Historic Environment – Paper 1

British Sector of the Western Front

Injuries, treatments and the trenches

How will I be examined?

Question 1 – Describe 2 features (4) – THIS IS BASICALLY A BIG PONT WITH SOME SUPPORTING DETAIL DONE TWICE

Feature 1 –

Feature 2 –

5 minutes

Question 2 – How useful are Sources A and B for an enquiry (8)

For each source you must do:

1. What can you learn? Why is it useful?
2. What knowledge can you use to back it up?
3. Why is the provenance useful and less useful (WHY WAS IT WRITTEN? WHO WROTE IT? WHEN WAS IT WRITTEN? CONSIDER THE IMPACT OF THE SOURCE – WHAT FEELINGS IS IT TRYING TO PROVOKE ETC?

15 minutes

Question 3 – Follow up source question (4)

1. Details you would follow up (Look more into) PICK OUT A QUOTE
2. Question you would ask from that quote
3. What would you use to follow it up? (Type of source)
4. Why that source will help you answer that question

3-4 minutes

THEN AROUND 50 MINUTES TO FINISH THE REST OF THE SECTION B – MEDICINE THROUGH TIME.

Historical context of medicine in 20th century

Medical Breakthrough	Specific facts	Positives/negatives
Aseptic surgery		
Development of x-rays		
Blood transfusion/blood storage		

Aseptic Surgery

Lister first used Carbolic Acid to prevent infection in 1865 based on Pasteur's Germ Theory. By the late 1890's, Lister's methods had laid the foundation for aseptic surgery. By 1900, most operations were carried out using aseptic surgery

- All medical staff had to wash hands, faces and arms BEFORE entering.
- Rubber gloves and gowns and masks were worn.
- Use of steam sterilisation. A machine called autoclave was invented in 1881 by Chamberland. STERLISED EQUIPMENT USING STEAM.
- Air was sterilised by being pumped over the heating system

Development of x-rays

Development of x-rays was completely accidental by Wilhelm Roentgen in 1895. He was studying the effects of passing an electrical current through a glass tube covered in black paper. He noticed that although everything in the room was dark, a screen about a metre from the equipment began to glow.

1896 radiology departments were opening in a number of hospitals, contributing to advancement of knowledge. First diagnosis based on an x-ray was made by Dr Hall-Edwards at Birmingham General Hospital. However, there were many problems:

- Radiation was 1,500 higher than what is released today. HARMFUL AND LED TO HAIR LOSS OR EXTREME BURNS.
- Taking an x-ray took a long time, 90 minutes for a hand that had to stay still.
- Larger x-ray machines were difficult to move around. HOWEVER, THE DANGERS DID NOT PREVENT THE USE OF X-RAYS

Blood transfusions/Blood Storage

Average human body contained around 5 litres of blood. If people lose too much they could go into shock and die.

- James Blundell did the first experiments in human blood transfusions in 1818 to help women under his medical care who lost blood when they gave birth. Between 1818-29 he carried out 10 transfusions with half surviving.
- Blood had to be used as soon as it became available – The donor would be connected to the recipient of the blood.

Problem of transfusion	Attempted Solution
Blood clots as soon as it leaves the body. This meant that the tubes that transferred blood could become blocked	Attempts to find chemicals that prevented clotting. In 1894, Almoth Wright, concluded that soluble solutions of certain chemicals could prevent clotting.
Rejection of the transfused blood	In 1901, Austrian doctor Karl Landsteiner discovered existence of 3 different blood groups, A, B and O. In 1902 AB was also found. This would be used to match a donor and recipients blood type before a transfusion.
Infection from unsterilized equipment	Aseptic methods

