

The British Sector of the Western Front, 1914-1918, part II: injuries and treatments

Key Treatments	
X-rays	<ul style="list-style-type: none"> • A type of electromagnetic radiation that can provide imaging of the inside of the body. • Discovered by accident in 1895 by Wilhelm Roentgen, a German physicist. • X-rays were used in the war to identify shrapnel and bullets in wounds.
Blood Transfusions	<p>Blood taken from a healthy person and given to another person. Developed as follows:</p> <ul style="list-style-type: none"> • Almroth Wright, a British scientist, prevents blood from clotting in 1894 by using a solution of acids. • Discovery of blood groups in 1901 by Karl Landsteiner followed by the identification of type "O" blood by Reuben Ottenberg in 1907 as the universal blood group. • In 1916, Francis Rous and James Turner develop a method for storing blood for up to 4 weeks by adding a citrate glucose solution to it. Stored blood was used to treat injured at the battle of Cambrai in 1917.
Brain surgery	<ul style="list-style-type: none"> • 20% of all wounds on the Western Front were to the head, face and neck. These were often fatal. • Harvey Cushing, an American neurosurgeon, developed new techniques in brain surgery using a magnet to remove metal fragments from the brain. • He also operated using local rather than general anaesthetic, to reduce the risk of swelling in the brain.
Plastic surgery	<ul style="list-style-type: none"> • Developed by a New Zealand doctor called Harold Gillies who was sent to the Western Front in January 1915. • Gillies saw many head injuries that caused severe disfigurement and became interested in facial reconstruction. • Plastic surgery was carried out in Britain, mainly at the Queen's Hospital in Sidcup. • By the end of the war, nearly 12,000 plastic surgery operations had been carried out there.
Thomas Splint	<ul style="list-style-type: none"> • Created in the late 19th century by Robert Jones and his uncle Hugh Thomas in their medical practice, this splint was designed to stop joints from moving. • The introduction of the Thomas splint to the Western Front in December 1915 helped increase survival rates for fractures from 20% to 82%.
Treatment of wounds to prevent infection	<ul style="list-style-type: none"> • Wound excision or debridement: The cutting away of dead, damaged or infected tissue from a wound to stop infection spreading. After excision, the wound would be closed by stitching. • Carrel-Dakin Method: A method for treating wounds with a sterilised salt solution through a tube. • Amputation: This was done as a last resort to stop infection from spreading.
Aseptic surgery	<p>Surgery performed under sterilised conditions to prevent infection from germs. By the start of the 20th century, aseptic surgery was achieved by:</p> <ul style="list-style-type: none"> • medical staff washing hands and face before operations • wearing rubber gloves and gowns • sterilising air by pumping it through a heating system • sterilising instruments using an autoclave

Chain of Evacuation	
<p>The main stages in the chain of evacuation were:</p> <ol style="list-style-type: none"> 1. Regimental Aid Posts (RAP) 2. Dressing Stations 3. Casualty Clearing Stations 4. Base hospitals 	
Regimental Aid Post (RAP)	Located within 200m of the front line , in deserted buildings or communication trenches. Manned by a medical officer and stretcher bearers with first-aid knowledge. Its purpose 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 .
Dressing station	Located in abandoned buildings or dugouts about half a mile from the front line . Staffed by medical officers, stretcher bearers and nurses. Injured men would walk to the dressing station or be carried there by stretcher bearers.
Casualty Clearing Stations (CCS)	Located far enough from the frontline to provide safety against attack but close enough to be accessible to ambulance wagons. Medical officers would operate on critical injuries at the CCS. When arriving, wounded soldiers were divided into 3 groups (triage) to help medical staff make decisions about their treatment: <ol style="list-style-type: none"> 1) walking wounded 2) those in need of hospital treatment 3) those unlikely to recover from their wounds
Base hospitals	These hospitals were located near the French or Belgian coast so that the wounded could be easily transported back to Britain . As the war progressed, soldiers' wounds were increasingly dealt with at Casualty Clearing Stations and not at base hospitals because wounds had to be dealt with quickly before gangrene set in. This meant base hospitals were responsible for continuing the care of the wounded before they were either sent back to Britain or returned to the battlefield.
Key Medical Conditions & Terminology	
Gangrene	A condition where a loss of blood supply causes body tissue to die . Gangrene can occur as a result of an injury and typically starts in toes, feet, fingers and hands. Treated by surgical removal (or amputation) of the affected area. Gas gangrene is an infection that produces gas in the gangrenous wound. The bacteria for gas gangrene spread from the soil on the Western Front, which had been heavily farmed with fertiliser before the war.
Shellshock	A condition that was little understood at the time of the war. Soldiers experienced headaches, nightmares, loss of speech, shaking and complete mental breakdown . Many men were treated for shellshock at the Craiglockhart hospital in Edinburgh.
Shrapnel wounds	When shells exploded, shrapnel (metal fragments from the shells) travelled at fast speeds over wide areas, causing injuries to anyone in their way.
Trench fever	Flu-like condition spread by lice in the trenches.
Trench foot	Painful swelling of the feet caused by standing in cold mud and water, which could lead to gangrene . Prevention included keeping feet dry, changing socks regularly and rubbing whale oil on the feet to protect them.
Autoclave	Machine invented in 1881 which sterilised surgical instruments in boiling steam .