Glossary

Boosted protease inhibitors
Pharmacokinetic boosting refers to the co-administration of low-dose ritonavir with other protease inhibitors. Ritonavir inhibits the cytochrome P450 system so co-administration increases the plasma levels of the other protease inhibitor (e.g. lopinavir) – this makes the drug more effective and easier to take.

Codon
A series of three consecutive nucleotides in DNA or RNA, which codes for a specific amino acid

Compartmentalisation
Populations of Mycobacterium tuberculosis can reside in different sites within the body with different micro-environments. This concept can be important for the development of anti-TB drug resistance.

Cross-resistance
Resistance to a particular drug that also results in resistance to other drugs, usually from the same drug class. This occurs with antiretroviral therapy, e.g. resistance mutations selected by efavirenz (e.g. K103N) usually confer resistance to nevirapine; and with anti-TB therapy, where for example resistance to one fluoroquinolone will confer resistance to most if not all other fluoroquinolones

Cytochrome P450 system
This is a group of enzymes involved in processing of drugs within the body. Certain drugs can induce or inhibit this system, which then affects the levels of other drugs. This can be important when combining drugs to treat HIV and TB.

DOTS
Directly Observed Therapy, Short-course is the internationally recommended strategy for TB control. Note this is different from DOT (Directly Observed Therapy) which just refers to a system whereby an individual is observed taking medication

Drug susceptibility testing (DST)
Testing to determine the likelihood that a particular drug will be effective in stopping the growth of an organism

Extensively drug-resistant TB (XDR-TB)
M. tuberculosis with resistance to rifampicin and isoniazid (MDR-TB) plus resistance to a fluoroquinolone and at least one second-line injectable agent (kanamycin, amikacin or capreomycin). The term pre-XDR-TB is sometimes used to denote MDR-TB plus resistance to either the fluoroquinolone or injectable second-line agent, but not both.

Fixed-dose combination (FDC)
Combination of two or more active drugs in a single dosage form (tablet/capsule). There are antiretroviral FDCs (e.g. Atripla®, a combination of tenofovir, emtricitabine and efavirenz) and anti-TB FDCs (e.g. Rifinah®, a combination of rifampicin and isoniazid).

Genetic barrier
The number of mutations required to overcome drug-selective pressure. Boosted protease inhibitors have a high genetic barrier as they usually require the accumulation of several mutations before the virus can overcome the drug-selective pressure. Conversely, non-nucleoside reverse transcriptase inhibitors have a low genetic barrier as high-level resistance develops after a single mutation

Genotypic resistance testing
The detection of particular genetic mutations which are known to alter the effect of a particular drug

Genotypic susceptibility score (GSS)
A numerical value of expected degree of susceptibility to an individual drug, based on the mutations observed with genotypic resistance testing. The sum of the scores can be calculated to give an indication of susceptibility to the regimen.

Hypersusceptibility
The presence of certain mutations in HIV (or other pathogens) that renders the virus more susceptible to specific drugs (i.e. it required less drug to inhibit viral replication)

Line probe assay
A molecular diagnostic test that detects the presence of an organism (e.g. *M. tuberculosis)* and/or resistance mutations in a specimen through amplification of DNA by polymerase chain reaction (PCR) and then visualisation of the amplified material on a strip with bands, similar to a pregnancy test. An example is the Genotype MTBDRplus assay which detects *M. tuberculosis* and mutations that give rise to rifampicin and isoniazid resistance

Molecular diagnostic test
A diagnostic test that relies on the detection of the genetic material (DNA/RNA) of an organism

Multidrug-resistant TB (MDR-TB)
M. tuberculosis with resistance to at least rifampicin and isoniazid

Phenotypic resistance testing
The measurement of the growth of an organism in response to specific concentrations of individual drugs

Polymorphism
Natural variations in a gene or DNA sequence that have no adverse effects on the organism and occur with fairly high frequency. The most common type of polymorphism involves variation at a single base pair (single nucleotide polymorphism, SNP)

Positive predictive value
The proportion of those with a positive test result that actually have the disease

Primary drug resistance
Resistance to one or more drugs in an organism isolated from an individual never exposed to the drug(s). This is also referred to as transmitted drug resistance.

Quasispecies
A group of viruses, related by a similar mutation or mutations, which exists within the larger viral population. Quasispecies are seen particularly with RNA viruses, e.g. HIV due to the high mutation rate

Secondary drug resistance
Resistance to one or more drugs in an organism isolated from an individual who has been treated with drugs active against the organism. This is also referred to as acquired drug resistance.

Sensitivity
The proportion of those with a disease who have a positive test result

Smear conversion
A response to anti-TB treatment where smear microscopy for acid-fast bacilli (AFB) becomes negative during the course of treatment

Specificity
The proportion of those without a disease who have a negative test result

Thymidine analogue mutations (TAMs)
A group of mutations in the HIV-1 reverse transcriptase (RT) gene that usually develop during treatment with thymidine analogues (e.g. stavudine, zidovudine). The mutations are at positions 41, 67, 70, 210, 215 and 219

Viral fitness
Fitness refers to the ability of a virus to adapt and replicate in a defined environment. Specific genetic mutations can affect viral fitness, a good example being the M184V mutation. In HIV infection, quasispecies exist in the viral population at levels proportionate to their fitness

Wild type
The typical or most common form of an organism or gene as it occurs in nature