

Paper 1

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Medicine in England 1250-Present

- 4 mark "Explain one way that _____ differed"
- 12 mark explain
- 16 mark "How far do you agree"

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The British Sector of the Western Front

- 4 mark "Describe two features of..."
- 8 mark "How useful are sources A and B for an enquiry into..."
- 4 mark "How could you follow up source A to find out more about..."



Ypres

There were three major battles that took place at Ypres. The third is often referred to as Passchendaele, an area near Ypres.

The area surrounding the town of Ypres (called 'Wipers' by the British troops) was the scene of several major battles lasting months. There were too major reasons for fighting here.

1. The town of Ypres stood on the most direct route to the Channel ports such as Calais and Dunkirk. If Germany captured those ports they would cut off most of the supplies to the British army – equipment, men and food. Therefore Ypres and the surrounding area had to be defended to keep the British war effort going.
2. The Ypres Salient (salient means 'bulge') was a vulnerable part of the Allied line. German forces occupied a ridge of high ground overlooking the Salient which meant they could fire down on British and Allied forces and they could see the layout of defences and the movements of Allied troops. In addition, the higher German positions were well drained so were healthier and better for transport, and stronger defences could be created. The British trenches were in low-lying ground which easily became water-logged and flooded, especially when churned up by shell fire as this account shows:

The second Battle of Ypres in 1915 also saw the first extensive and effective use of poison gas by German troops.

The Somme

The Battle of the Somme started on July 1st 1916. It lasted until November 1916. For many people, the Battle of the Somme was the battle that symbolised the horrors of warfare in World War One; this one battle had a marked effect on overall casualty figures and seemed to epitomise the futility of trench warfare.

For many years those who led the British campaign have received a lot of criticism for the way the Battle of the Somme was fought – especially Douglas Haig. This criticism was based on the appalling casualty figures suffered by the British and the French. By the end of the battle, the British Army had suffered 420,000 casualties including nearly 60,000 on the first day alone. The French lost 200,000 men and the Germans nearly 500,000.

The main tactic of the Battle of the Somme was bombarding the enemy with shells before going over the top.

The battle for Hill 60 near Ypres in April 1915 is an example of how German forces held the high ground around Ypres and of the methods used to try to capture the ground.

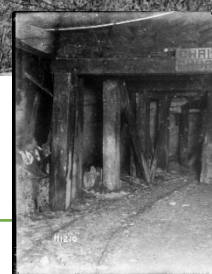
Unlike other German positions, Hill 60 was actually a man-made hill, 60 metres above sea level, allowing the German troops to fire directly down on Allied troops. In 1915 it was decided to attack Hill 60. Soldiers who had worked as coal miners in Wales and Northumberland dug tunnels into and under the hill. German soldiers dug counter-tunnels. If tunnels caved in or were blown in by the enemy, the soldiers who died underground were usually left where they were because of the difficulty of retrieving them.

On 17 April 1915, five mines were exploded under the German position; four mines went up in two pairs and the fifth mine as a single mine. The top of the hill was literally blown off. The British took the hill and over the following four days fought off fierce German counter-attacks. On 22 April the battle subsided with the British in control of the hill.

Source A: Bombardier J. W. Palmer, Royal Field Artillery, describing conditions in 1917 at the third Battle of Ypres
 It was mud, mud everywhere: mud in the trenches, mud in front of the trenches, mud behind the trenches. Every shell-hole was a sea of filthy, oozing mud. I suppose there's a limit to everything but the mud of Passchendaele – to see men sinking into the slime, dying in the slime – I think it absolutely finished me off.

Cambrai

The Battle of Cambrai late in 1917 saw the first large use of tanks although they had been used in smaller numbers during the Battle of the Somme in 1916. Over 450 tanks were used against the German front line. As there was no preliminary bombardment the assault was a surprise. The tanks were effective and the German forces lost ground on the first day of the battle. However, the tanks did not have enough infantry support and, by themselves, could not defend and were quickly captured. As a result the British lost almost all the ground they had taken.



