

Instructions to Candidates – Aim for 8 minutes

You are a Foundation doctor working in a GP practice.

Your next patient is Chloe Smith, a 7-year-old girl brought in by her mum due to having abdominal pain.

Please take a history from her mum and formulate your differential diagnoses.

At 6 minutes the examiner will ask you three questions.

Script for simulated patient:

Patient Name: Chloe Smith

Mum's name: Sandra Smith

Age 7

PC: Tummy ache

HOPC: (collateral history from mum)

Your daughter has been complaining of tummy ache for the past three days. The pain is mainly in the lower abdomen and has been worsening. She described it as an achy pain with no radiation. She finds that opening her bowels and having Calpol relieves the pain. She has been vomiting for the past two days as well, always after eating and so was off food. You also noticed that she has been going to the toilet more frequently, and **(only if asked)** that her urine smells odd.

She had noticed small amount of fresh red blood in urine which started today. No discharge or pus down from below. She usually opens her bowels once every three days, usually hard and small amounts. She is still drinking fluids and has had no fever.

(only if asked) She has not started her periods yet. You and her older sister had first period around 13 years old.

No rash / coryzal / cough / flu

No joint pain

No meningism: photophobia / neck stiffness

PMH:

Constipation – treating with Movicol

Previous Bronchiolitis

DH:

Movicol 2 sachets PRN

Allergies: NKDA

FH:

Your older daughter, now 10 years old had many urine infections when she was younger. Everybody at home is fit and well, no kidney problems

BINDS (Paediatrics history)

Birth hx – Spontaneous vaginal delivery. Full term. No pregnancy or antenatal scan issues.

Immunizations – Up to date.

Nutrition – Has reduced appetite but tolerating fluids.

Developments – Meeting all developmental milestones.

Social (LOST): Living situation: || Attends Primary School || Social: Smoking, Alcohol, Recreational drugs, Exercise || Travels:

Lives with older sister, mum and dad. No issue with pregnancy or delivery of older sister. No social concerns. No one smokes at home. No travels.

ICE

I: You think it is a urine infection but unsure if this is related to her constipation.

C: You are concerned with how unwell Chloe appears.

E: You hope the doctor can find out what's going on.

Questions:

1. What are your differential diagnosis?

Urinary tract infection, constipation, appendicitis, sepsis, nephrolithiasis, ovarian torsion

2. What investigations would you like to request for this patient? And why?

Bedside urine dip (to rule out UTI), urine microscopy and culture (mc&s, to culture organisms)

Bloods – FBC, CRP (infection markers), U&E (to measure kidney function), LFT (compare against baseline)

It is unlikely that a child would need blood tests to diagnose UTI unless they appear very unwell or dehydrated on examination.

3. Please interpret the following results and explain to the examiner your findings.

Urine dip: pH 6.0, ketones +++, nitrites ++, leukocytes ++

4. How will you manage this patient?

Obtain observations and examine the patient. Important to assess the risk of serious illness in children (Traffic light system). If unwell, consider admission.

Start the patient on antibiotics according to local guidelines.

Answer sheet:

Area	Clear Fail	Fail	Satisfactory	Good	Excellent
C/O & HOPC					
PMH					
DH					
BINDS + (LOST)					
FH					
ICE					
Differential dx					
Investigations					
Rapport/ Comm skill					
Overall					

Feedback

Urinary tract infection is common in children.¹ It is more common in girls compared to boys. According to NICE, around 1 in 10 girls and 1 in 30 boys will have had a UTI by the age of 16.¹ Depending on the child's age, the management varies:

Age < 3 months

- Children in this age group often present with vague symptoms, including fever, vomit, lethargy, irritability, failure to thrive and poor feeds.
- Management: urine dip, urine microscopy and culture. Start IV antibiotics according to local guidelines and refer urgently to secondary care.

Age > 3 months

- These children often present with more typical symptoms such as dysuria, increased frequency, abdominal pain, loin tenderness. (and/or all the symptoms of the above age group)
- Perform a urine dip if suspecting UTI:

Dipstick results:

<u>Leukocyte esterase</u>	<u>Nitrates</u>	<u>To-do</u>
+	+	<ul style="list-style-type: none">• Send urine off for mc&s• Start antibiotics
-	+	<ul style="list-style-type: none">• Send urine off for mc&s• Start antibiotics
+	-	<ul style="list-style-type: none">• Send urine off for mc&s• Depending on age: <3 yo – start abx >3 yo – start abx if suspecting UTI clinically
-	-	<ul style="list-style-type: none">• Consider other differentials

- Management: start oral antibiotics as per local guidelines depending on whether it is an Upper or Lower UTI.

Urinary Tract Infection (UTI) can be divided into upper and lower:

Upper UTI (UUTI) / pyelonephritis

- renal pelvis and kidneys

- symptoms:

fever of $\geq 38^{\circ}\text{C}$ & bacteriuria, OR

fever $< 38^{\circ}\text{C}$ & loin tenderness & bacteriuria

Lower UTI (LUTI) / cystitis

- bladder and urethra

- start Trimethoprim or Nitrofurantoin (eGFR $\geq 45\text{ml/min}$)

Recurrent UTI is defined as

- ≥ 2 UUTI
- OR
- One UUTI and ≥ 1 LUTI OR
- ≥ 3 LUTI

Further investigations such as Renal Ultrasound and Dimercaptosuccinic acid scintigraphy (DMSA) should be arranged for children with:

- atypical symptoms (poor urine outflow, abdominal mass, sepsis, not responding to abx <48 hours, infection with non-E.coli organisms, raised creatinine)
- <6 months of age with first UTI
- with recurrent UTI *important to consider neglect or social issue with recurrent UTI. Always raise concerns if you are worried*

Please refer to local guidelines for one or both investigations and the timescale to arrange for these investigations.

Abbreviation:

UTI – urinary tract infection

UUTI – upper urinary tract infection

LUTI – lower urinary tract infection

MC&S – Microbiology Culturing and sensitivity

References:

1. <https://cks.nice.org.uk/topics/urinary-tract-infection-children/>