Exam Practice: Describe 2 features of Aseptic Surgery

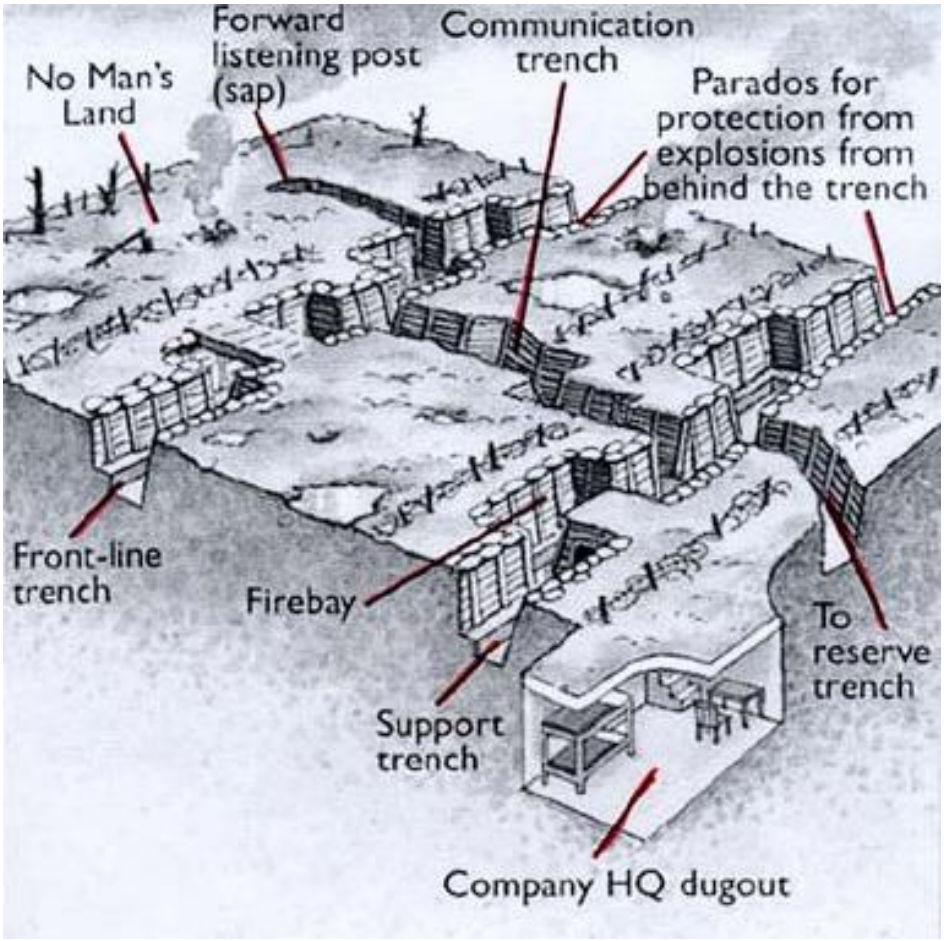
Feature 1:

Feature 2:

Context of British Sector of Western Front

- Britain declared war on Germany on August 4 1914.
- Germany invaded France through Belgium.
- The British government sent the British Expeditionary Force (BEF) to support the French troops in northern France to try to stop the German advance through Belgium.
- The BEF was outnumbered. Although they stopped the German advance briefly, they were ordered to retreat to the River Marne in order to prevent Paris from falling.
- After the Battle of the Marne, the German forces pulled back to the River Aisne and it was here that trench warfare began.
- A line of trenches was eventually established all the way from the English Channel in the north, to Switzerland in the south.
- Trenches began to be dug in 1914, however a more complex system was put in place from 1915, generally dug to a depth of about 2.5 metres.

Task: Note down the purpose of each of the following aspects of the trench.



Part of Trench	Facts
Frontline Trench	Where attacks would be made from
Support Trench	80 metres (but varied) behind front-line. Soldiers would retreat here if frontline came under attack.
Dugouts	Would be dug into side of trenches where men could take protective cover.
No Man's land	Area between two enemy lines of trenches.
Reserve Trench	100 metres behind the support trench. Reserve troops would be mobilised here for a counter-attack if frontline was captured by enemies.
Artillery Emplacements	Prepared position for certain weapons (guns)
Communication trench	Ran between other trenches – SO COMMUNICATION AND SUPPLIES ETC COULD BE TRANSFERRED.

Key Battles in the British Sector of the Western Front

Key Event	**Result**	**Significance**
First Battle of Ypres (1914) Autumn of 1914 Germans launched attack on British position to the east and north-east of Ypres.	Britain lost over 50,000 soldiers. BUT THEY HELD ONTO YPRES. Germans extended some control around the edge of Ypres.	Holding onto Ypres meant that Britain controlled the English Channel ports so their supplies and reinforcements could be provided.
Use of mines at Hill 60 Germans captured this man-made hill to south-east of Ypres in Dec 1914, giving them strategic advantage. British dug tunnels into hills (offensive mining), placed five mines in tunnels and blew top off hill.	By April 1915 Britain took back Hill 60	Britain took back a strategically important position
Second Battle of Ypres (1915) Began straight after the Battle for Hill 60 was finished. Lasted a month	Britain lost 59,000 men Germans moved 2 miles closer to the town of Ypres	First time Germans used chlorine gas on Western Front
Battle of Somme (1916) Launched 1st July 1916 and aimed to take back land from Germans Ended November 1916	Huge casualties. On first day there were 57,000 injuries. 20,000 men died. Over 400,000 casualties in total by Nov when battle called off	Use of creeping barrages – artillery launched from the trenches. Use of tanks in warfare – NOT VERY SUCCESSFUL
Tunnels, caves and quarries at Arras In 1916, the British decided to link existing tunnels, caves in quarries in the chalky ground to create an	Dug more than 2.5 miles of tunnels in five months.	25,000 men could be stationed in the tunnels, which contained electric lights, running water, a light railway system and fully functional hospitals.

