

Figure 1

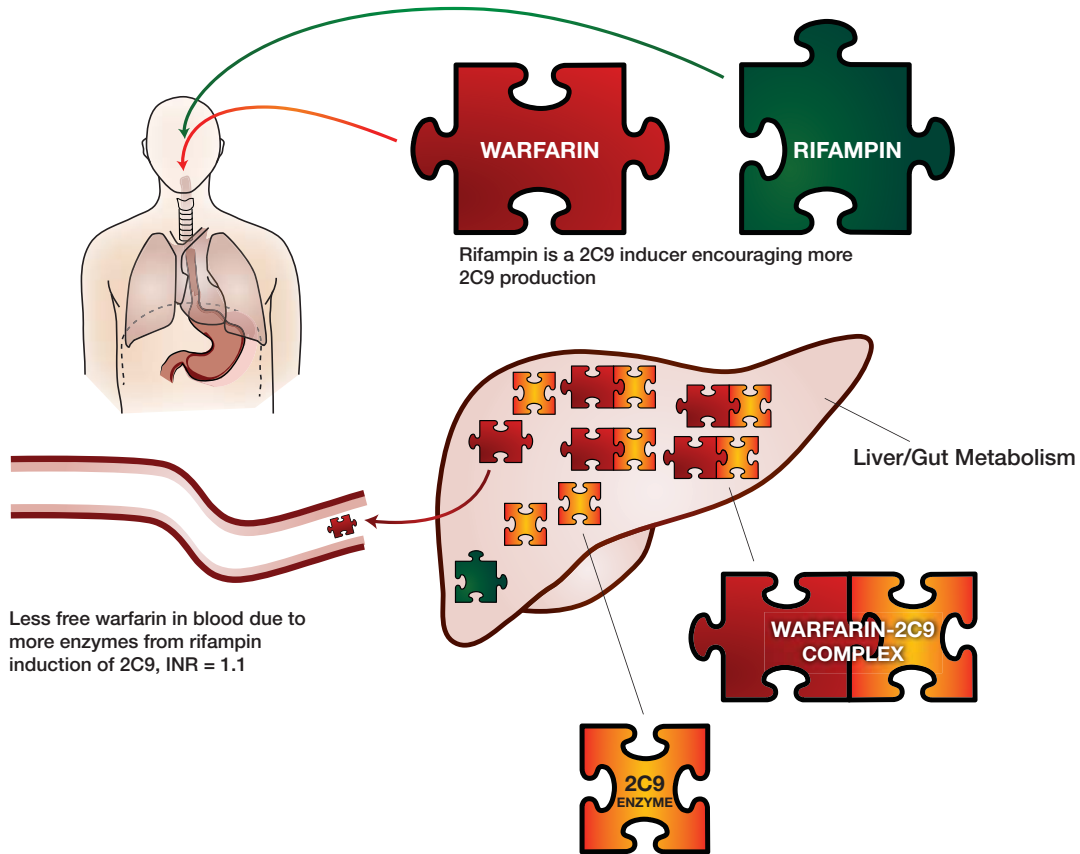


Figure 2

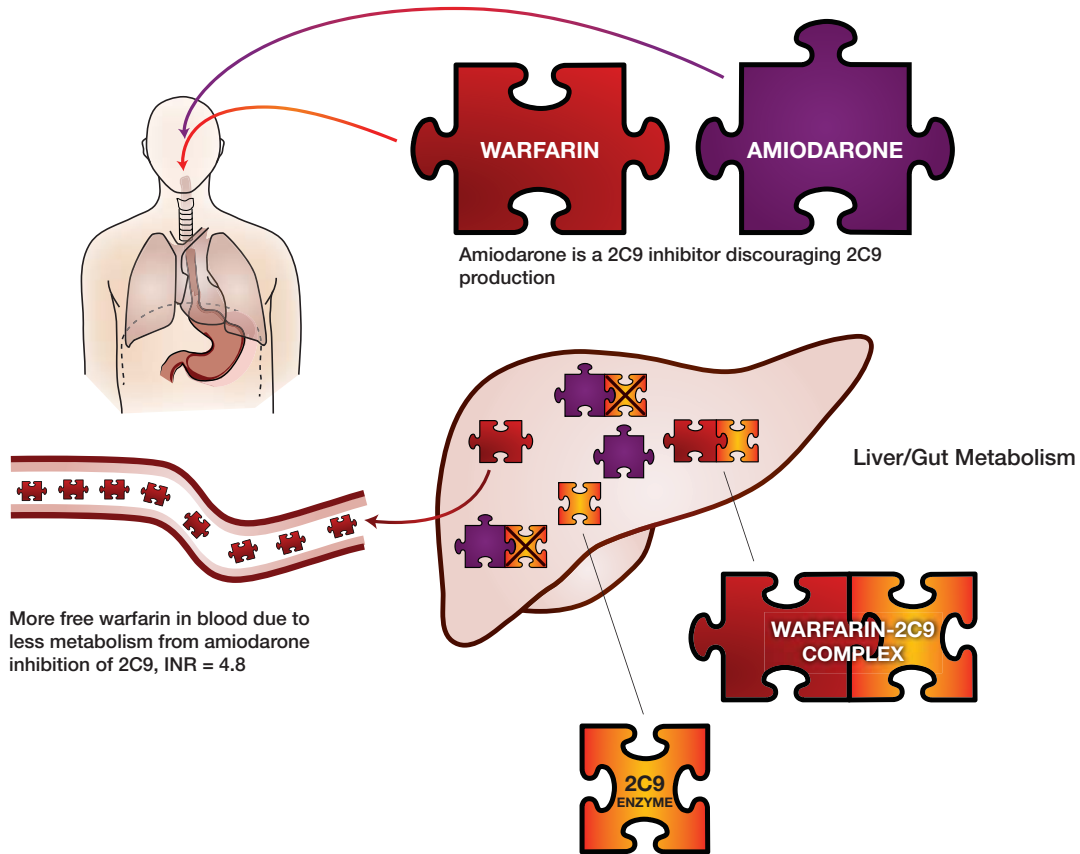
