Source material

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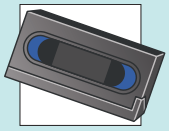
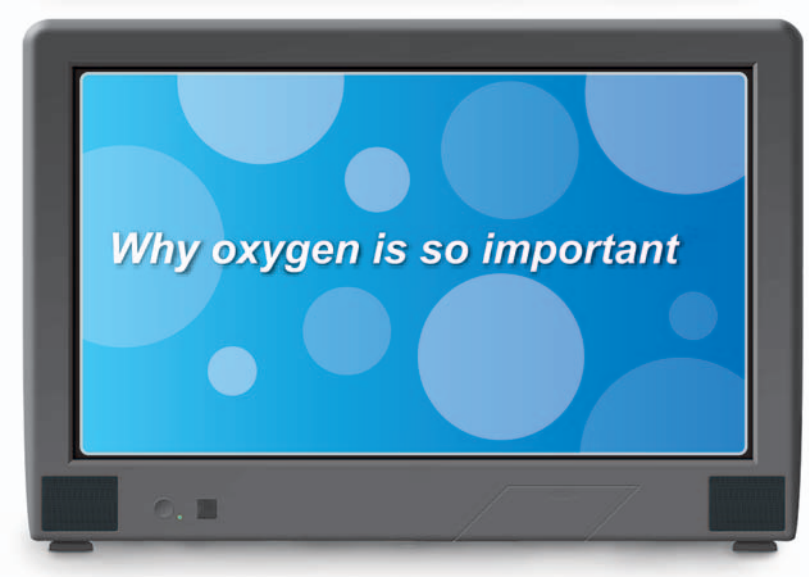
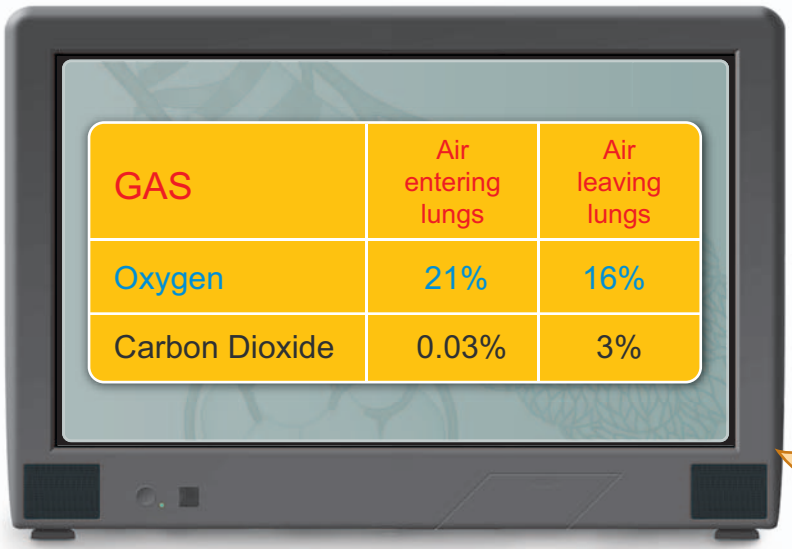
Training video: Why oxygen is so important

Trainer's guide: Why oxygen is so important



This ten-minute video explains why we need oxygen, how it passes from the lungs and heart to the rest of the body, and why exhaled air can still help a casualty.



