



Medicine Through Time: The British Sector of the Western Front: 1914-1918



Learning Outcomes

1. How developments in medicine in the early 20th century contributed to treatment of soldiers
2. Understanding the types of injuries that were experienced by soldiers in the British sector
3. Understanding of the different developments in surgery and medicine used to treat soldiers

The First World War: Western Front

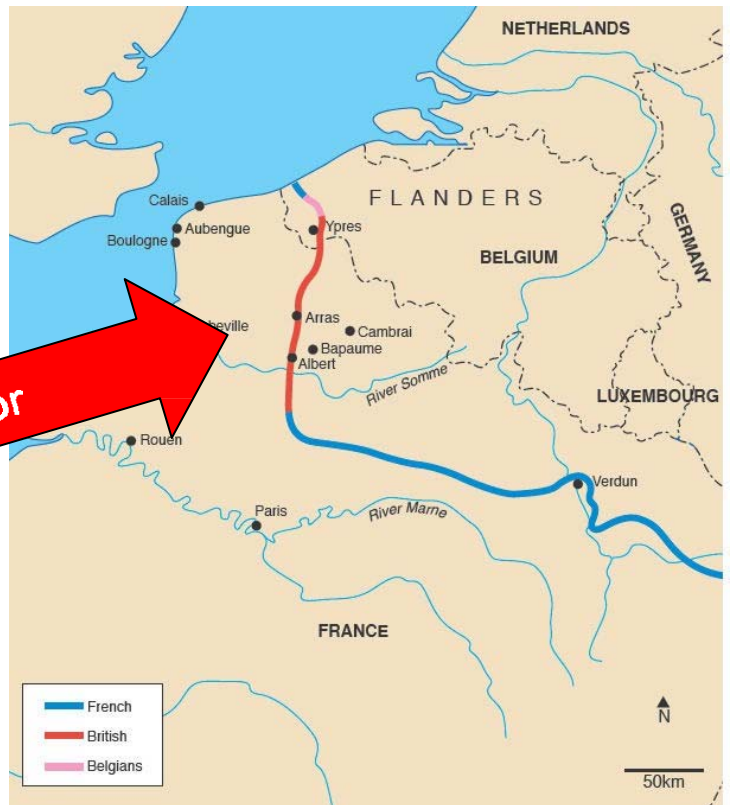
Britain declared war on Germany on August 4th 1914 when Germany invaded France through Belgium. The British government sent the B.E.F (British Expeditionary Force) to northern France to try and stop the German advance. By the end of 1914, much of Belgium and northern France had been occupied by the Germans.

After the initial fighting, both the British and Germans pulled back their forces and this is when 'Trench Warfare' began as both the British and Germans pulled back their forces. It became a defensive war using trenches with some offensive attempts to capture the enemy trenches and land.

The British Sector

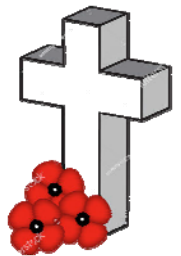
Between 1914 and 1918, most of the fighting done on the Western Front (France/Belgium) was trench warfare.

The British sector (in red) includes the strategic areas of Ypres, Arras, Albert and the River Somme and many of the largest battles in the war were fought in this sector.



The medical impact of WW1

- There were 2.7 million casualties in the British sector of the Western Front during the war.
- 1/4 (700,000) of these casualties were not seen by medical services because they were killed/prisoners.
- The remaining 2 million were treated by medical services in France or back in England.
- Of those treated, 5.6% (150,000) died from their wounds.
- Therefore the vast majority of those treated survived their wounds and illnesses: a testament to the successes of the medical care during WW1 (of course, many of these might be killed later in fighting).



Oct 1914 Motor Ambulances sent to the front.

1915 Lawrence Robertson pioneers use of blood transfusions



1915 First gas masks introduced

1915 Richard Lewisohn stops blood clotting

1915 Richard Weil discovers how to store blood for 2 days

1916 Francis Rous and James Turner discover how to store blood for 4 weeks



Jul 1916 Battle of the Somme

Jul 1917 3rd Battle of Ypres



Oct 1917 Battle of Cambrai

1917 Transfusions widely used in CCS's

1918 Delousing Stations set up

Nov 1918: WW1 Ends

Timeline 1914 -1918

Key Events of the Western Front

Oct 1914 1st Battle of Ypres

Apr 1915 2nd Battle of Ypres – 1st use of gas

Apr 1915 Battle of Hill 60

1915 Brodie Helmets introduced



Dec 1915 Thomas Splint taught to medical practitioners

Jan 1916 FANYs allowed to drive ambulances

1916 Tunnels dug at Arras

1917 Battle of Arras



1917 Carrel-Dakin method agreed as best method to stop infection

Aug 1917 Gillies opens Queen's Hospital for plastic surgery



The Four Key British Battles in WW1

The Ypres Salient 1914-15



The 'Salient' was an area under British control surrounded by Germans on 3 sides. The Germans held the high ground, whilst the British were in the low, wetter areas.

