

In this unit

- units of measurement for medicine
- talking about the effects of medication
- mathematical expressions
- describing a chart

- 5 The drug is very strong; even just a _____ can make you drowsy.
- 6 Make the solution with 100 _____ of insulin.
- 7 Make up a suspension in a _____ of 10:1.
- 8 Put 3.6 _____ of the powder into a litre of water.
- 9 Make a 20 _____ solution with 20 grams of soluble solid and add enough water to make 100 ml.
- 10 The patient has a _____ of 9 on the ranking scale for reactions to drugs.
- 11 Use a syringe with a volume of 25 _____.

Patient care

Monitoring the effects of medication

- 1 Complete the dialogue using the verbs below in the correct form.

build up	react	stand
discontinue	re-evaluate	suffer
go away	renew	tolerate
notice	report	worry
put on	run out	



Nurse I want to review your medication, Mr Thomas. How are you getting on with the new tablets?

Mr Thomas They're a big improvement.

Nurse Your notes say we started you on Atenolol, but you stopped taking it. Did you _____¹ badly to it?

Mr Thomas Yes, I felt tired all the time.

Nurse So the doctor tried something different and you were _____² an alternative regime. Is that right?

Mr Thomas Yes, I was. That was Captopril. It was no good either.

Nurse No? Did you _____³ an allergic reaction? A lot of people _____⁴ having breathing difficulties with that drug.

Mr Thomas Yes. My mouth and throat swelled up – like I was swallowing a tennis ball.

Nurse I see. How about the new medication? Do you _____⁵ any changes in your body from taking it?

Mr Thomas Well, yes. It is affecting my sex life.

Nurse I see. Well, we can't ignore that. We probably need to _____⁶ your medication regime and it may be necessary to _____⁷ this treatment as well and think about a different one. In the meantime, how are the headaches? Do they _____⁸ when you use the new painkillers?

Mr Thomas The capsules you gave me for the headaches are great. They're very powerful and fast-acting.

Nurse Have you _____⁹ of them?

Mr Thomas Yes. They're all gone.

Nurse I know they are good, but people who take them _____¹⁰ a tolerance quite quickly so they no longer work after a while. Are you able to _____¹¹ the headaches when they come?

Mr Thomas Honestly, I can't, they're unbearable.

Nurse If you can't _____¹² the pain, I think you'd better go back to the specialist before we _____¹³ your prescription. I am starting to _____¹⁴ about all these contraindications.

- 2 Make a list of expressions the nurse uses

- 1 to ask about side effects
- 2 to ask about medication history
- 3 to describe what might happen in the future.

James Lind first introduced 'control' groups into experiments in 1747. He studied sailors with scurvy. The control group was given their normal food. Other groups were given their normal food plus supplements. Lind found that the group receiving oranges and lemons recovered. What causes scurvy?



● Language spot

Mathematical expressions

- 1 Complete the mathematical expressions with these prepositions.

by from of to

- Five per cent _____ 50 is 2.5.
- One teaspoon is approximately equivalent _____ 5 millilitres.
- How much is 7.2 kg divided _____ 15?
- Subtract 4 litres _____ 13.
- BMI equals height divided _____ weight squared.
- What do you get when you subtract 52 _____ 100?
- 150 mg is added _____ 500 mg to make a total dose of 650 mg.
- Three quarters _____ 100 litres equals 75.

- 2 In the mathematical expressions above, identify one conversion and one formula.

- 3 Listen and match what you hear with the sums written below. Write a–h. Each sum has two spoken versions.

1 $3 \text{ mg} + 6 \text{ mg} = 9$ _____

2 $\frac{36 \text{ ml}}{4 \text{ ml}} = 9$ _____

3 $13 \text{ litres} - 4 \text{ litres} = 9$ _____

4 $3 \text{ mg} \times 3 \text{ mg} = 9$ _____

- 4 Listen and write what you hear in numbers and symbols.

a _____ e _____

b _____ f _____

c _____ g _____

d _____ h _____

- 5 Work in pairs. Read aloud mathematical expressions for your partner to write down in numbers and symbols.

Student A, go to p.110.

Student B, go to p.113.

» Go to **Grammar reference** p.118

Reading

Drugs testing

- 1 Do this questionnaire on attitudes to drugs testing and compare your responses with other students.

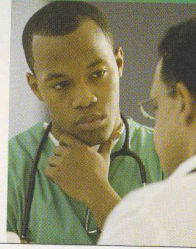
	strongly agree	agree	disagree	strongly disagree
Testing drugs on animals is unnecessary and wrong.				
Before testing them on others, researchers should test new drugs on themselves.				
Scientific progress is more important than the lives of a few people.				

