 6013

We also answer questions online and by email.

www.i-Base.info/qa

Introduction

This booklet is about HIV treatment (called ART).



It is for people living with HIV, especially if you are about to start ART.

The guide was written and reviewed by people living with HIV, community activists and health professionals.

Information is based on latest UK guidelines.

www.bhiva.org

When appropriate, we also refer to European and US guidelines.

www.eacsociety.org

www.aidsinfo.nih.gov

Updates include:

- Recommendations based on 2022 UK guidelines.
- The section on choice of ART focuses on the most commonly used combinations.
- All latest drugs including long-acting injectable ART and fostemsavir.
- There are new future drugs.
- QR codes now link to further info online.
- Larger type to make it easier to read.
- The 4-page drug chart in the centre pages.
Detailed information about each drug is online:
i-base.info/guides/category/arvs
- Extra info is online.
i-base.info/guides/starting

ART:

Antiretroviral treatment

HIV:

Human Immunodeficiency Virus



First questions: what, when, why?

What are ARVs?

HIV is a retrovirus and it is treated by antiretrovirals (ARVs).

What is ART?

ART stands for ARV treatment. It is also called combination therapy or HIV treatment.

ART usually includes two or three active HIV drugs, sometimes in a single pill.

Sometimes ART includes either ritonavir or cobicistat to boost one of the other drugs.

Does ART really work?

Yes. Amazingly well.

Globally, more than 24 million people are now on ART.

ART works for adults and children, for women and men. It works for transgender and cisgender people.

It works no matter how you were infected, whether this was sexually, through drug use, at birth, or by blood products.

Taking ART at the right time and in the right way will reduce HIV to very low levels.

Does everyone need ART?

Generally yes. Even with a high CD4 count, ART can still help.

ART is easy to take. It often involves only one or two pills a day.

How soon do I need to start?

In the UK, you can begin ART whenever you are ready.

This is usually soon after testing positive.

How long you wait also depends on your individual situation.

Your HIV doctor should talk about ART in your first appointment.

What about side effects?

ART has a low risk of serious side effects.

If side effects do occur they are usually mild and improve within a few weeks.

But if side effects continue, talk to your doctor about other drugs.

Cisgender: people who live in the gender they were assigned at birth.

“HIV treatment is not rocket science.
You can easily learn about it.

I am sure I get better treatment for my
HIV because I understand what is
going on.

This gives me the confidence that I
should live a long and happy life.

I talk with my doctor and I take an
active role in my choice of treatment.

I always say if I have problems with side
effects or adherence.”

Paul, London

Two essential blood tests

CD4 count

- The CD4 count tells you about your immune system. Results are given as cells per cubic millimetre (cells/mm³).
- The range for HIV negative adults is from about 400 to 1600. Getting above 500 is considered normal.
- Even with a very low CD4 count, ART can boost your immune system much higher.
- The CD4 percentage (CD4%) is sometimes checked if you get an unexpected CD4 result.

Viral load (VL)

- VL shows how much HIV is in a small sample of blood. Results are given as copies per millilitre (copies/mL).
- VL also shows how well ART is working. The aim is to reduce this to less than 50 copies/mL. This is called undetectable.
- Viral load is the main monitoring test for people on ART.

Finding out you are HIV positive?



Getting an HIV diagnosis can still be a shock.

Take time to come to terms with this change in your life.

Other services can help This includes peer support from others living with HIV.

<http://i-base.info/just-found-out>

How does ART work?

ART stops HIV from making copies of itself.

This reduces viral load to very low levels in your body. Your CD4 count then increases.

When not on ART, your immune system works in overdrive. It is in a constant state of activation and inflammation.

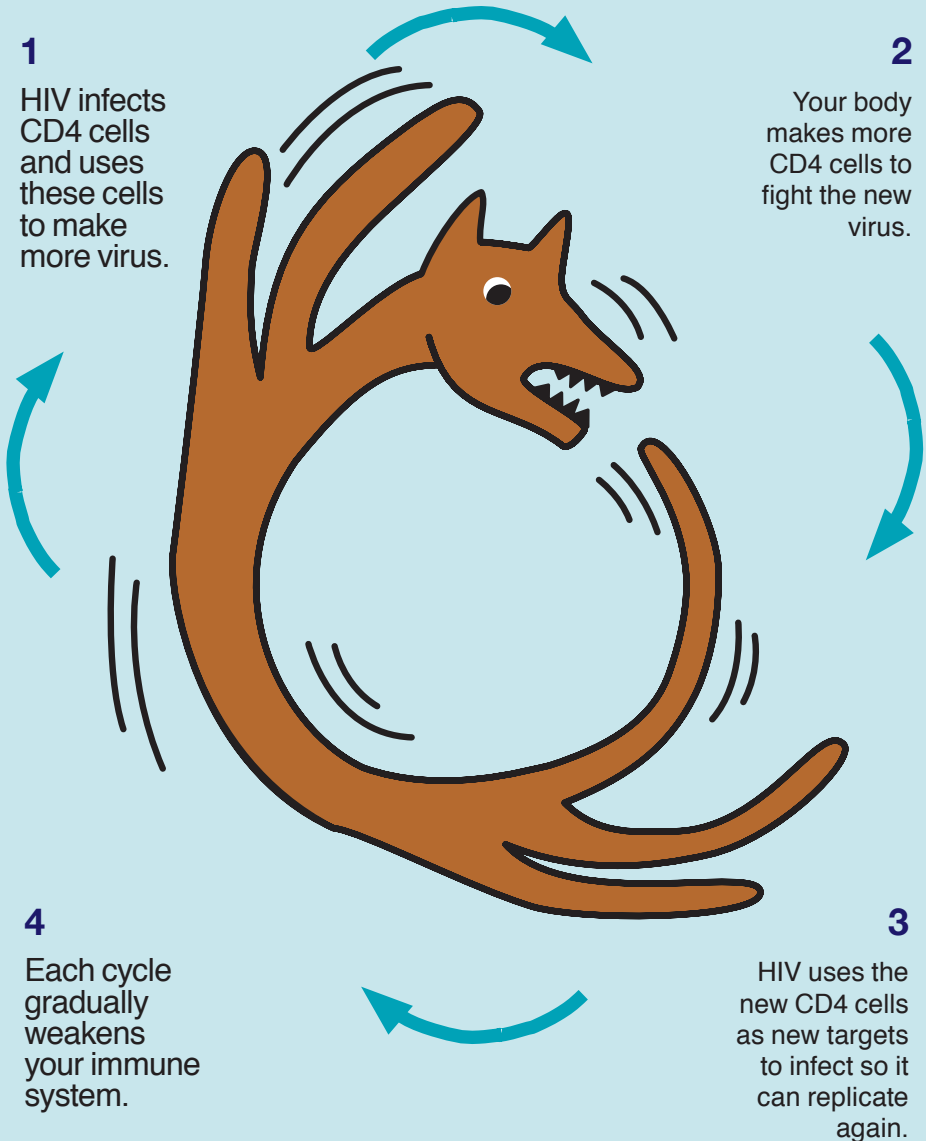
- HIV uses CD4 cells to make more virus.
- Your body produces new CD4 cells to fight the new HIV.
- These new cells then produce even more HIV.

