EMR Tutorial for Drug Interactions

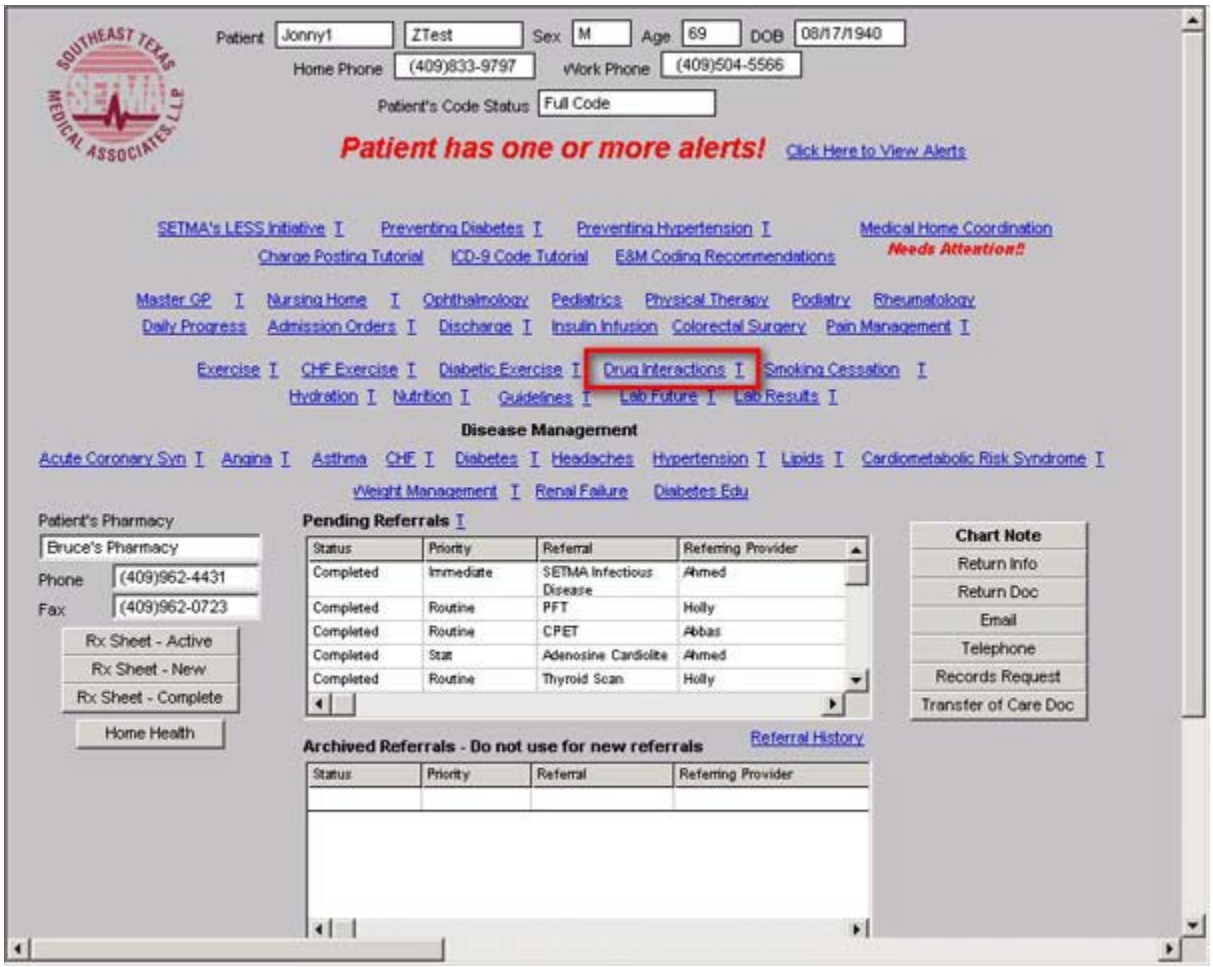
The complexity of drug/drug interactions is growing so rapidly that it is virtually impossible for anyone to know all of the contraindications for the use of even the most common medications without considering those medications which are uncommonly used. This is such the case that the first "common clinical pitfall of monitoring drug interactions" listed below is, "Relying on memory as to which drugs interact."

While NextGen EMR has a very complete drug/drug interaction check built into the medication module, the implications of the Cytochrome P450 system is such that special attention needs to be drawn to those drugs which are detoxified by this system.

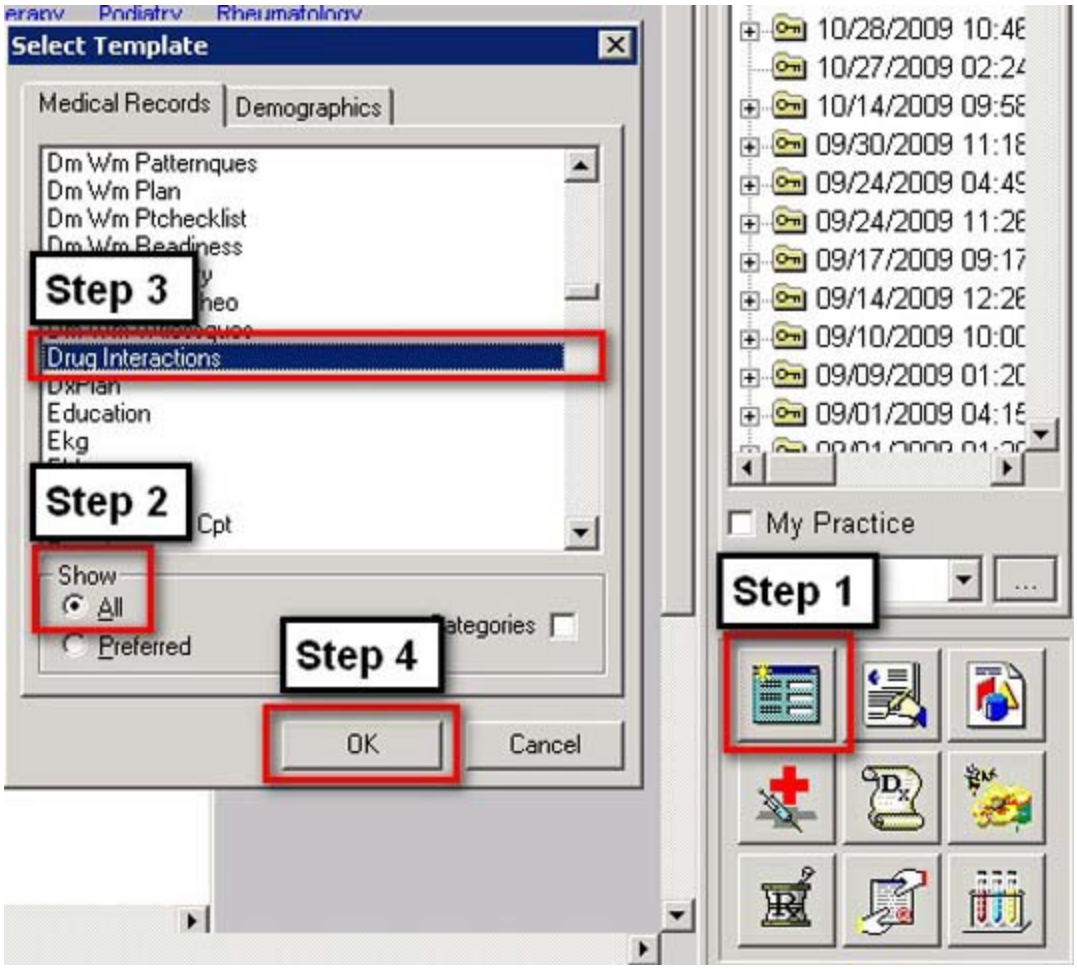
SETMA's **Drug Interactions Suite of Templates** has been built for the purpose of informing providers about this very important field which affects their daily prescriptive habits.

How to find the Drug Interactions Template

AAA Home



Master Tool Bar Icon



- When the Template button is clicked you will be presented with the preference list.
- If the **Drug Interactions** Template is listed as one of your preferences, select it.
- If it is not one of your preferences, select the All radio button and scroll down until you find it in the list. Then you may select the template by either double-clicking on the name or single click on the name (so that it is highlighted in blue) and then click the OK button.

