*This podcast helps you to understand the context of the British sector of Western Front and the theatre of war in Flanders and northern France: the trench system – its construction and organisation, including frontline and support trenches; the use of mines at Hill 60 near Ypres and the expansion of tunnels, caves and quarries at Arras; significance for medical treatment of the nature of the terrain; and problems of the transport and communications infrastructure.*

**Person 1:** What can you tell me about the conditions on the Western Front?

**Person 2:** Conditions everywhere on the Western Front were the same. Trenches and No Man’s Land were often muddy places, not everywhere fits that generalisation.

**Person 1:** Whilst it is true that the Trenches and No Man’s Land were often muddy places many trenches at different parts of the war were far from ideal for reasons such as the impact of shell-fire or flooding. But not everywhere fits that generalisation. For example: the third Battle at Ypres, 1917 was fought in awful conditions. British trenches were located in low lying ground with heavy soil that easily became water logged and flooded. During the battle conditions became even worse as record breaking quantities of rain fell and the drainage system was blown up. In contrast the Battle of Arras, also in 1917, was mainly dry because the ground was chalky rock and drained easily. There were also times when trenches were less important to the war. Fighting by 1918 was much more mobile. For example during the German Spring Offensive and the later in British and allied advance.

It is very important that you are specific and don’t use generalisations. Let’s try another question. Explain the tactic of tunnelling.

**Person 2:** Tunnelling featured in a numbered of battles such as the battle for Hill 60 near Ypres in April 1915 and the Battle of Arras. They were used to attack the enemy.

**Person 1:** A better response, you have referred to specific battles but made the mistake that the tactic of tunnelling was similar. It is vital you note impacts of tunnels were different. For example, during the battle for Hill 60 near Ypres in April 1915 tunnels were used as a form of attack by the British. They dug into and under the hill the German troops occupied. At the Battle of Arras tunnels were also used but the purpose was not the same. Tunnels provided soldiers accommodation that included water and electricity, a hospital with 700 beds and operating theatres. They also created shelter against artillery fire and routes to convey troops to the front in secrecy.

Focus on the next question and use more examples. Give examples of weapons used in battles.

**Person 2:** As war advanced so did weaponry. Two battles which highlight advances are the second Battle of Ypres, 1915 and the Battle of Cambrai, 1917. During the second battle of Ypres German troops launched the first extensive and effective use of poison gas. It took Allied soldiers completely by surprise and without any defences, caused mass casualties. Whilst the Battle of Cambrai saw the first large scale attack by tanks, over 450 tanks were used against the German Front Line. The tanks proved initially effective as there was no preliminary bombardment. The assault was a surprise.

**Person 1:** An excellent answer. Remember avoid generalisations, use specific examples and draw comparisons between battles.

The final generalisation to avoid is that ‘trench systems were the same along the western front’. Many trenches at different parts of the war were far from ideal for reasons such as the impact of shell-fire or flooding. There were also times when trenches were less important to the war. Fighting by 1918 was much more mobile for example during the German Spring Offensive and then later in British and allied advance.

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*This podcast helps you to understand conditions requiring medical treatment on the Western Front, including the problems of ill health arising from the trench environment; the nature of wounds from rifles and explosives; the problem of shrapnel, wound infection and increased numbers of head injuries; the effects of gas attacks.*

**Person 1:** During the fighting on the Western Front a wide range of illnesses arose from the trench environment. Let’ see how many you know… ‘Pyrexia of Unknown Origin or PUO’.

**Person 2:** Please can I have a clue?

**Person 1:** Also known as ‘trench fever’ or ‘relapsing fever’.

**Person 2:** Soldiers’ symptoms included headaches, shivering and pain in the bones and joints. It lasted five days but relapses were common with men spending at least a month in hospital.

**Person 1:** How did it spread?

**Person 2:** It spread via lice that lived in the seams of clothes and in blankets. To minimise their spread, soldiers’ clothes were disinfected and bathhouses were built. Some men found the best way was to pick lice off their clothes by hand!

**Person 1:** Describe ‘trench foot’.

**Person 2:** Soldiers’ feet would become numb, swollen and turn blue. The problem quickly deteriorated and could lead to gangrene. It was caused by standing in waterlogged trenches for hours.

**Person 1:** How was it treated?

**Person 2:** Senior officers ordered that every man should have three pairs of socks and change them twice a day as well as rubbing whale oil on their feet.

**Person 1:** What is ‘NYD.N’?

**Person 2:** Army code for shell shock.

**Person 1:** How did they treat it?

**Person 2:** Soldiers were mainly given rest, food and talks to calm them down. Later in the war some hospitals developed specialist centres for treating the condition. At first, soldiers were returned to Britain for treatment but it was feared that shell shock would be contagious and from 1916 men were treated in France near the Front.

Ok now my turn to test you… One of the main problems facing the medical services was the vast number of casualties and more severe wounds due to the development of weaponry. Name types of weapons used.

