

anti-hiv therapy

Anti-HIV therapy is treatment with drugs that attack HIV itself. These drugs interfere with the way the virus tries to reproduce itself inside a human cell. Although anti-HIV drugs cannot kill the virus completely, they reduce the chance of infected cells producing new HIV particles which could go on to infect even more cells.

The anti-HIV drugs currently available for prescription fall into two main categories:

- Reverse transcriptase inhibitors
- Protease inhibitors
- A single drug from a third class, known as fusion inhibitors, is available to people with limited treatment options.

Anti-HIV drugs are most effective when taken in a combination of three or at the same time. This is called combination therapy or HAART (Highly Active Antiretroviral Therapy). It's unclear which of the many available combinations is the most effective.

It is also uncertain when is the best time to begin taking anti-HIV drugs, however the British HIV Association's guidelines on treatment recommend starting treatment if you are ill because of HIV, or if your CD4 count is low (below 200). If you are asymptomatic, and have a higher CD4 count (200-350), the decision on whether to start treatment is guided by the speed at which your CD4 is falling and your viral load is increasing.

HAART combinations usually include two drugs from a class of anti-HIV medicines called nucleoside analogues, and one other drug from another class; either non nucleoside reverse transcriptase inhibitors (NNRTIs) or a protease inhibitors. Some people take four or more drugs, particularly if they are very ill because of HIV, have a very high viral load or have taken several HIV combinations before and have become resistant to some anti-HIV drugs.

Reverse transcriptase inhibitors

Once HIV has locked onto and invaded a human cell, it uses a substance called reverse transcriptase to convert its genetic code into the same form as the genetic code of human cells (DNA). This viral DNA then merges with human DNA, converting the cell into a factory for building blocks of the virus.

There are three classes of anti-HIV drug that target reverse transcriptase. Nucleoside analogues, which include AZT (zidovudine, *Retrovir*), ddI (didanosine, *Videx*), 3TC (lamivudine, *Epivir*), d4T (stavudine, *Zerit*), abacavir (*Ziagen*), ddC (zalcitabine, *Hivid*) and FTC (emtricitabine). AZT and 3TC are also available in a single combined pill called *Combivir* and AZT, 3TC and abacavir in a single combined pill called *Trizivir*, and abacavir and 3TC comes in a combined pill called *Kivexa*.

There are currently two licensed non-nucleoside analogues. These are efavirenz (*Sustiva*) and nevirapine (*Viramune*). Delavirdine (*Recriptor*) is also available on a named patient basis.

The third class of drugs which attacks reverse transcriptase currently available is nucleotide analogues. Tenofovir (*Viread*) is the only drug in this class currently available for prescription.

Protease inhibitors

Protease is a different HIV enzyme. After HIV has successfully merged its DNA with the human cell's DNA, the cell produces a string of protein. Protease cuts this protein into smaller proteins that can be used to construct new particles. By blocking protease, protease inhibitors help to prevent an infected cell from producing new infectious virus particles.

Currently available licensed protease inhibitors are indinavir (*Crixivan*), ritonavir (*Norvir*), nelfinavir (*Viracept*), saquinavir (which is available in two formulations, *Invirase* and *Fortovase*), lopinavir/ ritonavir (*Kaletra*), amprenavir (*Agenerase*), fosamprenavir (*Telzir*), and atazanavir (*Reyataz*)

Fusion Inhibitors

The fusion inhibitor T-20 (*Fuzeon*) is available to people with limited treatment options.

Other treatments

Other drugs from the above classes are in clinical trials to test their effectiveness and safety, as are drugs from other classes of treatment, such as the fusion inhibitors and the immune therapy Interleukin-2. The anti-cancer drug hydroxyurea is occasionally (but now rarely) also used as it boosts blood levels of some anti-HIV drugs.

Side-effects

Like all medicines, anti-HIV drugs can cause side-effects. Different drugs cause different side effects. Ask your doctor or HIV or pharmacist to explain what side-effects you can expect, including mild ones which wear off, and serious ones which you should report to your doctor straight away.

Resistance

Resistance can develop whenever HIV continues to reproduce whilst anti-HIV drugs are being taken, but can be delayed, perhaps indefinitely, by taking drugs in powerful combinations which suppress viral load to very low levels. HIV that is resistant to one anti-HIV drug is likely to still be susceptible to some other anti-HIV drugs. However, if you become resistant to one drug in a class, you may be resistant to other similar drugs and this could limit your future treatment options.

The risk of developing resistance increases if you don't take your anti-HIV drugs regularly at the right time and in the right way, following any food restrictions and that you get support which enables you to take your treatment over the long-term. Sticking with your treatment regimen in this way is called adherence, and is the subject of another NAM Factsheet <http://www.aidsmap.com/publications/factsheets/fs09.asp>. For this reason, it is particularly important only to start anti-HIV therapy if you are firmly committed to continuing to take it and to get support which enables you to take your treatment over the long term.

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