33 The urinary system

A Urinary symptoms

Urine is formed in the kidneys and stored in the bladder until it is **passed** (or **voided**).

Patients may say:

I have some pain when I | **pass water.** / **pee.**

Doctors may say:

Are you having any trouble with your **waterworks**?

Doctor: Are you having any trouble with your waterworks?
Mr Jones: Well, I do seem to have to **go to the toilet** more often than I used to.
Doctor: How often is that?
Mr Jones: It depends, but sometimes it's every hour or even more often.
Doctor: What about at night? Do you have to get up at night?
Mr Jones: Yes. Nearly always two or three times.
Doctor: Do you get any burning or pain when you pass water?
Mr Jones: No, not usually.
Doctor: Do you have any trouble getting started?
Mr Jones: No.
Doctor: Is the **stream** normal? I mean is there still a good strong **flow**?
Mr Jones: Perhaps not quite so good as it used to be.
Doctor: Do you ever **lose control of your bladder**? Any **leaking** or **dribbling**?
Mr Jones: Well, perhaps a little dribbling from time to time.
Doctor: Have you ever **passed blood** in the urine?
Mr Jones: No, never.

Common urinary symptoms and their definitions:

frequency	frequent passing of urine
dysuria	**burning** or **scalding** pain in the urethra when passing urine
nocturia	urination at night
urgency	urgent need to pass urine
hesitancy	difficulty starting to pass urine
urinary incontinence	involuntary passing of urine
haematuria	macroscopic blood in the urine

B Urinalysis

Urinalysis is the analysis of urine. Simple screening tests of the urine are carried out with **reagent strips**, for example Clinistix for the detection of glucose. More detailed tests are carried out in a laboratory on a **specimen** of urine. Typical specimens are a **midstream specimen** (**MSU**) and a **catheter specimen** (**CSU**). Microscopic examination may reveal the presence of red blood cells, pus cells, or casts. **Casts** are solid bodies formed by protein or cells.

Plus signs are used in case notes to indicate abnormal findings. A small amount (+) is described as a **trace**. For a large amount (+++), the words **gross** or **marked** can be used, for example **gross haematuria**. When there is nothing, the word **nil** is common.

sugar	nil
protein	+
blood	+++

There was no sugar, a **trace** of protein and **gross** haematuria.

33.1 Look at the conversation in A opposite and complete the notes about Mr Jones. Use medical terms where possible.

c/o (1) ..... and (2) ..... for 1 yr.
No (3) ..... or (4) ..... .
(5) ..... a little weaker.
No incontinence apart from occasional (6) ..... .

33.2 Match the patients' descriptions of their symptoms (1–7) with the medical terms (a–g). Look at A opposite to help you.

1 'I have to pee every half hour or so.'
2 'I get a scalding pain when I pass water.'
3 'I have to get up several times to pass water at night.'
4 'I have to rush to go to the toilet.'
5 'I have trouble getting started.'
6 'I can't hold my water.'
7 'I passed some blood in my urine.'

a dysuria
b frequency
c haematuria
d hesitancy
e nocturia
f urgency
g incontinence

33.3 *Write the doctor's questions for each of the symptoms in 33.2 above. Look at A opposite to help* you. You will need to think of your own question for urgency.

33.4 Describe the findings of the laboratory report in words. Look at B opposite to help you.

blood	+
protein	+++
casts	nil

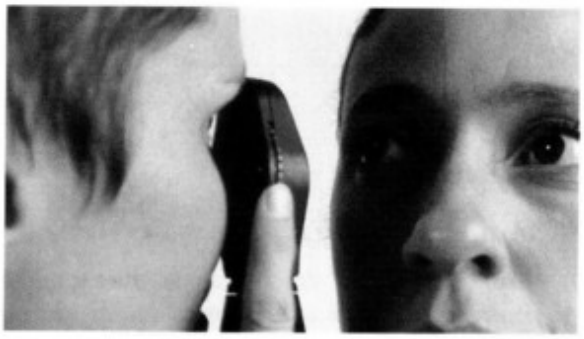
Over to you

What is your provisional diagnosis for Mr Jones?

34 Basic investigations

A Ophthalmoscopy

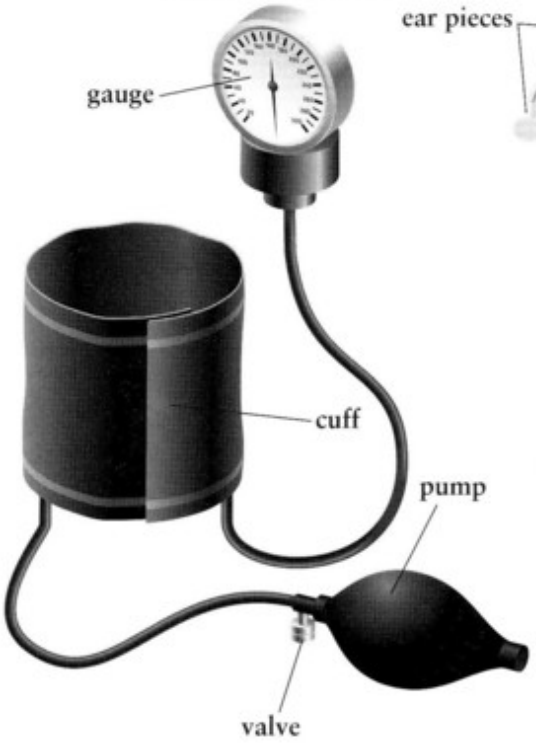
An ophthalmoscope allows the doctor to examine all parts of the eye: the iris, lens, retina and optic disc. For best results, the examination is done with **dimmed**, or lowered, lights to allow the **pupil** to maximally **dilate** or widen. A **topical mydriatic solution** may be applied to the eye to aid **dilation**. The patient is then asked to **fixate** on a target for the duration of the test.



