1. Linezolid interactions

You review a new prescription for oral linezolid for a patient on your ward. However the e-prescribing system is flagging up an interaction with their sertraline and warfarin. The patient also takes omeprazole.

Suggested background information you need to gather:

(a) What are the doses of the medicines? What is the clinical significance of the interaction?
This is to help you to decide what you need to do next. If this is a minor interaction then you may not need to take any action. If this is a significant problem then this becomes an urgent issue for you to resolve.

(b) What are the indications for all the patient's medicines?
This will help you to decide the best way forward. If the patient is stabilised on sertraline for anxiety and depression for example, then you are unlikely to want to change this in order for the patient to start linezolid. However there may be exceptions in patients with serious infections.

(c) Could any of the patient's medicines be changed to an alternative option?
This follows from the point above. There may be some medicines that could be changed to avoid the interaction occurring – so you could investigate alternatives to warfarin if necessary or linezolid. But there will be some medicines that preferably shouldn't be switched.

(d) Where is the patient going to be treated?
Is your patient going to be discharged imminently or are they likely to receive their course of antibiotics as an inpatient? This is important as it will help you to evaluate the potential ways forward. If you established that there was a serious interaction and that the linezolid needed to be changed to an alternative such as intravenous vancomycin for example, then this is unlikely to be practical if the patient is being discharged. As well as the administration aspects, you also need to consider any monitoring that may be required. This doesn't just mean therapeutic drug monitoring but monitoring for side effects too. Is the patient going to be alone at home if something untoward were to happen?

(e) Who has recommended and/or initiated linezolid?
Has this been recommended by the hospital microbiology team? Who do you need to liaise with if changes are required?

(f) Does the patient have any intravenous access?
Again to help you explore the potential solutions.

(g) Does the patient have any other significant co-morbidities or allergies?

(h) What is the intended duration of linezolid? Is there a plan to review treatment?

Suggested sources:

- Most of this information will come from the patient, their records and their team but for information on the drug interactions, Stockley's Drug Interactions and the Summaries of Product Characteristics are recommended.

2. Penicillin allergy

You pick up a request to supply intravenous meropenem for a patient on a general medical ward. A check of the patient's records reveals that they have an allergy to penicillin. The patient may also have an allergy or intolerance to ciprofloxacin but they cannot remember the details.

Suggested background information you need to gather:

(a) What is the nature of the patient's penicillin allergy?
You need to establish whether this is definitely an allergy producing symptoms such as rash or anaphylaxis, or whether this is actually an intolerance. The 2 are different and it's essential you're armed with the facts.

(b) What is the indication for the meropenem? How severe is the infection?

(c) Is this empirical ('blind') treatment or have sensitivities been reported?
The answers to both these questions will help you assess whether this is a clinically appropriate choice of antibiotic and explore alternatives if required.

(d) Who has recommended and/or initiated the meropenem?
Has this been started upon expert advice? Who has been involved in the decision?

(e) What is the intended duration of meropenem?
You may need to think about oral options as the patient's infection improves. How will her allergy influence the oral treatment options?

(f) What is the nature of the ciprofloxacin allergy or intolerance?
This may or may not be required depending upon the answers to the above. If the patient can't remember, is there someone else that may be able to advise such as a carer or their GP.

(g) What other medicines does the patient take? Do they have any other significant co-morbidities?

(h) Where is the patient going to be treated?
As above, is your patient going to be discharged imminently or are they likely to receive their course of antibiotics as an inpatient? This is important as it will help you to evaluate the potential ways forward.

Suggested sources:

- Some of this information will come from the patient, their records and their team but information on cross-sensitivity between antibiotics can be a bit trickier to track down. Firstly check if you have a hospital policy on the subject. Be careful using other hospitals' policies that you may find online as these may vary in their quality.
- Sources such as the Summary of Product Characteristics for meropenem, Martindale, AHFS, UpToDate or Micromedex may be helpful (if you have access). Check too for expert advice such as that from the British Society for Allergy and Clinical Immunology and consider contacting your local microbiology experts.

3. Ceftriaxone in a patient with liver disease

A newly qualified doctor asks you whether the dose of ceftriaxone needs to be reduced in a patient with liver cirrhosis.

Suggested background information you need to gather:

(a) What is the indication for the ceftriaxone? How severe is the infection?
To help you assess whether ceftriaxone is appropriate for the patient's infection, and to check what the usual dose would be.

(b) What's the clinical presentation of the patient's cirrhosis?
What are their symptoms? What are the results of their recent liver function tests? What is their Child-Pugh class?

(c) Does the patient have any allergies?
To ensure ceftriaxone is appropriate for the patient.

(d) What other medicines does the patient take? Do they have any other significant co-morbidities?

Suggested sources:

- You will need to establish how ceftriaxone is normally cleared from the body, and whether it may cause hepatotoxicity or other side effects that could be a concern in a patient with cirrhosis (e.g. confusion, bleeding). Some of this information can be found in the manufacturer's Summary of Product Characteristics.
- Resources such as Martindale, AHFS, Micromedex or UpToDate may be helpful if you have access. You could also try searching for guidance using the Trip Pro database, Embase and/or Medline.
- If you need a refresher on clinical decision-making for patients with liver disease, then visit our page on the subject here.