The area surrounding the town of Ypres was the scene of two major battles, the First and Second Battle of Ypres, as the Germans pushed to take Ypres and get to the Channel ports.



1914: The First Battle of Ypres

In autumn 1914, the Germans attacked the British positions around east and north east of Ypres. Britain kept Ypres but lost 50,000 troops.

Hill 60: Mines

The Germans held 'Hill 60' south-east of Ypres which gave them the height advantage over the British. In April 1915, British soldiers mined underneath the hill and literally blew up the German defences so the British were able to capture it.

1915; The Second Battle of Ypres

Between April to May 1915 the second battle started. It was the **first time the Germans used Chlorine Gas** on the Western Front. British losses were 59,000 men and the Germans moved 2 miles closer to the town of Ypres.

The British finally pushed back the Germans in the rainy 1917 battle of Passchendaele. It was a costly victory, with 245,000 casualties.

The Somme, 1916

Largest British attack in WW1 which lasted from July to November, 1916. It aimed to take ground from the Germans.



Huge casualties on both sides but especially for the British, with 57,000 casualties and 20,000 dead on first day alone.

The battle was significant for two reasons, which would help contribute to more casualties in the war:

- **First use of tanks** – used but not effective yet.
- **Use of creeping barrage** – artillery bombardment that moved towards the German trench as the British approached it.

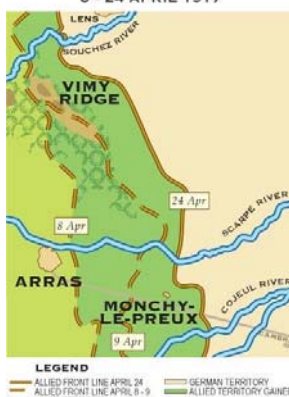
Arras, 1917

The allies (Britain, New Zealand & Canada) built over 2.5 miles of tunnels as shelter to prepare to attack the German line. It was a new tactic used by the British.

The tunnels could shelter 25,000 men, contained accommodation, a railway, water and electrical supplies and a hospital big enough for 700 beds.



THE BATTLE OF ARRAS 8 - 24 APRIL 1917



Initially the attack in April 1917 was a success as the British advanced 8 miles into enemy territory.

However, by May 1917 the attack had virtually stopped with the Allies suffering 160,000 casualties.

Cambrai, 1917

First large scale attack by British tanks to attack the German front line. Over 450 tanks were used.



No artillery bombardment used, which surprised the Germans. The British attack succeeded at first, helped by tanks.



However, the Germans counter-attacked after the British attack stopped.

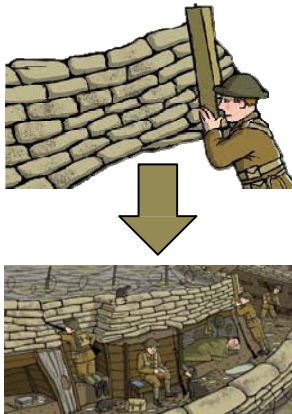
All land taken by the British was lost.

The Trench System

Trenches were first dug by the British and French Armies in Northern France in 1914. The aim of trenches was to act as a barrier to stop the rapid advance of the German army.

At first trenches were temporary and built quickly using sandbags and shovels in existing ditches.

They would need to be constantly repaired due to the weather and constant bombing.



As the war went on, trenches became part of the 'stalemate', used to defend & launch attacks.

Trenches became more complex with bunkers, drainage, hospitals and accommodation.

Trenches also became more dangerous with machine guns, concrete bunkers and barbed wire used as defenses.

With this evolved new weapons such as tanks, gas, machine guns, artillery and airplanes to fight on this terrain.

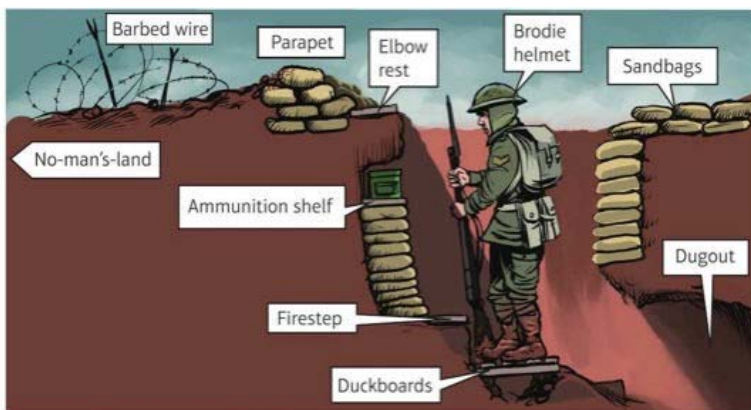


Important!