underground network to shelter from German attacks and allow safe movement.		
Battle of Arras (1917) April 1917, 24,000 men hiding in tunnels attack the Germans with aim of breaking through German lines.	Britain advanced 8 miles in first few days but it slowed down by May	Large number of casualties (160,000)
Third Battle of Ypres (1917) Throughout June 1917, British prepared for main attack in Battle of Messines (drive Germans off ridge that formed part of Ypres salient). 31st July- launched attack, marching east from Ypres towards Passchendaele. Campaign ended in November.	Advanced 2 miles on first day. But it began to rain and ground become waterlogged – MANY MEN FELL AND DROWNED. 245,000 BRITISH CASUALTIES	Britain moved edge of salient back by 7 miles.
Battle of Cambrai Artillery barrage changed – LESS WARNINGS FOR THE GERMANS Launched 20th October 1917	Tanks moved easily across barbed wire and their machine guns were effective.	**FIRST LARGE SCALE USE OF TANKS.**

Answer the following questions:

1. Why do you think treatment in medicine advanced as the war went on?
2. What were Britain trying to do in the majority of their attacks during the war?
3. Which areas were important for Britain to hold onto throughout the war?
4. What types of injuries do you think occurred based on the openness of battle?

Answers here:

Problems with the terrain, transport and communication

- Constant shelling left landscape full of craters and destroyed many roads.
- Land often waterlogged.
- Had been farmland, so lots of fertiliser (manure) in soil. Meant was lots of bacteria that could infect wounds.
- Stretcher bearers exposed to shelling and gunfire. Physically tiring work. Hard to move injured around trenches and across open ground safely
- At start of war, military leadership decided not to send any motor ambulances but horse-drawn wagons couldn't cope with the numbers of casualties.
- Horse-drawn wagons were shaky and often made injuries worse – especially thigh bone fractures.
- Lack of transport led to soldiers being left to die or taken prisoner.
- Motor vehicles couldn't operate in muddy terrain.

Development of methods to transport the injured

- Following public appeal for donations, made by *The Times* newspaper, had enough money to buy 512 ambulance wagons within 3 weeks.
- First motor ambulances sent to Western Front in October 1914, as result of work by Red Cross.
- In worst areas, six (rather than the usual two) horses would be used to pull ambulance wagons.
- Wounded men also transported by train or canal in final stage of evacuation to the Base Hospitals on French coast.
- Originally used French good trains but first converted ambulance train arrived in France in November 1914 (spaces for stretchers). Some later trains even had operating theatres.
- Some of wounded being carried on canals by-passed Base Hospitals to be transferred directly to ships transporting the wounded to Britain.
- Later in the war, some trains sent to France contained operating theatres.
- Canal Barges were also used. They were more comfortable (less jolting around).

Exam Practice: How useful is Source A for an enquiry into transport and communication on the Western Front?

Photograph taken by Lieutenant John Brooke, an official photographer for the British army on the Western Front. Taken at the third battle of Ypres in August 1917.

Main medical problems on the Western Front

Shells and Shrapnel

- Responsible for 58% of wounds on the Western Front.
- When a shell exploded it could kill or injure immediately.
- Shell explosion scattered shrapnel (FRAGMENTS OF METAL) This could cause injury
- 60% of injury was to arms and legs
- Bullets responsible for 39% of wounds – They could fracture bones and pierce organs
- Brodie helmets developed and in use from 1916 onwards – prior to that soldiers only had cloth berets or other regimental uniform headgear!

Trench foot

- Painful swelling of feet caused by standing in cold mud and water.
- Second stage of TF, gangrene set in. FOOT DECOMPOSES.
- Prevention was key, rubbing whale oil into feet and keeping feet dry and regular change socks.
- Amputation used if second stage occurred.

Trench fever

- Flu-like symptoms
- Effected half a million on Western Front.
- Identified that contact with LICE caused it.
- Delousing stations set up to prevent it with bath houses, machines to disinfect clothing etc .

Shellshock

- Tiredness, headaches, nightmares, loss of speech, complete mental breakdown in some cases.
- 80,000 soldiers experienced it.
- NOT WELL UNDERSTOOD AT THE TIME.
- Would have possibly led to treatment back in Britain.
- Some soldiers who suffered with Shellshock accused of being cowards.

Infections

- Shrapnel and bullets carried fabric from clothes into wound. Soil full of bacteria from fertiliser/manure use as much of the fighting was in fields/farmland.
- Soil contained bacteria for tetanus and gas gangrene (produces gas in gangrenous wounds).
- Use of anti-tetanus injections from end 1914 reduced impact tetanus.
- No cure for gas gangrene- bacteria spread quickly and could kill a person in one day.

