Who's in Health?

Example teaching sessions

Part of Inspiring the Future
Primary Futures

Medical Schools Council

NAHT
FOR LEADERS, FOR LEARNERS

NHS
Education for Scotland

NHS
Health Education England

Department of
Health, Social Services and Public Safety
www.dhsspsni.gov.uk

Llywodraeth Cymru
Welsh Government

The campaign

The **Who's in Health?** campaign places volunteers from the health professions into primary schools across the UK. Once there, they give a short session to inspire 7–11-year-olds (those at Key Stage 2) about their profession.

The aim is to address children's lack of inspirational healthcare figures, to connect what they are learning right now with the idea of a future career, and to inspire children of all backgrounds.

It has been found in medicine that a disproportionate number of medical students come from wealthier backgrounds. It has also been found that relatively little 'outreach' work takes place at primary level. Seeing positive role-models at this crucial stage can raise aspirations and help to ensure that our caring professions can always select from the best applicants, no matter what their background.

To sign up to the **Who's in Health?** campaign, and to learn more about how volunteers are matched with primary schools, visit this website:

www.inspiringthefuture.org/primary-futures

This booklet

A competition was run among UK medical students to design 15-minute sessions to be delivered in primary schools, and these are the winning entries. They are designed to discuss being a doctor, but the methods they use will work equally well for talking about any health profession.

If you are thinking of signing up to the campaign and going into a primary school, the examples in this booklet will give you some great ideas for your session. They exemplify different approaches and tools, but all fulfil the essential criteria: they engage and inspire.

Medical Schools Council

Part of Inspiring the Future Primary Futures

NAHT FOR LEADERS, FOR LEARNERS

Contents

The five senses

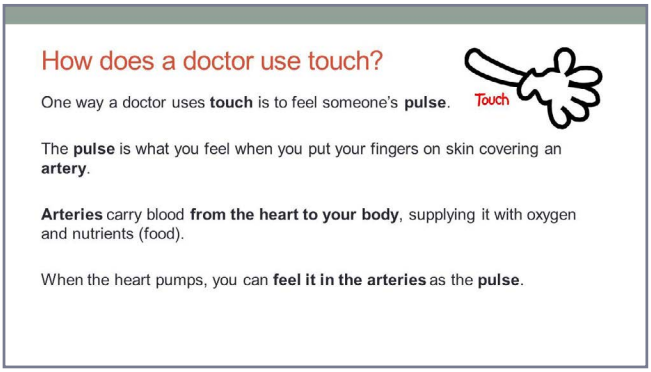
Laith Alexander

This session aims to show primary school children the challenges a doctor faces on a busy day in the A&E department, whilst illustrating specific skills a doctor requires that relate to the subjects the children study at school. The activity is split up into three separate stations and is fast-paced and interactive. This version is aimed at primary students in year 5 and 6 but the question difficulty can be adapted for younger pupils.

Time: 15 minutes (two minute introduction, three minutes for station 1 and 2, six minutes for station 3, one minute round up)

Touch

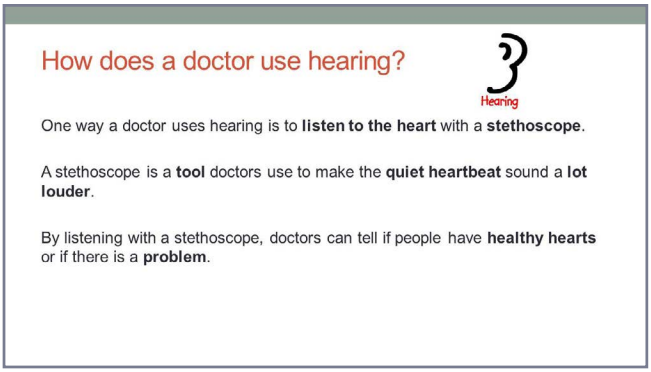
After asking the pupils to name their five senses, the session will explore how doctors use touch first. The instructor would explain that doctors use touch to feel the pulse, and would briefly explore what the pulse is. Additionally, the slide presentation includes a basic animation to demonstrate the pulse. In order to emphasise how doctors use mathematics in their everyday lives, the instructor would go on to say that doctors regularly need to count the pulse to determine if someone is ill. Using the clock, the pupils would then be invited to count their friends' pulses. By exploring how doctors use touch this part of the session has engaged pupils' science and mathematics skills as well as being interactive, in line with the objectives of the session.



This slide explains how doctors use touch to feel the pulse, and also explains what the pulse is.

Hearing

The next of the five senses that the session looks at is hearing. Here, the instructor explains that doctors use hearing in order to listen to patients' heartbeats using a stethoscope. The instructor explains that the stethoscope makes quiet sounds louder. An animation would illustrate the principle. The pupils would then be able to listen to their friends' heartbeat using a stethoscope. Whilst listening, the pupils would be encouraged to count the number

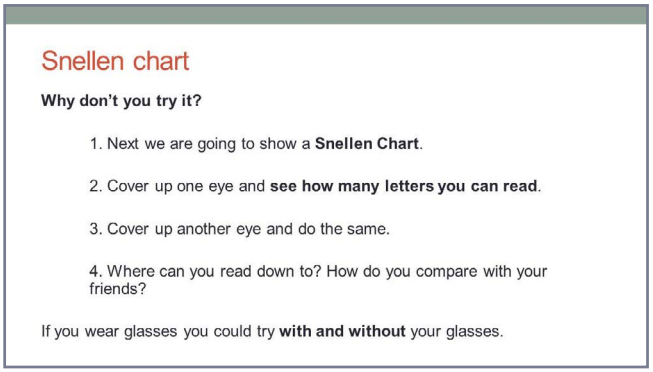


This slide explains how doctors use hearing to listen to the heart, and what a stethoscope does.

of heartbeats again using the clock, and compare the figure they obtained with the pulse they had counted in the touch section. This part of the presentation engages pupils' science and mathematics skills, is interactive and also includes the use of simple props to which all medical students and doctors will have access.

Seeing

In order to explore how doctors use vision, the instructor will explain how patients can suffer with problems of sight such as short-sightedness and longsightedness. Then pupils will be told that doctors are able to test patient's vision using the Snellen chart. The pupils will then have an opportunity to look at a Snellen chart and see how many lines of letters they can read. The slide suggests that students compare their left and right eyes and – should they be wearing glasses – compare their performance with and without glasses.