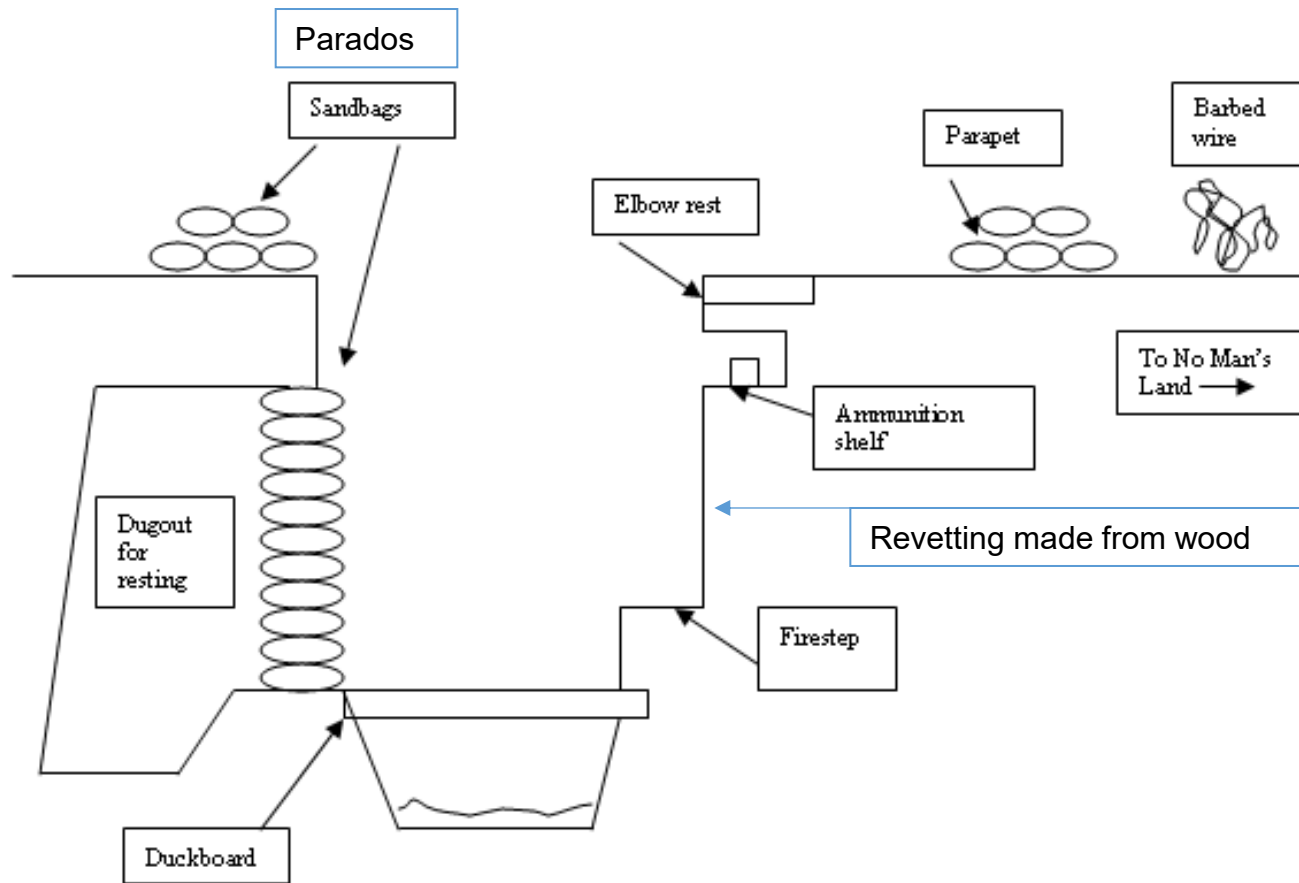
Arras

The Battle of Arras was fought in 1917 but what was remarkable was what happened before the battle began. Trenches were dug from New Zealand and some from the north of England. A network of tunnels in the ground underneath Arras was created. This ground made tunnelling easy and new tunnels joined up with ancient tunnels and quarries under the city quarried over centuries of years before. Rooms were created off the tunnels with running water and electricity supplies. This created accommodation for soldiers to live and sleep in and a hospital, large enough for 700 beds and operating theatre. The tunnels were also used as shelters against artillery fire and to convey troops to the front in secrecy and safety.