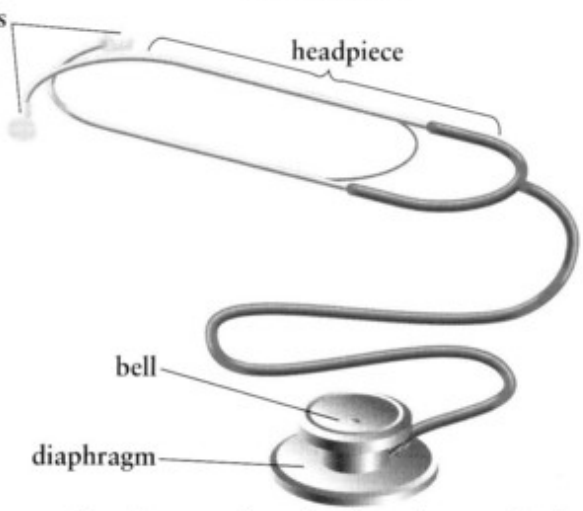
Direct ophthalmoscopy

B Blood pressure

A **sphygmomanometer**



A **stethoscope**



A stethoscope is used to hear the sound of blood rushing back through the artery. The first thumping sound is the **systolic blood pressure** (**SBP**). When the thumping sound is no longer heard, that's the **diastolic blood pressure** (**DBP**).

C Taking blood

During **venipuncture**, the **phlebotomist**, a technician who takes blood, inserts a needle into a vein and withdraws blood into a **specimen tube**, which is sent to the haematology **laboratory** for **analysis**. Usually the phlebotomist can find a vein in the inner part of the elbow, the antecubital fossa, that is easily accessible. She may **apply** a **tourniquet** – a tight band – above the site, or the patient may be asked to clench their hand to **make a fist**, in order to make the vein more prominent. Afterwards, the patient may be asked to press lightly on a **dressing**, usually a piece of gauze, to help the blood to **clot** and to prevent swelling and a haematoma (a black and blue mark, or a **bruise**) where the vein was punctured.

Note: A **bruise** is a specific mark. **Bruising** can be used to describe a number of bruises or a larger area – *The patient exhibited bruising on the right forearm.*

34.1 A doctor is talking to a patient during an ophthalmoscopy. Match the underlined expressions she uses (1–4) to expressions with similar meanings from A opposite (a–d).

> Right, Mr Gold, because you've been having these headaches I'm going to have a look at your eyes, particularly the back of your eye – the retina. I'm going to put (1) a couple of drops in your eye, (2) which will make it easier for me to see the retina. After a few minutes you may find your vision a bit blurry. This will wear off after about an hour.
>
> (3) I need to get rid of as much external light as possible. This means closing the blinds.
>
> Now, I'd like you to (4) look straight ahead at that clock. This takes a few minutes and your eyes might feel a bit tired so you can blink if you need to. I don't want you to look at me, look at the clock.

a the examination is done with dimmed lights
b a topical mydriatic solution
c to aid dilation
d fixate on a target

34.2 Complete the instructions. Look at B opposite to help you.

1 Wrap the ..... around the patient's upper arm.
2 Place the ..... over the area of the brachial artery. Raise the patient's arm so that the brachial artery is at the same height as the heart.
3 Close the valve on the ..... .
4 Pump up the pressure to at least 150 mmHg. Open the ..... a little and slowly deflate the cuff while listening and watching the pressure ..... .
5 The first sound you hear is the flow of blood through the brachial artery. The value on the gauge at that point is the ....
6 Continue listening while you slowly ..... the cuff.
7 The ..... blood pressure is measured when the sound completely disappears.

34.3 Complete the text. Look at C opposite to help you.

(1) ..... are specially trained in taking blood. They are skilled at (2) ..... – puncturing the vein to take a blood sample. The wrist, hand and foot can be used but more often a vein in the inner part of the elbow is used. If it is difficult to locate a suitable vein, the patient may be asked to make a (3) ..... , or a (4) ..... may be applied on the upper arm to make the vein more apparent. Afterwards, a (5) ..... is applied and the patient is asked to press gently. This helps to stop the bleeding and prevent (6) ..... at the site. It is important that (7) .... are labelled correctly before they are sent to the haematology (8) ..... , where a full blood count or other investigations will be carried out.

Over to you

Practise talking a patient through an investigation that you carry out regularly.

35 Laboratory tests

A A Microbiology request form

A Microbiology request form uses a number of abbreviations for specimen types (see Appendix II on page 131 for an explanation of these abbreviations).

Date collected .../.../...
Time collected ..... (24hr)

- ☐ **MSU**
- ☐ **CSU**
- ☐ Urine – Other, specify
- ☐ Urine first voided – for chlamydia
- ☐ Faeces
- ☐ Sputum
- ☐ **NP** secretions
- ☐ **BAL**
- ☐ Induced sputum

- ☐ Nose **sw**
- ☐ Throat sw
- ☐ Axilla sw
- ☐ Groin sw
- ☐ Eye sw
- ☐ Endocervical sw
- ☐ **Sw in Virus TM*** (give site)
- ☐ Sw for chlamydia (give site)

*special medium

- ☐ **Blood Culture**
- ☐ Clotted Blood
- ☐ **EDTA blood**
- ☐ **CSF**

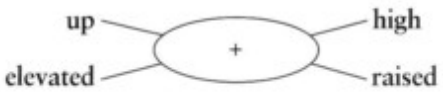
Other:

B A Biochemistry and Haematology lab report

	Value	Range	Unit
Full blood count (FBC)			
Haemoglobin (Hb)	143	115–165	g/L
Haematocrit (HCT)	0.224	0.37–0.47	L/L
Mean cell volume (MCV)	72.5	78.0–98.0	fL
White cell count (WCC)	7.4	4.0–11.0	10^9/L

	Value	Range	Unit
Urea and electrolytes (U&E)			
Urea	4.5	2.5–6.6	mmol/L
Creatinine	58	60–120	umol/L
Sodium (Na)	138	135–145	mmol/L
Potassium (K)	4.5	3.6–5	mmol/L
Liver function test (LFT)			
Bilirubin	7	3–16	umol/L
ALT	9	10–50	U/L
Alkaline Phosphatase (Alk.Phos)	131	40–125	U/L

C Terms used to describe lab results



When the results are within the normal range, doctors say:

Potassium is	within normal limits. normal. unremarkable.