Over time, without ART, your immune system gets worn out. It is like a dog chasing it's own tail. See Figure 1.

On ART, your immune system can then rest and grow stronger.



Fig 1: Before ART, your immune system is like a dog chasing its tail ...



How long will ART last?

As long as you do not develop drug resistance, the same drugs could work forever.

This involves getting viral load to undetectable and keeping it there.

This is why these three things are essential.

- To take your drugs on time.
- To follow advice on taking with or without food.
- To not miss doses.

Once your viral load becomes undetectable, it is likely to stay this low.

Around 19 out of every 20 people (95%) in the UK whose viral load is undetectable in the first year, will stay this low in following years.

Can I change meds?

Yes.

Most people do well on their first ART, but in the UK it is easy to change if you need to.

Changing ART will not affect your long-term health. It will not reduce your future choices.

It is important that you find meds that work for you. And you can still use the first drugs if you need to in the future.

Can I stop treatment?

Stopping ART is not a good idea, unless there is a medical reason.

Stopping ART can cause viral load to increase after only a few days.

Within a few weeks it might be back to pre-ART levels.

- Each time you stop there is a small risk of drug resistance.
- Staying on ART is generally better for your long term health. It will keep your CD4 count high and keep HIV under control.

Please speak to your doctor if you want to stop ART.

- If you stop then monitoring your CD4 and viral load is essential.



What about if I am feeling well without ART?

Even if you are feeling well without ART, HIV will be damaging your immune system.

Even with a high CD4 count, ART reduces the risk of serious problems. This includes heart disease and some cancers.

What if I am a slow progressor?

A small percentage of people have a very strong immune response to HIV.

Roughly 1 in 20 people (5%) can keep a CD4 count above 500 for five years without ART. They are called long-term slow progressors (LTSPs).

About 1 in 1000 (0.1%) can also keep viral load undetectable. They are called elite controllers (ECs).

ART is still recommended for LTSPs and ECs.

This is because HIV might be damaging your body in ways that are not shown by your CD4 count and viral load.

Does ART always work?

Yes. Everyone can get an undetectable viral load after starting ART.

If this does not happen, this could be because of one or more of the following reasons.

- Side effects.
- Missing doses.
- Drug resistance.
- An interaction with other drugs.
- Choice of drugs.

Each issue is discussed in this booklet.

Review ART every year

UK guidelines say to review ART every year.

The drugs that your doctor prescribes today might be different next year.

It is good to ask about your monitoring results and if there are other options for ART.

Should I enter a study?

Some HIV clinics are also research centres and you might be asked to join a study.

Research improves how we use both new and existing drugs.

If you are interested in a study, take time to find out about the details.

Whether or not you join a study is up to you. Your future care will not be affected either way.

Ask about the choices to the study treatment. Ask what advantages or risks the study offers over existing care. For example, you might get to use better tests and monitoring.

i-Base and other HIV organisations can give advice on research studies.

What about drug interactions: alcohol, drugs, supplements and vitamins?

Some HIV drugs interact with chems, recreational and street drugs, methadone, vitamins, herbal remedies, supplements and over-the-counter medicines.

This can increase or decrease levels of HIV meds or the other drugs.

Please tell your HIV doctor and pharmacist about other drugs or supplements that you take, even if you use them rarely and even if they are not legal.

Your doctor will treat this information in confidence.

Although alcohol does not interact with HIV drugs, the side effects of alcohol might lead to missing doses.

For these reasons, people who drink more alcohol have a higher risk of ART failure.

Please talk about with your doctor about this.

“I became HIV positive after one low-risk experience. I knew that I wanted to start ART and I wanted to be less infectious to any future partners, even if we used condoms.

I also learned from my support group that because I was diagnosed soon after I was infected, there may be other benefits from early ART.

So I started ART within a week - when I was still within six months of infection.

Since then, my experience of HIV has been really positive – both at the clinic and from support organisations. It was great when I became undetectable.

I was really unlucky to catch HIV. But learning and understanding how ART works – and then deciding to use it – was an important part of how I chose to move forward.”

What about a cure?

ART is really effective but it is not a cure.

Even having an undetectable viral load for years, HIV still remains in some of the CD4 cells that are resting.

The resting cells are mainly in your lymph nodes.

Lymph nodes are where most CD4 cells stay. They are the bumps you can sometimes feel in your neck or armpits or groin.

These resting cells are why HIV is so difficult to cure. They might sleep for 20 years – or wake up at any time. This is why we need to continue taking ART.

Research is making exciting progress, but a cure might still take many years.

Even if a cure takes a long time, taking ART carefully makes it likely to live well and into older age.

The monitoring for ART can also help your general health more than if you were HIV negative.

Age, gender and pregnancy

How do children use ART?

HIV treatment for children is similar to adults, but there are two main differences.