**Person 1:** Rifles, machine guns, shrapnel, artillery and gas.

**Person 2:** Tell me about the nature of the wounds these weapons caused.

**Person 1:** Artillery was the biggest killer. Shells removed limbs or inflicted major internal damage, often causing rapid blood loss. Shell fragments were very hard to find and proved deadly as they carried infections deep inside the body. Machine guns and rifle bullets broke major bones and pierced vital organs. The blast impact from these weapons often damaged or destroyed tissue and bone around the initial impact site. The number of head injuries was extremely high as it was not until 1916 that metal helmets were widely used. Gas did not kill as many men as many people think; it accounted for fewer than 5 percent of British deaths. Although the effects were bad, once gas masks were developed it was easy to defend against.

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*This podcast helps you to understand* *the work of the RAMC and FANY. The system of transport: stretcher bearers, horse and motor ambulances. The stages of treatment areas: aid post and field ambulance, dressing station, casualty clearing station, base hospital. The underground hospital at Arras.*

**Teacher:** Describe the work of the Royal Army Medical Corps (RAMC).

**Student:** All medical officers and men in 1914 belonged to the RAMC. It organised and provided medical care for soldiers. It was responsible for keeping all men healthy through good sanitation as well as treating the wounded and sick.

**Teacher:** Describe the role of the First Aid Nursing Yeomanry (FANY)?

**Student:** FANY worked as ambulance drivers and nurses, working for the Belgium army until 1916 when the British also recruited them. One unit ran the Calais ambulance convoy for two years; others carried supplies to the front and drove motorised kitchens to supply food.

**Teacher:** Name the systems of transport used for injured soldiers on the Front.

**Student:** The nature of transport improved as the war advanced. Types of transport included motor ambulances, horse ambulances, vital in muddy ground, ambulance trains and river barges.

**Teacher:** Describe the work of stretcher bearers.

**Student:** Recover the dead and wounded. They carried basic supplies including morphine. They had to deal with mud, shell craters and crowded twisting trenches. There were often not enough bearers; with only sixteen bearers per battalion of up to one thousand men. It took four to carry a stretcher and in the worse conditions like Ypres up to eight.

**Teacher:** Describe the Regimental Aid Post (RAP).

**Student:** The RAP consisted of the battalion Regimental Medical Officer and a team of up to thirty orderlies. They worked very close to the frontline and moved forward when casualties were expected in an attack. The Regimental Medical Officer would distinguish between the lightly wounded and those needing further treatment. They worked in poor conditions and often under fire.

**Teacher:** Briefly describe field ambulances and dressing stations.

**Student:** A large mobile unit with medical officers, support staff and from 1915 nurses. They received the wounded from the RAP and used a triage system. All serious conditions were sent on to the CCS.

**Teacher:** Describe a casualty clearing station (CCS).

**Student:** A large well-equipped medical facility located even to twelve miles from the fighting. By 1917 they were performing more operations than hospitals. They contained operating theatres, x-ray machines and wards. They would deal with around a thousand casualties at a time.

**Teacher:** What were Base Hospitals?

**Student:** Civilian hospitals or large converted buildings near railways. By 1918 some had up to 2500 patients. They had operating theatres, laboratories for identifying infections and X-ray departments.

**Teacher:** Briefly describe the underground hospital at Arras.

**Student:** It was located in an underground town that soldiers had dug out using an existing tunnel structure in 1916. The hospital had running water and electricity, 700 beds and operating theatres.

**Teacher:** That’s great! Well done.

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*This podcast helps you to understand* *the work of the RAMC and FANY. The system of transport: stretcher bearers, horse and motor ambulances. The stages of treatment areas: aid post and field ambulance, dressing station, casualty clearing station, base hospital. The underground hospital at Arras.*

**Person 1:** How much do you know about who treated wounds during the First World War? Let’s put your knowledge to the test.

**Person 2:** I’m ready.

**Person 1:** Tell me about the nursing organisations who cared for the wounded.

**Person 2:** The Queen’s Alexandra’s nurses were the main group of military nurses in 1914. Initially, they were the only nurses who were accepted by the British army, but as the war continued volunteer nurses were allowed to support the army. The Volunteer Aid Detachment, were an example of a volunteer nurse organisation. Their work included high-level nursing as well as cleaning duties.

**Person 1:** Have you forgotten about the First Aid Nursing Yeomanry?

**Person 2:** Not at all! This group worked for the Belgian army and later the British, carrying supplies to the front, driving ambulances and providing nursing care.

**Person 1:** Tell me about the RAMC.

**Person 2:** All medical staff within the army belonged to the Royal Army Medical Corps. The RAMC organised the medical care provided by the army and included doctors, ambulance drivers and stretcher-bearers. Many of the doctors recruited had never worked in a theatre of war, and were faced with many challenges in providing medical care.

**Person 1:** Very good – but now I want to know exactly what happened to wounded soldiers. Have you memorised the evacuation route?