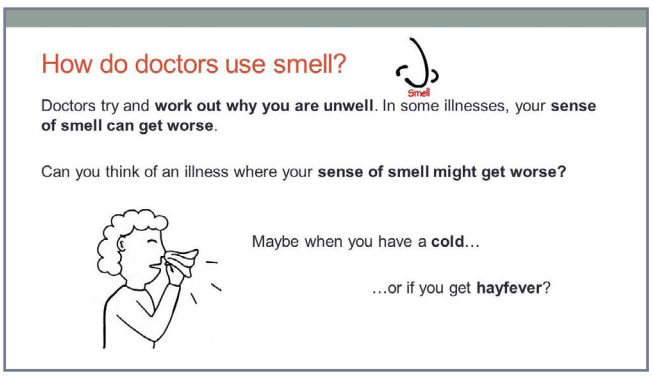


This slide explains how pupils should read the Snellen chart.

This part of the presentation engages pupils' reading skills, and is interactive. The Snellen chart can be displayed on the projector. If available, a Snellen chart with simple words could be used (instead of just letters) to further stretch reading skills.

Smell

To see how smell is important in medicine, the instructor will emphasise that one of the roles of a doctor is to work out why people are unwell. The instructor can then mention that in some illnesses, sense of smell can get worse. Pupils will be encouraged to think of times where their sense of smell has changed. The session will look at the common cold and hay-fever as two illustrative examples. A brief and simple explanation will elucidate what is happening in both of these illnesses, followed by an opportunity for pupils to suggest symptoms that someone might have if they were to suffer with a cold or hay fever. Finally, two interesting pictures of the cold virus and pollen particles are shown which have been taken from microscopes.

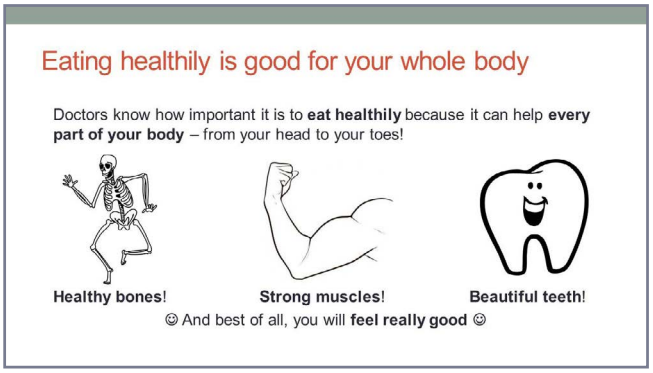


This slide encourages pupils to think when their sense of smell might have changed.

The smell section engages pupils' science skills, and offers a number of opportunities for interaction. It also emphasises the role of a doctor in diagnosis.

Taste

To explore the final sense, the instructor suggests that part of being a doctor involves helping people to live a healthy lifestyle. An interactive component asks students to think of ten tasty, healthy foods and also asks whether the students know how many fruit and vegetables one should eat per day. A final slide looks at the implications of healthy eating and how it enables both physical and mental health. This section uses pupils' science skills and is interactive. It also adds a public health component to the session.



This slide illustrates the importance of eating healthy, tasty foods.

Close

The final slide rounds off the session with the following: "If you work hard and continue learning your maths, reading and science, then you will be ready to be a good doctor before you know it!" Pupils will then be given a certificate which summarises what they have done in the session. This certificate can include the logos of the sponsoring bodies, as well as a signature by the instructor.

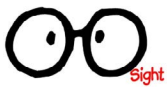
CERTIFICATE OF ACHIEVEMENT

This is to certify that

_____

attended the 'Why be a doctor?' talk and now understands how doctors use all five senses to help people get better.

I used my sense of **TOUCH** to feel the pulse of my friend, and used my **MATHS** skills to count the pulse.



I used my sense of **SIGHT** to read a Snellen chart, and I used my **READING** skills to read all the letters I could.

I used my sense of **HEARING** to listen to the heartbeat of my friend, and used my **MATHS** skills to count the heartbeats.

I know how important my sense of **TASTE** is when eating tasty, healthy foods and I learnt some **SCIENCE** about how healthy foods can help our bodies grow.

I know how my sense of **SMELL** can change with a cold or with hayfever, and I know how doctors use **SCIENCE** to work out why someone is ill.

Date _____ Signature _____

Laith's handout certificate

Mini medics

Robyn Brown

Aims

- Inspire students from all backgrounds, showing them that medicine is for anyone with the desire and ability
- Demonstrate that working at science, maths and English will help them in a medical career

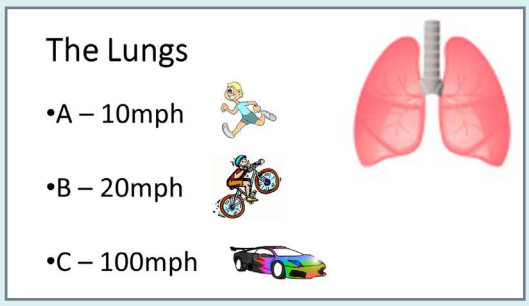
Learning Objectives

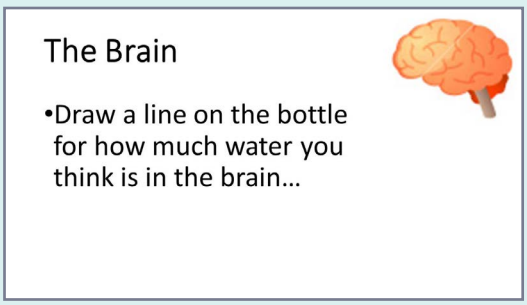
- Science in the workplace – human anatomy, forces, human physiology
- Maths in industry – estimating, units of measurement
- English in industry – listening to instructions, communicating in teams, reading and verbally using new words, comparison e.g. bigger, heavier

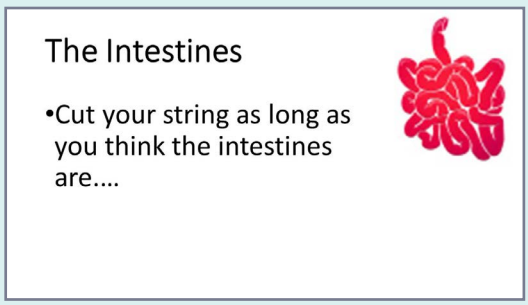
Resources

- Slide presentation
- Stethoscope
- Peak flow meter
- 8.5m length of string
- Cantaloupe melon
- 30x 'Mini Medic' Passports
- Per Table:
  - * Laminated heart, lungs, brain and intestines sheets
  - * Laminated A, B, C cards
  - * Waist-up body cardboard cut out
  - * Tennis ball
  - * Ball of string and scissors
  - * 1L Bottle of water and board pen

Slides







Intro

1 minute

- Hello, I'm _____ and I've come to tell you all about my exciting job as a (Student) Doctor!
- Today we are going to find out some awesome facts about the human body, how we use what we learn to be doctors and how you can all be doctors too!