Trenches were different from one place to another across the Western Front.

So not every soldiers had the same experience in the trenches.

Cross Section of a trench

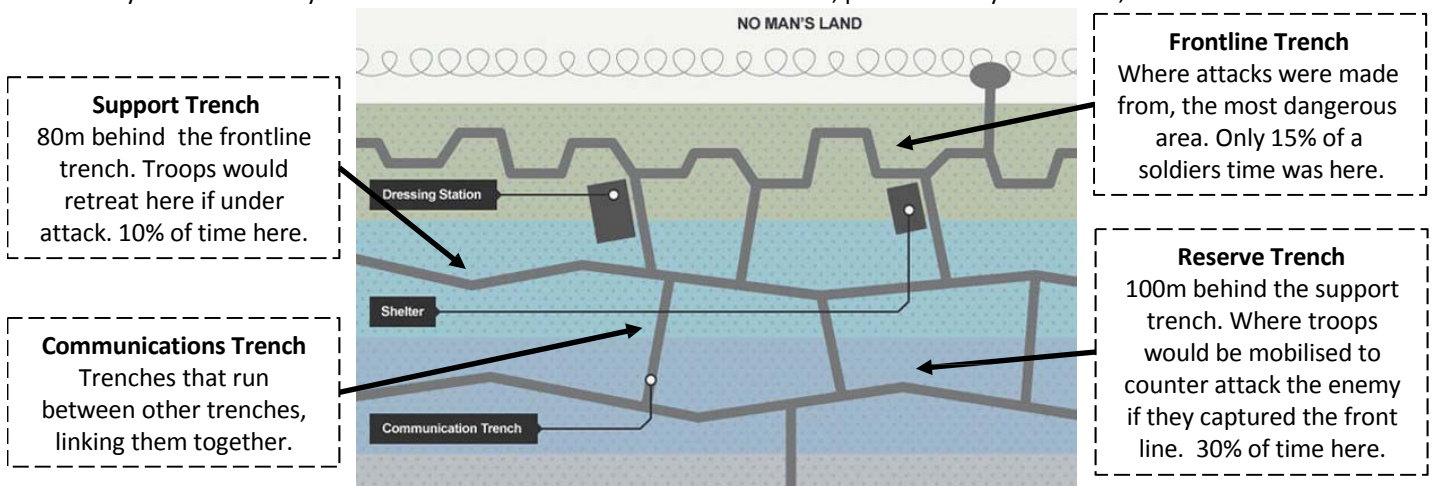


This is a typical British trench on the Western Front.

Key Features	
Firebay	Where troops did their shooting, they would be protected by sandbags
Duckboard	To prevent soldiers from standing in water. Possibly preventing trench-foot
Firestep	Allows the soldiers to fire towards the other trench. Trenches were 2.5 m deep
Parapet	Low protective wall
Ammunition shelf	Area in which ammo was kept near the firestep
Dugout	Area dug into side of the trench where men could take protective cover

The Trench System

This shows the main features of the Trench System from the Western Front, they were often quite different but they were mostly laid out this way. No Man's Land was between the two trenches, punctuated by shell holes, death and destruction.



45% of a soldiers time was actually spent away from the trenches.



The Trench System

Advantages:

- Simple to make and cheap to build
- Easy to defend with few men using barbed wire, artillery, concrete bunkers and machine gun fire
- Provided some shelter/protection

Disadvantages:

- Hard to attack as had to cross **no man's land** (the area between the two trenches) which has been destroyed by shell fire and was a mass of mud and craters
- Trenches were very dirty and unhygienic as there was no running water or flushing toilets.
- In summer sewage, dead bodies & heat led to horrific smell and disease everywhere.
- In winter bad weather led to flooding and frostbite (6000 cases in December 1914).

Conditions on the Western Front

The constant bombing and shelling often left the Western Front a landscape of craters, mud and water. All roads had also been destroyed, making it very difficult to cross and transport the wounded.



This caused issues in both transporting wounded men away from the front line and communication.

Key Problems on the Western Front

No Man's Land

The land was dangerous and the wounded could only be collected at night.

The destroyed terrain was muddy, contained stagnant water filled craters with rotting corpses and unexploded munitions and chemicals waste.



Trench System

The trenches were clogged up with men and equipment. This made it hard for stretchers to manoeuvre whilst under fire.

The numbers of wounded also overwhelmed the medical system.