NOTE: For more on how to set up your preferences, Click Here

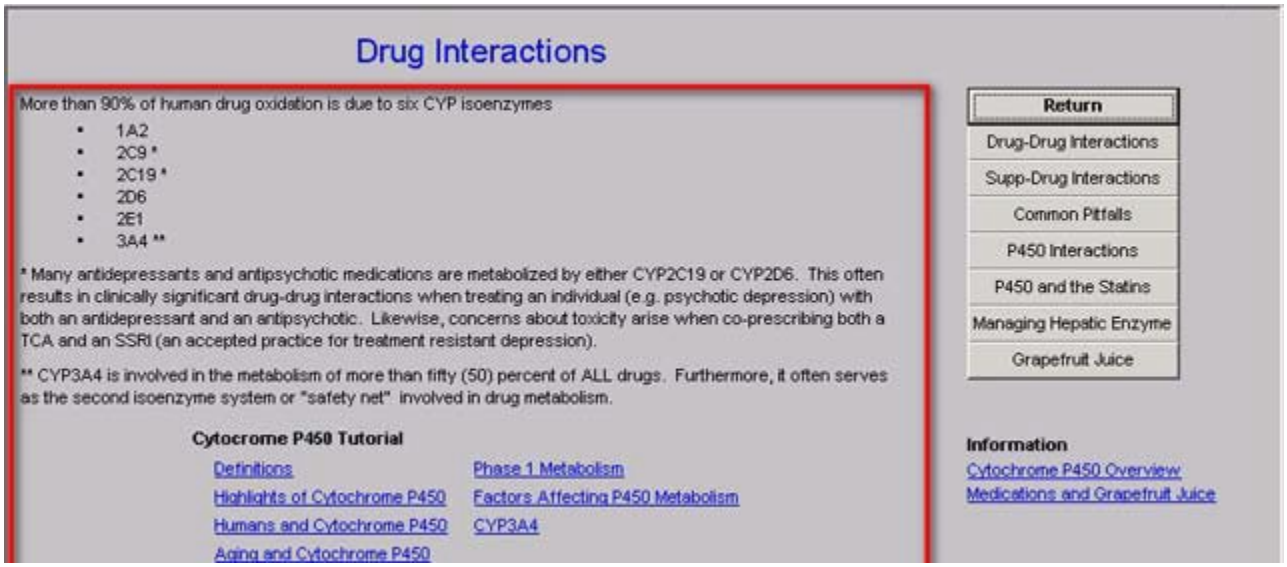
Drug Interactions Master Template

This template presents a brief introduction to the subject of the Cytochrome P-450 system.

At the bottom of the template, the following appears:

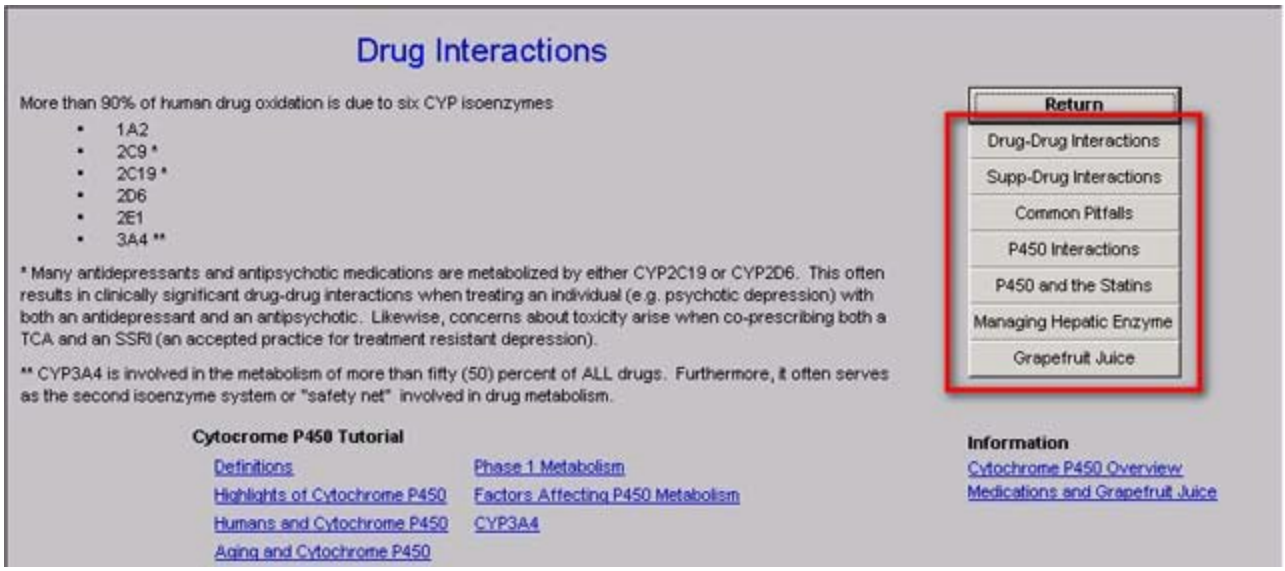
Cytochrome P450 Tutorial with the following parts:

- Definitions
- Highlights of Cytochrome P450
- Humans and Cytochrome P450
- Aging and Cytochrome P450
- Phase 1 Metabolism
- Factors Affecting P450 Metabolism
- CYP3A4



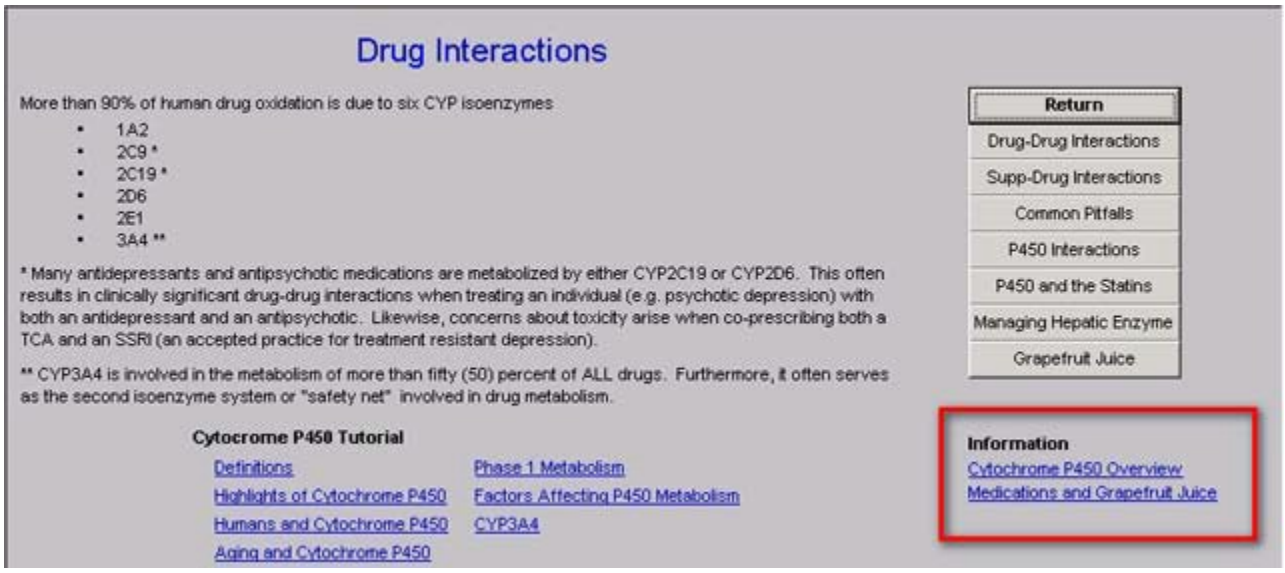
To the right are seven navigation buttons to additional information about the system; they are:

- Drug-Drug Interactions
- Supplement-Drug Interactions
- Common Clinical Pitfalls
- Cytochrome P450 Interactions
- P450 and the Statins
- Managing Hepatic Enzyme
- Grapefruit Juice