- Young children are usually monitored by their CD4 percentage (CD4%) rather than the CD4 count. A CD4% of 25 to 30% is similar to an adult CD4 count of about 500.
- Some adult drugs are not yet available for young children – so there are fewer choices.

Children of all ages need to be treated by a paediatric doctor with experience in looking after HIV positive children.

The immune system and drug absorption can be different in babies, children and adults.

There are separate treatment guidelines for children. However, they tend to be updated less frequently than adult guidelines.

It is therefore important to be aware of changes in adult care that might be important for children.

For more info see the Children with HIV Association (CHIVA) and PENTA web sites:

www.chiva.org.uk

www.penta-id.org



“When I was diagnosed I was in shock and I worried about dying. I pictured myself as a person in the media adverts for African people with AIDS who were just bones and skin.

My viral load was 650,000 and my CD4 was less than 10. So I had to start ART immediately.

I read the leaflets first and then started. I still could not believe I was on treatment for HIV.

Because my CD4 count was so low, the increase in CD4 cells caused TB to become active.

So I needed a short course of TB treatment. I asked the pharmacist to have the TB meds as an oral solution as I couldn't swallow the large tablets.

Now, 20 years on, I take my HIV meds every day and at the right time.”

Memory, London

Does ageing affect HIV in adults?

About half the people living with HIV in the UK are over 50.

Some of us have been positive for many years and others only recently became positive.

Having an undetectable viral load on ART is especially important for those of us who are older.

Ageing is related to health problems, and these can overlap with complications from HIV.

Your HIV doctor and pharmacist can help make sure any other medicines also work with ART.

Leading a healthier lifestyle can make ageing easier.

This includes keeping mentally and physically active, eating a healthy balanced diet, sleeping well and not smoking etc.

Does gender affect ART?

ART is just as safe and effective for all genders.

Some aspects of care, including monitoring can be different for women compared to men.

However, social factors affect women, men and people who are trans differently and this can include access to care and support.

Trans people and ART

HIV drugs are safe and effective for people who are trans.

The main caution is to not use HIV drugs that interact with hormone treatment. Your doctor needs to understand these potential interactions.

Liverpool University publish a summary of interactions between HIV and gender affirming meds. tinyurl.com/yuxxa8fy



Specialist sexual health clinics for trans people are in some towns and cities. This includes in London, Brighton and Manchester.



See:

i-base.info/guides/starting/trans-people-and-hiv

What about ART in pregnancy?

ART is very safe during pregnancy.

An undetectable viral load reduces the risk of transmitting HIV to your baby to almost zero.

ART used in pregnancy is sometimes different to standard adult treatment. This is to make sure the safest HIV drugs are used for you and your baby.

Pregnancy involves specialist care. See the i-Base guide: *HIV, Pregnancy and Women's Health*.



Starting ART

Is starting ART easy?

Generally yes. Most people find ART is much easier than they thought.

- Try not to miss doses of ART.
- Although everyone worries about side effects, these are usually mild and then resolve.
- You can be involved in your choice of ART.
- Once started, it is not good to stop and start ART.

How soon do I need to start?

As with all treatment choices, this is individual. You can decide when to start.

Many people start as soon as they are diagnosed. This is often the same day or week.

But as long as there is not a medical urgency (such as pregnancy or a very low CD4 count), you can take more time.

- Ask about the different options.
- Think about what you want. Do not feel rushed into doing something you don't understand.

It is more urgent to start if you:

- Have a very low CD4 count.
- Are pregnant. Or
- Were recently infected.

In these situations the earlier you start the better. Every week might be important.

Early diagnosis and primary infection

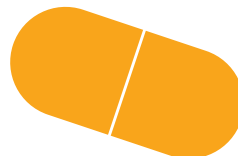
Early HIV is defined as testing positive within six months of infection.

In the UK, a special HIV test called STARHS or RITA can help confirm this. This is recommended for all new diagnoses, but you might need to ask for this.

The results need to be interpreted with your recent history of risks.

There are several reasons to start ART very early.

- To reduce damage to your immune system.
- To reduce any risk to partner(s) when viral load is very high.
- To have a smaller reservoir of infected resting cells.
- To perhaps benefit from cure-related research.



Late diagnosis and low CD4s

In the UK, about 2 in 5 people (40%) are diagnosed after their CD4 count is already less than 350.

About 1 in 5 (20%) are even later, with a CD4 count below 200.

Late diagnosis can be related to:

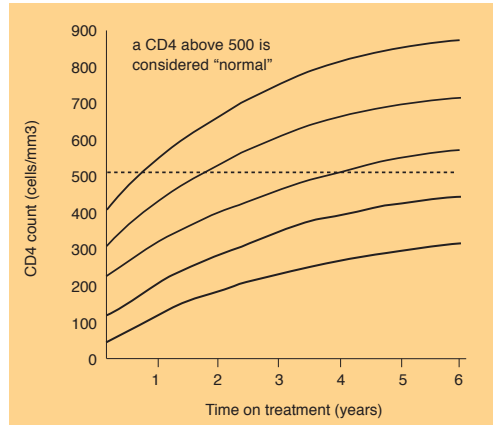
- Fear of testing.
- Denial: “it will never happen to me”.
- Fear of stigma and prejudice.
- Lack of up-to-date information about HIV and treatment.

Even with a low CD4 count ART will work well. Even if below 100, if you take your meds carefully.

But starting with a very low CD4 count can cause some infections to activate, such as TB. This is called Immune Reconstitution Inflammatory Syndrome (IRIS) and is serious, but can still be treated.

Sometimes, other infections might need to be treated first. But ART will be started soon after.

Figure 2: CD4 increases on ART



The higher your CD4 count when you start, the more likely it will reach or stay above 500.

Even getting above 350 or even 200 will reduce the risk of most HIV complications.

This graph shows average levels of CD4 increases. Some people respond better or worse than average.



U=U and Treatment as Prevention

As well as being good for your health, ART also protects your partners.

An undetectable viral load on ART stops the risk of HIV, even without condoms.