Gas Attacks

- Gas attacks caused great panic and fear, shown in poetry written after the war.
- NOT A MAJOR CAUSE OF DEATH. Only 6,000 dying as a result of it.
- Gas masks were used from 1915, they developed over time.
- Chlorine used in 1915 first by the Germans, could lead to led to death by suffocation, lungs filled with liquid. Before gas masks were given in 1915, soldiers would soak cotton pads with urine and press them to their faces to stop gas from entering their lungs.
- Phosgene Gas – Using end of 1915 near Ypres. Faster acting than Chlorine and could kill within 2 days. Did not have a strong smell like chlorine, harder to detect.
- Mustard Gas – First used in 1917 – Odourless gas that would work within 12 hours. Caused internal and external blisters and bleeding and blindness. Attacked moist areas of body especially (eyeballs etc.) Remained active in the soil for weeks after release.

Exam Practice – How useful are Sources B, C for an enquiry into the impact of gas attacks on the Western Front

Source B – **From Dulce et Decorum Est. A poem written by Wilfred Owen in 1917 whilst he was being treated for Shellshock. He serves on the Western Front in 1916-17 and returned in 1918, where he was killed in action shortly before the end of the war. The text in the title and at the end of the poem is in Latin and means 'it is sweet and fitting to die for one's country'**

Gas! Gas! Quick, boys! – An ecstasy of fumbling,
Fitting the clumsy helmets just in time;
But someone still was yelling out and stumbling,
And flound'ring like a man in fire or lime . . .
Dim, through the misty panes and thick green light,
As under a green sea, I saw him drowning.
In all my dreams, before my helpless sight,
He plunges at me, guttering, choking, drowning.
If in some smothering dreams you too could pace
Behind the wagon that we flung him in,
And watch the white eyes writhing in his face,
His hanging face, like a devil's sick of sin;
If you could hear, at every jolt, the blood
Come gargling from the froth-corrupted lungs,
Obscene as cancer, bitter as the cud
Of vile, incurable sores on innocent tongues,
My friend, you would not tell with such high zest
To children ardent for some desperate glory,
The old Lie; Dulce et Decorum est
Pro patria mori

Content –

Own Knowledge –

Provenance -

Source C – From the notebook of Lance Sergeant Elmer Cotton, who serves in the 5th Northumberland Fusiliers in 1915. He is describing the effects of a chlorine gas attack

It produces a flooding of the lungs. It is the equivalent to drowning, only on dry land. The effects are these – a splitting headache and a terrific thirst (but to drink water is instant death), a knife-edge pain in the lungs and the coughing up of a greenish froth off the stomach and the lungs, finally resulting in death. It is a fiendish death to die.

Content –
Own Knowledge –
Provenance -

Exam Practice: What details would you follow up from Source B to find out more about the effects of Gas attacks?

1) Which detail would you follow up?

2) What question would you ask?

3) What type of source would you want to answer your question?

4) Why might that source help you answer your question?

Answer How useful question here:

Work of RAMC and FANY

The system of transport and the stages of treatment

Stage	Where were they?	Who worked there?	What was their role/purpose?	How were soldiers transported to them?
1: Regimental Aid Post (RAP)				
2: Dressing Stations (ADS and MDS)				
3: Casualty Clearing Stations (CCS)				
4: Base Hospitals				

Key Terms:

RAMC: Royal Army Medical Corps
FANY: First Aid Nursing Yeomanry
CCS: Casualty Clearing Stations
Base hospitals
ADS & MDS: Dressing stations
RAP: Regimental Aid Posts

Because of the large number of casualties, it was essential that there was an efficient system to get the wounded from the frontline to a safe area where they could be treated. This system became known as the chain of evacuation.

Stage 1: Regimental Aid Post (RAP)

The RAP was generally located within 200m of the frontline, in communication trenches or deserted buildings. It was staffed by a Regimental Medical Officer, with some help from stretcher bearers with first-aid knowledge. Wounded soldiers would either walk in themselves or be carried in by other soldiers.

The purpose of the RAP was to give immediate first aid and to get as many men back to the fighting as possible. It could not deal with serious injuries. These had to be moved to the next stage in the chain of evacuation.

Stage 2: Dressing Stations (ADS and MDS)

In theory, there should have been an Advanced Dressing Station (ADS) about 400m from the RAP and a Main Dressing Station (MDS) a further half a mile back. In practice, this was often not the case and there may only have been one Dressing Station. Where possible, the Dressing Stations were located in abandoned buildings, dug-outs or bunkers, in order to offer protection from enemy shelling. Where these were not available, tents would be used.

Each dressing station would be staffed by ten medical officers, plus medical orderlies and stretcher bearers of the RAMC from a unit known as the Field Ambulance. From 1915, there were also some nurses available for this part of the chain of evacuation.