Unit abbreviation	Full form
g/L	grams per litre
L/L	litres per litre
10^9/L	times ten to the power nine per litre
fL	femtolitres
mmol/L	millimols per litre
umol/L *or* µmol/L	micromols per litre
U/L	units per litre

35.1 Write the name of the specimen for each of the suspected conditions. Look at A opposite to help you.

Suspected condition	Specimen
anaemia	
bacterial conjunctivitis	
genital herpes	
meningitis	
septicaemia	
urinary infection	
urinary infection (catheter in place)	

35.2 Complete the sentences describing the results of the report in B opposite. Look at C opposite to help you.

1 Haemoglobin is ....., one hundred and forty-three ..... per litre.
2 Creatinine is slightly ....., fifty-eight ..... litre.
3 Alkaline Phosphatase is ....., one hundred and thirty-one ..... .
4 ALT is slightly reduced, nine ..... .
5 Bilirubin is ....., seven ..... .

35.3 Write full descriptions of the following results from a case history. Look at B and C opposite and at 35.2 above to help you.

Na 138, K 4.5, WCC 12.2, HCT 0.224, MCV 72.5, Alk.Phos 72, ALT 9

Sodium is normal, one hundred and thirty-eight millimols per litre.

Over to you

Describe the lab results of a recent case you've been involved in.

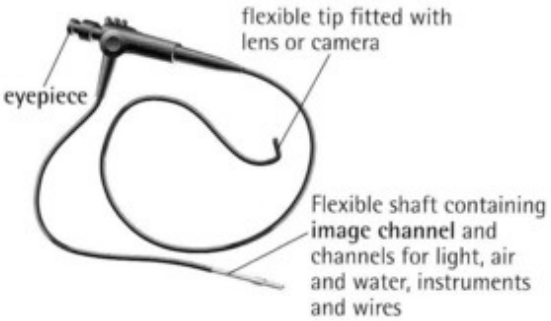
36 Endoscopy

A Functions of endoscopy

Endoscopy is a way of examining parts of the body which are not visible from the outside. A typical endoscope is a flexible **tube** which is **inserted through** one of the natural **orifices** – openings – such as the anus or mouth. **Rigid endoscopes**, which cannot be bent, are also used but are inserted through small **incisions** – surgical cuts. The **shaft** contains several **channels** to transmit light from the outside and images from inside and to allow different instruments to be used.

Endoscopes can be used for the following:

- to provide diagnostic information
- to **excise** – cut out – diseased tissue or **growths** such as **polyps**
- to clear obstructions
- to **take a biopsy**
- to **cauterize** a site of bleeding by applying heat.



B Enteroscopy

Dr Jardine is talking her patient through an enteroscopy.

Now, I'm just **lubricating** the tube with a **jelly** which contains a **local anaesthetic**. It'll help to ensure a smooth passage as it **passes down** and you shouldn't feel too much.

I'm going to **feed** the tube **through** your nose. This is the most uncomfortable part of the procedure but it's very brief. You'll **get used to** the tube in a few minutes' time. OK, when it hits the back of your throat, **take a** deliberate **swallow**. I'll tell you when.

Now! **Swallow**, swallow. That's it. Well done.

C Report of a diagnostic endoscopy

EXAMINATION

Informed consent was **obtained** from the patient after discussing **risks and benefits** of the procedure. The patient was connected to the **pulse oximeter** and placed **in the left lateral position**. Oxygen was provided through a **nasal cannula** and the **premedication administered** as stated. The endoscope was **introduced into** the oesophagus. At the end of the examination the patient was **transferred to** the **recovery area** to **recuperate**.

PREMEDICATION

Throat spray

ENDOSCOPE

Olympus GIF-XQ240

Pulse oximeter

36.1 Complete the table with words from A, B and C opposite.

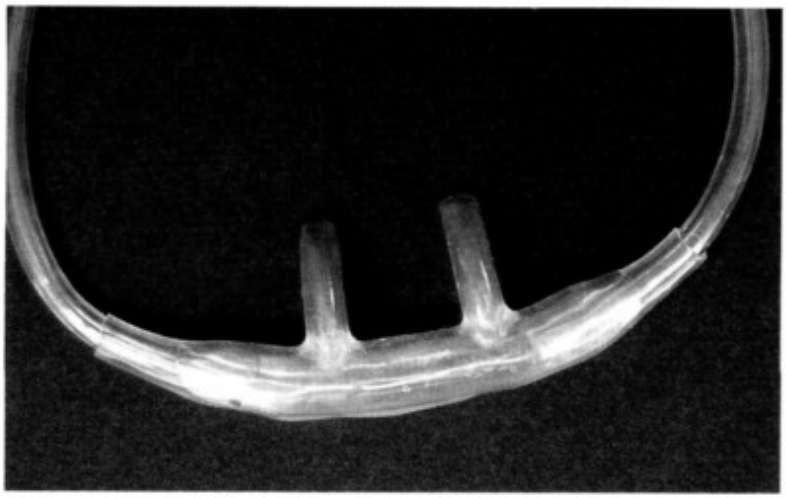
Verb	Noun
consent	
	excision
incise	
	insertion
recover	
swallow	

36.2 Find words in A and B opposite with the following meanings.

1 to pass (an instrument through an orifice)
2 a substance used in procedures for lubrication
3 the flexible part of the endoscope
4 to stop something bleeding by applying heat
5 a growth that protrudes from a mucous membrane
6 to remove diseased tissue
7 taking a sample of a tissue for analysis
8 not flexible
9 a drug that numbs a particular part of the body
10 become accustomed to

36.3 Replace the underlined words and phrases with alternative words and phrases from C opposite.

After connecting the patient to an (1) instrument which measures levels of oxygen in the blood and pulse rate and placing him (2) on his left side, oxygen was provided through a (3) tube in his nose and the (4) drug treatment prior to the procedure administered as stated. Shortly afterward, the endoscope was (5) inserted into the oesophagus. After the examination, the patient was (6) moved to the recovery area.



Nasal cannula

Over to you

What would you say to a patient during a bronchoscopy, or during another internal investigation which you carry out regularly?

37 X-ray and CT

A Radiography and radiology

Radiography involves exposing a part of the body to a small dose of **radiation** to produce an image of the internal organs. Organs with high density such as the ribs and spine are **radiopaque**, meaning they do not absorb radiation, and appear white or light grey on the image. Lung tissue is **radiolucent** – absorbs radiation – and appears dark on the image. Before some types of **X-rays**, patients are given a liquid called a **contrast medium**, such as barium or iodine, which is radiopaque and allows the organ or tissue it fills to be examined. The contrast medium may be swallowed, introduced through the anus as an **enema**, or given as an injection.