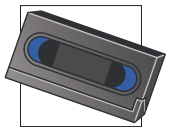


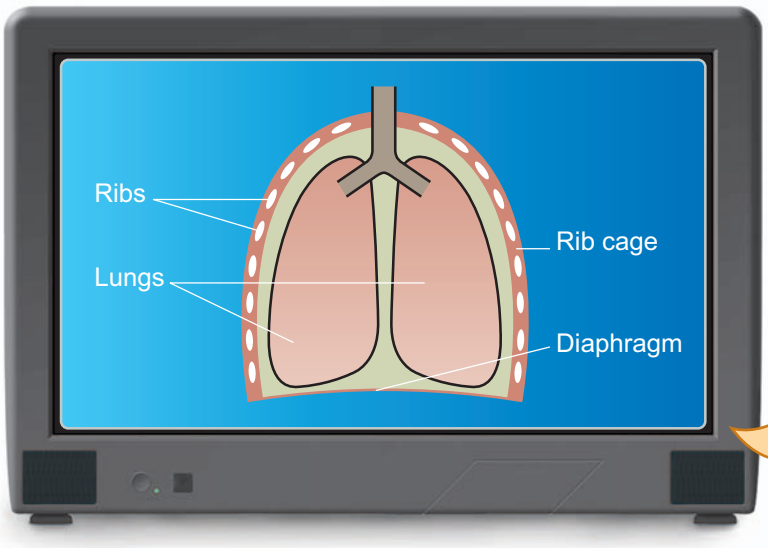
GAS	Air entering lungs	Air leaving lungs
Oxygen	21%	16%
Carbon Dioxide	0.03%	3%

*Now all our body tissues depend on oxygen, so we breathe in air to get that oxygen. Air, as you can see in the table, consists of **21% oxygen**. But the interesting thing is that the air we breathe out **still** contains **16% oxygen**. So why is this **useful** for us as First Aiders?*

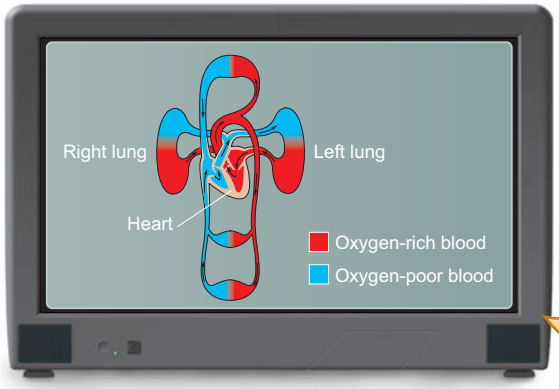
*A lack of oxygen in the body is known as **hypoxia**. This is a very serious condition; if the brain is starved of oxygen for more than 3 minutes, we die. But the air we breathe out still contains **enough oxygen** to keep someone alive until an ambulance comes with more advanced medical help.*

Why oxygen is so important

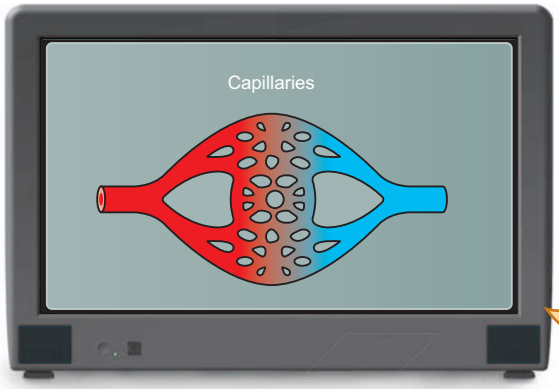




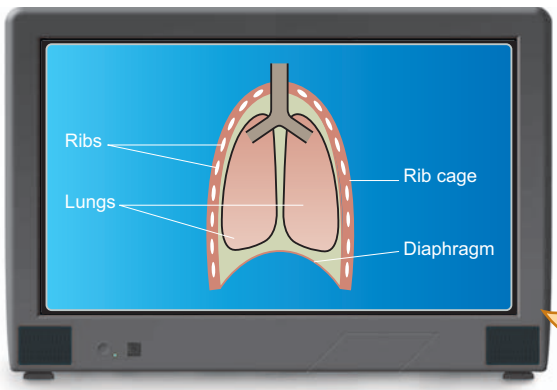
*So let's move on now to look at how we use this oxygen. We need to start with the **respiratory system**, that's to say breathing in and out. Basically the body takes in oxygen and removes a gas called carbon dioxide, which it does not need. Let's start at the point of breathing air **into** the lungs – we do this when the chest expands and the diaphragm flattens.*



*From the respiratory system we move on to the **circulatory system**, in other words, the **circulation** or movement of blood from the heart to the body tissues. Blood with oxygen from the lungs, which we call **oxygenated** blood, is pumped by the heart to the body tissues through the arteries, which divide into strong, elastic-walled vessels called **capillaries**.*



