



PharmGKB Training Exercise – Psychiatry

How to use this exercise

This exercise is intended to help new users familiarize themselves with the PharmGKB website and some of the different types of information available. **This exercise is not for use in a classroom setting for credit**, including professional development such as CME, as the answer sheet is freely available on the PharmGKB website.

We recommend that the trainer first provide an introduction to the PharmGKB website and its key features, including the genotype pickers available for the CPIC dosing guidelines. This exercise can then be used to reinforce areas covered in the introduction.

The ‘What is PharmGKB?’ page at www.pharmgkb.org/whatIsPharmgkb has helpful explanations of the different types of information that can be accessed on the PharmGKB website. This page will be useful for any trainers who are themselves unfamiliar with the PharmGKB website.

This exercise should take about 20-30 minutes to complete following an introduction to the website.

During the training session, each person will require access to an internet-connected computer where they can access the PharmGKB website.

An answer sheet for this exercise is provided at the end of this document.

PharmGKB is for research purposes only and does not provide medical advice or recommend when to order a pharmacogenetic test. All questions are written under the assumption that a patient’s genetic information is already available.

If you have any questions or comments regarding this training exercise, please contact the PharmGKB team at feedback@pharmgkb.org

A patient with depression has experienced serious side effects to trimipramine, doxepin and amitriptyline. They mention that they have been genotyped by a direct-to-consumer genetic testing company and wonder if there's a genetic basis for the side effects.

Before prescribing another antidepressant, you decide to check the patient's genetic data to see if they are carrying any genetic variants which might explain the side effects.

1) Look at the annotations of the CPIC guidelines for trimipramine, doxepin and amitriptyline. Which genes should you check for variants?

These are the patient's genotypes at the relevant genes:

Gene	Genotype/Diplotype
CYP2D6	*1/*9
CYP2C19	*3/*3

2) What is the patient's CYP2D6 metabolizer status?

3) What is the patient's CYP2C19 metabolizer status?

4) Variants in which gene are likely to be the reason for the patient's side effects? Why?

5) Looking at the annotation of the CPIC guideline for CYP2D6, CYP2C19 and tricyclic antidepressants and the annotation of the CPIC guideline for CYP2D6, CYP2C19 and selective serotonin reuptake inhibitors, name three other antidepressants which should not be prescribed to the patient.

6) Name an antidepressant mentioned in the CPIC guidelines which which could be prescribed to the patient.

A patient with depression has experienced serious side effects to trimipramine, doxepin and amitriptyline. They mention that they have been genotyped by a direct-to-consumer genetic testing company and wonder if there's a genetic basis for the side effects.

Before prescribing another antidepressant, you decide to check the patient's genetic data to see if they are carrying any genetic variants which might explain the side effects.

1) Look at the annotations of the CPIC guidelines for trimipramine, doxepin and amitriptyline. Which genes should you check for variants? **CYP2D6 and CYP2C19**

These are the patient's genotypes at the relevant genes:

Gene	Genotype/Diplotype
CYP2D6	*1/*9
CYP2C19	*3/*3

2) What is the patient's CYP2D6 metabolizer status? **Normal metabolizer**

3) What is the patient's CYP2C19 metabolizer status? **Poor metabolizer**

4) Variants in which gene are likely to be the reason for the patient's side effects? Why? **CYP2C19. Reduced metabolism of tertiary amines to secondary amines can affect side effects**

5) Looking at the annotation of the CPIC guideline for CYP2D6, CYP2C19 and tricyclic antidepressants and the annotation of the CPIC guideline for CYP2D6, CYP2C19 and selective serotonin reuptake inhibitors, name three other antidepressants which should not be prescribed to the patient. **Any of citalopram, escitalopram, sertraline or clomipramine.**

6) Name an antidepressant mentioned in the CPIC guidelines which could be prescribed to the patient. **Any of fluvoxamine, paroxetine, desipramine or nortriptyline.**