Radiology is the use of radiation in the diagnosis and treatment of diseases such as cancer.

B X-ray examination

The chest X-ray is the commonest diagnostic X-ray examination. Normally a frontal (anteroposterior) view is obtained. The patient stands **facing** the photographic plate with the chest pressed to the plate, with hands on hips and elbows **pushed out** in front. The **radiographer**, the technician who takes the X-ray, asks the patient not to move, then to breathe in deeply and not to breathe out. This makes a **blurred**, unclear X-ray image less likely and improves the quality of the image, as it is easier to see **abnormalities** in air-filled (**inflated**) lungs than in **deflated** lungs.

Keep still.

Now, **take a deep breath** and **hold your breath.**

For a side, or lateral view, the patient is asked to **stand sideways** to the photographic plate with **arms raised**. A chest X-ray may be repeated at intervals to track for any changes. These repeated examinations are called **serial** chest X-rays.

C Computed Tomography

Here is an extract from a hospital's press release.

The Western General has installed a new GE LightSpeed 16 Computed Tomography **(CT) Scanner**. CT uses an X-ray source which rotates around the body to produce cross-sectional images.

The new scanner takes up to 16 simultaneous cross-sectional images (**slices**) and transmits more data in less time than ever before. Each slice can be less than one millimetre thick, making it possible to find very small abnormalities.

The scanner will be used for:

- diagnosing muscle and bone disorders
- locating tumours, infections and clots
- monitoring the progress of malignant diseases and the **response to therapy** (treatment)
- providing accurate guidance for **interventional procedures** such as biopsies, and **drainage** – removing fluid from the site of an injury or infection.

37.1 Choose the correct word or phrase to complete each sentence. Look at A and B opposite to help you.

1 In radiography, barium is used as a contrast ..... (image/medium).
2 Tissue which absorbs radiation and appears dark on an X-ray is .....
(radiolucent/radiopaque).
3 An ..... (enema/injection) is a liquid introduced into the bowel by way of the anus.
4 *X-rays used to measure the progress of a disease are called* .....
(repeated/serial) X-rays.
5 If a patient moves during an X-ray, the image may be ..... (blurred/abnormal).
6 It's easier to see abnormalities when the lungs are ..... (deflated/inflated).

37.2 Complete the words. Each begins with *radio*. Look at A and B opposite to help you.

1 Using radiation to diagnose and treat disease is radio..... .
2 Using radiation to make images is radio..... .
3 Using radiation to provide treatment is radio..... .
4 If something is not penetrable by radiation, it is radio..... .
5 If something is penetrable by radiation, it is radio..... .
6 A technician who administers X-rays is a radio..... .

37.3 Complete the radiographer's instructions. Look at B opposite to help you.

Please stand (1) ..... this board.
Put your hands on the back of your hips and your elbows forward. I'll help you.
(2) ..... your elbows (3) ..... .
Keep (4) ..... .
In a moment I'll ask you to (5) ..... a deep breath in and hold it.
Breathe in, (6) ..... it.
That's it. Fine. You can breathe out now.
Thank you. I'll need to check the film.
Now I'm going to take a side view.
Can you stand (7) ..... with your right side close to the machine and your arms raised?

37.4 Complete the table with words from B and C opposite.

Verb	Noun	Adjective
		abnormal
breathe		
drain		
intervene	intervention	
		therapeutic

Over to you

Explain to a patient what an X-ray is and what a CT scanner does.

38 MRI and ultrasound

A Magnetic Resonance Imaging (MRI)

MRI is safer than X-rays because it does not use **radiation**. It provides more information than Computed Tomography (see Unit 37) about some head, neck and spinal disorders because the images are more detailed and have more **contrast**, meaning the differences between dark and light areas are stronger. Unlike CT, the images can be taken on any **plane** – any surface of the body seen from an angle. It is now used for **imaging** – taking images of – the brain and heart, and in oncology.

Contraindications, cases in which it should not be used, include patients with metallic **foreign bodies** in the orbits, and patients with **pacemakers** – electronic devices surgically implanted to regulate heartbeat. MRI is also not approved during the first **trimester** of pregnancy.

B Ultrasound

Ultrasound examination uses **high-frequency sound waves** to view organs and structures inside the body. The waves are generated and received by a hand-held device called a **transducer**. The reflected waves are processed by a computer which produces detailed images for display on a monitor. Ultrasound is safe as it does not employ ionizing radiation like X-rays. It is a cheap, quick and **non-invasive** investigation – with no surgical procedure – for a wide range of **referrals**, although results can be unsatisfactory in **obese** (overweight) patients.

C Preparing for medical imaging

Preparing for an MRI scan

You will need to have **completed a safety questionnaire** and have it with you(1). It is important that there is no metal on your clothing or person(2). Prior to the scan you can eat and drink normally(3). Your details and safety questionnaire will be checked with you by the radiographer, who will explain the procedure and answer any questions you may have(4). You will be asked to remove any **metallic objects**, as well as credit cards(5).

You will be asked to lie on the MRI **scanner table** and **make yourself comfortable**(6). The radiographer will **position** the part to be scanned carefully in the scanner(7). During the MRI scan you will not feel anything but you will be required to **stay still** to achieve the best possible images(8). The whole examination process takes approximately 45 minutes(9). You will not require any injections(10).

Preparing for an ultrasound

You will be asked to lie on an examination table(11). A special **gel** is **applied** to your skin(12). This ensures there are no air pockets between the transducer and your body(13). The transducer is moved over the area to be examined(14). You may feel some pressure and **experience some discomfort**, especially if the test requires you to have a full bladder(15). You may be asked to change your position for clearer pictures(16). When the radiologist is satisfied with the picture quality, the test is done and the gel is **wiped off**(17). A typical test may take between 20 minutes and one hour(18).

D Describing medical imaging

An ultrasound scan of the liver **revealed** reduction of metastases.

An ultrasound scan of the abdomen **demonstrated** a small right renal tumour.

An ultrasound scan **showed** an intra-abdominal abscess.

38.1 Match the two parts of the sentences. Look at A opposite to help you.

1 MRI provides more detailed information than CT because
2 MRI is not approved for use in
3 MRI is safer than X-rays because
4 MRI allows imaging on many planes

a there is no radiation.
b unlike CT.
c of high contrast sensitivity.
d the first three months of pregnancy.