*The thin walls of the capillaries allow the exchange of gases and other material between the blood and the cells of the body. The capillaries join to veins, through which the **deoxygenated** blood is then pumped from the heart to the lungs. Oxygenated blood is **brighter** red than deoxygenated blood, which is a darker red, but is always shown as blue on diagrams.*



*So now we are back with the lungs, with the **respiratory system**. This **final** stage in the cycle comes when we breathe out; the chest contracts and the diaphragm becomes shaped like a dome. This releases carbon dioxide and takes fresh oxygen into the lungs. **Oxygenated** blood then returns to the heart to be pumped round the body again.*

The recovery position

1

2

3

4

5

Listen for the **instruction** words telling you **what** to do.

Listen for the **descriptions** of **how** to do it.

Listen for the **explanations** of **why** you do it.

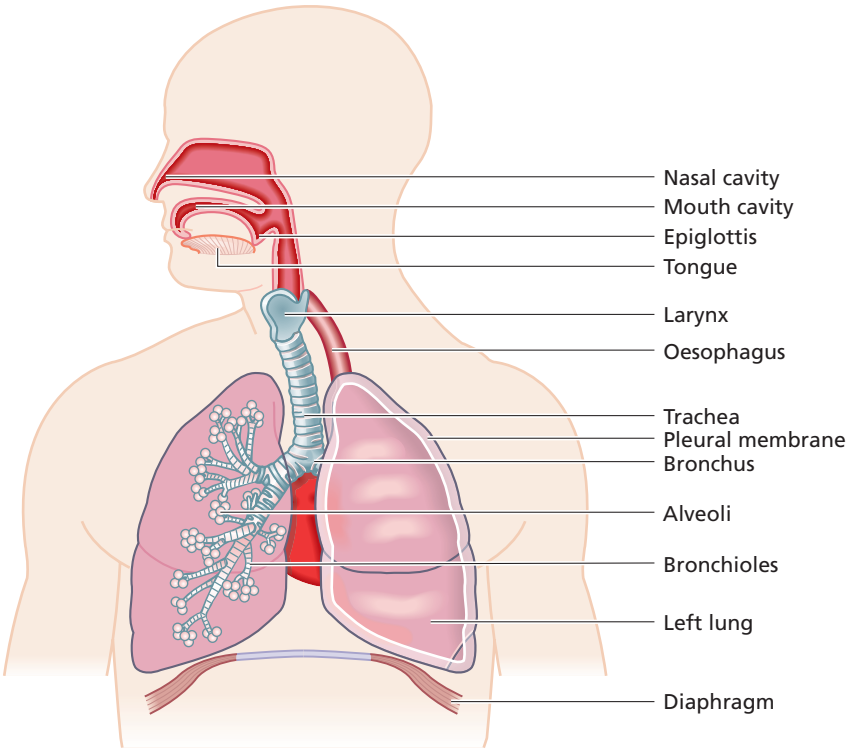
Using a dictionary or glossary

The heart is located in the centre of the chest, slightly to the left of your breastbone. It weighs about 10 ounces. It is a strong muscular pump that beats an average 100,000 times each day, pumping about 4 and a half litres of blood through the body approximately three times every minute.

The pump consists of four chambers, two at the top and two at the bottom. Valves in the heart prevent the backflow of blood that has been pumped returning into those chambers again.

The middle layer is the part of the heart that is primarily affected by a heart attack, as an area of this muscle dies as a result of the inadequate supply of oxygen to that area.

The respiratory system



The respiratory system is all about breathing. The body takes in oxygen and removes a gas called carbon dioxide, which the body does not need.

Oxygen, however, is vital to life as the brain and body need oxygen to function. If the body is starved of oxygen irreversible brain damage starts to occur after about three minutes.

The respiratory system can be divided into the respiratory tract, the mechanics of respiration and control of breathing. The respiratory tract is the route that air follows when it is inhaled, passing from the nose and mouth, through the epiglottis, and eventually reaching the alveoli in the lungs. The oxygen is taken up by the circulatory system, then carbon dioxide, which is a waste product, is removed by exhaling.

The mechanism for breathing is as follows: messages from the brain are passed via nerves, which stimulate muscles to contract and relax, so enabling breathing to take place.