British areas of the Western Front

Ypres	The Somme	Cambrai	Arras
<p>At Ypres, the Germans had the high ground. This meant they could shoot down at the British and see what they were doing.</p> <p>The low land that the British were fighting in was very, very wet. As it was so muddy, it was very difficult to fight in.</p> <p>The Germans used chlorine gas for the first time at Ypres in 1915. Many British died as they were not prepared with gas masks.</p> <p>In October 1917 it rained every day for a month.</p>	<p>On the first day of the battle, 60 000 soldiers died. (That is just 8000 less than the capacity for Sheffield United and Sheffield Wednesday COMBINED).</p> <p>On the first day of the battle, cavalry (soldiers on horses) were used.</p> <p>The Somme was the first place that tanks were ever used in battle. Only 35 were used, they were very slow and kept breaking down.</p> <p>The ground was quite dry.</p>	<p>The battle was fought in Winter, 1917. The weather was bad but not as bad as in Ypres.</p> <p>This was the first battle where tanks were used on a large scale. 450 tanks were used against the Germans.</p>	<p>The ground at Arras was very dry and chalky.</p> <p>This ground made it very easy to dig tunnels. Tunnels were there before the battle but the British built more.</p> <p>The tunnels had running water and electricity. Soldiers could live in the tunnels.</p> <p>There was an underground hospital with 700 beds.</p>

The structure of a trench



The command trench would be 10-20 metres behind the firing line

Time spent in each area:

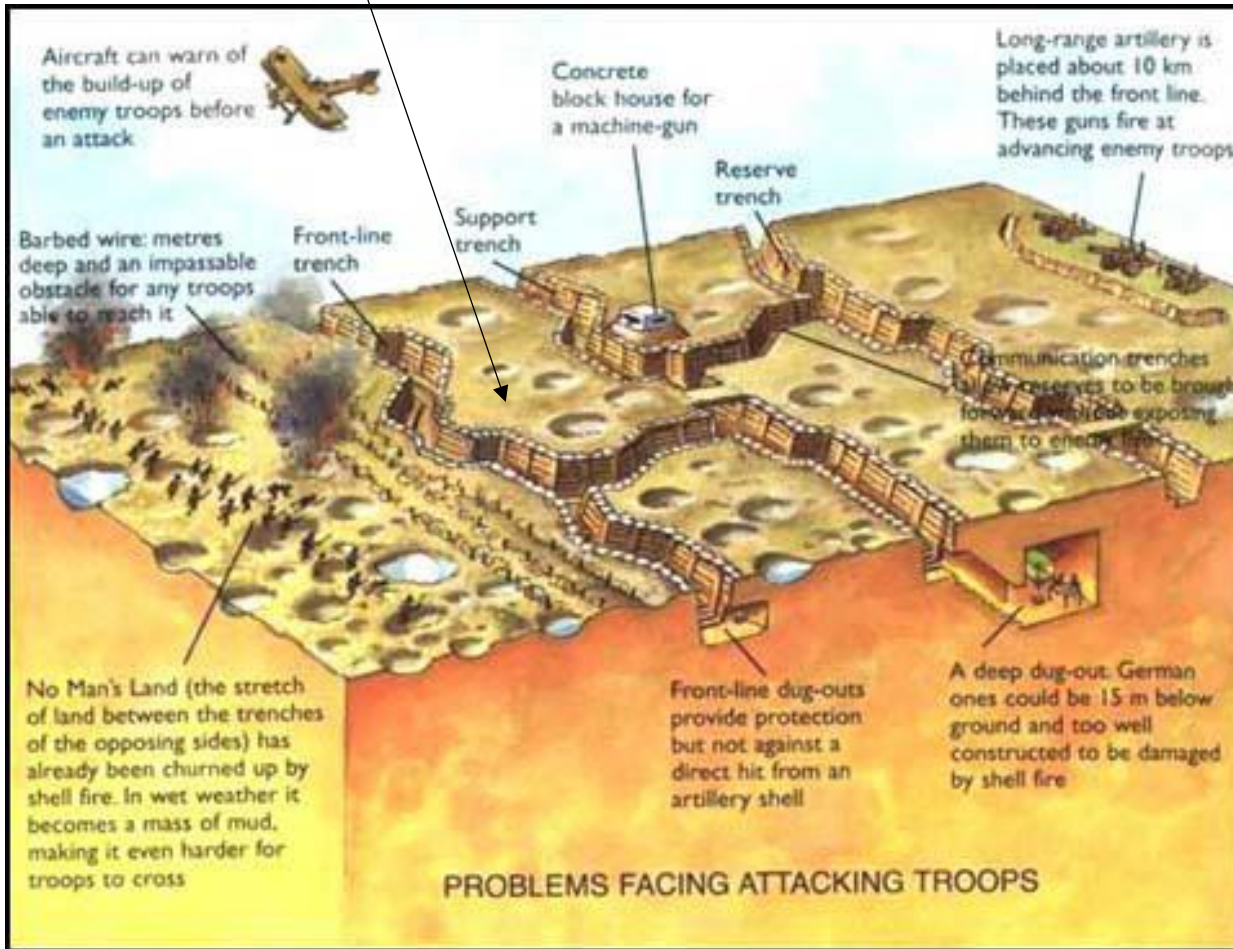
Front line: 15%

Support trench: 10%

Reserve line: 30%

Away from trenches: 45%

Trench Structure

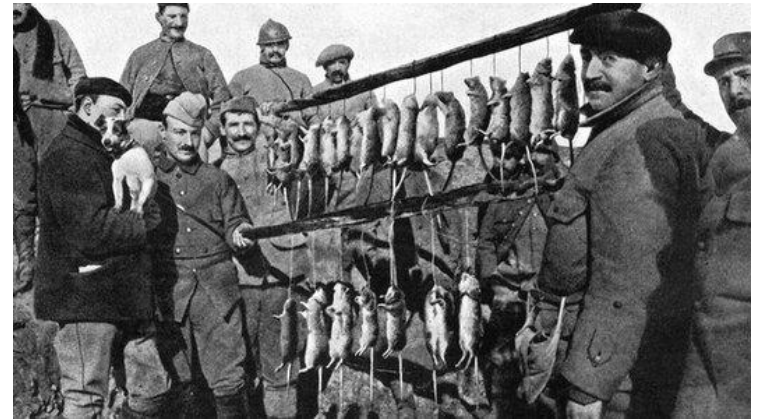


The impact of the terrain on the wounded

- Collecting the wounded from No Man's land was dangerous. It might have to be undertaken under fire or at night.
- No Man's Land and the trenches could be deep in mud, making movement difficult and dangerous. Huge shell craters could be filled with water, making transporting wounded difficult.
- The trench system could be clogged with equipment and men, moving in different directions. Carrying stretchers was hard work.
- There could be a huge number of wounded at any one time, slowing everyone down.

Trench Fever was a collective term for lots of trench illnesses. The main symptoms were - *severe headaches and eye pain, shivering, and bone and joint pains* which would last up to five days.

It was known by troops as **relapsing fever** because it was very common to have it over and over again.



The fever was spread by lice. The soldiers called them "grey backs". They lived in the seams of clothing and in soldiers' blankets.

When soldiers came away from the front line they would be disinfected by fumigating, washing and ironing uniforms but whilst in the trenches the soldiers would often pick out the lice or scrape them off with knives like these two:

While the efforts of the army to stop the spread of trench fever and keep men clean away from the front line improved morale it didn't stop the fever. Packed in so close together in the trenches and with severe weather conditions in places like Ypres the fever could not be prevented.