This is called U=U or Undetectable = Untransmittable.

Your HIV doctor should talk about this.

The PARTNER and Opposites Attract studies both reported zero transmissions when the positive partner has an undetectable viral load.

Couples in these studies – both gay and straight – had sex more than 100,000 times without condoms.

This means condoms are only important if you want to protect against pregnancy and some STIs.

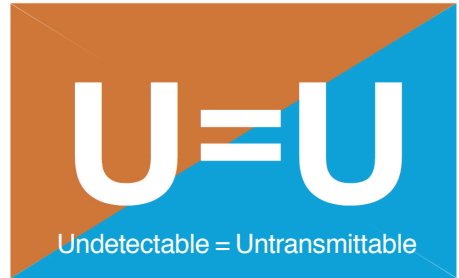
U=U should reduce anxiety over stigma about HIV.

Links

The evidence for U=U:
i-base.info/htb/32308



U=U campaign
www.preventionaccess.org



Public health and personal choice

U=U has changed the approach to HIV and ART.

But your decision to use ART should always be your personal choice.

The main reason to take ART is for your own health.

- Most people living with HIV never put their partners at risk.
- Most new infections are from people who are not yet diagnosed. This is because viral load will be higher when not on ART, especially in early infection.
- U=U can improve our lives. It is good to no longer worry about our partners being at risk.
- ART makes it easier to have relationships without the fear of HIV.

“We are both HIV positive and not using condoms is a special part of our relationship.

We are both on ART with no drug resistance. We don’t usually have other partners, but agree to use condoms if this happens, so that we would reduce the risk of STIs...”

Steve, Manchester

“I am positive and so is my partner.

I am happier to continue using condoms because I feel better to be in control of this part of my life.

At least I don’t have to worry about my health if he has other partners...”

Paula, London

What about side effects?

All medicines have a risk of side effects (or adverse events). So it is normal to worry about this before you start.

However:

- Many people do not get side effects.
- If they do get them, they are usually mild.
- Within a few weeks, most people find that ART is much easier than they thought. It just becomes part of everyday life.
- There is only a small risk of serious side effects. For example, rash should always be reported to your doctor. Others should be picked up by routine monitoring.

Ask your doctor, nurse or HIV pharmacist about the most common side effects of the drugs that you might use.

- Ask how likely they are to occur.
- Even rough estimates will give you a good idea of what to expect.
- Ask how many people stop treatment because of side effects – usually it is very few.

If you do have any side effects, please talk to your doctor. Sometimes these can be caused by a different health problem.

Weight gain

Some HIV drugs have been linked to changes in weight.



This is mostly reported for integrase inhibitors but may occur with other drugs too.

This should not affect your choice of ART. Recording your weight when you start and with routine monitoring will show any early problem.

More detailed information

Weight increases on ART

i-base.info/guides/starting/weight-increases

How to lose weight successfully

i-base.info/htb/40717



Metabolic changes

Many HIV meds can change the levels of fat and sugar in our bodies.

Metabolic changes can also be caused by lifestyle factors including poor diet and lack of exercise.

These include:

- Changes in blood lipids (fats) like cholesterol and triglycerides.
- Changes in blood glucose (sugar) - an early sign of diabetes.



Routine monitoring by your HIV clinic, with blood or urine tests, look for these possible side effects.

Other body changes

Body changes called lipodystrophy were reported as a side effect of the first HIV drugs.

Luckily, this is no longer a worry with modern HIV drugs.

ART and heart disease

HIV drugs are very safe for your heart but a few are not recommended.

The biggest risks for heart disease are smoking cigarettes, poor diet and low exercise – or not being on ART.

Your HIV doctor should check your risk of heart disease online when you are diagnosed, before ART and then every year.

www.hivpv.org

www.qrisk.org

www.qintervention.org

The q-intervention calculator also looks at risk for type-2 diabetes.

The i-Base guide includes detailed info on all main side effects:

HIV and your quality of life: a guide to side effects and long term health



i-base.info/guides/sides

It also covers long-term health issues related to ageing well with HIV.

This link includes info on every HIV drug:

i-base.info/guides/category/arvs



You and your doctor

A good relationship with your doctor and other health workers can really help.

Nurses and pharmacists can give you support and advice on all aspects of ART. This includes adherence and side effects.

They can make referrals. For example to dieticians, psychologists and social workers.

It is important to involve your local doctor (GP), especially as you get older. Find a GP and/or a surgery that you are happy with.

Your GP has expertise in other health areas and for other referrals.

Your rights as a patient

HIV testing, monitoring and treatment is free at any NHS HIV clinic to anyone living in the UK.



This is even if you do not have permanent resident status.

You have rights about how you are involved in your care and how you are treated, including confidentiality and seeing your medical notes.

You can choose to change clinic or doctor, can make a complaint without it affecting your care and ask for a second opinion.

<https://i-base.info/guides/starting/you-and-your-doctor>

Things you can do to help

There are also many things you can do to help.

- Find a doctor and clinic you like.
- Women may be able to ask for a female doctor. Gay men may be able to see a gay doctor in some clinics.



*HIV treatment is free to everyone living in the UK.
This is even if you are not a permanent resident.*

- Try to be on time. Tell the clinic if you can't make it so someone else can be seen.
- Take a list of things you want to discuss with your doctor.
- Ask to see the same doctor until your care is settled - although this is difficult in some clinics. Once you are settled, seeing a different doctor can give you a different perspective.
- Treat all people involved in your care with the same respect you would wish to receive yourself.
- If possible, have blood tests 2-3 weeks before your clinic visit so the results are ready for your appointment.
- Listen carefully to health advice.
- If you don't understand something, ask your doctor to explain it again or in a different way.
- Be open with those caring for you. Your discussions are in confidence.
- If you have problems with ART, please tell your doctor and other health workers.
- Talk about other things that affect your health. For example, any other drugs including alcohol, legal and illegal drugs and complementary treatment.
- Remember that your HIV doctor might not be able to treat every health issue. Your GP and other specialists might be needed to get the best care.