Transport Problems and Solutions

If you were injured you needed to be moved ASAP away from the trenches where they could provide better medical treatment and cover from shelling.

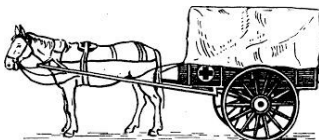
4 man stretcher bearers would carry the wounded away from the front line once they were in a stable condition. They carried the wounded during day and night, often under enemy fire.

The faster a man could be evacuated and treated, the greater the chance of survival.



Horse- Drawn Ambulance Wagons

Originally the decision was made not to send motor ambulances to the frontline: they used horse-drawn instead.



This was a mistake as horse-drawn carriages could not cope with the number of wounded, whilst the shaky transport often made injuries worse. A lack of ambulances meant many men were left to die.

Motor Ambulances

News of this reached Britain and The Times appealed for donations. As a result enough money for 512 ambulance was raised.

By October 1914 the first motor ambulances reached the frontline sent by the Red Cross.



However, the worse the terrain the less effective motor ambulances were. Therefore, horses continued to be used, sometimes up to 6 in horrendous conditions.

Solution

Train, barge and ship ambulances

To reach the final destination, Base Hospitals on the French Coast, the **Royal Army Medical Corps (RAMC)** used specially designed ambulance trains from November 1914.



Stretchers could fit down the side of the carriage and some contained operating theatres, hundreds were evacuated. However, they were criticised for damaging the war effort as trains were blocking supply routes in France and Belgium.

As a result, canals were used. These were comfortable, slow but could often transport the wounded straight to ships back to Britain.

Medical Problems on the Western Front.

Trench Foot

Trench foot was a major problem caused by standing in waterlogged trenches with no change of boots or socks. In the first stage, the feet would swell, go numb and the skin would turn red or blue. The condition could get worse quickly, leading to gangrene and amputation of limbs!

In the cold, wet winter of 1914-15 cases of trench foot were serious. The 27th Division of the British army experienced 12,000 cases of trench foot.

Attempted Solutions

To prevent the impact of trench foot, medical officers ordered soldiers should carry 3 pairs of socks and change them twice a day. They were also encouraged to rub whale oil into their feet.



Attempts were made to pump out trenches to reduce waterlogging and add duckboards, but constantly bombing made this hard



Trench Fever (PLO)

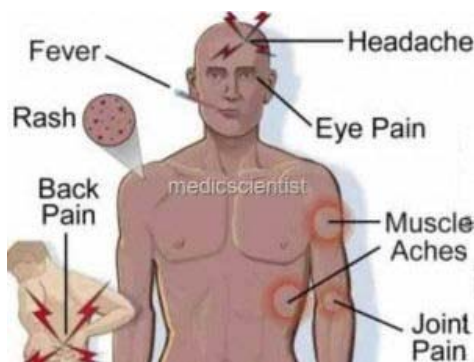
Flu-like symptoms with high temperature, headache and aching muscles which was spread by lice. Men could be ill for up to a month.

Estimated half a million men on the Western front were affected by trench Fever.

Attempted Solutions

Delousing stations were set up on the front; clothes were disinfected, men were bathed and sprayed with chemicals to prevent lice.

As a result of this, there was a decline in the numbers experiencing the condition.

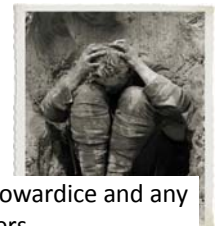


Shell Shock

Symptoms included tiredness, headaches, nightmares, loss of speech, uncontrollable shaking and complete mental breakdown. It is estimated 80,000 British troops experienced shellshock. Called NYD,N (Not Yet Diagnosed, Nervous) as a code by the army for shellshock.

Attempted Solutions

This condition was not understood at the time, some soldiers who experienced shell shock were accused of cowardice and any were punished, some even shot. Craiglockhart Hospital in Edinburgh was set up and dealt with 2,000 sufferers.



New Wounds

The First World War introduced a wide range of wounds for medical staff to attend to. For example, high explosive shells and shrapnel (fragments of metal) were responsible for 58% of wounds whilst bullets were responsible for another 39%.

60% of shrapnel wounds were to the arms and legs. A common treatment was amputation. Over 41,000 had their limbs amputated.

The high number of head wounds led to the steel Brodie Helmet being introduced. It reduced fatal head wounds by 80%. All soldiers were given it.

Most injuries often got infected due to the bacteria in the soil, causing gangrene. The impact of gangrene was reduced by tetanus injections from the end of 1914.



Gas gangrene could not be cured. It could often kill in a day.

Artillery, gun fire and bombs could break bones, pierce vital organs and destroy tissue. Many never made it to hospital.