Bathhouses were built away from the front and men were given louse-repelling gel as well as other chemicals. Machines were also sent to steam clothing.

The added problem of rats spread the disease. Not only were rats spreading other diseases but they spread the lice from trench to trench.



Health problems – Trench Foot



Trench Foot was the name given to a condition where feet would become numb, swollen and blistered.



Wearing poorly fitting boots, living in freezing mud and water sometimes led to trench foot. Mud was often feet deep and men even drowned in it. Moreover the poorly fitted boots restricted blood flow which caused the blisters and soreness.

Once sore, the feet deteriorated rapidly in the poor conditions. This led to gangrene which is a term given to dead flesh which no longer has blood flow. Gangrene spreads quickly up the body and becomes infected as the body no longer fights off infection in those areas. This often led to amputation.

To combat trench foot the army ordered that every man should have three pairs of socks, change them twice a day and rub oil into them. Men also paired up to check each other's feet and rubber waders were ordered for the worst areas.



Being on duty in the front line gave no time to changing clothes. Socks and boots would be worn permanently meaning feet could not be dried out.

Trench foot meant that feet often swelled to two or three times their normal size and went numb. Skin would peel off as boots were removed. In some cases they had to be amputated.

Trench foot continued throughout the war even with army intervention. Men would often find themselves hiding in destroyed, waterlogged, trenches or shell holes waiting for support to arrive.



Shell Shock was the name given to a state of shock and trauma sustained from facing horrific conditions and danger for a long time.

Symptoms included anything from shaking to extreme panic and being unable to fully function. In the most extreme cases men couldn't walk or talk.

Early on in the war in particular soldiers were put on trial and in rare circumstances shot for cowardice because of their shell shock.

During the war itself it was often known as a "not yet diagnosed" illness or NYD. The purpose of this was that the army didn't want to panic large numbers of soldiers by giving it the name shell shock.

There were an estimated 80,000 treated cases of shell shock in British troops during WWI but it is highly likely that there were thousands more cases that went undiagnosed.

Rest was usually used as a cure. Rather than sending men back to Britain they were treated in France so that they could be sent back to the front if fit. If it was a mild case they would be given rest and food for a few days but more severe cases were sent to specialist hospitals.

Most returned to fighting after a short spell away from the front.

Soldiers were rarely sympathetic. If someone with shellshock had acted bravely in battle it could be overlooked but often it was seen as cowardice if someone refused/was unfit to fight.



Health problems - Summary

Trench Fever

Medical term: PUO - Pyrexia of Unknown Origin

Cause: Spread by lice. This was suspected from 1915 but known from 1018.

Symptoms: Headaches, shivering, pain in the bones and joints that lasted 5 days but kept coming back at different times.

Methods of prevention: Disinfecting clothing, use of bathhouses and use of louse-repellent gel. Underwear washed in paraffin.

Treatment: Effective when diagnosed early, effective nursing needed. Time in hospital for a few months.

Trench Foot

Cause: Standing in water logged trenches causing feet to go numb. Tight boots restricting blood flow. No ability to change wet boots and socks.

Symptoms: Numb, swollen, blistered feet that turn blue. Can turn to gangrene - the flesh dies.

Methods of prevention: Every soldier should have 3 pairs of socks and change them twice a day and rub whale oil into their feet for protection. High rubber waders were given in the worst conditions. Mechanical pumps were used to drain the water in some places.

Treatment: Amputation.

Shell Shock

Medical term: Not Yet Diagnosed Nervous. (NYDN)

Cause: Psychological trauma. They thought it might be contagious.

Symptoms: Varied from person to person. Common symptoms were an inability to sleep, eat or talk. Paralysis or shaking. Inability to function normally.

Methods of prevention: None

Treatment: Treated in France. Close to the front line. Rest, food and talks. If it was due to an explosion, sent to a hospital for treatment.

Electric faradisation (putting an electric current through the tongue) to cure people unable to talk. When other treatments would not work - lobotomies were carried out on some men (part of their brain was removed).