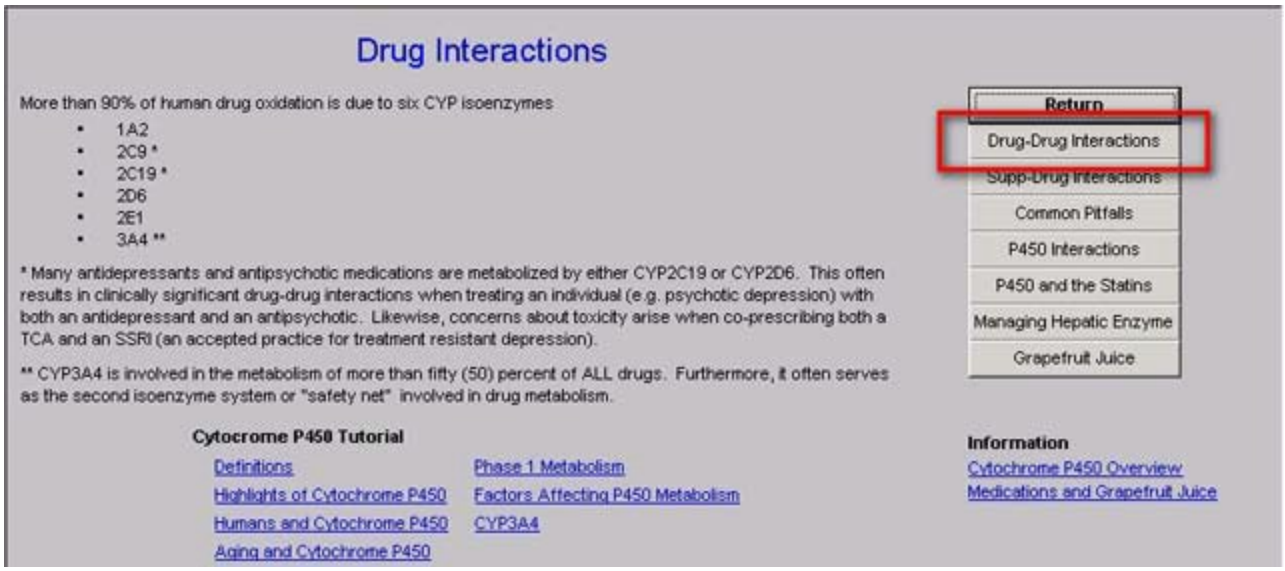


Below the navigation buttons are two documents entitled:

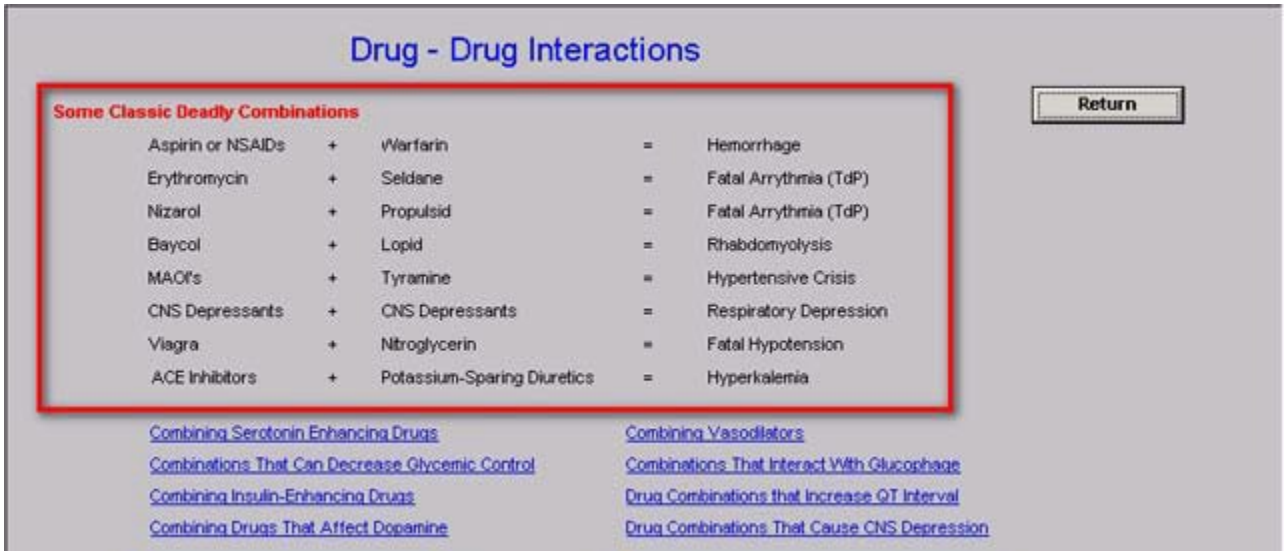
- Cytochrome P450 Overview
- Medications and Grapefruit Juice



Drug-Drug Interactions Template

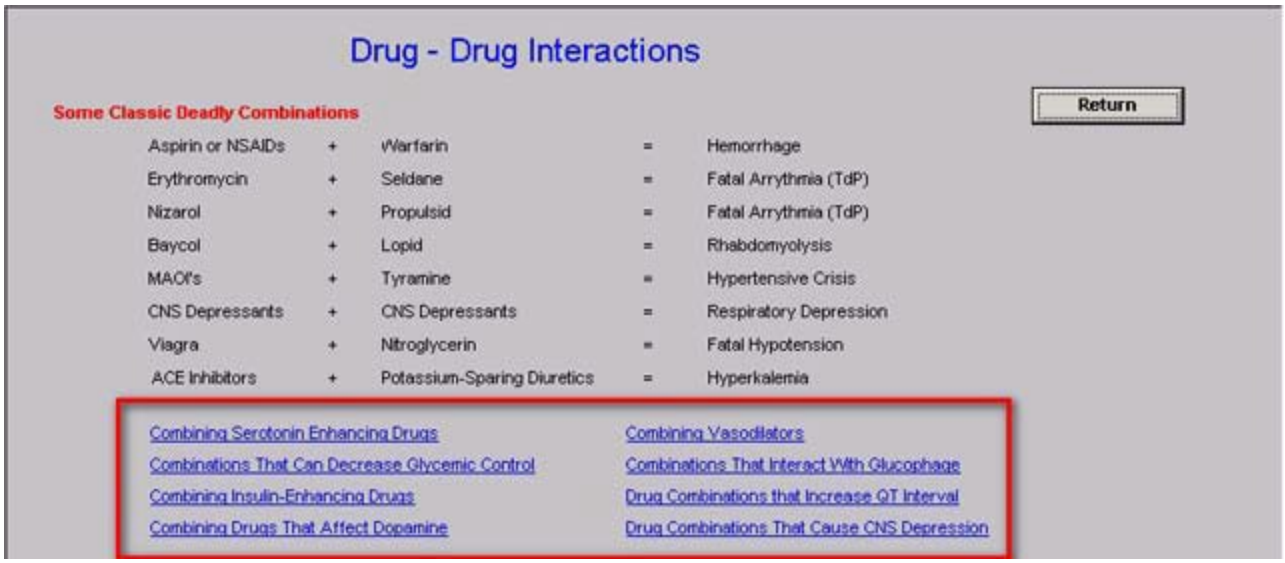


This template displays information on "**Some Classic Deadly Combinations**" of medications.

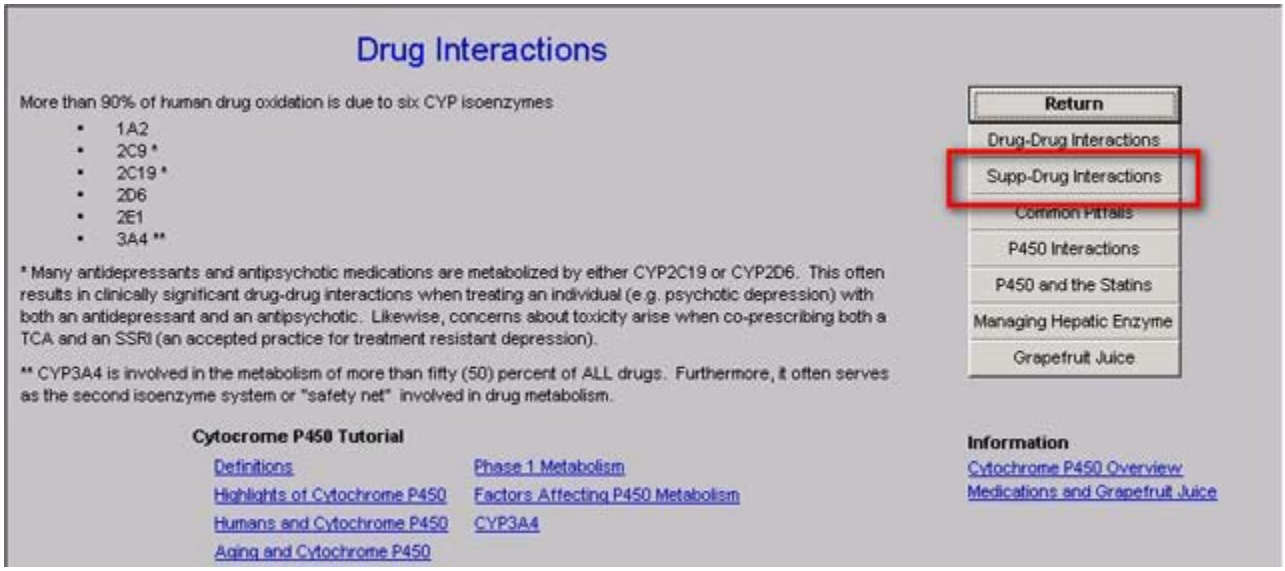


At the bottom of the template are 8 documents on the following subjects:

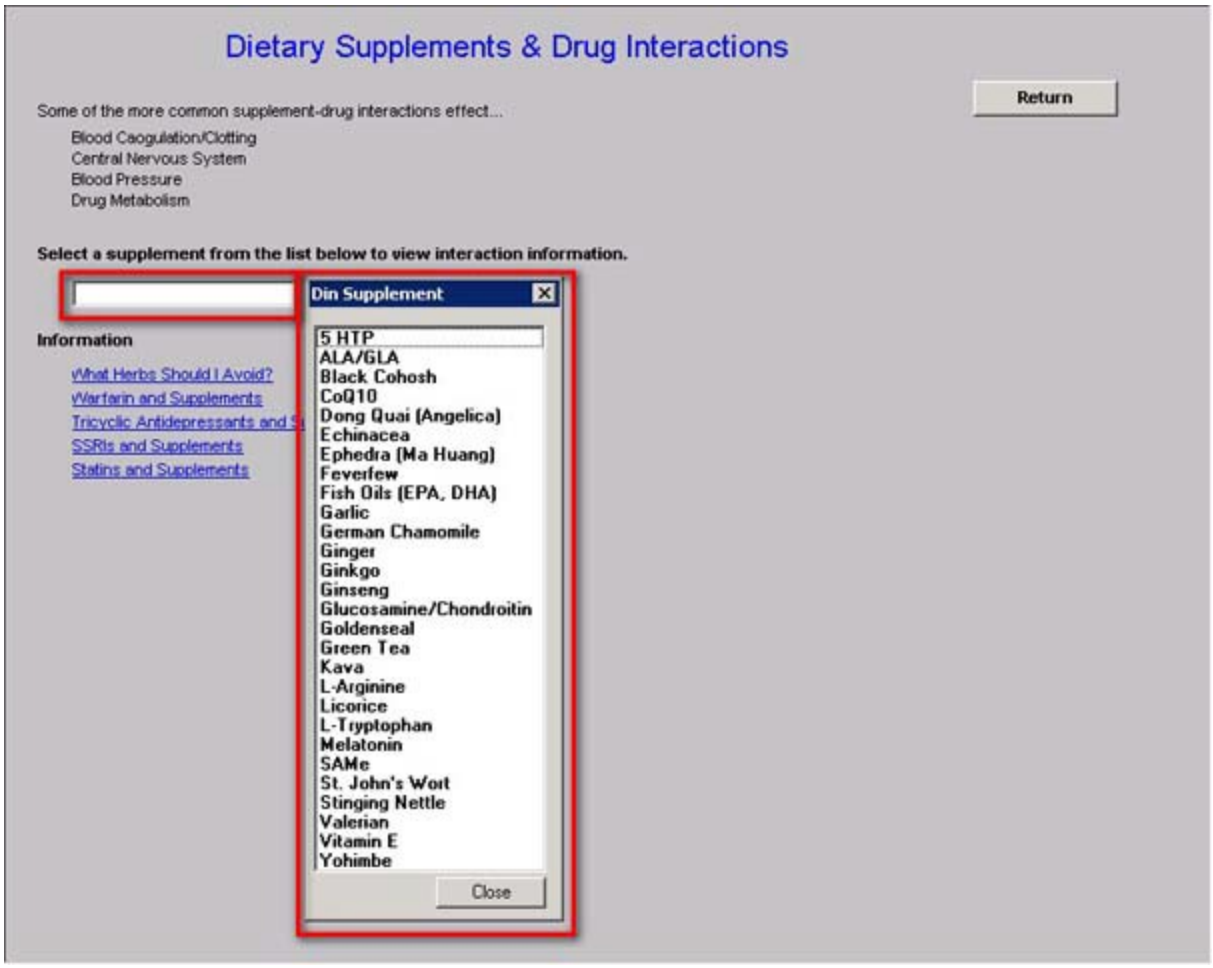
- Combining Serotonin Enhancing Drugs
- Combinations that can Decrease Glycemic control
- Combining Insulin-Enhancing Drugs
- Combining Drugs that Affect Dopamine
- Combining Vasodilators
- Combinations That Interact with Glucophage
- Drug Combinations that increase QT Interval
- Drug Combinations that Cause CNS Depression



Dietary Supplements & Drug Interactions



This template identifies the drug/drug interactions of 28 commonly used supplements which are not FDA regulated. By clicking in the box, and selecting the supplement, a pop-up will appear which will give you information about potential problems with the selected supplement.

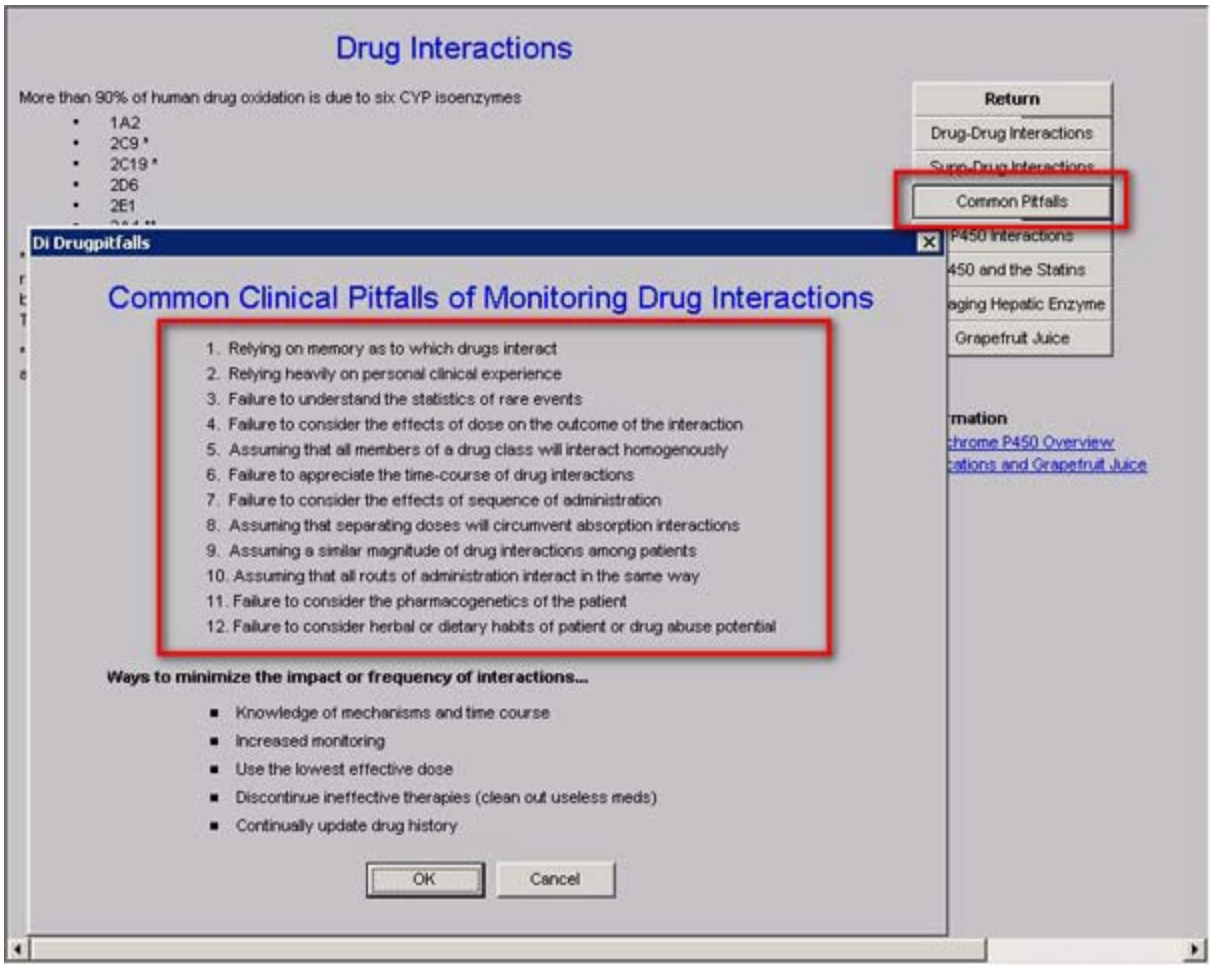


At the bottom of the template there are the following information pieces:

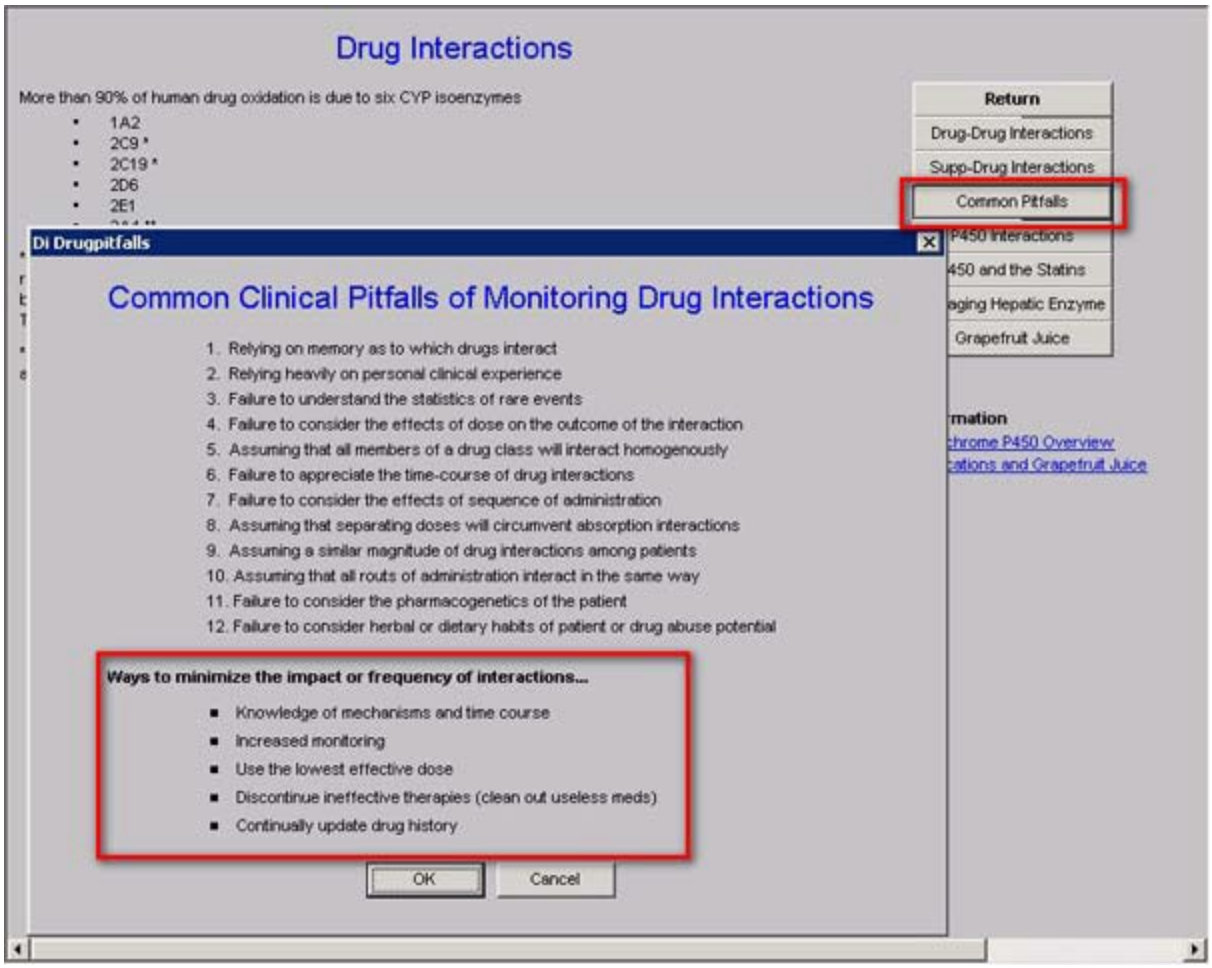
- What Herbs Should I Avoid?
- Warfarin and Supplements
- Tricyclic Antidepressants and Supplements
- SSRIs and Supplements
- Statins and Supplements

Common Pitfalls Template

This template lists 12 common pitfalls which increase the probability of experiencing drug/drug interactions.

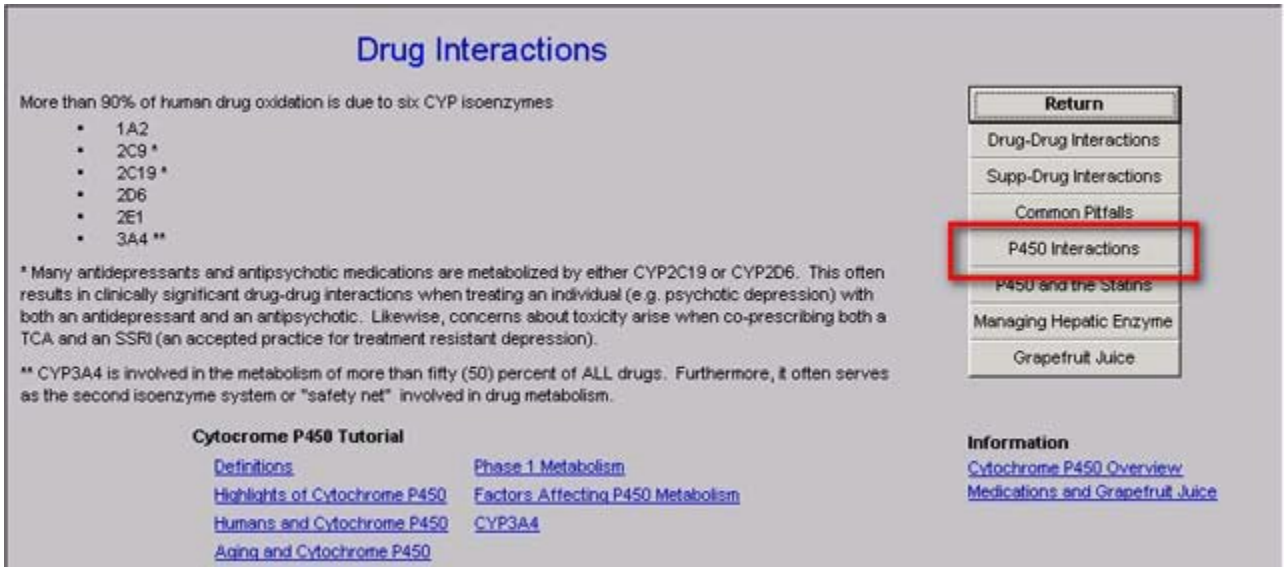


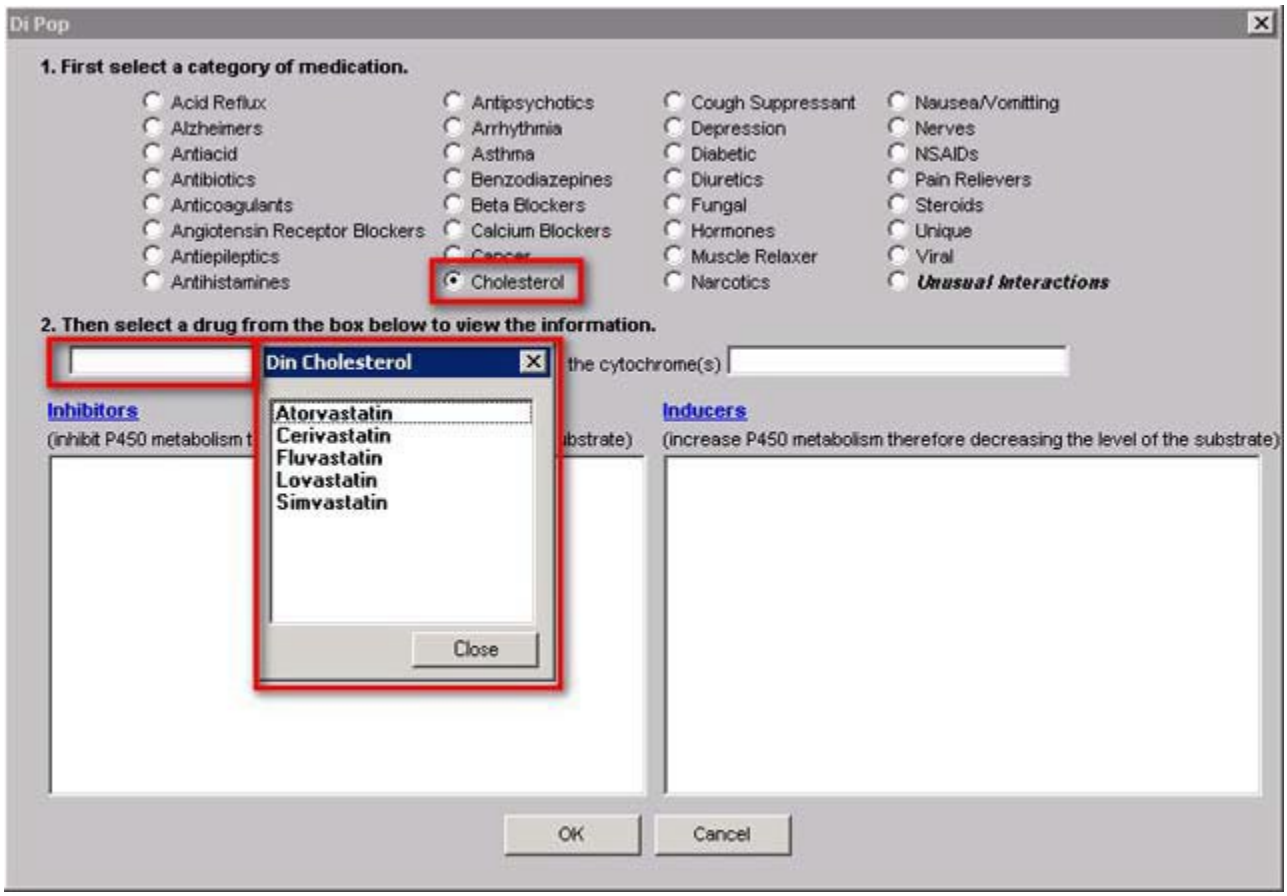
Then the template displays 5 ways to minimize the impact or frequency of interactions.