To get to the Dressing Station, men would either walk, if they were able to do so, or be carried in by stretcher in stages.

The Field Ambulance units did not have the facilities to tend to wounded men for more than a week and in theory could only deal with 150 wounded at a time (there would be considerably more during major battles). Men who had been treated would either be returned to their units if they were fit enough to fight, or they would be moved on to the next phase of the chain of evacuation by horse or motor ambulance.

Stage 3: Casualty Clearing Stations (CCS)

Casualty Clearing Stations were located a sufficient distance from the frontline to provide some safety against attack, but close enough to be accessible by ambulance wagons. They were set up in buildings such as factories or schools and were often located near to a railway line to allow the next stage of the chain of evacuation to take place quickly.

When wounded soldiers arrived here, they were divided into three groups. This system was called triage, from the French word for sorting or selecting. Triage helped medical staff make decisions about treatment. The three categories were:

1. The walking wounded. Men who could be patched up and returned to fighting.
2. Those in need of hospital treatment. Once treated for immediate life-threatening injuries, they would be transported to a Base Hospital.
3. Those with no chance of recovery. They would be made comfortable.

Stage 4: Base Hospitals

Base Hospitals on the Western Front were located near the French and Belgian coast, so that the wounded men who were treated there would be close to the ports, from which they could be transported home to Britain. Men were treated in the hospital until they could be returned to Britain for further treatment or were fit enough to return to the fighting.

As the war progressed, Casualty Clearing Stations played an increasingly important role in dealing with wounds instead of Base Hospitals. It had become clear that if contaminated wounds were not dealt with quickly, wounded men were more likely to develop gangrene. In turn, Base Hospitals became increasingly responsible for continuing treatment that was begun in the CCSs, before men were either returned to the frontline or transported back to Britain.

Base Hospitals also experimented with new techniques which, once successful, were used in the CCSs. For example, by dividing patients up into different wards according to their wounds, and by allocating doctors to a specialised ward, it was possible for doctors to become expert in the treatment of particular wounds.

However, when the Germans launched an attack in the spring of 1918, pushing back the frontline, many CCSs had to be pushed back and the Base Hospitals again took over much of the surgery.

Task 1: Complete the cloze exercise explaining the work of FANY.

The first six FANYs arrived in _____ on 27 October 1914. However, the British would not make use of them so they devoted their energies to helping French and _____ troops.

Finally, in January 1916, the British army decided to allow FANYs to drive _____. They became the first women to carry out this role, replacing British Red Cross male ambulance drivers. They were used to transport _____ troops by ambulance in the Calais region. Although there were never more than 450 FANYs in France, they did open the way for other women who were attached to other organisations, such as the Voluntary Aid Detachments (VADs), to participate in the _____.

FANY did things other than driving ambulances to support the soldiers on the Western Front. They drove supplies such as food and _____ to the frontline. They had a mobile bath unit which provided baths to the soldiers in water heated by the power from the van's _____. They also set up cinemas to help the _____ of soldiers.

morale frontline Belgian clothes wounded ambulances engine France

Extension: How useful in Source A for an enquiry into the work carried out by FANY.

Annotate the source using COP (content, own knowledge, provenance).

SOURCE A: *From Pat Beauchamp's autobiography, Fanny Goes to War, published in 1919. Beauchamp first worked as a nurse, bringing in the wounded from the trenches, and from 1916 as an ambulance driver. Here she is writing about an account of FANYs from an English newspaper.*

The following is an extract from an account by Mr Beach Thomas in a leading daily:

"Our Yeomanry nurses who, among other work, drive, clean, and manage their own ambulance cars… have done prodigies (wonders) along the Belgian front. One of their latest activities has been to devise and work a peripatetic (travelling) bath… Ten collapsible baths are packed into a motor car which circulates behind the lines. The water is heated by the engine in a cistern in the interior of the car and offers the luxury of a hot bath to several score men."

Answer Utility here

Underground hospital at Arras

In November 1916, tunnelling began under the town of Arras. In 800m of tunnels, a fully working hospital was created so close to the frontline that it was, in reality, a Dressing Station. From here, wounded soldiers would move through the chain of evacuation. It was sometimes called Thompson's Cave after the RAMC officer who was responsible for equipping it. The hospital was abandoned during the Battle of Arras in 1917, when it was hit by a shell which destroyed the water supply.

What facilities were available?

- Reserve stretchers
- RAMC office headquarters
- Operation theatre
- Mortuary
- Water stand pump
- Waiting wards
- Able to accommodate 700 soldiers at a time.