Key weapons of war

Rifles:

Had been used in previous wars.
E.g. Boer War of 1899-1902.
Use a cartridge case that created automatic rapid fire since 1889.
Bullets had a newly pointed shape which drove them deeper into the body from a longer distance.
Accuracy could be guaranteed to 600 metres.



Machine guns:

Fired around 500 rounds per minute - the equivalent of the power of 100 rifles.
Helped to defend trenches.
Mass-produced by both sides during the war.



Artillery:

Howitzer - could send 900 kilogram shells 12 miles.
Shell bombardments could last weeks or months.
Artillery fire caused half of all casualties.



Shrapnel:






A hollow shell packed with steel balls or lead, gunpowder and a timer fuse.
Designed to explode in mid air over the enemy causing maximum damage.
Very effective if the enemy were travelling across no-mans land.
They broke into many fragments when detonated.





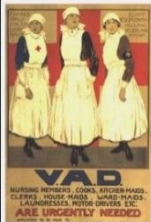

Gas:

Tear gas was used by both France and Germany in 1914.
1915 - Chlorine gas was used at Ypres. Deadly as it suffocated.
Protection - urinating on handkerchiefs and holding them over noses.
Later - mustard gas was used.
Gas masks were developed leading to only 5% of people attacked, dying in gas attacks.
Mostly the effects lasted two weeks - coughing, temporary blindness and loss of taste and smell.

STRAP FA CASH

	<p style="text-align: center;"><u>Stretcher Bearers</u></p> <p>Stretcher bearers were the first on the scene for the wounded. They had a difficult job to do as they had to enter no-mans land under fire. They gave basic medical aid and carried the wounded through the trenches which was also difficult as they were very tight. It could take 4 men to carry a stretcher and there were only 16 bearers per 1000 men (one battalion).</p>
	<p style="text-align: center;"><u>RAP</u> (Regimental Aid Posts)</p> <p>The RAP was close to the front line. It was a temporary fixture and moved forwards during big attacks to receive men quickly. Simple wounds were dressed here and sent back out into the action. Other wounded men would be patched up and sent to field ambulances and dressing stations. They were poorly constructed and badly lit. Only one doctor in each RAP per 1000 men.</p>
	<p style="text-align: center;"><u>Field Ambulances and Dressing Stations</u></p> <p>Field ambulances were semi-permanent structures built around a mile behind the front line. They were either created in large tents or sometimes in derelict buildings. Similar to the RAP they were a "triage" or go-between station. The less-serious cases would stay to be patched up while the more serious were sent on to Casualty Clearing Stations.</p>
	<p style="text-align: center;"><u>Casualty Clearing Stations (CCS)</u></p> <p>Casualty Clearing Stations were large, well-equipped buildings around ten miles behind the line. They had multiple doctors as well as X-ray machines, proper wards and beds. Surgery could also be done here and the stations could deal with around 1,000 men at a time.</p>
	<p style="text-align: center;"><u>Base Hospitals</u></p> <p>The largest areas were the base hospitals. These dealt with long-term injuries and illnesses. They were based in proper civilian hospitals in the towns. Access was through the rail-routes or new motor ambulances although the roads were poor. They could deal with around 2,500 men at once and death with major surgery and infections from the front including gas poisoning.</p>