Pin the organ on student

4 minutes

- I need a volunteer from each table to come and be models! (**Give cardboard cut-outs to 5 children to hold in front of them.**) You are the patients.
- The rest of your table are your doctors. You have 1 minute in your tables to place the body organs I've put on your tables on to your patients in the right place!
- **One minute of putting organs on 'patient'.**
- Well done everyone! Right let's see how you all did! Image on powerpoint of human body with organs on.
- Who got them all right?

Guessing game

8 minutes

- Next, hands up for points for your team/table. Everyone take an organ picture each for your team.

Heart slide

- What is this? HEART. All Heart doctors pick your heart picture up!
- What does it do? We use it to pump blood around our body
- You all have a tennis ball on your desk. Give it a firm squeeze for one minute and count how many times you do it. You are using the same amount of force as your heart does to pump blood around your body!
- Putting one of your cards up, you have 30 seconds to discuss in your teams and tell me – how many times do you think your heart does that every day?
  - **Refer to slide (answer in bold)**: A – about 1,000, **B – about 100,000**, C – about 100,000,000
  - Our heart pumps about 80 times a minute, or 100,000 times a day when we are resting and much faster when we are walking or running. We measure how many times somebody's heart pumps by feeling their wrist - try it! **Demonstrate fingers on wrist**.
  - We get to listen to the heart using our stethoscopes like this (**demonstrate on assistant**) and it makes sounds like this. **Play sound effect**. (If any of you want a go at the end if we have time you can have a go)

Lung slide

- What is this? LUNGS. All Lungs doctors put up your cards!
- What do they do? We use them to breathe air in and out
- When you sneeze, air is forced out of your lungs into the air! You have 30 seconds again to decide how fast do you think the air goes when you sneeze and each lung doctor hold up the card!

  * **Refer to slide**: A – A person sprinting 10mph, B - A bicycle doing 20mph, **C – A race car doing** 100mph

- We measure how fast people can push air out of your lungs using this (**peak flow metre**) which blows the arrow up. Blow into this as hard as possible. If we have time at the end again you can have a go.

Brain slide

- What is this? BRAIN. Brain doctors hold up your cards.
- What does it do? helps you think and choose to move, see, hear and think
- Our brain is about the size and weight of this melon (**pass it round**). It has all the cells that make our memories joined by electrical connections strong enough to light up a lightbulb! However lots of the brain is made of water. Using your pen, draw a line on the bottle of how much water you think is in the would fit inside that melon/ your brain!
- It is actually the whole bottle! All soaked up in an organ the size of the melon!

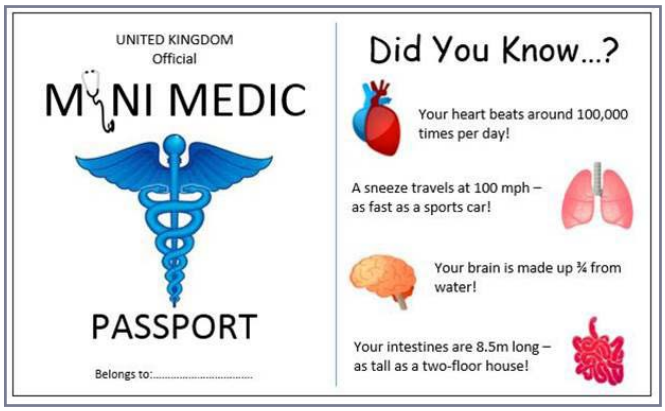
Intestines slide

- Finally what is this? INTESTINES. All intestines doctors put your card up!
- What does it do? Made up of small and large part and transports your food
- When you eat food, it travels all the way through your intestines. In your tables use the ball of string and cut it at the length you think is the distance of your small and large intestines is stretched out.
  * All help each other hold your string up so I can see how long it is.
  * 7 + 1.5m = **8.5m**. **Have pre-prepared string length. Get all children to help hold the string**.
  * This is how long it actually is! But as you can see (*coil up string*), your intestines are all supercoiled up in your tummy! We sometimes use a mini camera on tube to have a look inside people's intestines.

Summary

2 minutes

- Well done everyone! Today you've learned a bit about what fun it is to be a doctor.
- You've learned parts of body and some fun facts about how we look at them.
- You've also shown today that you can use your science, maths and English skills you learn at school to help you in real doctor situations.
- In showing interest, listening and learning, you've all demonstrated that every one of you can be a doctor like me!



Robyn's handout

- Therefore you are all being awarded your 'Mini Medic' passport with all the cool facts you've learned today you can go and tell your friends and impress adults! With this passport you just need to keep working hard at your english, maths and science lessons to become a doctor like me!
- Give out Mini Medic Passports.

A trip to the hospital

Clare Coggins

Summary

1. Introduction
2. Pupils are invited to volunteer (two doctors, one patient)
3. Acting out a nervous impulse as a group to explain how painkillers work
4. Calculating the number of tablets to prescribe as a group
5. Writing a short letter as a group
6. Summary and suggested extension – please see Appendix 1

Resources

- Scrubs
- Stethoscope
- Hat, envelope or other container with around 10 slips of paper inscribed with names of body parts, e.g. nose, knee, tongue, big toe, hand
- Whiteboard or flipchart and markers

The session-giver should be dressed in smart casual clothes non-specific to healthcare employees. The items above should be kept hidden until the appropriate time to bring them out.

Plan (**Alternative options to the plan are in purple**)

Introduction

- Walk in and say, "Can anyone guess what job I do?" Follow the children's guesses by putting on the scrub trousers and asking again. If no-one guesses correctly, put on the stethoscope.
- **Alternatively, introduce yourself as a doctor and ask a question such as "Who wants to be a doctor when they grow up?"**
- Say "I'm here to show you what a doctor really does – you might be surprised."