Gas Attacks

Gas caused great panic as soldiers were unprepared for it. It wasn't a major cause of death. Only 6000 soldiers died during WW1.

There were 3 types used in the war:

Chlorine: Ypres 1915

Caused death by suffocation. Before gas masks, soldiers soak cotton pads in urine and pressed them to their faces

Phosgene 1915

Used at Ypres. Faster acting than chlorine, killing an exposed person within 2 days.

Mustard Gas 1917

Odourless gas that worked within 12 hours. Caused internal and external blisters and could pass through clothing to burn skin.

Solution

British soldiers were given Gas mask, from July 1915, which became more sophisticated over time.



Medical Progress up to WW1

In the years before WW1 many breakthroughs had occurred in medicine. These were the foundation for medical treatment and advancements in the British sector of the Western Front. These included aseptic surgery, x-rays and blood transfusions.



X-Rays

X-rays were discovered by accident in 1895 by Wilhelm Roentgen.



As early as 1896 radiology (x-ray) departments were set up, like Birmingham General Hospital where Dr. John Hall-Edwards was one of the first doctors to use x-rays to locate a needle in a woman's hand.

Problems with x-rays

- Health risks from x-rays were not understood. Radiation levels were 1,500 times stronger than those today, so patients could lose hair or suffer burns.
- Roentgen's x-ray machine contained a glass tube which was fragile.
- X-rays took about 90 minutes to complete, a long time.
- Big x-ray machines were being developed but immovable.

Blood Transfusions

In the 19th and 20th centuries, blood loss was a huge problem in surgical operations that had got more complex. Blood loss often caused shock and death, which limited progress.

James Blundell did the first experiments on human to human blood transfusions

He developed techniques/equipment so that transfusions were possible by the start of WW1.



Also, Karl Landsteiner discovered blood groups in 1901, e.g. A, B, AB and O, and O was the universal blood group.



This meant donor and patients could be matched.

However there was a main problem:

- Blood could not yet be stored so had to be used straight away and the donor of the blood had to be connected directly to the recipient of the blood.

Aseptic Surgery

Joseph Lister's methods has laid the foundations for aseptic surgery after Louis Pasteur's publication of his germ theory in 1861 and by 1900 most operations were carried out using these methods. It had a huge impact on reducing infection in surgery

Aseptic Surgery included

- All medical equipment was steam sterilised whilst the room was air sterilised to kill germs
- All medical staff had to wash before entering the surgery and wore clean gowns and rubber gloves



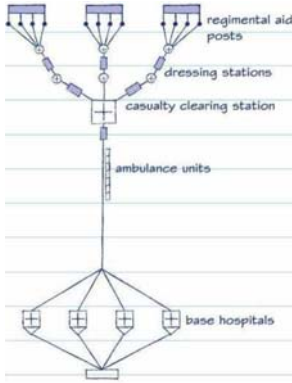
Antiseptic surgery – killing germs in wounds

There are **germs** in the operating theatre but surgeons use methods, e.g. carbolic spray, to stop open wounds being infected.

Aseptic surgery – preventing germs reaching wounds

Cleaning and **sterilising** methods prevent there being any germs in the operating theatre to infect wounds.

The Evacuation Route



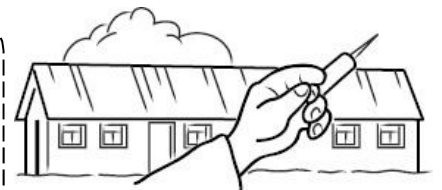
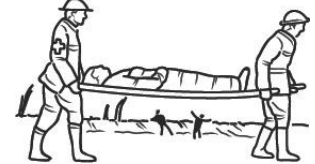
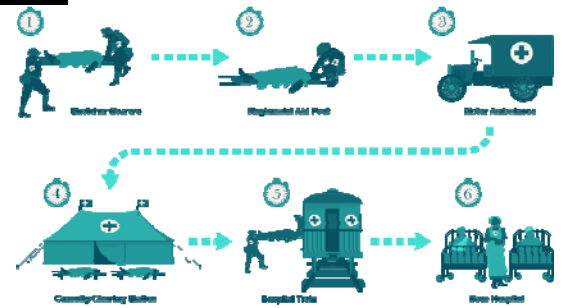
Because of the large number of casualties, the RAMC needed a quick and efficient system to get the wounded from the frontlines to a safe area where they could be treated.

This system was called 'The Chain of Evacuation'

The chain of evacuation

There were **four main stages of the chain of evacuation** but the order of these stages was not necessarily the same for each casualty.