Adherence to ART

What is adherence?

Adherence involves taking your meds as prescribed.

This includes:

- Taking them at the right time.
- Following advice to take with or without food.
- Avoiding any drug interactions.

Adherence is the most important thing to think about when you start ART.

Good adherence makes sure that all your meds will be working 24 hours a day, 7 days a week.

How much is enough?

Taking every dose correctly is still the best goal.

Missing or being late is okay once or twice, but if you are missing more than one dose every week or two, please talk to your doctor.

Getting support

You might need support to get used to ART.

- Plan to start ART when you have a few unstressed days.
- Work out your schedule.
- Getting into a good routine now will help in the future.
- Your clinic can help with advice. This might be support from an HIV positive peer mentor.

Tips to help

Choose a combination that fits with your life.

- Find out what is involved before you choose your ART.
 - How many tablets and how often do you need to take them?
 - How big are they?
 - How exact do you have to be with timing?
 - Are there food restrictions?
 - Are there easier options?



- Use a weekly pill box. Then you can see if you miss a dose.
- Plan your timetable (see page 28). For the first few weeks, mark the time that you take each dose. Include any other meds you normally take.
- Use the alarm on your mobile phone or watch for all doses. Then take your meds when it beeps!
- Link ART to other daily routine - for example, brushing your teeth.
- Keep a few spare meds at work or a friend's house.
- Take extra meds with you if you travel, in case flights or other things change.
- Ask a friend to remind you at difficult dose times, for example, when you are out at night.
- Ask friends if they have any tips.
- Once-daily usually means every 24 hours. Twice-daily means every 12 hours.

What if I forget?

Almost everyone will forget or be late at some time – and this will be fine.

But an occasional missed dose is different to regularly forgetting.

- Be strict when working out if you are getting adherence right.
- Support is available but you will need to ask for help.

If you often miss doses there might be easier combinations.

- ART can only work if you take it.
- Another combination might be easier for you and fit your lifestyle better.

If you realise you missed a dose, take it as soon as you remember.

BUT, don't take a double dose if you only realise a few hours before your next dose.

Drug resistance

What is drug resistance?

Drug resistance is when HIV makes small changes that stop your meds from working.

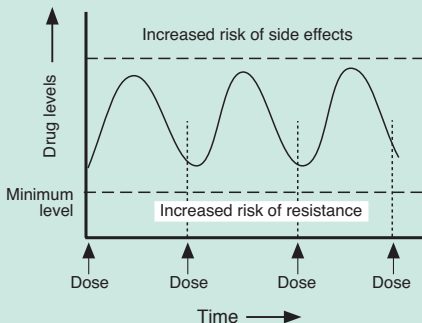
These changes are called mutations.

Sometimes resistance can develop to one or all the meds in your combination. This can also stop other similar drugs from working too.

- The biggest chance of resistance comes from missing your meds. See Figures 3 and 4.
- Drug resistant HIV can also be transmitted. About 1 in 10 people in the UK were infected with HIV that is resistant to at least one drug.
- This is why a resistance test is recommended when you are first diagnosed and before starting ART.

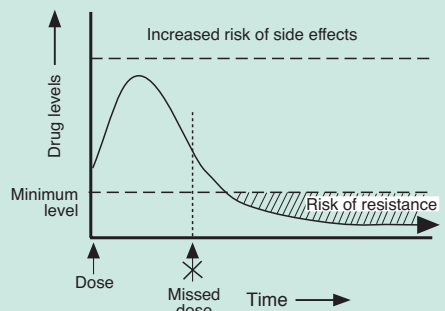
Please check if your clinic did this.

Figure 3: Drug levels with good adherence



Average drug levels need to be high enough to control HIV and not cause drug resistance.

Figure 4: A missed or late dose increases the risk of resistance



Missing a dose or being late lets the drug levels drop and resistance can develop. The more often you are late, the greater the chance of resistance.

The i-Base *Guide to changing treatment:
what to do if viral load rebounds*

www.i-base.info/guides/changing



When does resistance occur?

Drug resistance only develops when you have a detectable viral load on ART.

Usually, this is because drug levels fall too low from missing meds.

Your doctor will ask about adherence, side effects and drug interactions to find out why this happened.

You might need a drug resistance test.

How to avoid drug resistance

The best way to avoid resistance is to take your drugs every day and on time.

Once your viral load is undetectable, resistance is very unlikely – so long as you keep taking your meds.

What is cross-resistance?

Cross-resistance is when resistance to one drug will stop another similar drug from working.

So resistance to the integrase inhibitor raltegravir might stop dolutegravir from working, unless you switch quickly.

What happens if my viral load rebounds?

If your viral load becomes detectable, the viral load test needs to be repeated straight away.

Often this is just a laboratory or test error.

Small increases that go back down again are called ‘blips’.

The second viral load test will show if ART has stopped working.

Adherence diary

Use the table below for the first few week.
Mark when you take each drug.

This will help you know if you have just taken a dose – or if you are late or miss a dose.



Date at start of week _____

	Drugs & times (morning)	Drugs & times (evening)
Monday		
Tuesday		
Wednesday		
Thursday		
Friday		
Saturday		
Sunday		

Date at start of week _____

	Drugs & times (morning)	Drugs & times (evening)
Monday		
Tuesday		
Wednesday		
Thursday		
Friday		
Saturday		
Sunday		

Choosing first-line ART

UK guidelines

There are now many ARVs and formulations, including ten single pills with a whole combination.

This means that if one drug is difficult, you can always try another.

This booklet will focus on the combinations recommended when starting ART in the UK.

These are the safest and most effective. But some people might need or chose different combinations based on their individual history.

Main types of ARVs

There are many types (or classes) of ARVs – and others are in development.

Each class works at a different stage of the HIV life cycle.

Every combination uses at least two different types of drugs.

The pull-out drug chart in the centre pages includes the most commonly used HIV meds.