Drug Interactions
More than 90% of human drug oxidation is due to six CYP isoenzymes
1A2
2C9 *
2C19 *
2D6
2E1
Return
Drug-Drug Interactions
Supp-Drug Interactions
Common Pitfalls
P450 Interactions
450 and the Statins
aging Hepatic Enzyme
Grapefruit Juice
rmation
chrome P450 Overview
cations and Grapefruit Juice
Di Drugpitfalls
Common Clinical Pitfalls of Monitoring Drug Interactions
1. Relying on memory as to which drugs interact
2. Relying heavily on personal clinical experience
3. Failure to understand the statistics of rare events
4. Failure to consider the effects of dose on the outcome of the interaction
5. Assuming that all members of a drug class will interact homogenously
6. Failure to appreciate the time-course of drug interactions
7. Failure to consider the effects of sequence of administration
8. Assuming that separating doses will circumvent absorption interactions
9. Assuming a similar magnitude of drug interactions among patients
10. Assuming that all routs of administration interact in the same way
11. Failure to consider the pharmacogenetics of the patient
12. Failure to consider herbal or dietary habits of patient or drug abuse potential
Ways to minimize the impact or frequency of interactions...
Knowledge of mechanisms and time course
Increased monitoring
Use the lowest effective dose
Discontinue ineffective therapies (clean out useless meds)
Continually update drug history
OK
Cancel

P450 Interactions Template

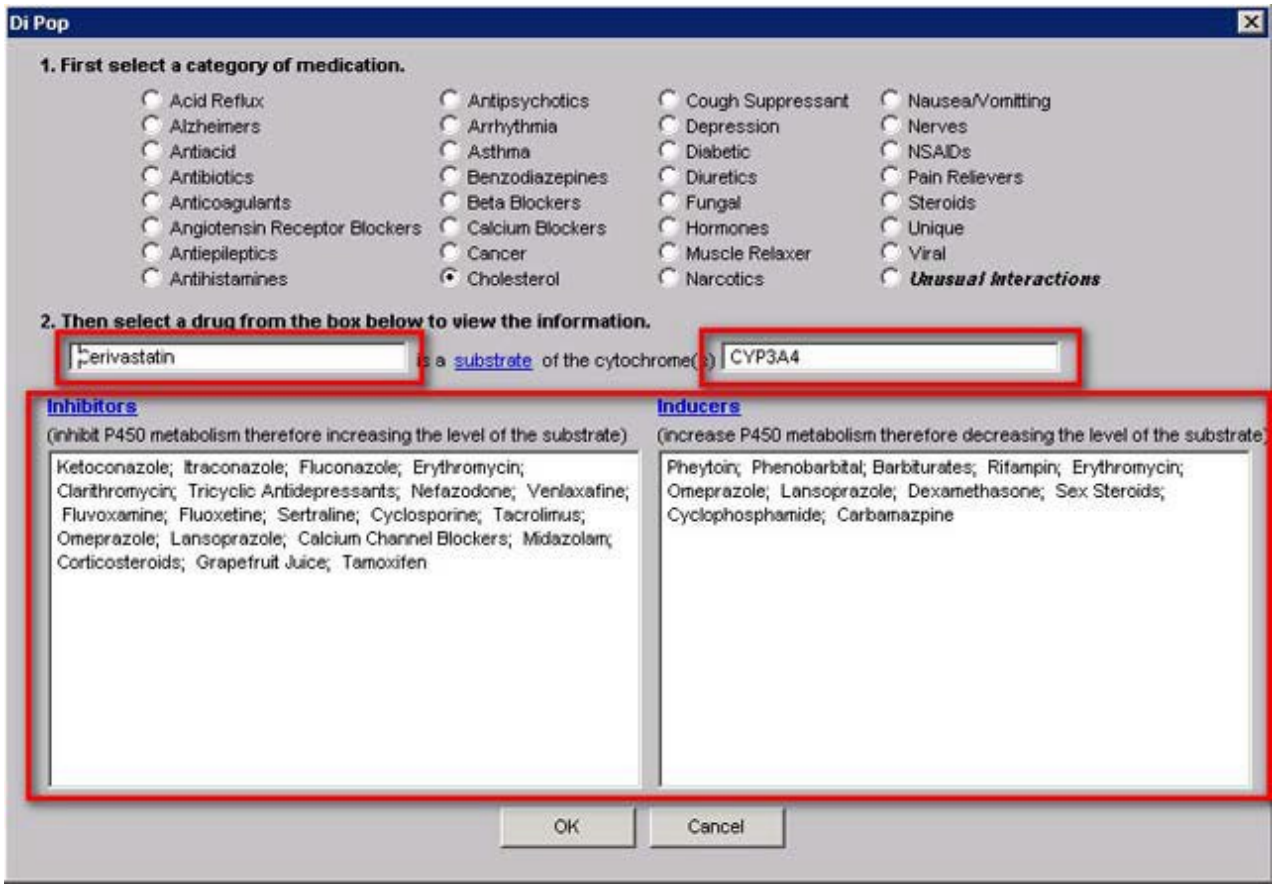
This template presents a list of 32 classes of drugs. When a class is marked, the box below will present a pick list of all of the drugs in that class which interact with the P450 system.