Understanding flow charts

Casualty no.	Condition of casualty	Action you would take
1	A woman is lying on the floor. She is unconscious. There is a live electric cable right next to her body.	
2	A man is sitting on the floor. He is in a lot of pain, and is holding his arm. You think it might be broken.	
3	A young man is lying unconscious on the floor. He is breathing, but his breathing is noisy, so you think he has an obstructed airway.	

Recognising and treating shock

Recognising and treating shock

Clinical shock is a life-threatening condition; it occurs when insufficient oxygen reaches the body tissues because the circulatory system has failed. This may happen either because the heart isn't pumping well enough, or stops; or because not enough fluid is circulating round the body.

Causes
The most common reason for a reduction in the volume of fluid circulating around the body is blood loss either through external bleeding (e.g. from a cut wrist), or through internal bleeding (from a damaged organ, such as the liver). A lowering in the total volume of fluid circulating around the body may also be due to other fluids lost through burns, diarrhoea, or vomiting.

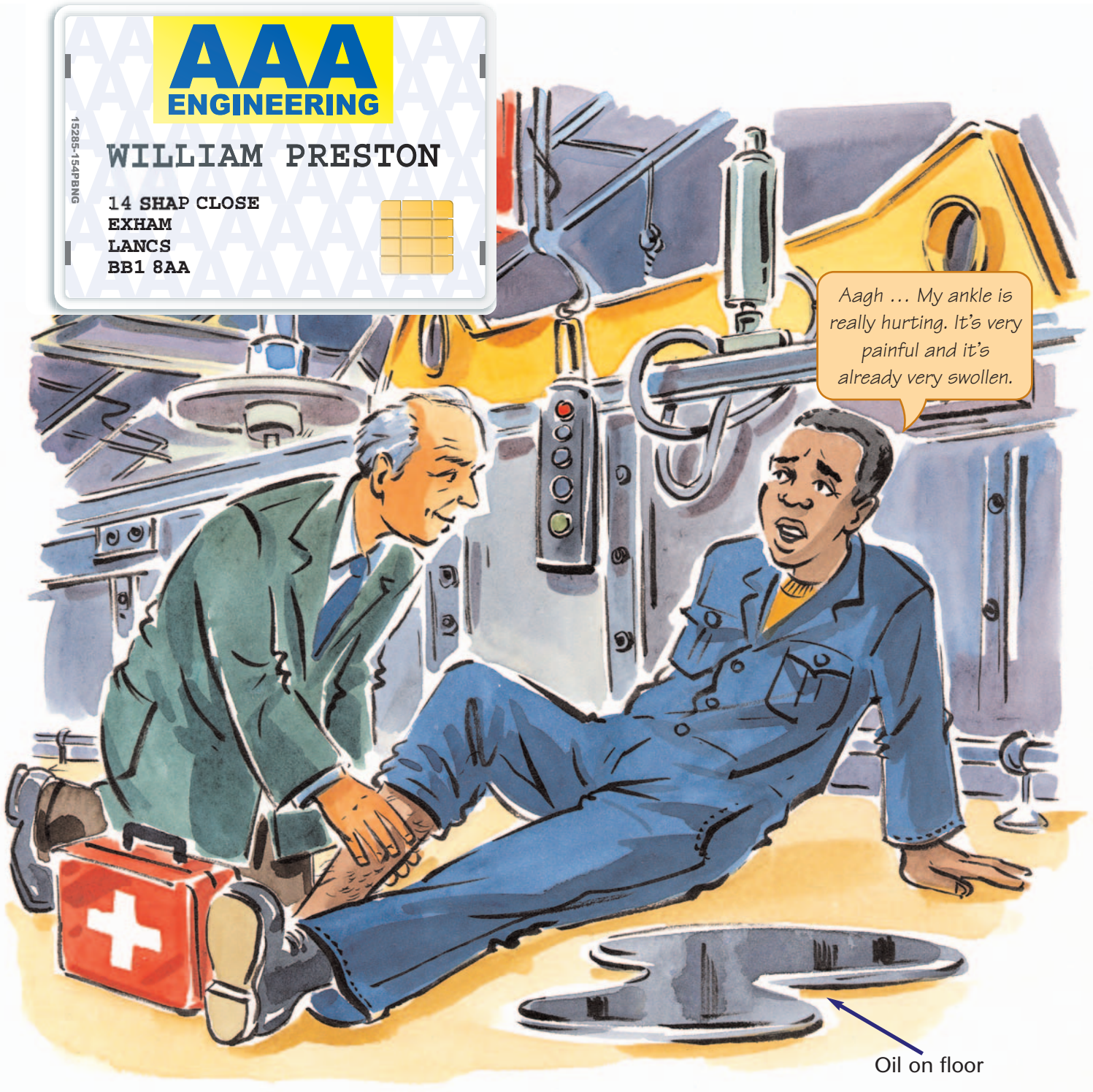
Recognising the condition
Ways of recognising that a casualty is in shock include: feeling sick or thirsty, or weak and giddy. Other signs are cold or clammy skin, bluish lips or restlessness. A person in shock may be alert but can quickly become unconscious, with fast or shallow breathing, and a rapid or weak circulation, which may even stop.