38.2 Match what the radiographer says during an MRI scan with a numbered point in C opposite.

a You don't need any injections.
b I want you to lie down and just relax.
c It's important that you try not to move.
d I'm going to go through your questionnaire with you.
e It will be over in three-quarters of an hour.
f It's very important that you put any metal objects into this tray.

38.3 Match what the radiographer says during an ultrasound with a numbered point in C opposite.

a I'm going to put some gel on your abdomen. You might find it a bit cold.
b That's it. All done. I'll just clean you up.
c I'd like you to lie flat on your back on the table.
d The gel is to make sure there's a good contact with your skin.
e I'll move this back and forwards to cover the whole area.

38.4 Make word combinations using a word from each box. You may need to look at Units 34 to 37. Then use some of the word combinations to complete the sentences.

breathe	anaesthetic
excise	your breath
experience	area
foreign	diseased tissue
hold	discomfort
informed	in
introduce	bodies
local	consent
recovery	the endoscope

1 I'm going to give you a ..... so that you won't feel any pain.
2 With an MRI, it's important there are no metallic ..... in the eyes.
3 After an operation, patients are moved to a ..... to recuperate.
4 Endoscopes can be used to ..... .
5 Before an endoscopy, the patient's ..... must be obtained.

Over to you

Explain to a patient why you are referring her for an ultrasound scan or an MRI scan, and what she can expect to happen during the procedure.

39 ECG

A Uses of an ECG

An **electrocardiogram** (**ECG**) is a **tracing**, or drawing, produced by an **electrocardiograph** – a device which records electrical activity in the heart. An ECG can be used for:

- deciding if the heart is performing normally or suffering from abnormalities, for example cardiac arrhythmia – extra or **skipped heartbeats**
- indicating damage to heart muscle, such as heart attacks, or ischaemia of heart muscle (**angina**)
- detecting **conduction abnormalities**: heart blocks and bundle branch blocks (BBB)
- **screening for** ischaemic heart disease during an **exercise tolerance test**, often carried out on an exercise bike or treadmill
- providing information on the physical condition of the heart, for example in patients with left ventricular hypertrophy (LVH)
- detecting **electrolyte disturbances**, for example low plasma potassium levels.

B ECG procedure

Here is an extract from a medical textbook.

1 The patient should lie down and relax.

2 **Calibrate** the ECG machine – a standard signal of 1mV should move the **stylus** two large squares (1 cm) vertically.

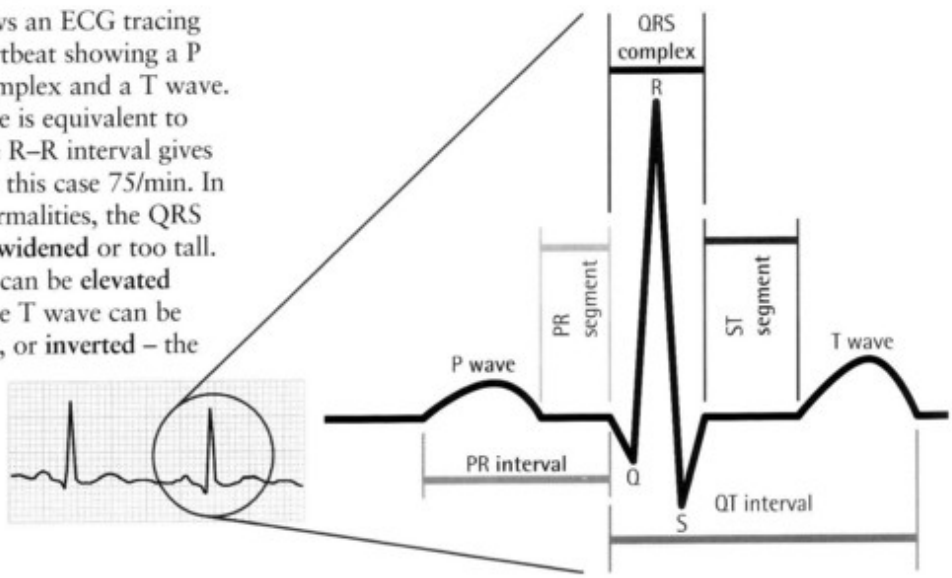
3 Attach the **limb leads**: left arm (**LA**), right arm (**RA**), left leg (**LL**), and right leg (**RL**).

4 **Record** the six standard leads: **I**, **II**, **III**, augmented voltage right arm (**AVR**), augmented voltage left arm (**AVL**), and augmented voltage foot (**AVF**) – three or four **complexes** (see C below) for each.

5 Apply the electrode to the six **chest positions** in turn, recording three to four complexes of each. If the rhythm does not appear to be **sinus** (normal rhythm), a rhythm strip of 6–10 complexes in a single lead should be recorded.

C A normal ECG

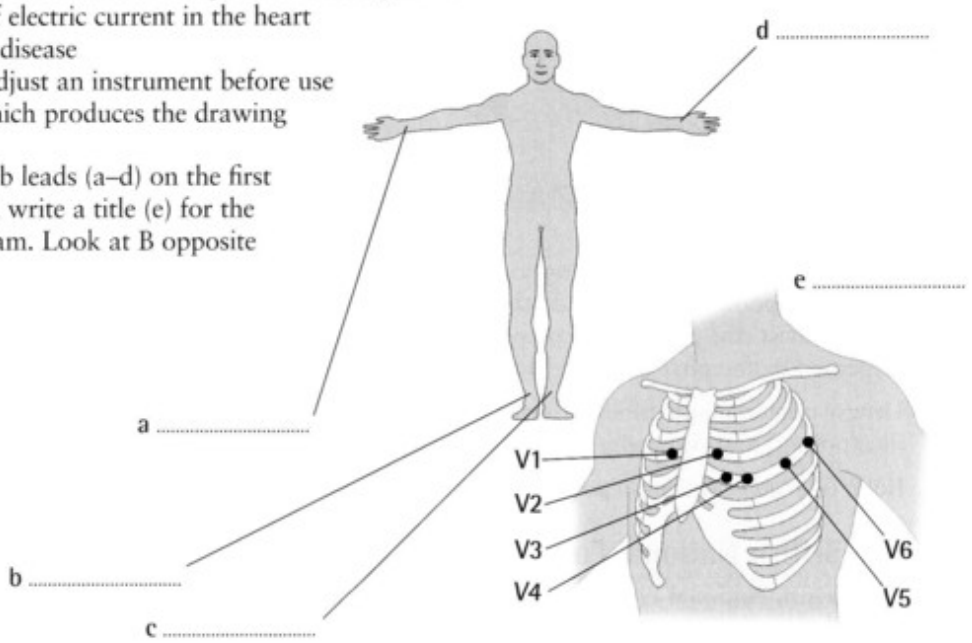
The picture shows an ECG tracing of a normal heartbeat showing a P wave, a QRS complex and a T wave. Each large square is equivalent to 0.2 seconds. The R–R interval gives the **heart rate**, in this case 75/min. In the case of abnormalities, the QRS complex can be **widened** or too tall. The ST segment can be **elevated** or **depressed**. The T wave can be the right way up, or **inverted** – the wrong way up.