- 2 Read the text and answer the questions.

- One reason why there is a constant need to develop new drugs is because new illnesses are appearing all the time. What are three other reasons?
 - In a clinical trial, first the drugs are tested on animals. What are the next two main steps?
 - What is the basis of the Nuremberg code?
 - Which two groups of people may not always be able to make a free choice over participating in clinical trials?
 - There are risks for sick people participating in clinical trials, but what are the benefits?
 - What ethical problems may arise when scientists believe very strongly in the importance of their research?
- 3 Think about the principle of informed consent and discuss the questions.
- Why do most clinical trials exclude pregnant women?
 - There's scientific evidence that a positive attitude is necessary for any cure to work. If there is only four per cent chance of benefiting from a drug being trialled, should you inform trial participants of this?

Ethical dilemma: when you are faced with a moral choice. For example, a student nurse sees a very senior colleague break a basic hygiene rule. The student nurse faces an ethical dilemma. Should he do something or stay quiet?

Do something Stay quiet Depends



Ethics and the search for cures

There is a constant need for new drugs. This is because there is a lot we don't know about human biology, there are still many illnesses we cannot cure, and new illnesses appear all the time while existing medicines lose their effectiveness. New drugs are tested on animals, but because animals' bodies work differently from ours, if a drug works on a caged rat, it does not mean that it will do the same for a human being. The only way to really know about a new medicine is to test it on people in a clinical trial. This is done by first giving it to healthy people to see if it is safe, and then giving it to sick people to see if it works.

Anyone participating in a clinical trial must understand the risks and give their informed consent. This is a principle of the Nuremberg code resulting from the cruel experimentation done in prison camps during the Second World War. Informed consent prevents abuse of people in the name of science, but the problem is that if you apply the principle literally, you cannot do research on children, people with Alzheimer's disease, and the mentally ill.

Prisons provide controlled environments and constant supplies of participants for drugs trials. However, the fact that prisoners often agree to do things they would not normally do (such as being deliberately infected with dangerous diseases) in



exchange for certain rewards, raises the question of whether they make genuinely free choices. The same goes for people living in extreme poverty whose need for money may blind them to the risks involved.

Sick people participating in a trial benefit by being the first to get a new treatment and a lot of attention. However, there are risks. By taking a brand new medicine, they enter an unknown area in which it is possible for things to go badly wrong. When little is known about them, the use of some drugs like Thalidomide, and more recently TGN1412, can lead to disablement and death.

The other ethical issue concerns the judgement of the doctors and nurses working on trials. As healers, their primary concern is for the well-being of their patients, but there may be times when, convinced by the importance of their work and the benefits it could bring to society, they give the experiment greater importance than the patients. In one famous study in America, hundreds of men with syphilis were left untreated, even after a cure was discovered, in order that researchers could study the effect of the disease right up until death.

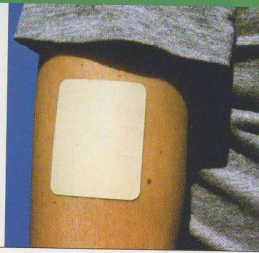
Speaking

Ethical dilemmas and medicine

- 1 Student A, go to p.110. Student B, go to p.113. You will each read two situations which set ethical dilemmas. Answer the questions.
- 2 Make a prediction of how your partner would answer the same questions.
- 3 Work in pairs. Close this book. Set the ethical dilemmas you have read for your partner. Ask the same questions and find out if your predictions were right.
- 4 Explain why you made your predictions and explain your own responses to the ethical dilemmas.

During a follow-up appointment, a practice nurse asked a patient how he was getting on with his medication patches. 'The doctor told me to put on a new patch every six hours and now I'm running out of places to put them,' he said. The nurse asked him to undress and saw that the man had fifty patches stuck on his body.

Write one sentence that gives instructions for using the medication patches that could not be misunderstood.

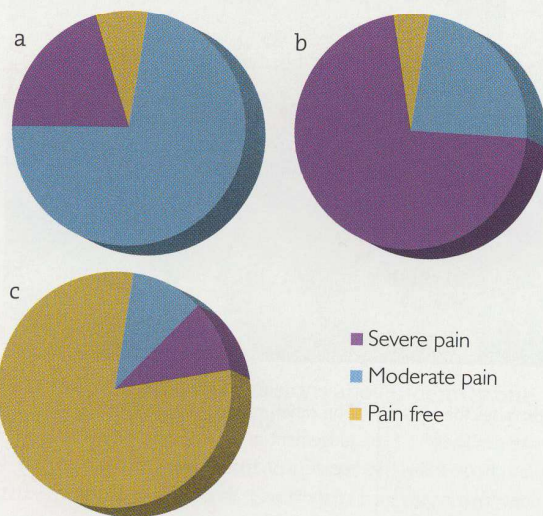


Listening

A clinical trial

- 1 Listen to a participant in a clinical trial talk to a nurse who is monitoring responses to a new drug. Answer the questions.