Exam Practice: How could you follow up Source A to find out more about Dressing Stations on the Western Front

Source A: General Macpherson, published in 1924. He was on the WF from 1914 and in charge of the RAMC from 1916-18. He wrote this history based on official records which he had access to. He is writing about the underground hospital in Arras

Dressing Stations were established in caves, cellars and basements of buildings, protected as strongly as possible with sandbags on the outskirts of the town. The chief of these was in a large subterranean cave, from which stone had been excavated for building the town in the 16th century. It was close to the 3rd Division trenches and only 800 yards from the frontline. Two entrances for stretchers were tunnelled into it from the communication trenches, and an exit tunnelled out from the back into Rue St Quentin, where an approach was constructed for ambulance cars. This cave was fitted with electric light and a piped water supply and was able to accommodate 700 wounded on stretchers in two tiers.

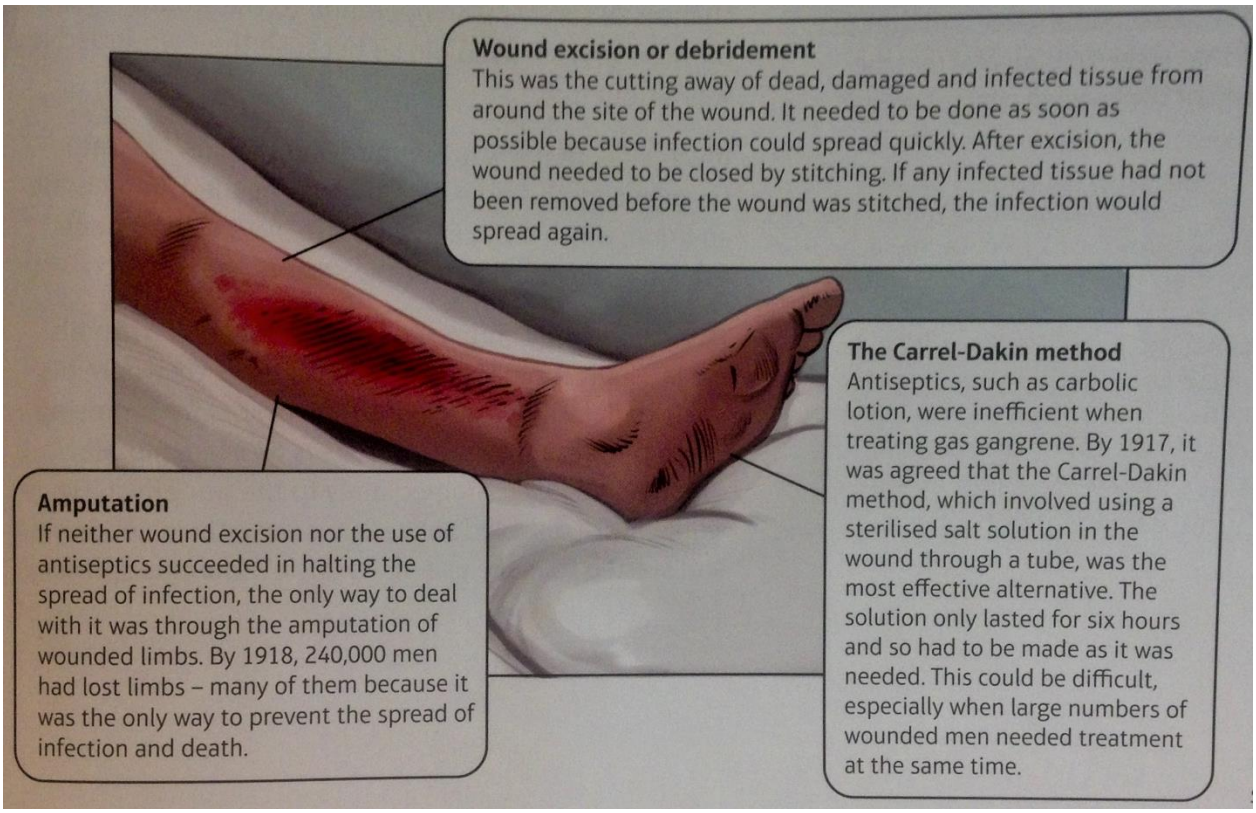
1) Which detail would you follow up?

2) What question would you ask?

3) What type of source would you want to answer your question?

4) Why might that source help you answer your question?

New techniques in treatment of wounds and infection



SOURCE A

From the diary of B.C. Jones, 1915-6. Jones served with the Royal Field Artillery in France from the start of the war until he was wounded in 1915.

7 December. A German shell hit the dugout of our telephone pit. I remembered no more until I woke up in Bethune Casualty Clearing Station Number 33, where I find I have been severely wounded. Left hand blown off, left arm ripped up 12 inches. Scalp wound 6 inches, wound over side of knee (left) 5 inches.