39.1 Find words and phrases in A and B opposite with the following meanings.

1 the marks produced by an ECG stylus
2 a test which determines how well a patient copes with physical exercise
3 a missed heart beat
4 a change in the chemical composition of body fluids
5 the flow of electric current in the heart
6 testing for disease
7 check or adjust an instrument before use
8 the pen which produces the drawing

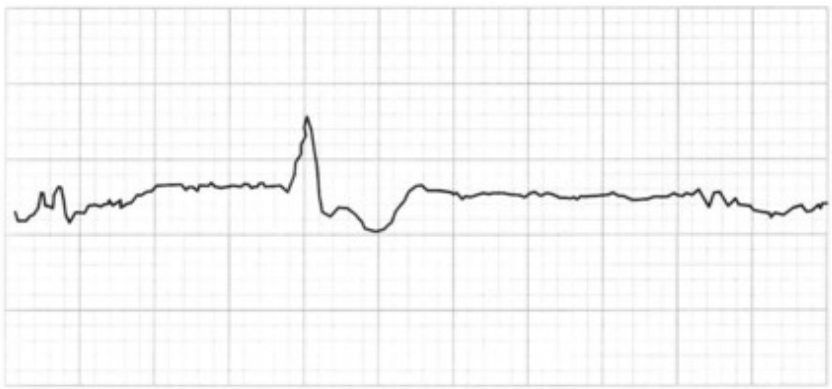
39.2 Label the limb leads (a–d) on the first diagram, and write a title (e) for the second diagram. Look at B opposite to help you.



39.3 Complete the text using words from the box. Look at C opposite to help you.

complexes	leads	wave	interval	rate

This very abnormal ECG shows a (1) ..... of approximately 33/min; a single long pause of approximately 4 seconds between ventricular complexes with atrial activity; widened QRS (2) ..... in keeping with (R)BBB. Deep T (3) ..... inversion in II, III, AVF and some chest (4) .....(V4–V6). Deep QRS complexes in V2 and V5 in keeping with LVH. One atrial ectopic. QT (5) .....is normal.



Lead II

Over to you

Describe an ECG tracing of one of your patients to a colleague.

40 Medical treatment

A Prescriptions and drugs

As part of treatment, a doctor may **prescribe medication**, commonly referred to as **medicine** or **drugs**. A **prescription** may take these forms:

Tab. Nabumetone 500 mg
mitte 56
sig. 2 tab. Nocte

Old style

Nabumetone Tab 500 mg
send 56
label 2 tablets at night

New style

In the UK, patients take prescriptions to a **chemist's** shop, which sells a wide range of **non-prescription medicines** and other products such as cosmetics, for **dispensing** by a **pharmacist** (the person who prepares the medicines). In hospitals, prescriptions are dispensed by the **pharmacy** (the department where the drugs are prepared).

Drugs come in many different forms. See Appendix III on page 143 for descriptions and illustrations, and Appendix II on page 131 for a list of abbreviations used in prescriptions.

Note: Latin abbreviations in prescriptions are being replaced by English, but may still be seen.

B The British National Formulary

The British National Formulary provides information on prescribing and administering **prescription drugs** in the UK.

SULCONAZOLE NITRATE

Indications: Fungal skin infections
Cautions: Contact with eyes and mucous membranes should be avoided.
Side-effects: Occasional local **irritation** and hypersensitivity reactions include mild burning sensation, erythema, and itching. Also **blistering**. Treatment should be discontinued if these are severe.
Dose: Apply 1–2 times daily, continuing for 2–3 weeks after lesions have healed.

Exelderm® (Centrapharm)
Cream, sulconazole nitrate 1%

An indication is a situation or a sign that suggests a specific treatment should be given. A **contraindication** is a situation or sign that a specific drug or treatment should not be used or is **contraindicated**.

Exelderm® is a **proprietary** – commercial – name for a medication containing sulconazole nitrate. The same drug may have both a proprietary name and a **generic** name. For example, Prozac and Fluoxetine are the proprietary and generic names for the same drug.

40.1 Match the abbreviations (1–9) with their meanings (a–i). Look at Appendix II on page 131 to help you.

1 p.c.
2 q.d.s.
3 s.c.
4 s.l.
5 p.o.
6 c.c.
7 p.r.n.
8 i.v.
9 infus^{n}

a by mouth
b sublingual
c with meals
d as required
e after food
f intravenous
g four times a day
h infusion
i subcutaneous

40.2 Complete the sentences. Look at A and B opposite to help you.

1 ..... of the skin may be caused by drugs such as aspirin which can produce a rash.
2 At a ..... you can get your prescription and all sorts of other health products.
3 Gastro-intestinal irritation is a ..... of aspirin.
4 Aspirin is ..... for patients with previous or active peptic ulceration.
5 When bubbles appear on the skin due to heat or irritation, this is called ..... .
6 The maximum ..... of paracetamol for an adult is 4 grammes daily.
7 ..... means a drug is not contraindicated but care must be taken in its use.
8 ..... for codeine phosphate are mild to moderate pain and cough suppression.
9 A person who dispenses drugs is a ..... .
10 The place where drugs are dispensed in a hospital is a ..... .

40.3 Describe each of these prescriptions for a patient with suspected acute coronary syndrome. Look at Appendix II on page 131 to help you. The first one has been done for you.