Nurses and Doctors involved

	<p style="text-align: center;"><u>Group One: RAMC - Royal Armed Medical Corps</u></p> <p>The Royal Armed Medical Corps was the group that all men concerned with medicine on the Western Front were part of. It consisted of any type of person involved, including doctors, ambulance drivers and stretcher bearers. The main role of the RAMC was to deal with the wounded but they were also in charge of keeping men healthy through good sanitation (cleanliness). In 1914 it had just 9,000 men but by the end of the war there were over 100,000. They achieved this by increasing the age of doctors allowed to serve to 45. The main issue was they had to learn on the job. They had to learn quickly about wounds they had never seen before in conditions completely different from any they had experienced.</p>
	<p style="text-align: center;"><u>Group Two: Queen Alexandra Nurses</u></p> <p>Alongside the RAMC were several groups of nurses. The main one was the Queen Alexandra nurses. They were a band of nurses specifically used in wars named after the wife of King Edward VII (King 1901-1910). They were very well-trained for this type of situation. Just like with the RAMC their number grew rapidly from 300 in 1914 to 10,000 in 1918. This group were the only professional group of nurses and early on in the war the only nurses that were actually used. However as conditions worsened the army needed to bring in volunteer nurses.</p>
	<p style="text-align: center;"><u>Group Three: Voluntary Aid Detachment</u></p> <p>The main type of volunteer nurses were known as the VAD - Voluntary Aid Detachment. They mainly came from wealthier middle- and upper-class backgrounds with little experience of work before the war. To start with they did many different jobs including scrubbing floors, cooking and washing clothes because they weren't actually trained. However by the end of the war they were doing more nursing such as changing dressings and giving painkillers.</p>
	<p style="text-align: center;"><u>Group Four: FANY - First Aid Nursing Yeomanry</u></p> <p>The final group of medical personnel was the First Aid Nursing Yeomanry (FANY). This group was only recently formed due to the new nature of warfare in the early twentieth-century. Their main role was as ambulance drivers and they also acted as nurses. They also drove other motorised machines like motorised kitchens and bath vehicles that could wash 40 men in an hour. They also took food and spare clothes to the front line.</p>

New methods of treatments

Description of health issue	New treatments involved
<p>Wounds in WWI got more and more serious with the introduction of more powerful weapons. Artillery shells often removed limbs or inflicted internal damage to the body and head.</p>	<p>X-ray machines Mobile X-ray machines were brought to war for the first time during WWI. They helped identify the wounds and where there may be shrapnel and breaks in the bones. This made surgery quicker and also prevented larger amounts of blood loss. By the end of the war all Casualty Clearing Stations and Base Hospitals had X-ray machines.</p>
<p>Machine guns and rifle bullets had the power to break bones. While a broken bone may not be a serious issue today they had a much bigger impact in WWI. A soldier with a broken leg only stood around 20% chance of survival due to infection and shock.</p>	<p>Thomas Splints The Thomas Splint was invented by Hugh Owen Thomas in the early 1900s. Prior to its invention, around 80% of soldiers that were shot in the leg resulting in large breaks died. This was because their legs were just set straight and the jagged bones caused ruptures and blood loss. This new Thomas Splint pulled the bones apart so they didn't grind and would set them back in a better way.</p>
<p>Blood loss was also a massive problem due to these new types of wounds.</p>	<p>Blood transfusions Karl Landsteiner had identified blood groups in 1901 and made blood transfusion safe. During WWI though they needed to transport blood in large amounts! There were three significant discoveries:</p> <ol style="list-style-type: none"> 1. Sodium Citrate added to blood stopped it clotting when stored (however the blood still deteriorated quickly). 2. Refrigerating blood meant it could be stored for a few days prior to large scale attacks. 3. A portable machine was invented for transporting blood to the front line.
<p>In the early stages of the war head wounds were more common. No war had been like this before and therefore helmets had never been commonplace. They weren't introduced en masse until 1916. Instead they had just worn leather hats. Steel helmets made a massive difference but there were still serious facial injuries leaving men without noses, eyes and even jaws.</p>	<p>Plastic Surgery Infection had previously prevented plastic surgery. But the developments of aseptic surgery in the 1800s made it much safer. By the end of the war, surgeons in Europe were using skin grafts to repair the body as well as creating metal splints and plates for replacing bones in the face.</p>
<p>There were more serious issues of brain issues. Nearby shell impacts could actually make the brain rattle around in the skull.</p>	<p>Brain Surgery Although not as complex and developed as today, there were some developments to help with brain injuries:</p> <ol style="list-style-type: none"> 1. Blood transfusions and saline solutions on a drip prevented the brain going into shock and dying. Brain surgery could then be done when the soldiers were more stable. 2. X-rays meant that fragments could be removed. A special magnet was used to extract metal from the head.
<p>The secondary impact of weapons was the blast impact. When bullets or shrapnel hit bones, parts would split off and get stuck in the body penetrating arteries and organs causing infections deep into the body.</p>	<p>Treating infection Aseptic surgery was practised based on Lister's ideas and further developments. However the dirt of the Western Front made it impractical. Tubes full of aseptic solutions were piped into wounds themselves during surgery. Furthermore surgeons went to extremes to prevent deeper infections:</p>
<p>Open wounds also led to infection. Lying out in no-mans land in the mud led to an invasion of bacteria in the body. In particular "gas gangrene" was an infection that made sores bubble and swell up. Because this was a new type of infection doctors didn't know how to deal with it in the early stages of the war.</p>	<ol style="list-style-type: none"> 1. All fragments lodged in the body, no matter how small, MUST be removed. 2. All dirty tissue and dead muscle should be cut-out of the body before being sewn up. 3. DO NOT sew wound up too early as it will trap the infection. Instead wounds must be thoroughly cleaned. <p>Although this damaged the body more, it prevented deaths from blood infections such as gas gangrene.</p>
<p>The first use of gas came at the Second Battle of Ypres in 1915. The German army used chlorine gas to suffocate the enemy. Mustard Gas also caused the skin to blister. They didn't have gasmasks so their only protection was to urinate in handkerchiefs and hold them over their noses. Whilst it didn't kill many it led to short-term blindness, loss of taste and smell and a bad cough. Symptoms lasted around two weeks and although not deadly it clogged up the hospitals.</p>	<p>Once evacuated, chlorine victims received oxygen and bed rest until they were healthy enough to return to the front. However, soldiers exposed to mustard gas, especially in high concentrations or for long periods of time, needed to bathe with hot soap and water to remove the chemical from their skin. If it was not scrubbed off within 30 minutes of exposure, blistering occurred. The bath vehicles of the FANY helped minimize the impact.</p>