9 December. Operation on upper arm for gangrene (successful).

12 December. I remain here for 8 days then removed to St Omer by hospital barge, very comfortable. I am then removed by train to Etaples. I am then sent to England on the Hospital Ship. Return to Nottingham where I am in bed until the end of February.

3 June 1916. I am eventually transferred to Brighton where I am operated on and re-amputated. Awaiting Roehampton for artificial limb.

SOURCE B

From Ward Muir's Observations of an Orderly, published in 1917. Muir was a Lance Corporal in the RAMC and worked in a hospital in London that received patients from the Western Front at the end of the chain of evacuation.

The majority of stretcher-cases… reached us in by no means a desperate state, for, as I say, they seldom come to England without having been treated previously at a base abroad (except during the periods of heavy fighting. And it is remarkable how often the patient refuses help in getting off the stretcher on to the bed.

Developments in blood transfusions and storage

1915 Use of blood transfusions in British sector on Western Front pioneered by Canadian doctor, Lawrence Bruce Robertson, in the Base Hospital at Boulogne. He used the indirect method, where a syringe and tube was used to transfer the donor blood to the patient.

Geoffrey Keynes, a British doctor and lieutenant in the RAMC, designed a portable blood transfusion kit that was used to provide transfusions close to the frontline in a Casualty Clearing Station. However, it could not use stored blood as there was no available refrigeration. He added a device to the blood bottle which helped prevent clotting. Keynes claimed that his work saved countless lives.

American doctor, Richard Lewisohn discovered that by adding sodium citrate to blood, the need for donor-to-donor transfusion was removed. Patients no longer needed to be in the same room as the donor.

Richard Weil discovered that blood with sodium citrate could be refrigerated and stored for up to two days.

1916 Francis Rous and James Turner found that by adding a citrate glucose solution to blood, it could be stored for a much longer period- up to four weeks.

1917 Blood transfusions were also being administered in the Casualty Clearing Stations as a routine measure in the treatment of shock.

Before the Battle of Cambrai, Oswald Hope Robertson, a British-born American doctor, stored 22 units of universal donor blood in glass bottles. He built a carrying case packed with ice and sawdust and called this a "blood depot". During the battle, he treated 20 severely wounded

Canadian soldiers (none of whom were expected to survive) with 26 day old blood. 11 of the 20 men survived. This was the first time that stored blood had been used to treat soldiers in shock.

Task 1: Find evidence of the following two factors in the above timeline:

- ☐ **Developments in blood transfusion process.**
- ☐ **Developments in blood storage.**

Task 2: A number of key individuals contributed towards that development of blood transfusions and storage. Who do you think made the greatest contribution and why?

_____
_____
_____
_____
_____
_____
_____
_____
_____
__

The Thomas Splint

- Broken bones were caused by gunshot or shrapnel wounds.
- Major bleeding would be the cause of death if the leg was not kept rigid as the broken ends of bone would grind against each other.
- Many who survived before the Splint would have had their leg amputated.
- Robert Jones worked with his uncle, High Thomas at the end of 19th century, in his medical practice where Thomas had developed a splint to stop joints from moving. It pulled the leg apart to stop the bones grinding together. When the war started he offered his service. In December 1915, Thomas was sent to Boulogne to instruct medical practitioners how to use the Thomas split. Survival rate went from 20% to 82%

Use of mobile X-rays

- X-rays used from start of war to identify shell fragments and bullets in wounds.
- Two x-rays would be taken from different angles and this helped surgeon to identify the location of shrapnel and bullets.
- THERE WERE SOME PROBLEMS
  1. X-rays could not detect all objects in the body. E.G Fragments of clothing.
  2. Length of time men had to remain still caused problems.
  3. Tubes used in x-ray machines were fragile and overheated quite quickly. Could only be used for around one hour at a time. The improvements on this only happened in 1917, when the US became involved in the war.

Exam practice: How could you follow up Source C to find out more about x-rays on the Western Front? (4)

Source C – From Radiography and Radiotherapeutics, by Robert Knox, published in 1917. This was a textbook on the use of x-rays written by a British doctor.

The need for portable outfits in connections with the war has led to a great development in the provision of motor wagons containing complete x-ray apparatus with all accessories. The mechanism used for driving the wagon i.e the motor is coupled with a powerful dynamo which delivers a continuous current.