Medicine	Dose	Method of administration
Streptokinase	1 500 000 U	i.v. infus^{n} over 60 mins
Aspirin	300 mg	p.o. stat
Diamorphine	2.5–5 mg	i.v. stat
Metoclopramide	10 mg	i.v. stat
GTN	300 mcg/5 ml	i.v. infus^{n} start @ 40 mcg/min

Streptokinase, one and a half million units by intravenous infusion over sixty minutes.

Over to you

Practise writing prescriptions in English for medication you often have to prescribe in your own language.

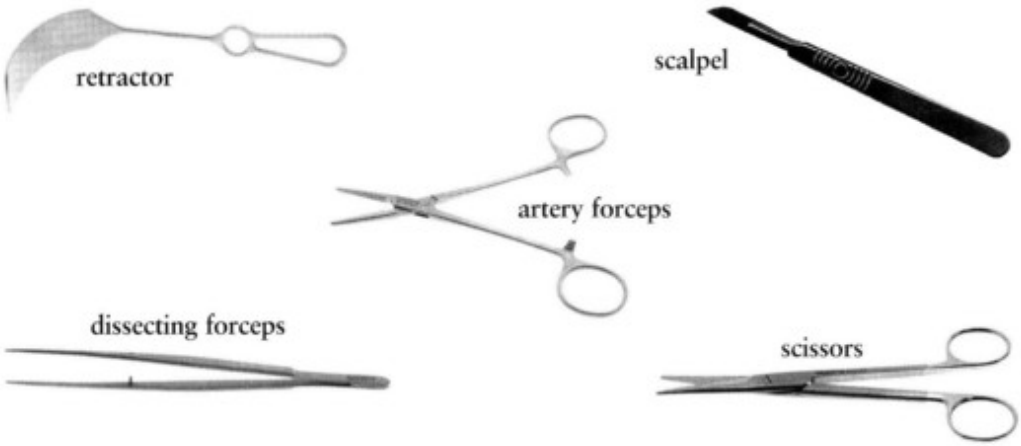
41 Surgical treatment

A The operating theatre

Surgery is carried out in an **operating theatre**. Great care is taken to make sure that operations take place in **sterile conditions** – free from microorganisms. The surgeon and his or her **assistant** wash or **scrub up**, and put on **surgical gowns**, **masks**, and **gloves**. The patient's skin is prepared by disinfecting it with an antiseptic solution. This is known as **prepping** (preparing) the patient. They are then covered with sterile **drapes**, so that only the area of the operation is exposed.

B Instruments

The most basic surgical instruments are shown in the picture.



C The operation

The **operation** begins when the surgeon **makes an incision** or cut. Control of bleeding is very important. A **swab** is a pad of cotton or other material used to soak up blood from the operation site. A **sucker** is a mechanical device which **aspirates** – sucks up – blood. Bleeding vessels are tied with **ligatures** or sealed by an electric current (**diathermy**).

Drains may be inserted to carry away fluid which might act as a culture medium for bacteria. Various methods are used to close the wound, for example **sutures** (also known as **stitches**), or **staples**. Finally, the wound is **covered** with a **dressing**.

D An operation report

This patient had an indirect right inguinal hernia.

Anaesthesia: Spinal anaesthetic with local anaesthetic **infiltration**

Incision: Right inguinal

Procedure: The external oblique aponeurosis was **divided** and the spermatic cord **mobilized**. The hernial sac was identified and separated from the spermatic cord. The hernial sac was then mobilized back to its neck where it was **transfixed** and the **redundant tissue excised**. The fascia at the neck of the spermatic cord was divided, carefully **preserving** the vessels, the genital branch of the nerve and the vas deferens. Thereafter the posterior wall of the inguinal canal was **repaired** in two layers.

Closure: The wound was **closed in layers** with Dexon suture material to the external oblique aponeurosis and staples to the skin.

41.1 Which of the instruments shown in B opposite is needed for each of the following procedures?

1 making an incision
2 keeping the sides of the wound open
3 cutting sutures
4 holding the cut ends of blood vessels before they are tied

41.2 A surgeon is talking to a medical student about assisting at operations. Complete his advice using words from A, B and C opposite.

An (1) ..... must be able to carry out the following tasks to help the surgeon. Firstly, he or she must help in (2) ..... the patient and putting the (3) ..... in place to provide (4) ..... conditions. Expert handling of a (5) ..... is essential to allow the surgeon to see what he is doing. The assistant must also keep the operation site free of blood, by careful use of the (6) ..... or (7) ..... . The surgeon also needs assistance with tying and cutting (8) ..... , and with the insertion of a (9) ..... , if necessary. Finally, the assistant may be asked to close the wound with (10) ..... or other devices.

41.3 Find words in C and D opposite with the following meanings.

1 cut into two parts
2 corrected (something that was damaged)
3 freed from surrounding tissues
4 removed by cutting out
5 spread of liquid into an area
6 making sure something is not damaged
7 small metal devices to hold the edges of a wound together
8 unnecessary
9 sewing up of the wound
10 flat, thin pieces of tissue that lie on top of one another

Over to you

Keyhole surgery (endoscopic surgery) has become popular. How important is it in surgery? Why?

42 Therapies

A Radiotherapy and chemotherapy

Radiotherapy is the use of radiation in controlled doses to treat cancers. It works by damaging the DNA of malignant cells. Radiotherapy may be used:

- as **curative** treatment, for example to shrink tumours
- as **adjuvant** treatment, alongside or following **chemotherapy** – treatment with anti-cancer drugs
- in lower doses as **palliative** treatment to reduce pain and other symptoms of cancer or disease, but not as a cure.

A **radiologist** determines the dose and the exact target for the radiation beams. Dosage is measured in **grays** (**Gy**). A daily dose is a **fraction**. Radiotherapy can also be delivered internally by radioactive **implants** such as needles, or by liquids such as strontium for some bone cancers.

B A day in the life of a physiotherapist

Sam is a hospital **physiotherapist**. She works mainly with patients who have conditions or injuries affecting the lower extremities such as fractures, torn ligaments, and cartilage tears. Most of her patients are **referrals** from other departments in her hospital. She also works with patients **in rehabilitation** following orthopaedic surgery. Some are young people with sports injuries, others are elderly people who have had **hip replacements**. Among her therapies are **manipulation**, **massage**, and exercise to keep the joints mobile and to strengthen muscles. **Rehabilitating** some patients means helping them to walk again using **crutches** or **Zimmer frames**.