Volunteer doctors and patient

- Say, "We're going to do something that doctors do every day." Ask for two volunteer 'doctors' for the activity

- If using the scrubs and stethoscope, give the scrub top to one volunteer (the 'hospital doctor') and the stethoscope to the other (the GP). Ask both their last names and call them "Dr [Last name].
- Ask for a third volunteer – the 'patient'. Call them Miss/Mr [Last name]. The patient has come to A&E following an accident.
- **Optional extra: give the patient an item of clothing to wear and use it to give an explanation of what they were doing when they hurt themselves e.g. a baseball cap – they were playing baseball in the park; a shopping bag – they tripped while they were buying food.**
- The patient picks a body part from the hat/envelope and reads it to the class. Explain that this is the body part they have hurt.

First activity – painkillers

No specific painkiller has been named here because of concern over children seeking out painkillers to try. It is imperative that the session-giver explain that they shouldn't take painkillers that an adult hasn't given them.

- Explain that the brain tells the body it's in pain. When a body part hurts, it tells the brain by sending it a message.
- Demonstrate this by asking the group to hold hands (they can stay in their seats).
- **If the group is larger than a normal class size, use the front row only to save time.**
- The child at one end of the chain is the brain; the child at the other end is the sore body part. The 'body part' child squeezes their neighbour's hand and so on, so that the hand-squeeze is passed along the line to the brain. When this happens the brain says 'Pain!' The squeeze is passed along the line again and the session-giver acts as the painkiller by separating the hands of two children in the middle.

Second activity – writing a letter

- Explain that this patient would see the hospital doctor because of the emergency. They would normally see the GP – whom they see at the doctor's surgery for problems that aren't emergencies e.g. tummy bugs and injections.
- Explain that the hospital doctor will give the patient a painkiller to take for three days. Emphasise that it is very serious if the doctor gets the numbers wrong, so their maths needs to be good.
- The patient needs four tablets a day. How do we work out how many tablets to give if they need four tablets every day for three days? Write down the calculation – 3 x 4 = 12 tablets.
- **Younger or less able children can prescribe the painkiller for 2 days (4 + 4 = 8 tablets).**
- The GP needs to know about their patient's accident so the hospital doctor would write them a letter.
- On the whiteboard or flipchart write a short letter, e.g.

Dear Doctor [GP volunteer's last name],

I recently saw Miss/Mr [Patient Volunteer's last name] in A&E. They had been [e.g. playing baseball in the park] and injured their [body part from hat]. They were in pain so I have prescribed them [e.g. 12 tablets] of a painkiller. The patient should only take four tablets a day. I have told them to visit you if their pain gets worse.

Yours sincerely,

Dr [hospital doctor volunteer's last name]

Summary

Ask the children: "In which subject do you learn to write letters, do multiplication, and learn about the body?" Explain that these subjects (Literacy, Maths/Numeracy and Science) are important for future doctors.

Suggested extension

The worksheet in Appendix 1 can be used either as a prompt for the teacher or as a hand-out for the class to read together. It looks at bones of the body with interesting names. **Alternatively, the worksheet can be used instead of the 'Painkillers' activity.**

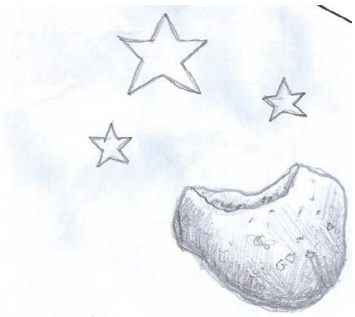
BONES IN YOUR BODY

If the patient we met today had had a worse accident they might have broken a bone. How many bones do you think an adult has? And how about a baby?

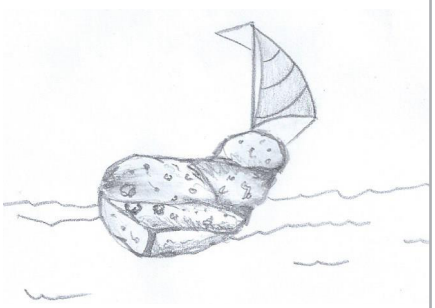
Adults have 206 bones! And babies have about 300, which are made of a material called cartilage. They fuse together bit by bit, so the baby ends up with 206 by the time they've grown up. This means that children like you have more bones than their parents and even their older siblings!

Bones with interesting names

You have more than one head in your body! Your second one is in your wrist. It looks a bit like a head joined to a neck so its name means 'having a head' in Latin - it's called the **capitate**.



In your wrist there's also a bone called the **lunate.** It's called this because it looks like a moon. The French for moon is *lune,* and we say 'lunar eclipse'. Can you spot the likeness between *lune* and lunate?



In your ankle there's a bone shaped like a boat! It's called the **navicular**. Its name looks similar to 'navy' and 'navigate' because they are all associated with boats and the sea.

There are many more bones with weird and wonderful names. Doctors need to learn all of these so that they give the patient the right treatment – some broken bones need plaster casts, and some are so small that the body heals them all by itself.

Clare's handout

A&E action

Eliza Davison

This session aims to show primary school children the challenges a doctor faces on a busy day in the A&E department, whilst illustrating specific skills a doctor requires that relate to the subjects the children study at school. The activity is split up into three separate stations, and is fast-paced and interactive. This version is aimed at primary students in year 5 & 6 but the question difficulty can be adapted for younger pupils.

Time: 15 minutes (2 minute introduction, 3 minutes for station 1 & 2, 6 minutes for station 3, 1 minute round up)

Resources

- Stethoscope
- Bleep
- 'DOCTOR' Badge
- Wallet with ID, diabetes medical alert card
- Blood glucose meter
- Vial of fake 'blood', with high glucose content
- Forms for patient handover

Script

Presenter: Hello everybody and thank you all for listening! Today, I am going show you some examples of the roles of a doctor, and if you want to become one, what you need to do now. My name is _____ and I am a _____ .

Hands up, how many of you would like to be a doctor or a nurse someday? Do you know what the role of a doctor is? And what skills a doctor or nurse need?

Today, I'm going to transport you to the Accident and Emergency department of a hospital to demonstrate what a doctor there has to do! On the way, we'll see that not only Science, but also Maths and English are subjects important to a doctor, and why it is vital that you listen, watch and act with respect to give your patient the best possible care.