The walking wounded would make their way to the RAP or they would be carried by stretcher bearers. Stretcher bearers would carry basic medical supplies and there were usually 16 men per battalion (1000 soldiers), so there were not enough.



1. RAP: Regimental Aid Post

- Located within 200 metres of the frontline, in communication trenches.
- The purpose of the RAP was to give immediate first aid and get as many men back to the front as quickly as possible. They could not deal with serious injuries – these were sent to ADS.
- Led by a Regimental Medical Officer with some stretcher bearers.

2. Dressing stations (ADS and MDS)

- There was usually an **Advanced Dressing Station (ADS)** within 400m of the RAP and a **Main Dressing Station (MDS)** about half a mile away, usually in tents or bunker to provide protection from enemy shelling. They could only look after men for a week.
- They were staffed by 10 medical officers, stretcher bearers and nurses too. In total, they could deal with about 150 men but often in battles like Ypres (1917) they dealt with 1,000 casualties in 2 days at Hooze.

3. Casualty Clearing Stations (CCS)

- Around 7 miles away from the front, close to the railway and for ambulance wagons.
- They had several doctors, contained operating theatres, x-ray machines and wards. They could deal with up to 1,000 casualties at a time. At the Third Battle of Ypres the 24 CCS treated over 200,000 casualties with only 4% dying.
- The CCS treated the most critical injuries close to the front. This was important as it would stop gangrene infection and so men could be sent back to the front.
- The CCS had a triage system to assess the wounded into three categories:
 - The walking wounded - patch them up and send back to the front.
 - Those in need of hospital treatment - move to a Base Hospital.
 - No chance of recover y- make them comfortable.

4. Base Hospitals

- Situated near the ports on the French/Belgian coast on trainlines and canals.
- They had operating theatres, x-ray machines, laboratories and even specialist centres for treating gas poisoning and head wounds. These specialist wards allowed doctors to become experts in treatment of particular wounds.
- They could treat up to 2,500 patients at once.
- From here, most patients were sent back to England, those with 'Blighty Wounds'.



As the war went on, the efficiency of the system improved significantly and by the end of the war, 67% of men that visited to the CCS were sent back the front again.

Arras Underground Hospital

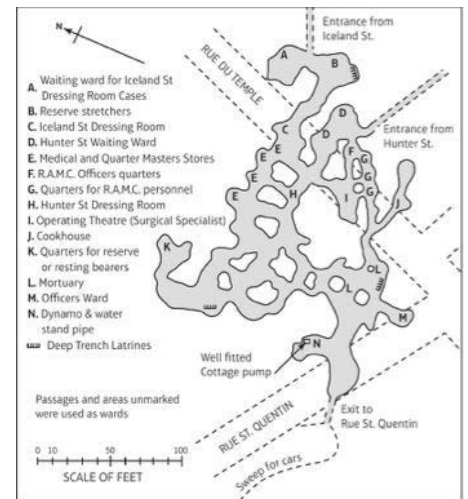
- In 1916, tunnelling began under the town of Arras with a fully working hospital built in 800m of tunnels. It was nicknamed Thompson's Cave after an RAMC officer.
- It was essentially a Dressing Station close to the front, where soldiers would move through the chain of evacuation.



The hospital included:

- waiting rooms for the wounded
- 700 spaces for stretchers to be used as beds
- an operating theatre
- a mortuary
- electricity and a water supply

- The hospital was abandoned during the Battle of Arras, 1917 when it's water supply was destroyed by a shell.



The role of the RAMC and FANY



The **Royal Army Medical Core (RAMC)** was the branch of the army responsible for medical care. It organised and provided medical treatment to the wounded and sick whilst being responsible for keeping men healthy.

Throughout the war, its numbers increased due to amount of wounded.

In 1914, there were 9,000 men and by 1918 they had 113,000 who were doctors, stretcher bearers etc

Well trained nurses from Queen Alexandria were allowed to join, but only 300 of them in 1914. By 1918, there were 10,000 and many volunteer cooks, cleaners and washers.



The **First Aid Nursing Yeomanry (FANY)**

was the first women's voluntary organisation to send volunteers to the Western Front.

The first 6 women went in 1914 and over 500 women volunteered to provide frontline medical support.

FANY helped by driving ambulances, driving supplies to the frontline and setting up a mobile bath units that could bathe up to 40 men an hour!



One unit ran the Calais ambulance unit, with 22 drivers and 12 ambulances.

FANY paved the way for VAD (Volunteer Aid Detachment) nurses to help medical services.



New Techniques in the Treatment of Wounds

Major problem for the RAMC was dealing with infections caused by gas gangrene.



It was not possible to perform aseptic surgery in the Dressing Stations and Casualty Clearing Stations for two reasons:

1. The contaminated conditions
2. The large number of wounded men

New methods had to be found to match the problems facing medics on the Western Front.