1 Which (a, b, or c) is the patient's self-monitoring chart?



- 2 What are the eligibility criteria for participating in this trial?
- 3 How is the trial inconvenient for the participant?
- 2 Listen again and complete the monitoring form.

CITY HOSPITAL Monitoring form

Patient's name: _____¹

Disorder: _____² Dosage: _____³

Improvement / deterioration⁴ in symptoms? (circle one)

Note specific details

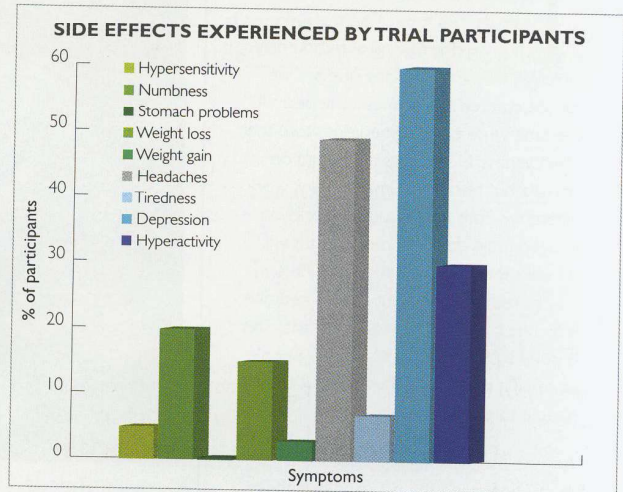
List any side effects

Is the patient happy to continue with the trial? Yes / No⁷

Tests

Side effects

- 1 Study the chart showing side effects experienced by participants testing a sedative in a clinical trial.



- 2 Complete the description of the chart with the names of side effects.

The most common side effect was _____¹. This was reported by sixty per cent of the participants, double the number who experienced periods of _____².

Half the total number of participants suffered _____³ and out of every hundred participants, twenty complained of _____⁴. This is four times the number who experienced periods of _____⁵.

The number of participants who experienced _____⁶ was statistically insignificant. A number of participants experienced changes in their BMI. _____⁷ was the most common at a ratio of five to one with _____⁸.

- 3 Read the information about two more symptoms and add blocks to the chart.

Reports of drowsiness came from forty-five participants in every hundred. This was nine times as many people who reported hallucinations.

Project

Research one of the following plants and explain in a class presentation what treatments derive from them.

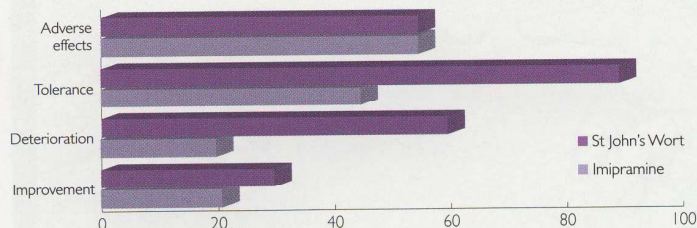


- citrus fruits e.g. pineapple, oranges, lemons
- betel nut palm (*Areca catechu*)
- deadly nightshade (*Atropa belladonna*)
- poppy (*Papaver somniferum*)

Writing

Describing a chart

- 1 Study the chart, which compares the effectiveness of herbal extract *Hypericum perforatum* (St John's Wort) with the synthetic drug Imipramine on patients with depression.



- 2 Say where these phrases could be used for describing the chart.

a ratio of 3:2	half the number
an equal number	one in two
double the amount	three times as many

- 3 Complete the description of the chart using the phrases to help you.

20% of patients taking Imipramine showed improvement.
Compared to St John's Wort, this is a ratio of 3:2.
A similar percentage of patients on Imipramine experienced deterioration of symptoms, but three times as many ...

Checklist

Assess your progress in this unit. Tick (✓) the statements which are true.

- I can talk about units of measurement
- I can talk about the effects of medication
- I can use mathematical expressions
- I can debate ethical issues
- I can describe a chart

Key words

Adjective
soluble

Nouns
clinical trial
contraindication
dosage
eligibility
ethical
participant
ratio
regime
score
synthetic
tolerance

Verbs
build up
re-evaluate
run out

Look back through this unit. Find five more words or expressions that you think are useful.