So first of all, I need a volunteer. (**Pick child from group.**)

What's your name? So, hello Dr (name); you're our doctor for the day! But you don't yet look like a doctor… Here is a stethoscope, for listening to people's hearts. Here is a badge, so everyone knows who you are. And here is a bleep; this is what other people contact you on if they need you in the hospital. A bit like a phone! Today, we're all going to help out Dr (**name**) to make sure everything goes smoothly.

(BLEEP GOES OFF)

Right, Dr. That means you are needed over at this part of A&E. (**Take over to a chair set up at the first station.**)

You have been called to see a new patient. Who wants to be our new patient? (**Pick a child from the class and show them to the chair.**) What's your name? Here we have 60 year old Mr/Mrs (name), who has come into hospital with pain in his/her chest, and is describing it like 'an elephant is sitting on his/her chest'. Can you imagine how the patient would be acting? (**Let the child act as though he/she has heart pain, whilst letting the other child listen to his/her heart.**)

So, do you know what organs we have in our chests? Why don't we ask everybody? (**Await answer of heart, lungs.**)

And if there is heart pain, what do we think is happening to Mr/Mrs (name)? (**Await answer of heart attack.**) Does anyone know what happens in a heart attack? (**Give a brief and basic description of a heart attack.**)

In school, we learn about how the body works and the structure of the body in SCIENCE, which is why we know the heart is in the chest and in a heart attack the heart doesn't get enough oxygen. If you want to become a doctor, science is very important.

(BLEEP GOES OFF)

There's no rest for a doctor! Dr (name) has been called to another patient. (**Direct the doctor over to the second station.**) Can I get another volunteer please? (**Pick a child from the class.**)

Dr, here is (name), who is 15 years old. He/she has broken his/her leg playing football. He/she is in quite a lot pain, and needs to be given some medicine to help stop the pain, before we sort out his/her leg. (**Again let the child imagine his/her pain.**)

You want to give (name) 1 gram of paracetamol, however each tablet has 0.25 grams of paracetamol in them. How many tablets do you have to give (name), to make sure he/she has 1 gram of paraceotomol?

(Name) is also feeling sick, and you want to give some other medicine to help this. We know that to be effective, we need to give 0.2mg per kg of his/her weight. This patient weighs 40kg, so how much anti-sickness medicine do we have to give?

As you can see, when you work out medicine doses as a doctor, you have to use a lot of MATHS! Keep focusing in Maths, and it will help you if you become a doctor!

(BLEEP GOES OFF)

Another patient to see! (**Direct the doctor over to the third station.**)

So now we have a patient who has been brought into hospital after being found unconscious. At the moment, we don't know anything about him/her and we just have the patient's wallet. I want you to look in the wallet and find out who this patient is and what is wrong with them!

(**Children find ID card, diabetes alert card in wallet.**)

This patient is a diabetic, which means that they have difficulty adjusting the levels of sugar in their blood, as they lack insulin, a hormone that acts as a controller of blood sugar. This patient is unconscious as their blood sugars might be too high or too low.

What we need to then do to find this out is test the patient's blood, using this machine. (**Present a blood glucose meter, alongside a vial of 'blood'.**) What we need to do is put a drop of blood on the strip here, and we can find out the patient's blood sugar. (**Let children use meter.**)

We've found the patient's blood sugar is high, so we need to give some insulin to help lower this. We treated this patient by working out a puzzle and reading the clues, which is English comprehension and reading is especially important at school.

(BLEEP GOES OFF)

And that's the end of your shift Doctor! Before you go, you've got to make sure the next doctor knows what to do about (name), the diabetic patient. Make sure you fill in this form which you can hand to the next doctor. (**Hand out below form to all children**)

This patient's name is _____ and they are _____ years old. Their date of birth is _____ .

The patient was found unconscious and brought into A&E.

The patient suffers with _____ and their blood glucose level is _____ .

We have treated the patient with _____ .

Signed _____ Print name (Doctor) _____

It is extremely important that, as a doctor, you are able to write neatly and quickly. If you don't, and another doctor or nurse reads your instructions wrong, mistakes could be made, such as giving the patient too much medicine, or operating on the wrong part of their body. So you must all practice your hand writing to make sure it is clear and legible.

So that's all for our action-packed day in accident and emergency! I hope you have all enjoyed it.

What have you learnt from today?

Remember to concentrate hard in English, Math and Science, as well as putting effort in throughout school. Becoming a doctor is a challenge but it's rewarding, exciting and very interesting.

At the end of the session, the students may receive a sticker or similar reward, illustrating how they have been 'a doctor for the day'.

A doctor for the day

Talia Eilon

Objectives	• To teach students about interviewing patients – to understand how Doctors collect information from patients and record it, that this is called a "Patient History" • For the students to practice communicating with each other in the style of Doctors and gain confidence in asking their patients to do things as part of a mock patient-examination. • Taking pulses – Teaching the skill of taking a radial (wrist) pulse and explaining that the heart rate goes up in exercise. • Using a stethoscope – practicing the skill of listening to each other's breathing and heartbeat. • Eye test – Seeing how a basic eye test is performed.
Materials required	• Student Worksheets (sample on next page) • Height chart or tape measures • Stethoscope • Clock/ watch/ timer– for pulses (need to see 15 seconds passing) • Print out of Snellen (visual acuity chart) and Ishihara plate for Colour vision test – optional
Style of delivery	Preferably in smaller groups (10–12 children).
Introduction	Ask children about their experience at a doctor's office – what questions does the doctor ask them? Why do they think doctors need to be good at asking questions and listening to patients? Explain that this session will be a chance to practice doing a doctors interview, known as a 'patient history,' and some parts of an examination, and writing it in a doctor's chart.
Body of session	**Part 1 – skills teaching** Explain to students how to feel the pulse at their wrist, how this corresponds to how many times the heart is pumping each minute and that the heart rate changes with increased activity. First let them practice taking their own pulse and calculating their heart rate by counting their pulse over 15 seconds and multiplying by 4 to work out beats per minute. Talk through a basic eye exam and what doctors are testing for – either using snellen chart (visual acuity) or asking how many fingers are being held up (with one eye covered at a time), looking at the movements of the eye by asking patient to follow the movements of a finger and see which fingers are moving

when they are held out to the side. (Optional addition: testing colour vision using ishihara plates.)

Part 2 – doctor-patient examination

Children will then be split into pairs (groups of three can also be possible) and allow them to take it in turns filling in their doctor's chart (worksheet) with information about their 'patient'.