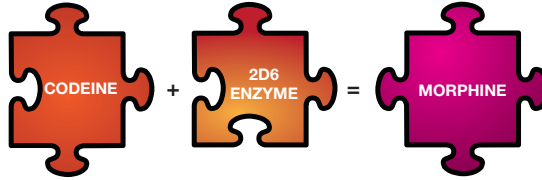
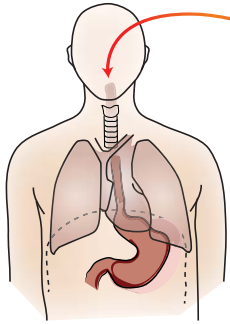
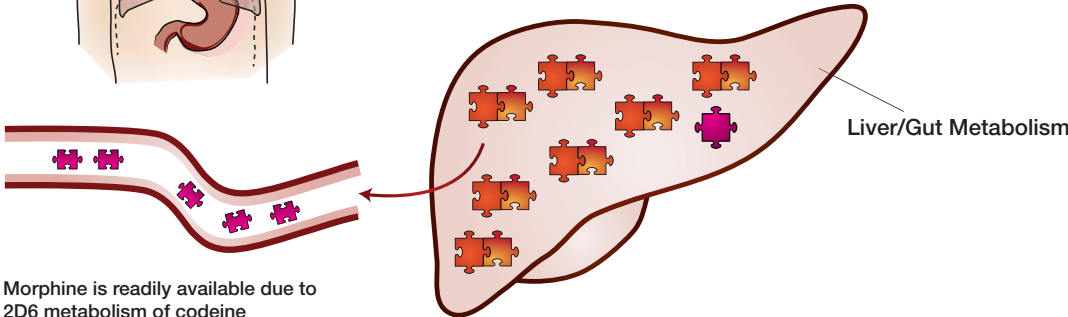