<p><u>Amputation</u></p> <p>If antibiotics or wound excisions failed to stop the spread of infection, the only way left was the amputation of limbs. By 1918, over 240,000 men had lost limbs to simply prevent their death.</p>	
<p><u>Wound excision or debridement</u></p> <p>This was cutting away the dead, damaged and infected tissue from around the wound to reduce infection. This needed to be done as quickly as possible to prevent infection spreading. All shell/bullet fragments were also removed</p> <p>After the excision the wound needed to be closed with stitches, often antiseptics were used to kill infection.</p>	
<p><u>The Carrel-Dakin method</u></p> <p>Antiseptics such as carbolic lotion were inefficient when treating gas gangrene. By 1917, the Carrel- Dakin method was the most effective solution. This involved putting sterilised salt solution in a wound through a tube. The solution only lasted for 6 hours and had to be made as soon as it was needed. This was a problem if large numbers of soldiers needed treatment.</p>	

Source A From the diary of B. C. Jones, 1915-16. Jones served with the Royal Field Artillery in France until 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 on over side of knee 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 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

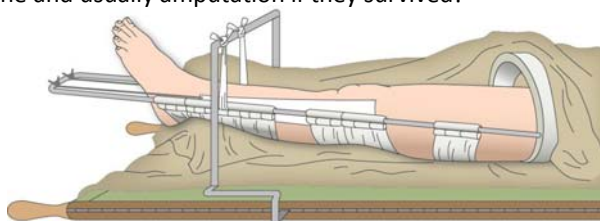
The Thomas Splint

In 1914/1915 men with a gunshot or shrapnel wound in the leg would have a very small chance of survival (20%).

The current splint that was used to secure the leg did not work. It did not keep the leg straight so by the time injured soldiers reached the Casualty Clearing Station, it caused blood loss, shock, gangrene and usually amputation if they survived!

Hugh Thomas invented the Thomas Splint, which was tested in a hospital in London. This split kept the leg straight so the bone healed in the correct position.

From December 1915, medical practitioners on the front were trained in on how to use the Thomas Splint. Survival rates from this type of wound increased from 20-80%.



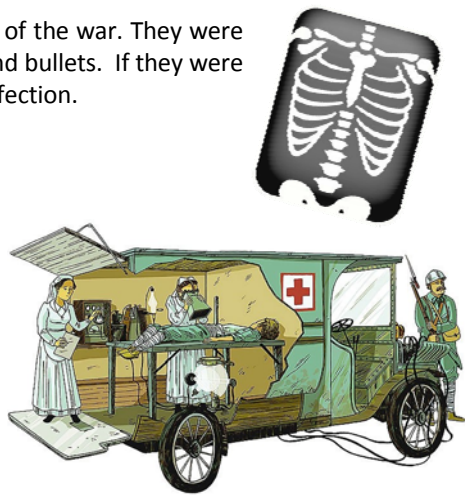
New Techniques in the Treatment of Wounds

Use of mobile X-ray units

X-rays were used from the start of the war. They were mainly used to show shrapnel and bullets. If they were removed this would help stop infection.

Two x-rays would be taken from different angles and this would help the surgeon identify the location and shape of the shrapnel, making it easier to extract.

6 mobile vans were used throughout the British sector of the Western Front, called 'Petit Curies' after Marie Curie who created them.



WEAKNESS

There were a number of weaknesses:

- X-rays could not detect all objects in the body, such as fragments of clothing in the wound.
- The length of time it took to perform an x-ray.
- Tubes in the x-ray overheated quickly, meaning it could be only used once an hour. To combat this, three machines were used in rotation.
- The mobile vans took a while to set up and the picture quality was poorer than in Base Hospitals but they could still see shrapnel.

Blood Transfusions

In the British Sector blood transfusions were introduced by Lawrence Robertson in 1915 in the base hospital at Boulogne.



He used the human to human method to prevent shock of blood loss in casualties. Many injured soldiers recovered using this method.

By 1917 blood transfusions were being carried out in the Casualty Clearing Stations because they had been so successful at the base hospitals.

Geoffrey Keynes, doctor and lieutenant in the RAMC designed a portable blood transfusion kit that was used to provide blood transfusions closer to the frontline.



This kit could store blood which could be used to take blood closer to the front line, meaning soldiers received blood sooner, stopping their bodies going into shock.

From 1915, Keynes was using his kit across the Western Front in Casualty Clearing Stations on the front.

The Blood Bank at Cambrai

Due to the identification of different blood groups and the use of type O as a universal donor there was less risk of using the wrong blood type during transfusions.

There were still problems of there not being enough blood as it could not be stored.