Crutches

A Zimmer frame

C Cognitive Behavioural Therapy

Cognitive Behavioural Therapy (**CBT**) is one of the 'talking therapies' for mental health conditions. It aims to eliminate negative thoughts and change behaviour in response to these thoughts. It can help with anxiety, panic attacks, depressive disorders, **post-traumatic stress disorder** and **chronic fatigue**. Therapy can be provided in **face-to-face sessions** with a **therapist**, but delivery by computer can also be effective. It is more effective than **counselling** for some and can provide long-term protection against **relapse**, a return of symptoms after improvement. However, patients must be committed to solving their problems and prepared to work on them between sessions.

42.1 Name the therapy being described. The same therapy may be described more than once. Look at A, B and C opposite to help you.

1 Treatment with drugs toxic to cancer
2 Treatment of cancer by radiation
3 May include massage
4 Aims to eliminate negative thoughts
5 Can involve helping people to walk again
6 Can help with panic attacks

42.2 Complete the sentences. Look at A opposite to help you.

1 ..... treatment is given in larger doses than palliative treatment.
2 Radiotherapy can be used alongside other treatments as ..... therapy.
3 ..... treatment is treatment which helps relieve the symptoms of a condition but does not cure it.
4 Radioactive ..... are wires or needles placed into the area to be treated.
5 A typical ..... for an adult is 1.8 to 2 Gy.

42.3 Complete the text describing a typical working day for Sam. Look at B opposite to help you.

Work begins around 8.00 am. I check for new (1) ..... on the computer and prepare for my morning appointments. Between 9.00 and 12.00 I see new patients around the hospital. I carry out assessments on them and decide what the appropriate form of (2) ..... is. I work with broken limbs, joint (3) ..... and ligament repairs. I deal with A&E patients as well as patients referred to me by their GPs or specialists.

After lunch I see regular patients. *Their therapy includes exercises to* increase range of motion and to strengthen muscles.

What do I like about being a (4) ..... ? Getting people back to normal. (5) ..... people so they can get on with their lives after an injury or an operation.

Over to you

Talk about two contrasting therapies you have experienced, and the advantages and disadvantages of each.

43 Screening and immunization

A Screening

Screening is a way of identifying people at **increased** or **greater risk** for a condition, although they do not yet have any signs or symptoms. In some cases, **mass screening** – screening large numbers of people – is appropriate, for example in the past for tuberculosis. In other cases, only those with **high risk factors**, like a **family history** of conditions such as cancer and diabetes, are screened. However, there are a number of problems with screening. There are always **false negatives**, cases where a patient has a disease but screening does not identify it. There are also **false positives**, where someone is told they have a disease when in fact they do not. Furthermore, with some diseases, early identification is of no benefit to the patient as there is no treatment available.

B Common screening tests

Condition	Test	Subjects	Frequency
Neural tube defects and Down's Syndrome risk	**AFP**	pregnant women	between 16 and 17 weeks
Breast cancer	**mammography**	women, 50–70	every 3 years
Cervical cancer	**smear test**	women, 20–60	every 3 years
Cardiovascular disease	**blood cholesterol**	>40 with high risk factors	every year
Secondary prevention			
Cholesterol >4	**blood cholesterol**	patients with heart disease	every 6 months
Diabetic retinopathy	**ophthalmoscopy** (see Unit 34)	patients with diabetes	every year

C Immunization for travellers

The following **vaccinations** are recommended for travellers to South Asia:

HEPATITIS A OR IMMUNE GLOBULIN (IG)
Transmission of hepatitis A virus can occur through direct **person-to-person contact**; through **exposure to** contaminated water, ice, or shellfish harvested in **contaminated water**; or from uncooked fruits, vegetables, or other foods.

HEPATITIS B
Especially if you might be **exposed to** blood or **body fluids** (for example, health-care workers), have sexual contact with the local population, or be exposed through medical treatment.

JAPANESE ENCEPHALITIS
If you plan to visit rural farming areas and under special circumstances, such as a known **outbreak** of Japanese encephalitis.

MALARIA
Your risk of malaria may be high in these countries, including cities. Travellers should take an effective antimalarial drug.

RABIES
If you might have extensive, **unprotected** outdoor exposure in rural areas.

TYPHOID
Typhoid fever can be **contracted** through contaminated drinking water or food. Large outbreaks are most often related to **faecal contamination** of water supplies or foods sold by street vendors. Vaccination is particularly important because of the presence of S. typhi strains **resistant to** multiple antibiotics in this region.

AS NEEDED
Booster doses for tetanus, diphtheria and measles, and a one-time dose of polio for adults.

43.1 Complete the sentences. Look at A, B and C opposite to help you.

1 .... for heart disease include smoking, high cholesterol and a family history of heart disease.
2 In a small number of cases screening will not identify patients with the early signs of a disease. These are ....
3 Some people without signs of the disease will be wrongly identified as having the disease. These are ....
4 People .... blood or body fluids should be immunized against Hepatitis B.
5 A ..... vaccination is given some time after the first vaccination to make sure the level of antibodies remains high.
6 Hepatitis B can be ..... through exposure to body fluids.
7 Penicillin now has no effect against some hospital-acquired infections as they are .... penicillin.
8 An ..... of measles has affected a number of children who had not been immunized with the MMR vaccine.

43.2 Complete the sentences using information from B opposite. The first one has been done for you.

1 Women aged from 50 to 70 should have mammography every three years to check for breast cancer .
2 Patients with heart disease ..... .
3 Women between 20 and 60 ..... .
4 Patients over 40 with high risk factors ..... .
5 Patients with diabetes ..... .
6 Pregnant women ..... .

43.3 Which of the immunizations listed in C opposite would you recommend for the following visitors to South Asia?

1 A tourist who will stay for a few nights in five-star hotels in major cities
2 A backpacker who will travel by local transport from one city to another
3 A medical student doing an elective in a city hospital
4 A volunteer who will live for a year in a rural community
5 A traveller who has not had a tetanus vaccination for ten years

Over to you

What immunizations are advised for visitors to your country, or a country you would like to visit?