Info on each HIV drug is also online – old and new.

i-base.info/guides/category/arvs



Table 1: Main types of ARVs

Abbreviation	Full name
NRTI/NtRTI (‘nuke’)	Nucleoside/tide reverse transcriptase inhibitor or nucleoside/tide analogue
NNRTIs (‘non-nukes’)	Non-nucleoside reverse transcriptase inhibitor
PI	Protease inhibitor
INIs (or INSTIs)	Integrase strand transfer inhibitor
CCR5 inhibitor	CCR5 inhibitor
Fusion inhibitor	Fusion inhibitors are a type of entry inhibitor
mAb	Monoclonal antibody
PK boosters	Ritonavir or cobicistat are included in some combinations to boost another drug.

What is the best combination?

Although there are many approved HIV drugs, only a few combinations are recommended.

These are all very effective and easy to take.

The one that is best for you depends on your medical history and your choice.

This means the main focus is to choose ART that will be both effective and easy to take.

Ask your doctor about your choices. This will depend on whether you have taken HIV drugs before, or have drug resistance.

Information about dosing, pill size and side effects will help you pick ART that is right for you.

Info on each drug

i-base.info/guides/category/arvs

Generic HIV drugs

i-base.info/guides/12423

First combination: integrase-based ART

UK guidelines recommend first ART includes either dolutegravir or bictegravir.

These are the two most recent integrase inhibitors (INSTIs).

They are generally used in 3-drug ART with two NRTIs.

Dolutegravir can also be used with lamivudine in a two-drug ART.

Alternative drugs

In certain situations, alternative drugs can be used.

These include:

- raltegravir - an integrase inhibitor.
- darunavir - a boosted PI.
- doravirine - an NNRTI.
- rilpivirine - an NNRTI.

These drugs are no longer first line because they are not as good overall.

Some can only be used in less advanced HIV or need to be taken with food. Or can have a higher risk of drug resistance.

They can still be used as a switch treatment.



“Seeing people get better on ART is without a doubt the most extraordinary thing I have ever seen. It made me become an activist.”

Polly, London

“My first reaction was to put off starting ART for as long as possible. I tried to improve my immune system by stopping smoking and using supplements, until I realised that my best bet was to use ARVs. They are the only way to ensure my long-term survival.

After eight months of resisting I eventually started ART. I do not say that I gave in, but that I became more clever!”

Vladimir, St Petersburg

“No-one wants to take drugs every day and I certainly didn’t, so I put it off.

Looking back, I wish I had started sooner.

I still wonder whether the three years I spent waiting for my CD4 count to fall would have been happier and more active ones if I had started treatment at a higher CD4 count, when my doctor recommended this.”

Matt, Brighton

The two nukes

Two nukes are the basis of most combinations, with both drugs usually in a single pill. These are once-daily drugs with a low risk of side effects.

- abacavir (ABC) + lamivudine (3TC).
- tenofovir DF (TDF) + emtricitabine (FTC).
- tenofovir AF (TAF) + FTC.

UK guidelines recommend TDF or TAF over abacavir, except when the third drug is dolutegravir.

TDF is widely used except in people who already have kidney or bone problems.

TAF is similar to TDF but with less impact on kidney and bone health. However, it is more expensive than either abacavir or TDF, both of which are either available as generics or will be shortly (see page 36).

Abacavir involves having a blood test first (called HLA B*5701) to rule out the small chance of a sensitivity reaction.

Abacavir should not be used if you have a high risk of heart problems.

Lamivudine (3TC) and **emtricitabine (FTC)** are similar drugs with few side effects. Either can be used, but they should not be taken together.

Choice of integrase inhibitor (INSTI)

Dolutegravir (DTG) and bictegravir (BIC) are so similar that this choice will depend on which nukes you use.

They are also in these fixed dose combinations (FDCs).

- Triumeq (DTG/3TC/abacavir).
- Dovato (DTG/3TC).
- Biktarvy (BIC/FTC/TAF).

About 1 in 20 people (5%) report mood changes or interrupted sleep. This is why it is better to taking these meds in the morning.

Weight gain has been recently reported as a side effect that might be higher with dolutegravir or bictegravir. It might also be higher in women compared to men.

Integrase inhibitors can interact with supplements that contain calcium, magnesium or aluminium. These can sometimes still be taken by separating the dosing times. See the prescribing leaflet for each drug.

Two-drug ART

Dovato only includes two drugs: dolutegravir plus lamivudine in a single tablet.

This combination works just as well as three-drug ART.

Alternative drugs

The drugs below can sometimes be used for first-line ART.

This should only be if the preferred meds can't be used. For example if there is drug resistance or are difficult side effects.

Doravirine is a once-daily NNRTI that can be taken with or without food. It was approved in 2019 and is also available as part of a single pill **Delstrigo** with TDF and lamivudine.

Raltegravir is a once-daily integrase inhibitor given as two pills. It can be used if viral load is less than 100,000 copies/mL

Darunavir is the only PI recommended in the UK. It needs to be boosted by either ritonavir or cobicistat.

It also needs to be taken with food.

Side effects from the booster include stomach upset, diarrhoea, nausea and increases in lipids. This is why PIs are not a preferred first choice.

The boosters interact with other meds including inhaled, injectable, nasal sprays and steroid creams.

Ritonavir or cobicistat can be given as separate pills. There is also a single pill version of darunavir/cobicistat (Rezolsta).

Non-standard combinations

Alternative combinations are sometimes used in individual cases or in research.

If you are already using an unusual combination that is working well, you do not need to change treatment unless there are reasons to do so.

Please ask your doctor or contact i-Base if you are unsure about your current drugs.

The following drugs are rarely used when starting ART.

Cabotegravir/rilpivirine injections

These two long-acting drugs are given by injection every 2 months.

The injections are into your the muscle in your buttocks.

This is only a switch option after having an undetectable viral load on ART for more than six months.

Other criteria are also important and are covered in BHIVA guidelines.

Juluca

Juluca is a two-drug combination. It includes dolutegravir plus rilpivirine in a single tablet.

It is approved as a switch option for people who have undetectable viral load for more than six months on their current ART.