Action you should take
When treating a casualty with shock you should raise and support their legs, loosen tight clothing, insulate them from the ground, cover them with a blanket, and get help. You should also reassure them, because shock can be made worse by fear or pain. You should not move the casualty, let them eat, drink or smoke, and you should not leave them unattended unless you have to in order to get help.

Dealing with the situation

Filling in an accident report form

Bill Preston, a machine operative at AAA Engineering, had an accident in the machine room on June 15th 2005 at half past ten in the morning. As First Aider in the company, you attended to him.



Ordering First Aid supplies

You work for a small printing company (eight employees). Your boss asks you to select a First Aid kit suitable for the company. You decide to look at suppliers' catalogues on line.

1 Read the part of the catalogue below and select the right section for you.

	First Aid & Emergency Signs.	14
	Find such items as signs + first aider arm bands etc, if you do not see what you require please call.	
	First Aid Cabinets (Metal)	3
	If you do not see what you require please call.	
	First Aid Kits (Sports)	5
	Various sports first aid kits, and sports related items. (If you do not see what you require please call.)	
	First Aid Kits (Fischen Premier 4)	5
	Fischen Premier 4 Range of first aid kits First aid has finally Evolved.	
	First Aid Kits (Specialist)	12
	This Category Contains Kits Such as burns kits, boating kits, Biohazard kits, sharps kits, Etc.	
	First Aid Kits For Business & Offices (Standard)	39
	You will find first aid kits for many areas such as Travel, Burns, Catering, Hikers, Motorist, Van & Truck, Biohazard, Sports, Aluminium kits, Etc.	

2 You find the right section. Now select the right kit for your company.

Code	Product	Units	Price
K1	Company Kit (1–10 Employees) (K1)	1	*£9.99
K2	Company Kit (11–20 Employees) (K2)	1	*£16.99
K1C	Company Kit (1–10) Contents Only (K1C)	1	*£9.99
K5	Travel Kit (K5) (in a soft zip up first aid pouch)	1	£8.85
K4	Public Service Vehicle KIT	1	£10.99
K2C	Company Kit (11–20) Contents Only (K2C)	1	*£14.99

Finding information on the Internet

You already have a First Aid certificate, but you want to find a course to bring your skills up to date.

1 Read the information below in detail. Then decide if this is the right course for you, and say why.

2 If it is the right course, what do you have to do to join it?
http://www.sja.org.uk/training/courses/workplace/skillsUpdate.asp

Skills Update/Practice Session

The course provides First Aiders in the workplace with an opportunity to practise and update their skills at any time during their three-year period as a qualified First Aider, so that they remain prepared for an emergency. *We recommend that they attend at least once during this time, especially if First Aid incidents are rare in their workplace.*

Who should attend

- A person who holds a current First Aid at Work certificate

What they will learn

- This session builds First Aiders' expertise and confidence by involving them in realistic situations with simulated casualties.

Course duration/content

- The course is tailor-made to meet the delegates' need to refresh the skills gained from their First Aid at Work training.