As the war continued, some advances were made:

- In 1915, Richard Lewisohn found that by adding sodium citrate to blood stopped it clotting so it could be stored.
- In 1916, Francis Rous and James Turner found that adding a citrate glucose solution to the blood meant it could be kept refrigerated up to 4 weeks.



In preparation for the Battle of Cambrai, 1917, Oswald Robertson stored 22 units of blood in the first 'blood depot'. 20 Canadians were treated using the blood, 11 survived.



This was first time blood was used to treat soldiers in shock and it showed its potential to save lives.

Blood at CCS's could not be used to make a huge difference to the survival of those injured on the frontline.

New Techniques in the Treatment of Wounds

Increase in head injuries

Approximately 20% of all injuries in the Western front were to the head, neck and face.

As the war went on new methods of treatment for head injuries were developed such as surgery to the eye, face, ear, nose and throat, and brain and plastic surgery.



Brain Surgery

Injuries to the brain were almost always fatal at the start of the war because:

- very few doctors had experience of neurosurgery before the war.
- infection in the head was common and it was difficult to move men through the chain of evacuation.

An American neurosurgeon called Harvey Cushing developed new techniques.

- He experimented with use of magnets to remove metal fragments from the brain.
- He also used a local anaesthetic (patient awake but wounded area numb) instead of a general anaesthetic (patient asleep) to avoid brain swelling.



Cushing operated on 45 patients in 1917 and 71% survived, compared to the usual survival rate of 50%.

Improving experience and observations of different patients quickly led to improvements in treatments.



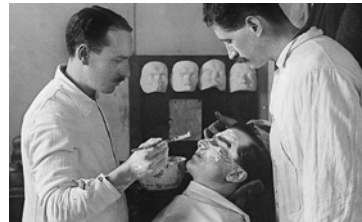
Plastic Surgery

A New Zealand ear, nose and throat surgery, Harold Gillies developed the use of plastic surgery during the war.

Gillies was interested in how to replace and restore those parts of the face that had been destroyed.

He devised new operations to overcome problems:

- Delicate surgery could not be completed in France, so Queen's Hospital in Kent opened in 1917
- Using skin grafts (taking skin from one area to graft onto the wounded area)
- Using jaw splints, wiring and metal replacement cheeks for facial reconstruction



After the Battle of the Somme in 1916, Gillies personally dealt with about 2,000 cases of facial damage.

By 1915, 7 hospitals in France specialised in plastic surgery, especially head injuries.

In total, over 12,000 plastic surgery operations were carried out throughout the war.



Observation	New Method
Men who were operated on quickly were more likely to survive.	Some Casualty Clearing Stations became specialist brain surgery centres. During the Third Battle of Ypres, all head injuries went to the CCS at Mendinghem.
It was dangerous to move men quickly after an operation.	Patients would stay at the CCS for three weeks after surgery.
Injuries may be hiding more severe injuries.	All head wounds would be carefully examined.

There was a move from ether and chloroform anaesthetics to gas and oxygen which was safer and gave better results.



Sources which could be used to follow up information

<u>Type of Source</u>	<u>What can be learnt from this type of source?</u>
National Army Service Records for individual soldiers (NB many were destroyed during a WWII bombing raid but many survive and are available from the National Archives)	Dates of service; where soldiers fought; record of wounds, treatments and hospitals admitted to, discharge records, death record.
Pension record cards (currently being digitised)	Details of war related wounds, sickness and injuries and post-war medical board results.
National newspaper reports	Battles, number of injuries, deaths etc. recorded, eye-witness accounts, government statistics – should be fair but may be one-sided. Propaganda often published as fact. Censorship relaxed during war.
Government reports on aspects of the war	Departmental overview of aspects of the war – spending on munitions, problems with transportation etc.
Medical articles/journals by doctors and nurses who took part in the war e.g. British Medical Journal	Although BMJ is produced for medical professionals it provides an insight in the medical care of soldiers e.g. articles like 'Head injuries in War', 'Some notes on Trench Fever'. Recollections of the work undertaken – injuries of soldiers, conditions, chain of evacuation, new techniques and technology etc.
Personal accounts of medical treatments by soldiers, doctors, nurses or others who were involved e.g. letters, diaries	Often emotive accounts – detailing feelings and thoughts as well as facts. Only give one person's view of events or a snapshot of what was happening at one particular time or place in the war.
Photographs	Show images of what is happening at that exact moment in time although could be staged and not necessarily typical of conditions across the Western Front or throughout the war.
Hospital/RAMC records	Date of admittance, records of injuries and care given, discharge notes, death records, new techniques attempted.
Army statistics	Numbers fighting in each battle, killed or injured.