Ibalizumab - a monoclonal antibody

Ibalizumab is an immune-based treatment that is given as an intravenous (IV) infusion every two weeks.

It is only used for people with extensive drug resistance.

Maraviroc (a CCR5 inhibitor) is usually only used in second-line treatment or in studies. Before using maraviroc you need a special test to check it is likely to work.

Etravirine is used if you have resistance to other NNRTIs, often in combination with boosted darunavir.

Meds no longer recommended

The following meds are no longer recommended.

People using these earlier drugs can change to more modern combinations.

Atazanavir: a boosted PI that has largely been replaced by darunavir.

Rilpivirine: an NNRTI that is also available in two single pill combinations (Eviplera and Odefsey).

Efavirenz: an NNRTI that is now only sometimes used during pregnancy and then changed.

Elvitegravir: an integrase inhibitor that needs to be boosted with cobicistat.

Nevirapine is an old NNRTI that is only used in people already taking this drug. But most people are switching to newer ART.

Future HIV drugs

The following research drugs might become available in the future.

Learning about new research shows how your care might change in the future.

How quickly these drugs become available is difficult to predict.

Islatravir (EFdA)

Islatravir is a new type of nuke that is being studied for HIV treatment and for prevention (PrEP).

Although it is being used in a few studies, most research is on-hold. This is because it might reduce CD4 counts.

Lenacapavir

Lenacapavir is a capsid inhibitor that is given every 6 months by a subcutaneous injection.

It needs to be used with other HIV meds though. It might be approved earlier for use against drug resistant HIV.

Monoclonal antibodies (bNAbs)

bNAbs are an immune-based treatment. As well as reducing viral load they might also make your immune system stronger.

Although one bNAb called ibalizumab is approved to treat HIV drug resistance, many others are being studied.

Generic HIV drugs & HIV care in the UK

In the UK, the NHS provides access to the best HIV care. Testing, monitoring and treatment is free and this will continue in the future.

However, many NHS services are running under tight budgets.

Even if services change you should still get access to the same treatment and care.

Drug costs and treatment choice

UK guidelines are clear that the choice of HIV drugs should be based on best medical need.

- HIV drugs are based on being most effective - not just on the price.
- But if two similar drugs are just as good, the least expensive should be used first.
- If there are clinical reasons to use more expensive drugs, these will continue to be available.

Your clinic should always tell you before changing your ART, including to generics.

Generic ARVs

When a drug is first approved, the manufacturer is given a license – called a patent. This usually allows 10 or more years for a company to profit from its investment.

After the patent ends, other companies can make generic versions of the same drug. These are the same quality but are usually much cheaper.

- In the UK, 60-85% of all NHS prescriptions are for generic meds.
- The savings enable the NHS to continue to provide free health care.
- Some HIV drugs are now off-patent.

As in other health areas, the NHS will use generic HIV drugs unless the original companies lower their prices.

- Generics are just as carefully made as the originals. They are the same high quality with the same active ingredients.
- Generics are just as effective as the originals.
- Generics might be a different shape and/or colour to the original. The packaging, manufacturer and brand name are also different.

Generic ART and single pill combinations

If generic drugs reduce the price of ART, some single pill combinations might not be used in the UK.

This could include pills like Atripla, Dovato, Eviplera, Genvoya, Kivexa, Odefsey, Triumeq and Truvada.

This would increase the daily pill count by one or two pills. Although an extra pill is less convenient, the savings will enable other important HIV services to continue.

The structure of HIV services

Over the last few years the structure of providing HIV care has been changing.

One recent change is for HIV drugs to be commissioned centrally by each country in the UK.

This should mean that the same drugs will be available wherever you live.

Your treatment history

i-Base produce a booklet where you can record your treatment history.



<https://i-base.info/guides/passport>

Please order a free copy online.

<https://i-base.info/forms/order.php>

Keeping a record of your treatment history can:

- Help you understand your health and treatment.
- Help if your doctor changes at your clinic.
- Help if you speak to other healthcare workers or to a treatment advocate for advice.
- Help if you ever change hospitals or clinics, if you want a second opinion, when on holiday or abroad or if you move to another country.

This includes results from blood tests like the CD4 count, viral load and resistance tests, as well as the history of drugs you have used and your reasons for changing them.

These URLs and QR codes link to key pages from the booklet.

CD4 and viral load results

i-base.info/guides/passport/cd4-and-viral-load



ART history

i-base.info/guides/passport/art-history



Other tests

i-base.info/guides/passport/other-tests



Other pages include:

Other infections, STIs and illnesses

Side effects and allergies

Vaccinations and screening tests

Trials and studies

Clinics and hospitals

Glossary

adherence

Taking medication exactly as prescribed. This includes at the right time and following any food advice.

antibody

Part of the immune system that fights an infection.

antigen

A protein found on the surface of a virus or bacteria. When the immune system recognises an antigen it makes antibodies.

antiretroviral (ARV)

An HIV drug – because HIV is a retrovirus.

ART

Antiretroviral treatment.

CD4 cells

A type of white blood cell that helps your body fight infections.

drug resistance

When HIV changes its structure so that a drug no longer works as well.

first-line therapy

The first ART that you use. Second-line ART is your second combination.

mutation

A change in the structure of HIV. Some mutations stop ART from working.

opportunistic infection (OI)

An infection that occurs after your immune system has been damaged by HIV.

post exposure prophylaxis (PEP)

A one month course of HIV drugs used by an HIV negative person after a risk of HIV exposure.

pre exposure prophylaxis (PrEP)

Using HIV drugs before sex to protect against HIV.

seroconversion

Very early HIV infection (usually a few weeks after infection) when your body responds to HIV.

side effect

An unwanted symptom caused by a drug.

treatment-experienced

Someone who has used ART.

treatment-naive

Someone who has never taken any ART before.

triglyceride

A type of body fat related to cholesterol.

viral load test

A test to measure the amount of HIV in blood, genital fluid, semen or spinal fluid. Tests can only measure down to certain cut-off level (i.e. 50 copies/mL).

viral rebound

When viral load increases on ART from undetectable to detectable levels.

wild-type HIV

HIV that has no drug resistant mutations. About 90% of people are first infected with wild-type virus.