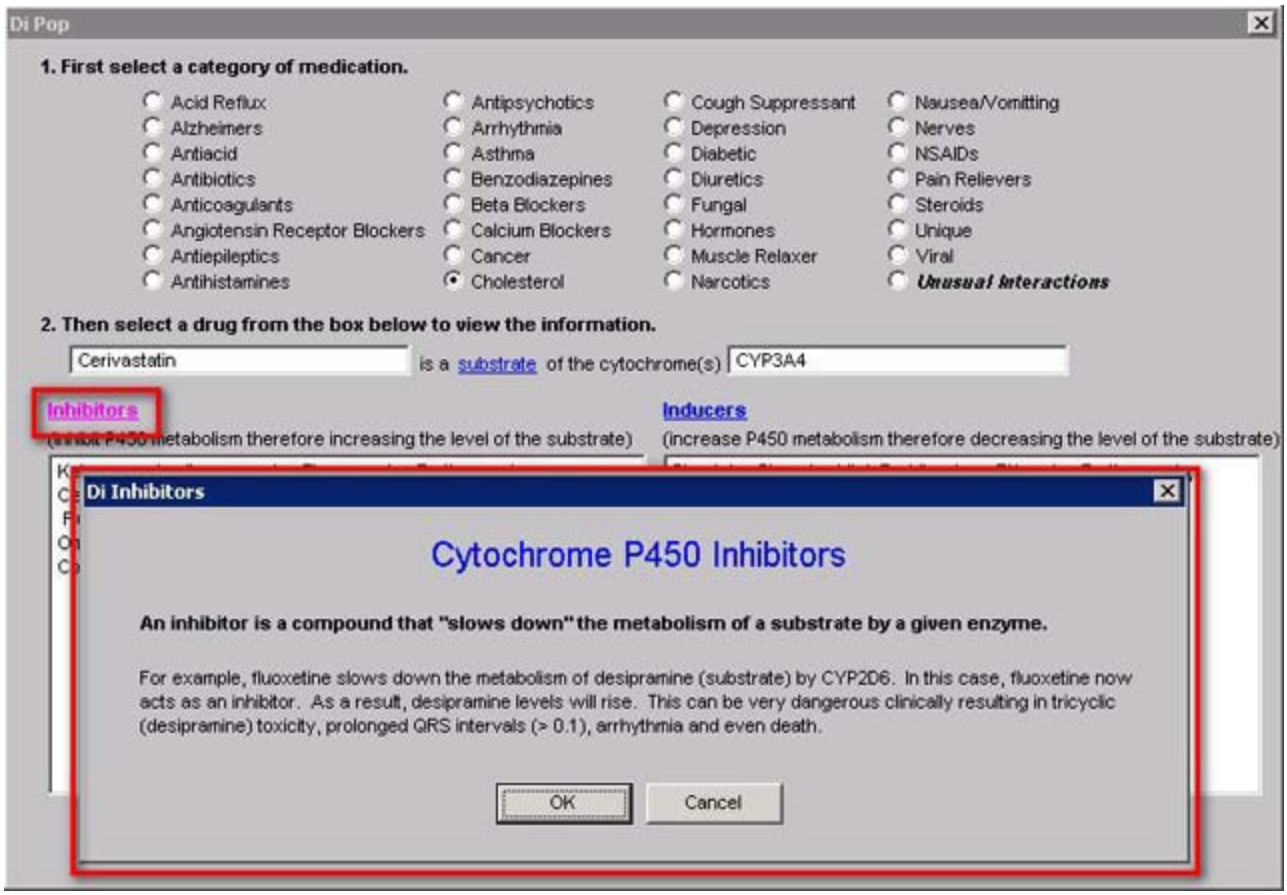


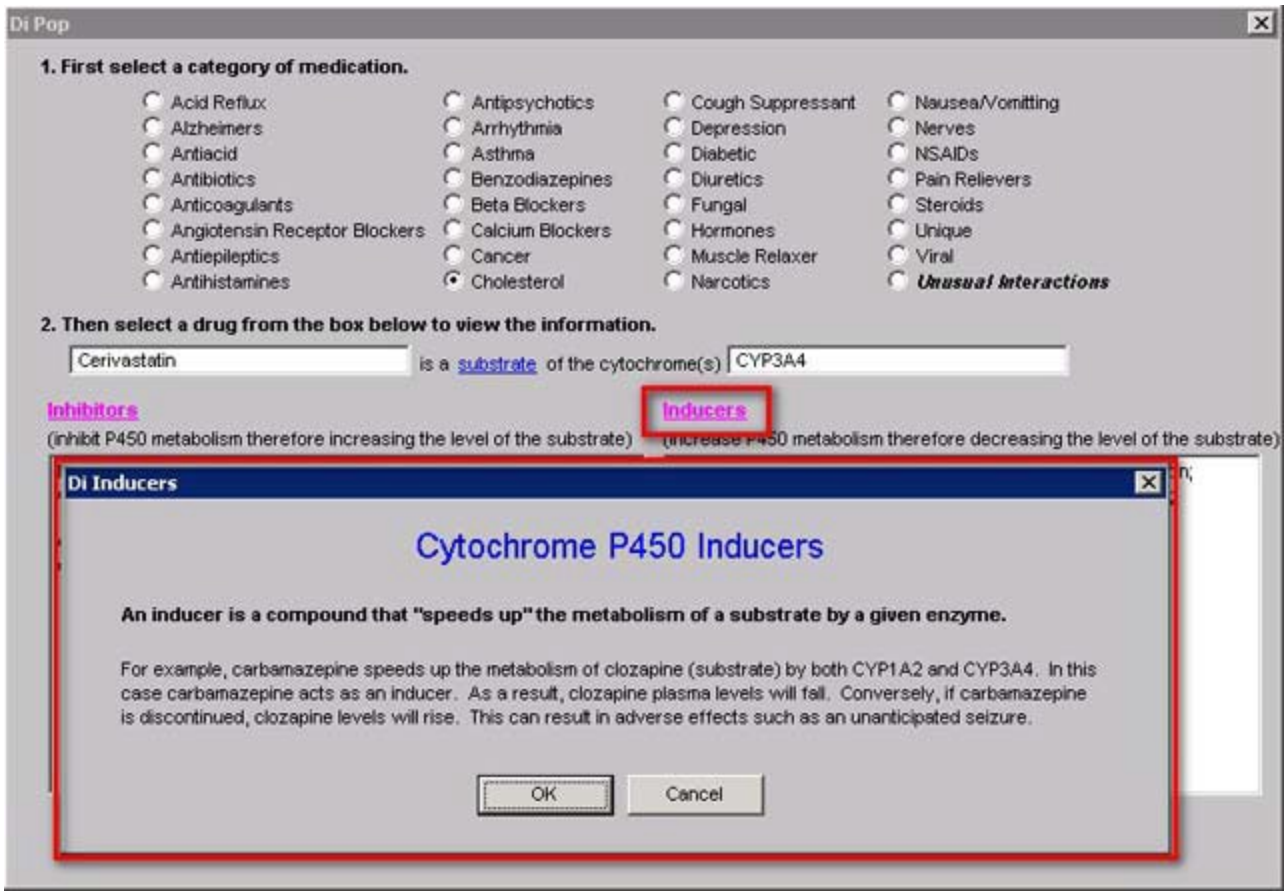


When a drug is selected, the following will be displayed:

- **Substrate** – the selected drug. The Cytochrome P450 enzyme which affects the substrate, will be displayed.
- **Inhibitors** – those drugs which will increase the concentration in the blood of the target.
- **Inducers** -- those drugs which will decrease the concentration in the blood of the target drug.

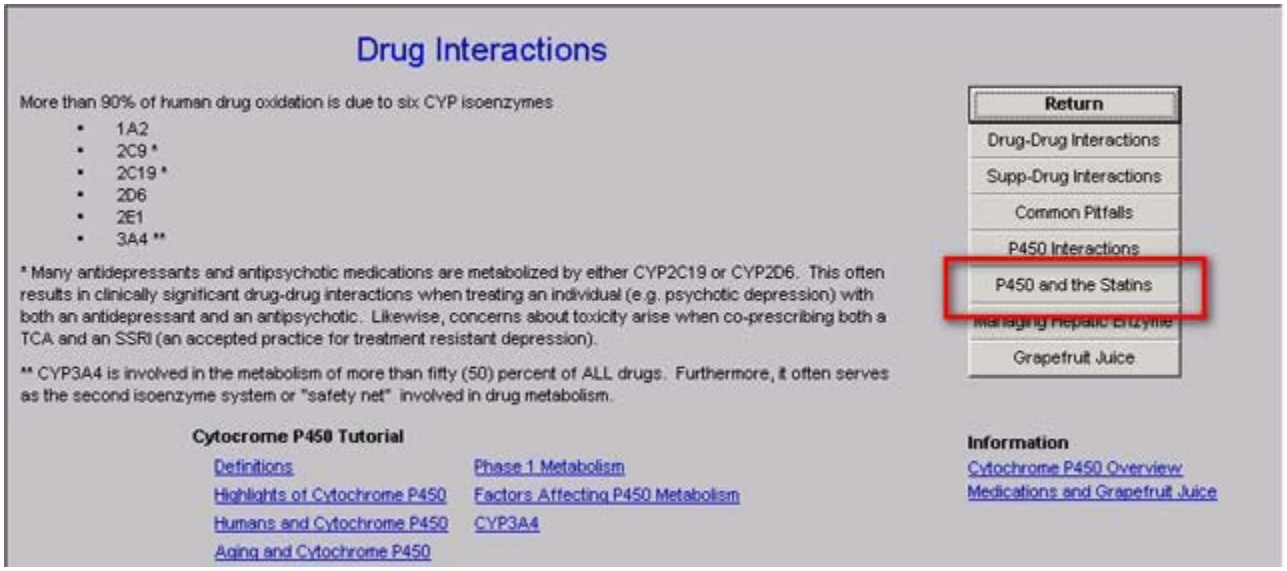



Di Pop
1. First select a category of medication.
Acid Reflux
Alzheimers
Antiacid
Antibiotics
Anticoagulants
Angiotensin Receptor Blockers
Antiepileptics
Antihistamines
Antipsychotics
Arrhythmia
Asthma
Benzodiazepines
Beta Blockers
Calcium Blockers
Cancer
Cholesterol
Cough Suppressant
Depression
Diabetic
Diuretics
Fungal
Hormones
Muscle Relaxer
Narcotics
Nausea/Vomitting
Nerves
NSAIDs
Pain Relievers
Steroids
Unique
Viral
Unusual Interactions
2. Then select a drug from the box below to view the information.
Cerivastatin
is a substrate of the cytochrome(s)
CYP3A4
Inhibitors
(increase P450 metabolism therefore increasing the level of the substrate)
Inducers
(increase P450 metabolism therefore decreasing the level of the substrate)
Di Inhibitors
Cytochrome P450 Inhibitors
An inhibitor is a compound that "slows down" the metabolism of a substrate by a given enzyme.
For example, fluoxetine slows down the metabolism of desipramine (substrate) by CYP2D6. In this case, fluoxetine now acts as an inhibitor. As a result, desipramine levels will rise. This can be very dangerous clinically resulting in tricyclic (desipramine) toxicity, prolonged QRS intervals (> 0.1), arrhythmia and even death.
OK
Cancel