- Their partner is their 'patient' and they need to ask them the questions they have on their worksheet and listen to their answers to fill in their chart
  - Mostly basic facts that doctors routinely ask as part of a basic history
  - Some more 'fun' questions about favourite sports/ what they had for breakfast/ favourite fruits or vegetables – to practise communication and question asking, also to:
- promote healthy lifestyle
- They also need to record their patient's pulse rate (count beats in 15 seconds) and calculate it (X 4 = 1 minute)
- They can also measure their patient's height and record shoe size
  - If there is time at the end of the session, the session leader can put this in a graph or demonstrate how to find the average, and discuss how plotting height and measuring it against the average/ expected figures is useful for doctors.
- If a stethoscope is available the pairs can take it in turns to listen to their 'patient's' heart beat and breathing (asking the patient to take a deep breath in and out) – this can be ticked off in the chart.
- Eye testing. "How many fingers am I holding up?" Close one eye – can you see my finger wiggling?"

The students then swap roles and the doctor (previously patient) fills in his/ her worksheet.

End of session	Discussion of what they liked about the doctor-patient exam, what was hard/ easy, what they have learned.
Take home Tasks	On the back of the student's worksheets there will be a wordsearch with some of the key terms that were discussed in the session as a reminder. • e.g. stethoscope, patient, history, chart, doctor, examination, vision, pulse, rate, heartbeat, communication, records, average Additionally: A comic book template for the student to draw their favourite part of the doctor-patient exam.

Sample worksheet

Doctor's Chart

Patient Name	Sammy Bird	**Eye colour**	Blue
Age and Date of Birth	9 years old 7th July 2006	**Hair Colour**	Brown
Height	128 cm	**Shoe Size**	5
Pulse Rate • Feel your patient's pulse on their wrist and count how many times you can feel it pulse in 15 seconds • To calculate the heart beat in a minute multiply this number by 4!	18 x 4 = 72 beats per minute	**Stethoscope** **Can you hear a …** • Heart beat • Deep Breath in + out **Vision test** • How many fingers • Follow my finger • Colour test	 Yes Yes Yes Yes Yes

What did my patient eat for breakfast this morning?

……

How many people are in my patient's family, do they have any brothers or sisters/ pets?

……

What is my patient's favourite sport?

……

What is my patient's favourite fruit or vegetable?

……

Has my patient ever broken any bones or been in hospital?

……

Does my patient take any medicines?

……

Who's in Health?

Laura Horne

Resources

- If there is access to a computer with a projector and speakers, you could find a short introductory video (but this is not essential – see the box on the right)
- A simple outline of a person (this should be blue tacked to the wall beforehand), continuation sheets with 'good writing' and 'bad writing' examples, giant cut-outs of 10mg 'tablets' (paper circles with '10' written in the middle)
- A stethoscope (not essential)
- Lots of enthusiasm!

Introduction

3 minutes

Introduce yourself to pupils and promote interaction with pupils (see speech bubbles for proposed questions)

- Opening questions: "**Does anyone want to be a doctor?**" "**Can anybody tell us what a doctor does?**" "**Can you think of 3 people, other than doctors who work in a hospital?**"
- Ask pupils, "**Who does English? Who does Maths? Who does Science?**" All should raise hands! "**In that case you're all hired as doctors for the day!**"
- Play introduction video or alternatively give the scenario verbally
- Video includes a dramatic music interlude during which time the pupils can share in one word what they think makes a good doctor

Verbal (non-video) scenario:

- Joe has chest pain
- "**Young doctors, we need your help!**"
- Discussion (2 minutes): What are the qualities of a good doctor?
- Aim: emphasise the importance of science, maths and English

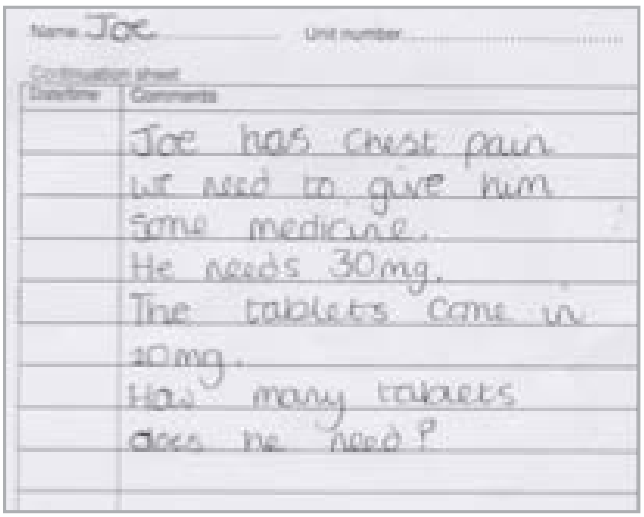
Activity

11 minutes

Aim of the activity is for the students to act as doctors to help the patient by utilising their knowledge of maths, English and science. Let's get to work…

- Focus on Joe's symptoms. Ask pupils, "**What is in the chest?**"
- Discussion (2 minutes): Why is the heart important? What surrounds the chest? Encourage pupils to also consider skeleton, muscles and skin
- Emphasise the links to and importance of science KS2 national curriculum links: human circulatory system, skeletons
- Get a pupil to draw the heart and lungs on an outline of a person
- Allow a pupil to use the stethoscope to listen to a chest (of volunteer, or a doll acting as the patient, or teacher) and describe what they can hear to the rest of the group

Bad continuation sheet



Good continuation sheet

- Ask a pupil to read 'bad writing' continuation sheet first
- Explore why this is difficult and emphasise the necessity of being a good writer, and speller and of being able to read. Explain reading and writing as a method of communication and the importance of avoiding mistakes
- Then give them the 'good writing' continuation sheet
- The continuation sheet instructs them to perform a simple medication calculation
- KS2 national curriculum links: calculations of g/kg, mental arithmetic, multiplication and division
- Work through this example with the class
- Explore what might happen if Joe was not given enough medicine, then consider what might happen if Joe was given too much medicine?
- Reinforce the importance of maths for a doctor

Conclusion

1 minute

- Congratulate the students: "**Joe is feeling much better!**"
- Summarise what they did, remind them that they have used their knowledge of science, English and maths to help Joe
- Inspire them to continue to work hard in these subjects so that they can make great doctors, nurses, councillors and physiotherapists (and any other healthcare professions you may have discussed) in the future
- Remind them that despite being fantastic doctors today, they cannot treat people with chest pain just yet and they should never take or give anyone any medicine unless their parents or a doctor tells them it is safe to do so

Extension tasks

Time permitting!