New methods of treatments - Summary

1. Carrel-Dakin Method

What problem did it tackle?

Muddy clothes and soil getting into soldier's wounds and causing infection.

How did it work?

A system of tubes kept a chemical solution flowing through the wound to stop infection.

What were the benefits?

Reduced the number of amputations due to infection.

3. Plastic Surgery

What problem did it tackle?

People got infections from facial injuries and had a poor quality of life.

How did it work?

More experience made surgeons better at plastic surgery. New techniques were developed. E.g. skin grafts and metal plates used as 'replacement' cheeks.

What were the benefits?

Less infection and better quality of life.

5. Blood transfusions and the storage of blood

What problem did it tackle?

Men dying from blood loss.

How did it work?

Methods were developed to store, transport and transfuse blood.

What were the benefits?

Reduced the number of deaths due to blood loss.

2. Deeper Surgeries

What problem did it tackle?

Infection due to bacteria being deep inside the body.

How did it work?

Even tiny bits of bullet and shrapnel were removed during surgery. All the tissue around the wound was removed and wounds were not sewn up straight away.

What were the benefits?

Reduced the number of amputations and deaths.

4. Mobile X-Ray Machines

What problem did it tackle?

Surgeons did not know where tiny fragments of bullets and shrapnel were in the body.

How did it work?

X-ray machines were used near the front line and patients were treated quicker and more accurately.

What were the benefits?

Reduced the death rate.

6. The Thomas Splint

What problem did it tackle?

80% of soldiers shot in the thigh bone (femur) died.

How did it work?

The splint pulled the leg lengthways, stopping the bones grinding together and reducing blood loss.

What were the benefits?

Only 20% died from this type of injury.

7. Brain Surgery

What problem did it tackle?

Serious brain injuries due to lack of helmets and being shot in trenches.

How did it work?

New techniques were developed. Blood transfusions and x-rays meant it was easier to do successful brain surgery.

What were the benefits?

Reduced the number of deaths.