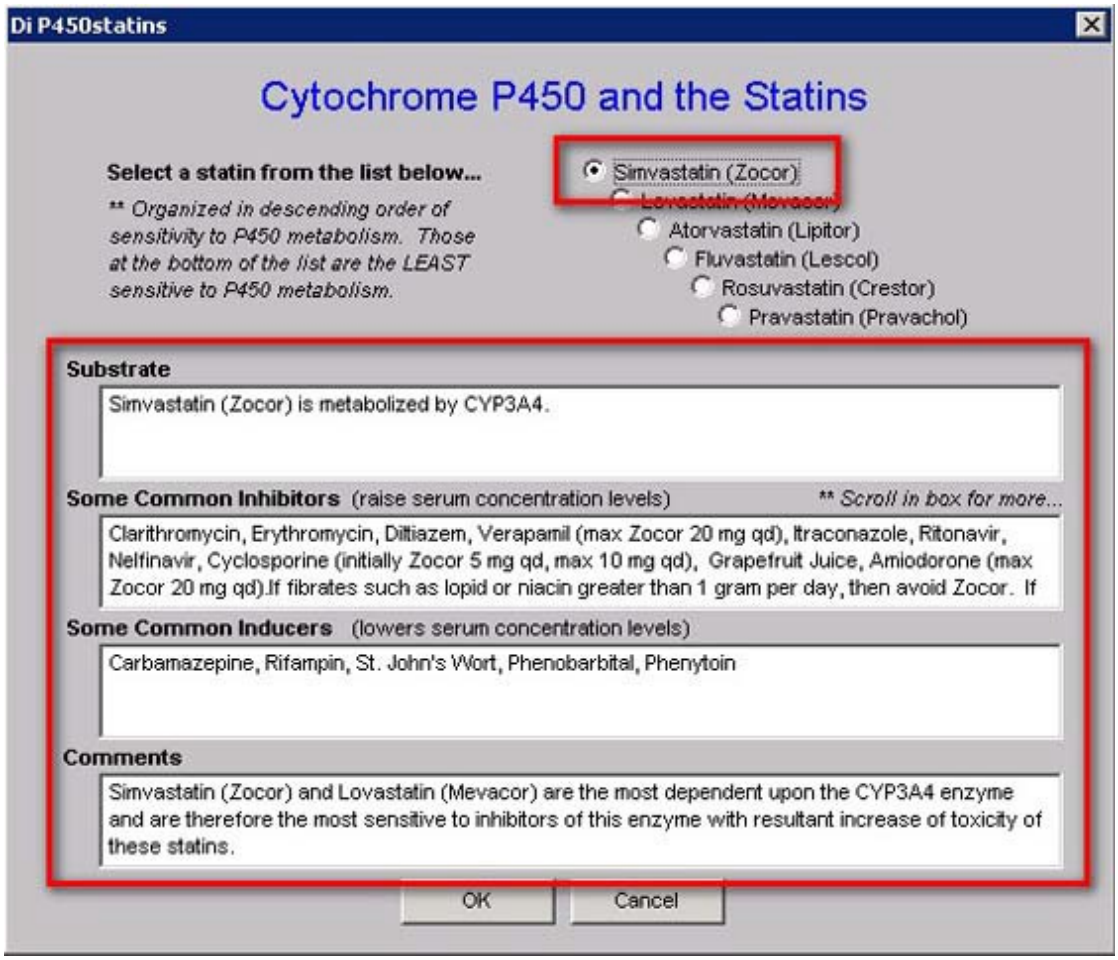


Cytochrome P450 and the Statins

This template lists the common statins in order from those which are most sensitive to the Cytochrome P450 System down to those which are the least sensitive.

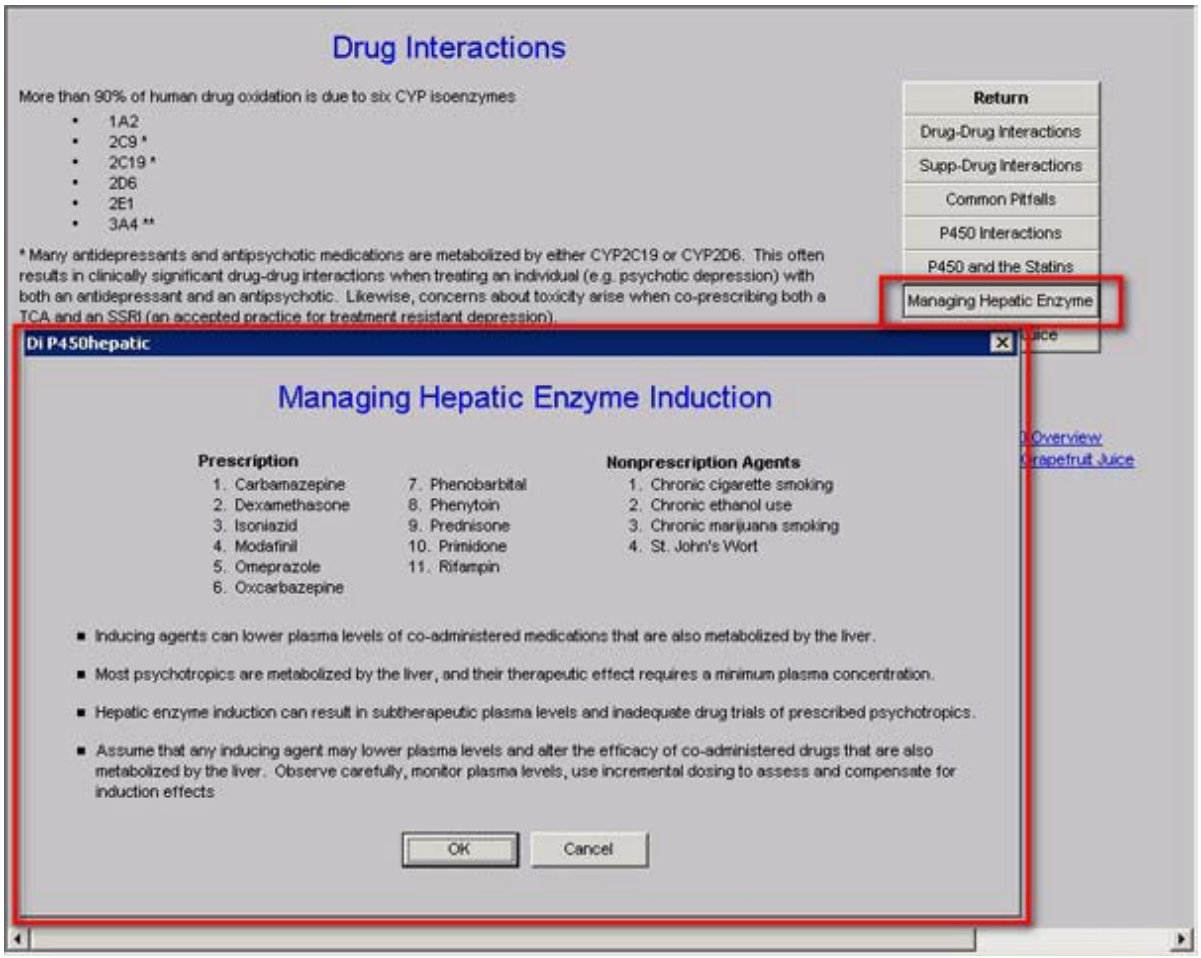


When you check the radial box next to the name of the statin, the P450 enzyme which detoxifies it, the inhibitors and the inducers will appear below. There is also a comment box.



Managing Hepatic Enzyme Induction Template

This template provides information on 4 principles of how to avoid problems with drug toxicity.



Grapefruit Juice Template

This template displays 5 important facts about grapefruit juice and the Cytochrome P450 systems.