Assessment

- Practical Scenario sessions

Certificate

- A certificate of attendance may be issued with this course on request.

Search for Skills Update courses:

postcode or town

June 2005 find ▶

See also:

- ▶ First Aid at Work
- ▶ FAW Requalification
- ▶ Emergency Aid for Appointed Persons
- ▶ Run this course at your venue
- ▶ National Contracts
- ▶ Request a brochure

Our skills update/ practice session gives First Aiders the chance to refresh their skills.

Glossary

abbreviation a shortened form of a word, for example Tue (Tuesday), rep (representative). They are used to save time, space and repetition in writing.
abbreviations shortened forms of words (see abbreviation)
ABC checks stands for Airways, Breathing, Circulation
accident an unplanned event that could possibly cause injury, damage or loss
accurate exact and correct
acronym a word formed from the initial letters (e.g. NATO – North Atlantic Treaty Organisation) or syllables (e.g. Oxfam – Oxford committee for famine relief) of other words. Acronyms are used to save time, space and repetition in both speech and writing.
adhesive sticky
aftermath result, consequences, outcome
alveoli sacks of air in the lungs
anxiety a state of worry
apply use, make use of; put on
appointed given a job or task
Appointed Person someone with duties related to First Aid, for example keeping First Aid boxes available and correctly stocked (they may not necessarily be trained in First Aid)
appropriate suitable and correct
assess consider, weigh up
atria the upper chambers of the heart

backflow movement of liquid back where it came from
bluish almost but not quite blue
body language give a message through expression in the face or through movements and/or position of your body, rather than through words
bold special type which makes words darker and stand out more
breastbone thin bone in the chest connecting the ribs
bystanders people standing nearby, spectators

capillary a very thin tube (for example a blood vessel)
carbon dioxide a gas which is breathed out
cardiac arrest heart stopping
casualty person hurt or injured in an accident; person who has had an accident (or been taken ill)
chamber a hollow enclosed space
circulate to move round
circulation movement, for example of blood around the body
circulatory system movement of blood to and from tissues of the body
circulatory to do with movement (for example of blood through the body)
clammy unpleasantly damp
compress press down on
concussion injury to brain after knock or fall, causing headache, not seeing clearly, etc.
conditional something (for example an instruction) that only needs to be done in certain circumstances
confirm understanding strengthen or support understanding
contaminated infected
contents page page at front of book or manual listing the things in the book and the pages they are found on
contract to draw or pull together

deoxygenated with (some of) the oxygen removed
designed planned
diabetes disease caused by a lack of insulin
diagram a drawing that explains how something works or shows the relationship between the individual parts
diaphragm muscle separating the chest from the stomach
diarrhoea a condition where solid waste matter from the body is runny and unusually frequent
discussion an exchange of views on a particular topic
dome a rounded shape

e.g. 'for example'. It is from the Latin *exempli gratia.*
elevate raise
enabling making (something) possible
entry one item in a list
epiglottis something at the back of the throat (it stops food entering the windpipe)
epilepsy loss of consciousness, violent shaking of the body
etc. 'and the rest'. It is from the Latin *et cetera.*
exhale to breathe out
exhaling breathing out
expertise high level of skill or knowledge
expose uncover
exposed open and uncovered
external on the outside (of the body)

fact a true statement
First Aider a trained person who can give First Aid treatment
flow chart diagram showing a process
fluids liquids
focus to concentrate your energy or attention upon something
font the particular style of letters (what they look like). On a computer most fonts can be made **bold**, underlined or *italic*.
formal language language that follows set rules, for instance in a workplace situation careful language is used in writing, with full sentences, attention to punctuation and grammar
format the style used for different texts to help people find their way round the information. This includes things like subheadings, bullet points, numbers, pictures, symbols, graphics, different sized or styled writing, colour, capital letters, etc.