Further information

i-Base

The i-Base website has other treatment guides including translations, technical reports, an online Q&A service and many other resources.

This includes guides to changing treatment, side effects, pregnancy and hepatitis C coinfection.

i-Base.info

For info on each HIV drug:

i-base.info/guides/category/arvs

UK-CAB

A community network that focuses on treatment, including peer-support and training.

ukcab.net

Community support

A network of HIV support groups provide direct services for HIV positive people.

Positively UK (positivelyuk.org)

Positive East (positiveeast.org.uk)

HIV Scotland (hivscotland.com)

THT online forum (tht.org.uk)

Aidsmap run an online directory of organisations (aidsmap.com)

HIV and ageing

A guide to HIV and ageing (called *Coming of Age*):

www.justri.org/coming-of-age

Drug approval agencies

Detailed information on every HIV drug is available from the European Medicines Agency (EMA). This is the European organisation responsible for drug approval and drug safety.

Information is in most European languages and other scientific documents are included.

www.ema.europa.eu

UK guidelines

About 18 UK guidelines are posted to the BHIVA website.

These include treatment guidelines and UK standards of care.

www.bhiva.org

Patient rights in the UK

Information about healthcare services including how to make a complaint are on the NHS website:

www.nhs.uk

Please search for PALS for how to give feedback or if you are not happy with your care.

Other notes

Feedback

Your comments help us improve these guides and are appreciated.

Comment online: www.surveymonkey.com/s/MK9R928

Or post to: i-Base, 107 The Maltings, 169 Tower Bridge Rd,
London SE1 3LJ.

1. How easy was the information in this guide to understand?

Too easy Easy Difficult Too difficult

2. How much of the information did you already know?

None A little Most All

3. Will the guide help you be more confident when speaking to your doctor?

Yes, a lot Yes, a little Maybe No

4. What did you find most useful?

5. Do you still have questions after reading this guide? Please include a contact email address if you would like us to reply to you.

6. Other comments?

Contact details (if you would like a reply):

Name _____

Email _____ @ _____

i-Base publications

All i-Base publications are available free.

Treatment guides are written in everyday language.

Please photocopy or post this form to: HIV i-Base, 107 The Maltings,
169 Tower Bridge Road, London SE1 3LJ.

or order online www.i-Base.info

Please send me

Pocket size leaflets

- Intro to ART PrEP in the UK
 Side effects & long-term health PrEP for women
 HIV and pregnancy

Treatment guides (A5 booklets)

- Introduction to ART (this guide)
 Changing treatment: what to do if viral load rebounds
 HIV, pregnancy & women's health
 HIV & your quality of life: side effects and your long term health
 UK guide to PrEP
 HIV testing and risks of sexual transmission
 Treatment passport: recording your treatment history
 ART in pictures: HIV treatment explained (A4 booklet)

HIV treatment bulletin (only by email)

Name

Address

.....

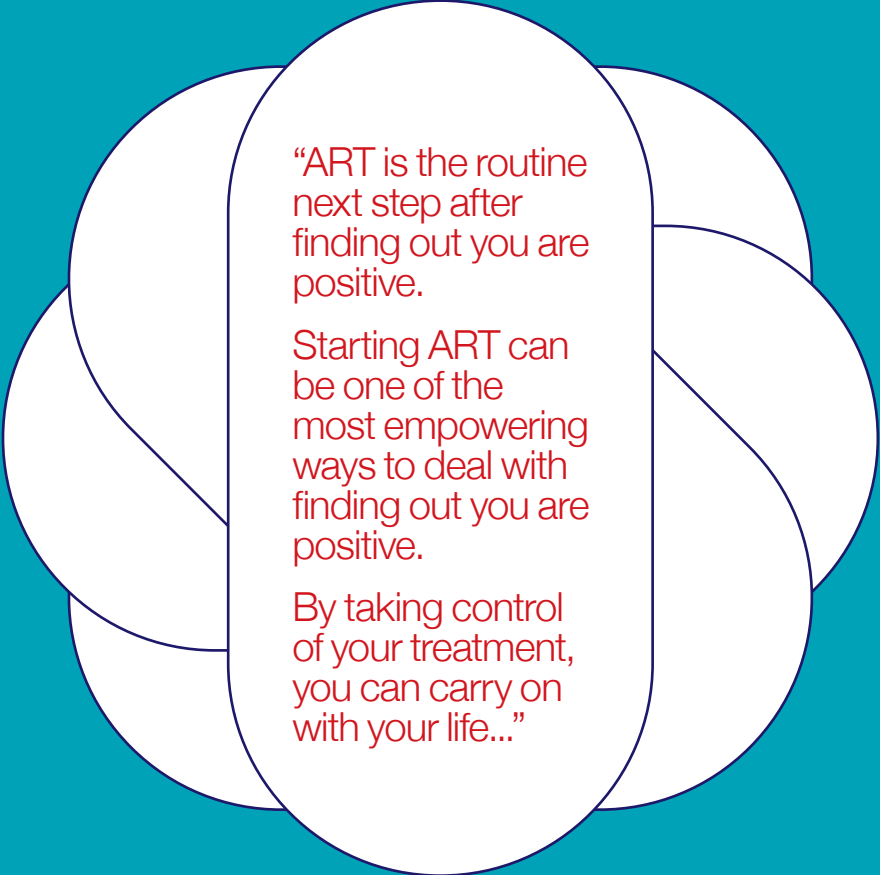
Postcode Tel

Email

Call i-Base on 0808 800 6013

Treatment Information Phonenumber

Monday to Wednesday
12 noon to 4pm



“ART is the routine next step after finding out you are positive.

Starting ART can be one of the most empowering ways to deal with finding out you are positive.

By taking control of your treatment, you can carry on with your life...”

i-Base can answer your questions by email or online

questions@i-Base.org.uk
www.i-Base.info/qa