

Chapter 6

CASE STUDY 6.1 UTI in a child

- What is the significance of a positive dipstick in a child?

Leucocyte positive is a good sign of a UTI from a urine dipstick.

- What type of sample should be sent to the laboratory to investigate a UTI in this child?

Clean catch or Pad urine.

- On arrival in the laboratory how would the sample be processed and what results would you predict for a) microscopy and b) culture?

Automated microscopy performed followed by culture onto a chromogenic UTI medium. Direct susceptibility tests set up. High white cell count and $>10^5$ organisms present in the sample.

- What direct susceptibility tests would you suggest be set up?

First line antibiotics such as amoxicillin, cephalixin, nitrofurantion.

- How would you proceed to identify the infecting organism?

Identification would be obtained from the chromogenic medium based on colour of the colonies.

- What are the possible long term implications for the child if it has a UTI?

Child may have some structural abnormality which may cause repeated UTIs.

CASE STUDY 6.2 Antimicrobial prescribing policy

- What methods would have been used to determine if the patient had a UTI?

Automated microscopy followed by culture onto chromogenic agar.

- What would have prompted the clinician to use IV Cefuroxime?

Patient may have showed signs of sepsis where an IV antibiotic may have been preferable to an oral compound.

- What are the disadvantages to using intravenous antibiotics?

IV line in situ can be a source of infection. Requires catheter which can be painful.

- Why did the patient likely acquire a *C. difficile* infection as a result of treatment?

Cefuroxime is a broad spectrum antibiotic and likely it will have disrupted the normal flora of the GI tract allowing *C.difficile* to proliferate.

- Can you suggest three oral antibiotics which would have most likely successfully treated the *E. coli* UTI?

Trimethoprim, nitrofurantoin, cephalexin.

- Should the laboratory be reporting long lists of antibiotics to the clinician? Are there any disadvantages to this?

No, it should only report a small number of antibiotics to prevent inappropriate antibiotics being used. Remember antibiotic resistance is on the increase and preventing this is crucial.

CASE STUDY 6.3 Multidrug resistance

- Are there any other sensitivity tests you would like to perform or would you consider treatment with nitrofurantoin?

First and second line antibiotics should be tested. Possible switch to antibiotic which has good serum levels based on the patient's condition.

- Why would you need to perform additional susceptibility tests?

The patient may be developing sepsis based on the clinical details.

- What would your diagnosis be based on the symptoms?

Most likely *E.coli* sepsis.

- What samples would you take for the laboratory?

Urine and blood cultures.

- How would these be processed and what initial results would you report to the clinician?

Urine by automated analyzer for microscopy and culture onto chromogenic media. Blood cultures processed by automated analyzer such as BacT/Alert.

- What empirical treatment would you start the patient on?

An IV antibiotic such as cefuroxime.

- Why is the patient experiencing such symptoms despite being treated with an antibiotic the *E. coli* is susceptible to?

If catheterized the *E.coli* may have formed a biofilm and is constantly seeding the bladder. These organisms are then getting into the blood stream. May have structural abnormality which could allow the *E.coli* into the blood stream. Patients age is a factor as immune response may not be high.

- What other clinical investigations would you suggest?

Scan of bladder to detect any structural abnormality.