giddy feeling that you may fall, dizziness
gist a rough idea about something
glossary an alphabetical list of words, related to a specific topic, with definitions, often placed at the end of a book

hazardous dangerous, risky
hazards dangers or possible dangers
heading a short line of text that tells you what the text below is about
heel (of the hand) part of the palm of the hand next to the wrist
hyphen a sign used to join two words together
hyphens punctuation marks that join words together or separate phrases
hypoxia lack of oxygen reaching the tissues

i.e. abbreviation for 'that is'. It is from the Latin *id est.*
illustrate give or show an example of something
inadequate not enough
index finger the first finger (nearest to thumb)
index alphabetical list found at the end of a book. Lists topics covered in alphabetical order (and the page numbers where they can be found).
information ideas and facts about specific topics
inhaled breathed in
injury physical damage to the body caused by an accident
instructions a series of commands aimed directly at the reader or listener to help them do (or not do) something
insufficient not enough
internal inside (the body)
Internet the connection of computers across the whole world allowing the sharing of information. The most commonly known part of the Internet is the World Wide Web (www) also known as the Web.
italic text or handwriting that slants (normally to the right *like this*)

key words important words or phrases that carry the meaning of a written or spoken sentence

layout overall plan, design or arrangement that helps you to tell what something is at a glance
life-threatening can cause death
logical clear and in the right order

mechanics how something moves
minor accident accident where the injury is not serious
minor not very important
mnemonic something that helps you to remember new information, by associating it with something you know already
muscular made up of muscle
myocardium heart muscle (part affected in a heart attack)

(n/a) or not applicable something you can put on a form when there is no information for that box
narrator the speaker who describes what is happening in a video

objective something that you are trying to do
occupation job
occurrences things that happen, take place
occurs takes place, happens
open question a question that needs more than a one word answer
oral spoken
ounce measurement of weight (about 28 grams)
oxygen an element in air that we need to breathe
oxygenated supplied with oxygen

personal protection keeping yourself safe
personnel a group of employees in an organisation
pressure (applying) pressing down firmly
primarily mainly
primary first (earliest, or most important)
procedure a series of actions to carry something out

questioner someone who is asking a question

reassure to make someone feel more confident, more at ease
record information kept about something

reduction lowering
relevant important for the action or topic being discussed
request asking for something
rescue breaths giving oxygen by mouth to a person who is not breathing
respiratory tract part of the body that carries air to the lungs
respiratory to do with breathing
route path to be followed

scan read very quickly, looking only for one or more key words
scanning passing your eyes quickly over a text looking for key words, as (for example) when looking up a name in a telephone directory
scenario situation
seizure a sudden fit (violent shaking of the body)
shallow opposite of deep
signal words words that give the listener clues about the content or direction of a talk, verbal instructions or explanation. For example: 'first', 'next', 'lastly' – help you keep track of the order of instructions; 'moving on to', 'now let's', 'the next point is' – help you prepare for a new topic
simulated not real, but used for training
skim read quickly to get the main ideas or gist
skimming to look quickly over a text in order to get an idea of the content and purpose
spidergram a way of showing the relationship between a central or main idea and other ideas associated with it (also known as a mind map)
sprain twist or pull some part of the body, causing pain
squeamish easily upset by blood or something unpleasant
sterile clean, free from germs
stimulate make something happen
stroke disabling condition caused by lack of flow of blood to the brain
subheading a smaller heading found under another larger main heading
substances materials
summarise sum up by giving the main point or points of something
survey examination of a person's condition in First Aid
symbols marks that have a particular meaning, for example '&' means 'and'

table a set of facts or figures presented in rows and columns
tailor-made specially made for the purpose
technical language language used specifically in a particular subject or area of work
technique a particular way of doing something; method, skill
tissue a collection of cells (a cell is the smallest part of a living being)
tissues collections of cells which form animals (including humans) and plants
title the name of a book, or of a section of a book

unattended alone, with no-one looking after a person
unconscious not aware (not awake)
update bring up to date

valve something which allows blood to flow in one direction only
VAT or Value Added Tax a tax on many goods that we buy
ventricles the lower chambers of the heart
verb a 'doing' or 'being' word that tells us what a person or thing is doing, e.g. Mark works in a factory. He is a supervisor.
vertically in a direction from top to bottom
vessel a canal holding or carrying a liquid (for example blood)
via by way of
vital very important
volume amount (of a liquid)
vomiting being sick

waste material or gas that is not needed