**Person 2:** Okay, right… The wounded soldier would first be collected by stretcher bearers, who would probably have given him basic medical care, before quickly removing him from danger. The wounded solider would be taken to a Regimental Aid Post, where the Regimental Medical Officer would decide if serious medical care was required. If the wound was severe, the soldier would be sent to a Field Ambulance, where they would attend a dressing station. The seriously injured would be transported by ambulances, which were horse-drawn or motorised, to a Casualty Clearing Station. The CCS were usually several miles behind the front line, and well-equipped with x-ray machines and operating theatres. Soldiers might also attend a base hospital, which was usually a converted civilian hospital.

**Person 1:** Excellent, but can you give me an example of a base hospital?

**Person 2:** Yes, the underground hospital at Arras. In 1916, the army extended an existing quarry to create this hospital large enough for 700 beds.

**Person 1:** Well, done, I’m impressed! Thank you for sharing your knowledge with us.

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*This podcast helps you to understand* *the significance of the Western Front for experiments in surgery and medicine: new techniques in the treatment of wounds and infection, the Thomas splint, the use of mobile x-ray units, the creation of a blood bank for the Battle of Cambrai.*

**Person 1:** It’s 1918, and joining me here today is Dr Tanner who treated the wounded on the Western Front. Tell us doctor, how did medical care change over the course of the war?

**Person 2:** Where to start… well, some of the new technology really helped… We couldn’t do without the mobile x-ray machine. We didn’t have them until 1916, but they’ve changed everything for our patients. We could identify even the tiniest fragment of shrapnel, which in turn reduces the risk of an infection.

**Person 1:** Excellent news! What about this Thomas Splint we’ve all been hearing about?

**Person 2:** Yes, yes the Thomas splint. Good old Hugh Owen Thomas, a great man – a Liverpudlian, isn’t he?

Well, his invention vastly reduced the death rate for wounds to the thigh-bone – also known as the femur – by preventing the broken ends of bone from causing blood loss. We’ve only had this splint since 1916 onwards, but it’s revolutionised how we treat thigh-bone injuries.

**Person 1:** Thank you, doctor. Can you tell us a little about blood transfusions?

**Person 2:** Oh, wonderful innovations… I served in Cambrai and I saw the difference blood transfusions make. Now the blood can be transported safely and it doesn’t clot before we give it to the patient, we’ve been able to prevent deaths of shock and blood loss.

**Person 1:** I know you aren’t a surgeon, doctor, but can you tell us about changes in surgery?

**Person 2:** We really had to change the way we did surgery, given the amount of operations conducted. Infections were a serious area of concern for us, as aseptic surgery was not an option. So, we used carbolic acid to kill the bacteria in the soldiers’ wounds. Later on, we started using the Carrel–Dakin method. Also, we performed much deeper surgery to get rid of all the fragments of shrapnel, which reduced the incidents of gangrene and tetanus.

**Person 1:** What about plastic surgery doctor? There are reports there have been innovations in this area too.

**Person 2:** Yes, well some of my colleagues have developed a kind of skin graft, and some surgeons are using metal plates as replacement cheeks!

**Person 1:** Thank you doctor for your time and for sharing this information about the changes to treatment on the Western Front.

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*This podcast helps you to understand* *the historical context of medicine in the early twentieth century: the understanding of infection and moves towards aseptic surgery; the development of x-rays; blood transfusions and developments in the storage of blood.*

In order for you to explain how the First World War impacted medicine, it is important that you know what medical care was like just before the war. How developed were surgical techniques before the war? Did doctors use x-rays? How did medical staff try to treat blood loss?

Surgery had been revolutionised by Lister’s development of antiseptic surgery. By using carbolic acid to kill bacteria in wounds and by publishing his book about this in 1867, Lister helped to prevent deaths due to infection. By the 1890s, aseptic surgery was being developed, which meant that germs were prevented from entering wounds by ensuring the operating theatre was cleaned thoroughly and all equipment sterilised. This was a significant step in the modernisation of surgery.

X-ray machines were used by hospitals from 1896, X-rays having been discovered by a German scientist Wilhelm Roentgen. Hospitals, including the London Royal Hospital, used X-rays to find out if a bone was broken, or if a wound contained fragments of metal. This helped doctors to treat these injuries much more effectively.

In 1900 blood transfusions were made possible by the discovery of the existence of blood groups. The Austrian doctor Karl Landsteiner realised that some blood groups were incompatible and that this was the reason why some blood transfusions failed. Landsteiner’s discovery meant that blood could be safely donated to a patient, and doctors could be confident that it would work – as long as they knew the blood groups of the donor and the patient. Blood, however, could not be removed from the body and stored for later use. When exposed to air, it would clot and become almost solid. Therefore, transfusions could only take place if the donor was in the same room as the patient, and donated blood directly to them. This worked well in peacetime, as there was time to organise a donation and usually enough donors to meet the needs of patients. However, once war became a reality in Europe, this was not efficient enough to deal with the enormous number of casualties in need of blood transfusions. This, as well as the use of X-ray machines and surgical techniques, all underwent huge development as a result of the pressures of war.

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