If groups finish the activity particularly quickly, incorporate additional examples of application of science, maths and English into the main activity, suggestions:

Science

- Discuss the different ways medicines can be given, such as solids, liquids and gases, and explore the advantages and disadvantages of each state. Do they find tablets tricky to swallow or do they think liquid medicine tastes horrible? Can anyone give an example of medicine that is a gas?

English

- Printouts of the continuation sheets may be handed to pupils and they can 'mark' the notes, make corrections and leave some feedback for improvement
- Get pupils to fill in the time and the date on the continuation sheet. Why is it important for a doctor to know what time it is?

Maths

- For older years more challenging drug calculations may be incorporated, including the need for half and quarter tablets, or calculations requiring the pupils to round up to the nearest 10

Charlie's chest

Courtney Lawson

Learning Objectives

- Science: To label the main body parts on a chest X-ray and describe what they do
- Maths: To work out heart rate and breathing rate using multiplication
- Literacy: To read a table correctly and write about a patient in the hospital notes
- Practical: To feel the radial pulse, see chest expansion, and listen to the lungs

Resources

- Lesson Plan
- Worksheets
- Pens & Pencils
- Coloured Pencils / Crayons
- Calculator
- Stethoscope
- Antiseptic equipment wipes
- Antiseptic hand gel

Session

Charlie is eight years old and is feeling unwell. Mum and Dad bring Charlie to the nearby hospital. You (the students) are the doctor looking after Charlie!

Activity 1

Demonstrate to the students how doctors feel for the radial pulse, look for chest expansion, and listen to breath sounds at the back of the chest with a stethoscope.

Help students complete Activity 1 on the worksheet using a calculator.

Simplify

- Allow more time by splitting students into groups to work on different activities
- Provide the multiplication factor to convert from 15 seconds to a minute

Challenge

- Think about why Charlie's heart and lungs might be working too hard

Activity 2

Help students complete Activity 2 on the worksheet using their knowledge of basic anatomy and biology.

Simplify

- Allow more time by splitting students into groups to work on different activities
- Provide a human biology image resource to assist with labeling

Challenge

- Think about how X-rays work; why are some parts black and some white?

Activity 3

Help students complete Activity 3 on the worksheet using the information provided to write brief details.

Simplify

- Allow more time by splitting students into groups to work on different activities
- Provide further help in filling in what happened in the hospital by suggesting: examination, tests, and treatment

Challenge

- Think about the reasons why doctors need to keep notes about their patients

Conclusion

You have used your skills in maths, science, reading, and writing to help Charlie. You have also learned some practical skills that doctors use to help patients.

You could be a great doctor!

Worksheet

Activity 1

You need to work out how hard Charlie's heart and lungs are working. The heart rate is how many times Charlie's heart beats in one minute. The breathing rate is how many breaths Charlie takes in one minute.

You feel the pulse beat 32 times in 15 seconds. What is the heart rate? _____

You see the lungs breathe 7 times in 15 seconds. What is the breathing rate? _____

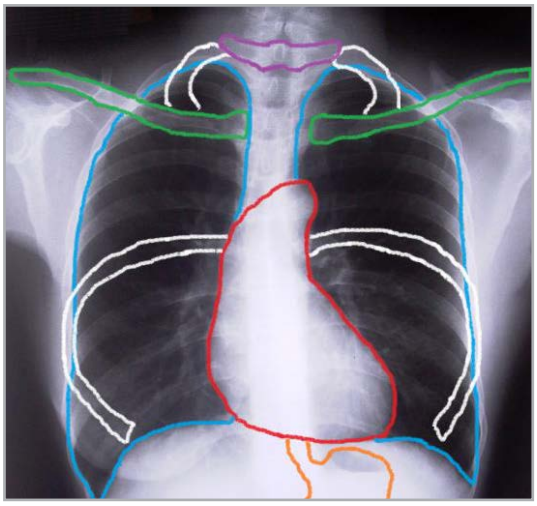
Compare your answers to the normal ranges in this table.

Age (years)	Heart rate (beats per minute)	Breathing rate (breaths per minute)
2–5	95–140	25–30
5–12	80–120	20–25
Over 12	60–100	12–20

Are Charlie's heart and lungs working too hard? _____

Activity 2

Charlie has an X-ray picture taken of his chest to look for any problems with his heart and lungs. Using colouring pens, match the colours of the organs in the X-ray to their names and roles in the boxes opposite.



- ☐ Heart
- ☐ Lungs
- ☐ Stomach
- ☐ Collar bones
- ☐ Spine bone
- ☐ Ribs

- ☐ Connects the shoulder to the breast bone
- ☐ Pumps blood around the body
- ☐ Forms a cage to protect the organs in the chest
- ☐ Helps to break down food
- ☐ Brings oxygen from the air into the body
- ☐ Supports the whole body like a pillar

Activity 3

You give Charlie some medicine to feel better. It is important to write down what has happened to Charlie in the hospital notes. Fill in these notes.

Hospital Notes

Date:.....

Time:.....

Patient name:.....

Patient age:.....

Doctor name:.....

Doctor signature:.....

Why did the patient come to the hospital?.....

What happened to the patient in the hospital?.....

Well done!

Looking, talking and thinking like a doctor

Oliver Taylor

Introduction: Looking like a doctor

3 minutes

This introductory section involves addressing all of the pupils as a seated group, engaging them with open questions and eliciting ideas from individual pupils.

Preparation: Wear long sleeves, a wrist watch, and a tie.