Figure 3

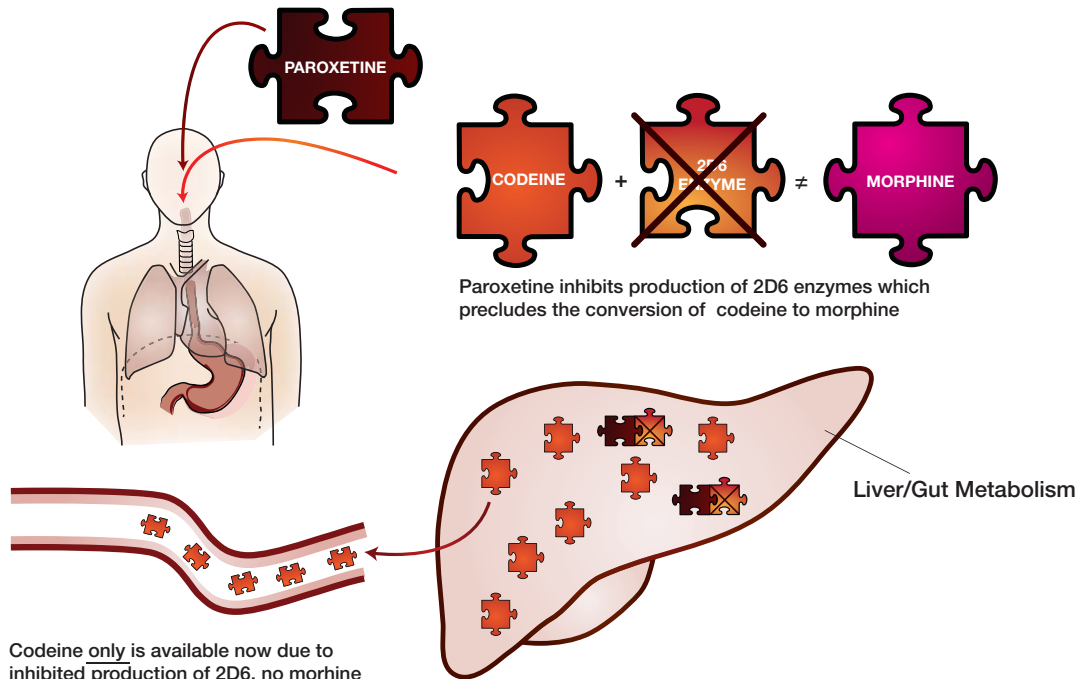


Codeine is a prodrug requiring activation to morphine for analgesic activity in the liver prior to being released into blood. This requires conversion metabolism by 2D6 enzymes.



Morphine is readily available due to 2D6 metabolism of codeine

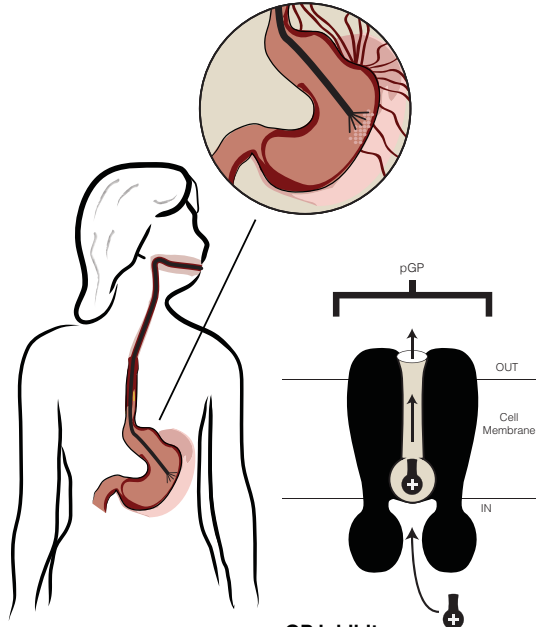
Figure 4



Codeine only is available now due to inhibited production of 2D6, no morphine and minimal analgesia.

Figure 5

The pGP "efflux pumps" do just what the name implies: they "pump" drugs that are pGP substrates back into the gut. This decreases the movement of some drugs across biological barriers, which decreases the amount of drug available in the blood. pGP pumps are in several locations, including the liver, gut wall, brain and kidney.



pGP inducer

Causes the creation of more of the pGP, and blood levels go down. pGP inducers reduce the amount of some toxin ingestion as well, by pumping them back into the gut.

pGP inhibitor

Inhibits the drug-pump-inhibitor and, consequently, blood levels of the drug increase.

There are other "transporters" or "pumps" that block the movement or facilitate movement of compounds through biological membranes; pGP is the most important for drugs.