7 Days of AZT/Abacavir

7 days of nucleoside reverse transcriptase inhibitors (NRTIs) inspired by [#ItsASin](https://twitter.com/search?q=%23ItsASin). The 1st HIV/AIDs drug [#AZT](https://twitter.com/search?q=%23AZT) (zidovudine) was discovered from unusual RNA/DNA elements found in marine sponges in the 1950s! Such analogues drew attention as anticancer drugs, because of the ability to disrupt cell function.

(cont) Abandoned as ineffective for cancer, [#AZT](https://twitter.com/search?q=%23AZT) was rediscovered during the frantic search for an HIV/AIDs treatment & licensed by FDA in 1987. AZT was given in high doses, causing some toxicity & resistance also became problematic. However, it did prolong life.

Day 2: It took a further decade to develop the combination drugs now standard therapy, as effective suppressors of HIV replication & also contain drug resistance. Newer versions of NRTIs e.g [#abacavir](https://twitter.com/search?q=%23abacavir) are focus of this series

Day 3: [#abacavir](https://twitter.com/search?q=%23abacavir) kinetics: good oral bioavailability & tissue penetration e.ginto the CNS. Hepatic metabolism by alcohol dehydrogenase & glucuronidation, but no significant CYP450 activity. Avoid in moderate-severe liver impairment. Mostly renal excretion of metabolites, dosage reduction end stage renal failure. t½ ~ 1.5 hours

Day 4: Once inside the cell, HIV makes self-copies via the reverse transcriptase enzyme allowing DNA production & reproduction, taking over even more cells. [#abacavir](https://twitter.com/search?q=%23abacavir) pretends to be a DNA component, but is deliberately defective, preventing creation of viral DNA. Effective against HIV-1 & 2

Day 5: ADRs [#abacavir](https://twitter.com/search?q=%23abacavir); Common; GI effects & decreased appetite, dizziness, fatigue,fever, rash. Severe include osteonecrosis, pancreatitis, lactic acidosis, SJS (not exhaustive). Much in literature re cardiovascular risks with HIV drugs, but none listed in BNF/SPC. Can cause weight gain.

(cont) Resistance is thought to have emerged slowly to [#abacavir](https://twitter.com/search?q=%23abacavir); however, some HIV strains are resistant & also multi-resistant to more than 1 NRTI, including [#abacavir](https://twitter.com/search?q=%23abacavir)

Day 6 [#abacavir](https://twitter.com/search?q=%23abacavir). Only a low number of drug-drug interactions (DDIs). There are 6 listed in BNF & the HIV drug tipranavir is the only 'severe' interaction. The remainder of DDIs are 'moderate' & are all anticonvulsants.

Interesting fact; there are now over 25 HIV drugs licensed in UK, with many fixed dose combinations, supporting medical needs, lifestyle & compliance. The new regimens mean HIV/AIDs is a manageable long-term condition & can produce a level of remission, but a cure is elusive [#BeMoreJill](https://twitter.com/search?q=%23BeMoreJill) [#ItsASin](https://twitter.com/search?q=%23ItsASin)

CPD: in addition to the tweets, read the BNF section in Chapter 5 on HIV infection as well as the overview on nucleoside reverse transcriptase inhibitors and the monographs on abacavir and zidovudine (AZT) Another useful source is the Summary of Product Characteristics for abacavir

<https://bnf.nice.org.uk/treatment-summary/hiv-infection.html>

<https://bnf.nice.org.uk/drug/abacavir.html#indicationsAndDoses>

<https://bnf.nice.org.uk/drug/zidovudine.html>

<https://www.medicines.org.uk/emc/product/5518/smpc#gref>

CPD questions (most but not all answers will be in the tweets). There is only one correct answer per question

1. Both AZT (zidovudine) and abacavir belong to the same group of HIV drugs, the NRTIs

TRUE or FALSE

1. Abacavir is a nucleoside analogue

TRUE or FALSE

1. There is no resistance to abacavir

TRUE or FALSE

1. Abacavir is usually taken alone

TRUE or FALSE

1. Which of the following is TRUE?’
2. Abacavir should be avoided at all stages of renal impairment
3. There is little/no phase 1 liver CYP450 breakdown
4. Excretion is mainly faecal
5. Abacavir has a long half-life
6. There are multiple severe drug-drug interactions

TRUE or FALSE

1. Which best describes the mechanism of action for abacavir
2. Once in the body, abacavir prevents viral entry into the body’s immune cells
3. Abacavir enhances the intra-cellular killing capacity of lymphocytes so they can destroy the virus
4. Abacavir inhibits the ability of the reverse transcriptase enzyme to make true DNA copies
5. Abacavir prevents the virus from being released from infected cells
6. Which of the following is a common adverse drug reaction?
7. Fatigue
8. Lactic acidosis
9. Pancreatitis
10. Stevens-Johnson syndrome
11. Abacavir can be combined with dolutegravir and lamivudine

TRUE or FALSE

1. With all the new drug combinations, HIV/AIDs can now be cured

TRUE or FALSE