3 Introduction to anti-retrovirals

Answers

1. What does ARV stand for?

Anti-retroviral

2. How many drugs are normally used for combination therapy?

At least 3, but can be more

3. Name four classes of anti-retroviral drug.

1. Nucleoside (and nucleotide) reverse transcriptase inhibitor (nuke or NRTI)
2. Non-nucleoside reverse transcriptase inhibitor (non-nuke or NNRTI)
3. Protease inhibitor (PI)
4. Entry inhibitor (EI)

4. Which class of drug is active before HIV enters a CD4 cell?

Entry inhibitors.

5. Approximately many drugs are approved to treat HIV?

About 20 (22 in June 2005 including co-formulated drugs eg Combivir)

6. How many combinations are recommended as first-line treatment by the WHO?

WHO recommends 4 combinations for first-line treatment (June 2005):

- 3TC + d4T + nevirapine
- 3TC + d4T + efavirenz
- 3TC + AZT + nevirapine
- 3TC + AZT + efavirenz

7. Name the individual drugs used in the main WHO combinations.

3TC, AZT, d4T, efavirenz, nevirapine.

8. Give 3 reasons to delay starting treatment.

- If the person is not ready or does not want to start treatment. Delaying treatment may give more time for them to prepare so that they adhere to treatment when they do start.

● If the person has an opportunistic infection like TB and starting two different treatments at the same time will increase side effects. With TB someone with a CD4 count less than 100 will delay ARVs for 1-2 weeks, someone with a CD4 count 100-200 will delay ARVs until after the first 2-months of TB treatment.

● If their CD4 count is higher than the level guidelines recommend for starting treatment. UK and WHO recommend starting treatment before the CD4 count falls below 200.

9. What can affect the levels of ARVs in the blood?

● How regularly a drug is taken and the time it is taken

● How quickly someone processes drugs (metabolism). Drugs levels vary in different people. Usually this is because of biological differences (eg differences in enzymes that the liver uses to process drugs) but sometimes it relates to body weight (eg heavier people need a larger dose).

● Diet. Many drugs are absorbed more quickly or slowly depending on whether they are taken with food or on an empty stomach.

● Drug interactions (including some recreational drugs). One drug can speed up the metabolism of another drug (reducing the drug levels) or can slow down the metabolism (increasing the drug levels).

● Liver damage. Someone with liver damage is likely to process drugs much more slowly. Also kidney damage for some drugs.

10. What is adherence?

Adherence means taking the drugs exactly as they are prescribed – at the right time every day, following any special diet restrictions.

11. List 6 things that could help with adherence.

Six things that could help adherence include:

1. Keeping a daily chart
2. Using a pillbox
3. Using a pill beeper or alarm watch
4. Having medications for the side effects
5. Asking a friend to remind you
6. Keeping a small supply of drugs at an easy to reach place

There are many others.

12. What is drug resistance?

Drug resistance refers to changes in the structure of HIV which means that the drugs no longer work as well or even at all.

13. What is clinical failure?

Clinical failure is when an HIV-positive person gets symptoms (other illnesses) because the drugs are not stopping him or her from getting ill.

14. What is virological failure?

Virological failure is when viral load never reaches undetectable, or rebounds and become detectable. Virological failure is determined from the results of viral load tests.

15. How low does viral load need to go to prevent resistance developing?

A viral load below 50 copies/mL stops HIV from developing resistance. After 5 years on treatment with a viral load below 50 copies, the virus will be the same as at the start of treatment. A viral load above 50 copies/mL allows HIV to evolve and resistance to develop.

This is the consensus view from many studies.