- Introduce yourself to the group: "Good morning year X, my name is Y, and today we are all going to be doctors. The first step in being a doctor is looking like a doctor. **What do you think a doctor looks like?**" Collect ideas from the pupils, and acknowledge them positively.
- If there is a student with short or rolled-up sleeves, indicate to them and say: "**Did you know that you look more like a doctor than I do?**" Raise your arm and encourage the pupil to put their hand up, and then ask the rest of the class: "**Why is [pupil's name] dressed more like a doctor than me?**" Draw attention to your arms and steer the student's answers towards noticing that you have long sleeves. (If there are no short-sleeved students, begin with: "**At the moment, I don't look like a doctor. Can you work out what I'm wearing on my arms that is wrong for a doctor?**")
- Explore with the students: "**Why do you think it's a bad idea for a doctor to have long sleeves? What do doctors spend a lot of time doing?**" Support this question by miming washing your hands. Once the pupils have answered, ask: "**Why is it important for a doctor to wash their hands?**" encouraging answers about spreading bacteria/bugs.
- Ask: "**Why might having long sleeves make it difficult to wash your hands properly?**" Explore ideas like "**sleeves would get in the way**", "**sleeves would get wet**" and "**difficult to wash higher up your arms**".
- Summarise what has been discussed: "**So, doctors always wear short sleeves so that they can wash their hands easily and avoid spreading bacteria**", and encourage activity from the pupils: "**Everybody, roll up your sleeves**".
- Having rolled up your own sleeves, show both your arms: "**Is there anything else I'm wearing that could make washing my hands difficult?**" Encourage the students to notice your wrist watch, remove it, and tell the class to join you: "**Take off anything that you have on your wrists, like watches and bracelets, so that you are bare below the elbows**".
- Now, stand up and ask: "**Is there anything else that I am wearing that could touch patients and spread bacteria? Particularly if I am leaning over to examine people?**" Lean forward and demonstrate the way your tie dangles down. Once students have offered their answers, remove your tie, and if the class has a tie as part of its school uniform, tell the class: "**Everybody, take off your ties**".

English Skills: Talking like a doctor

3 minutes

For this section the class is arranged into 3 groups, each group is given a set of cut-out statements, and pupils are challenged to choose the best phrases for communicating with a patient.

Preparation: Prepare labelled folders containing the cut-out statements listed below.

Signpost that a new stage of the session is starting: "**Now that we all look like doctors, we have to learn to talk like doctors…**" Split the class into three groups, and give each group a labelled folder containing three laminated, cut-out statements:

Group 1 – Asking for a patient's age

- "Would you mind me asking how old you are?" ✓ (Demonstrates sensitivity)
- "You look like you're about 30 years old. Is that right?" ✗ (Makes a presumption about the patient)
- "I need to know your age. How old are you?" ✗ (Less polite than option 1)

Group 2 – Encouraging a patient to eat a better diet

- "You have to eat healthier food or you will be very ill." ✗ (Negative and worrying)
- "Eating a better diet will help you to stay healthy." ✓ (Positive and encouraging]
- "Your diet is very bad. You should change what you eat." ✗ (Negative and insistent)

Group 3 – Asking to examine a patient's hand

- "Are you happy for me to look at the cut on your hand?" ✓ (Polite, offers a choice)
- "Show me your hands. I need to see your cut." ✗ (Demanding, no choice offered)
- "Give me your hand. I'm sure it's not so bad." ✗ (Suggests problem unimportant)

Task the groups with choosing the best statement for each scenario. Be sure to tell the students you are timing them to complete the objective, ideally using a visible timer such as a stop-watch app on an interactive white board. Give around one and a half minutes for year 2, 3 and 4 students, and a minute for year 5 and 6 pupils. After the timer is finished, encourage discussion about what words and phrases would make someone feel comfortable, and which might seem rude or worrying.

Maths and Science: Thinking like a doctor

8–9 minutes

For this section, students are split into pairs and taught: how to take a pulse, how to multiply to give answers in beats per minute, how to use a stethoscope to determine the number of heart sounds per pulse, and how to make heart sounds louder with a manoeuvre.

Preparation: Have access to a stethoscope for each pair of pupils (it should be possible to acquire several nurse's stethoscopes. Alternatively, the stethoscope exercise can be performed by having volunteers take turns to come up and listen to your heart).

- Indicate that a new stage of the session is starting: "**Now that we can look and talk like doctors, we need to learn to think like doctors…**" Split the students into pairs and instruct them that one pupil in each pair is going to take the other's pulse at the wrist. Demonstrate how to do this, and assist pupils that need help.
- Tell the class that you will time for 15 seconds, and that everyone should be quiet and count the number of heart beats they can feel in this time. Collect answers from pairs and write them up on a board or flip chart if possible.
- Next, introduce the idea of beats per minute: "So, at the moment, we know how many times each of your hearts beat in 15 seconds. But when doctors write down the heart rate on a chart, they have to say how many times the heart beats per minute. **Can anyone think of how we can use these numbers to estimate how many times your hearts beat in a minute?**" Collect suggestions and move towards the idea of multiplying the results by four to give the rough number of beats in 60 seconds. Ask different pupils to try and multiply the numbers by four, gauging the level of understanding of the students and allowing calculators where needed.
- Next, explore the effect of exercise on the heart rate: "**I'm going to ask you to do 30 jumping jacks. What do you think will happen to your heart rate afterwards?**" Collect suggestions, then get the students to perform the exercise, and repeat the timed pulse-taking.
- Summarise what has been learnt and why this is useful: "**So now we know that your heart rate will go up after you exercise. It's useful for doctors to check somebody's heart rate because people who are hurt or have infections will also have a very high heart rate.**"
- Next, introduce the stethoscopes: "**Does anyone know what this is for?**" Instruct the students who had their pulses taken to listen to the left side of their partner's chest for the 'lub-dub' sound of the heart.
- Once you have helped all students to hear the heartbeat, instruct them to take the pulse at the same time as listening and ask: "**How many heart noises are there for each pulse?**" Steer the students towards noticing that there are two heart sounds: a "lub" and a "dub", for each pulse.
- Depending on the level of the students, you may want to explain this to them: "**The heart has an upper part and a lower part. The upper part squeezes first, pushing blood into the lower part, which then squeezes hard to pump the blood around the body. So there are two noises for each pulse, one after the top half squeezes, and one after the bottom half squeezes (simplified explanation for primary school level).**" In older groups, you may wish to go further into explaining that the noise is caused by valves closing.
- A final activity, if you have time, is to ask the students to hold their breath in and then hold their breath out. Ask pupils to listen and state when they can hear the heart loudest. They should find that they can hear best when the breath is held out. You can explain this: "**When you breathe out, your lungs get smaller, and your heart moves closer to the front of your chest**" and mention that doctors use this to hear the heart better.

Close the session

Use any remaining time to continue exploring the stethoscopes and answering questions. End by bringing the class back together, asking: "**What have you learned today?**" and "**Do any of you think it would be fun to be a doctor?**"