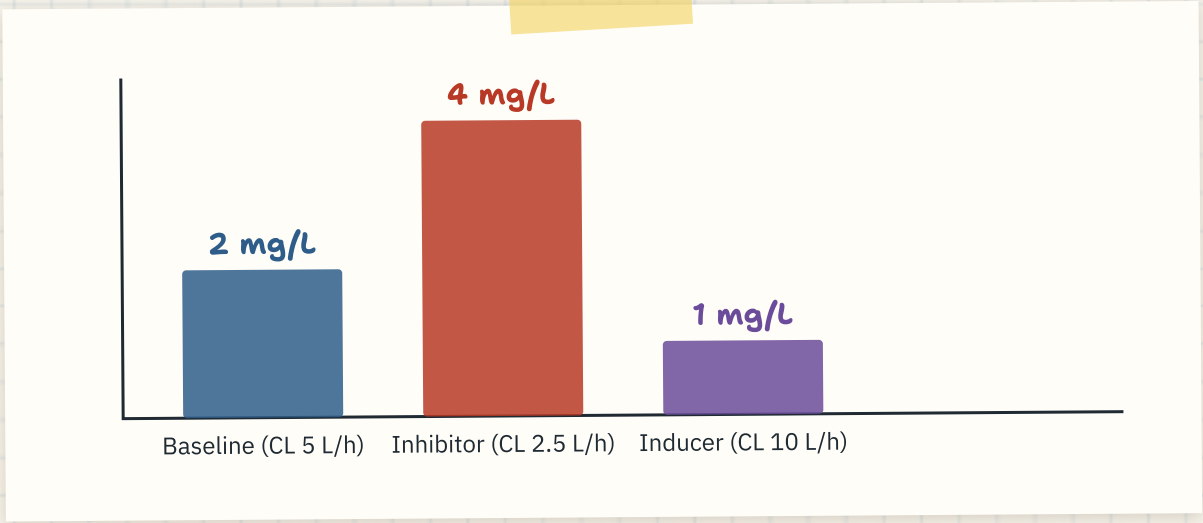
CYP450 inducers and inhibitors

Predict the change in another drug's level



Step by step

1. Decide whether the added drug is a CYP450 inhibitor or an inducer.
2. An inhibitor lowers clearance, so the other drug's level rises from the first doses.
3. An inducer raises clearance, so the level falls over days to weeks.

STEADY STATE

`level = dosing rate / clearance`

double the clearance, halve the level; halve the clearance, double the level

	Inhibitor	Inducer
Enzyme	Blocked	More built
Clearance	Falls	Rises
Other drug's level	Rises	Falls
Onset	First doses	Days to weeks
Offset	Usually fades as cleared	Days to weeks

Inhibitor versus inducer

Rule of thumb

Inhibition is fast; induction is slow

Inducers: rifampin, carbamazepine, phenytoin, phenobarbital, St John's wort

Inhibitors: macrolides (not azithromycin), azoles, ritonavir, cimetidine, grapefruit juice

Exam traps

- Azithromycin is not a clinically important inhibitor; clarithromycin and erythromycin are.
- Induction takes days to weeks to build up and to wear off.
- Narrow-margin drugs (warfarin, cyclosporine, tacrolimus) are the danger.

CYP450 inducers and inhibitors: how they change drug levels

Video, written lesson, practice question and sources: medservatory.com/usmle-step-1/pharmacology-principles-autonomic/cyp450-inducers-inhibitors-drug-interactions

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