1. Detail in source that I would follow up

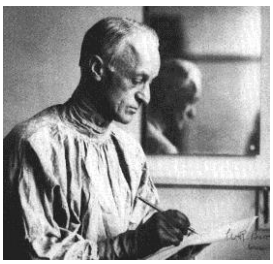
2. Question I would ask

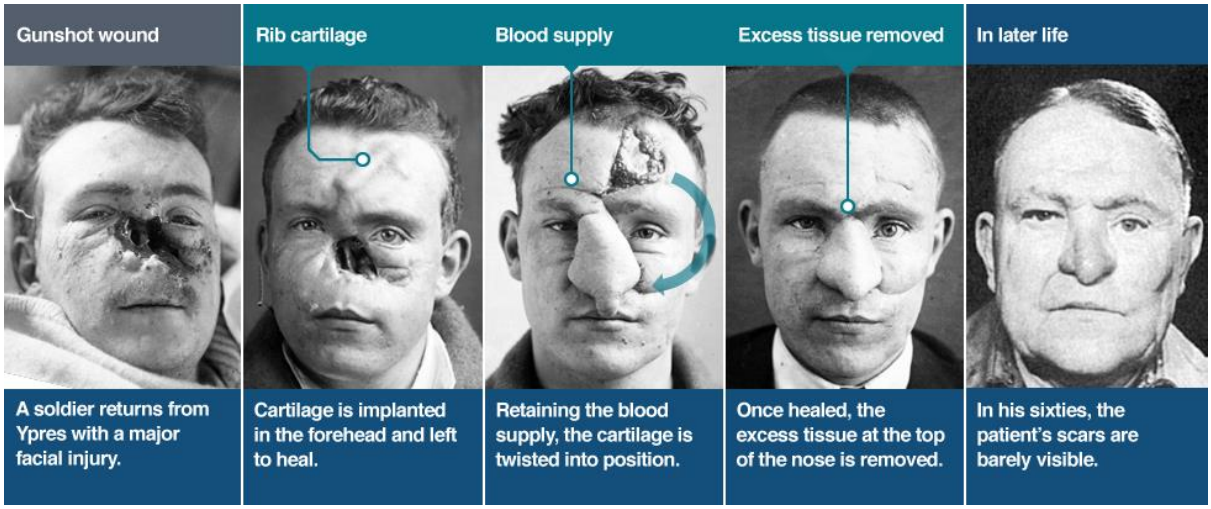
3. What type of source I could use to answer question

4. How might the source help me answer my question.

Head Injuries

Task: Use this information to summarise the achievements of these two men:

	Key Individual	Achievements
Brain Surgery	**Harvey Cushing (American neurosurgeon)** 	Brain injuries were likely to prove fatal at the start of war because: 1. Infection 2. Moving men through the Chain of evacuation was difficult. 3. Very few doctors who had experience in neurosurgery. Cushing developed new techniques in brain surgery on Western Front. He experimented with magnets to remove shrapnel from the brain. He also used local anaesthetic rather than general. LOCAL MEANT THE BRAIN DID NOT SWELL DURING OPERATION. Operated on 45 patients in 1917 with survival rate of 71% CCS became chosen as centres for brain surgery. Patients remained there for 3 weeks after surgery All head wounds were focused on and examined in more depth
Plastic Surgery	**Harold Gillies (New Zealand doctor specialising in ear, nose and throat surgery)** 	Developed plastic surgery. Gillies was sent to Western Front in 1915. Head injuries that did not kill could cause severe disfigurement. Gillies became interested in facial reconstruction. Men who needed this were returned to Britain. The key hospital who provided this care was Queen's Hospital in Kent. By the end of the war, nearly 12,000 plastic surgery operations were carried out.



Recall

1. Describe 2 features of the following topics
   - Trench system
   - Stretcher bearers
   - Ambulances
   - Trench foot
   - Gas attacks
   - RAMC
   - FANY
   - Dressing stations
   - Casualty Clearing Stations
   - Base Hospitals
   - The underground hospital at Arras
   - The Thomas splint
   - Blood transfusions
   - The blood bank at Cambrai
   - Plastic surgery

2. Draw a trench and label it
3. List and explain the key battles in the First World War and the types of medical advances shown during them
4. What were the problems with the following transports and communications:
   - Horse-drawn and motor ambulances
   - Train, barge and ship ambulances
5. What were the main symptoms of Trench Foot?
6. What were the attempted solutions to deal with Trench Foot?
7. What were the main symptoms of Trench fever?
8. What were the attempted solutions to deal with Trench fever?
9. What were the main symptoms of Shellshock?
10. What were the attempted solutions to deal with Shellshock?
11. How did soldiers attempt to prevent injuries from shrapnel, wound infection and head injuries?
12. What were the 3 types of gas used to attack? What were the effects of them?

13. What was the main stages of the chain of evacuation?
14. Write 5 bullet points about the following:
    - RAP
    - ADS and MDS
    - CCS
15. How did the FANY help with the treatment of soldiers?
16. Explain the following treatments used to prevent infections from spreading:
    - Amputation
    - Carrel-Dakin method
    - Wound excision or debridement
17. What was the Thomas Splint and how did it treat fractures?
18. What were the problems with using x-ray machines in the First World War?