Medicine on the Western Front 1914-18

Historical Context

By 1900 most surgery = **aseptic** (in sterile conditions); but not possible on Western Front
X-ray developed in 1895. But new technology was expensive, fragile, difficult to move.
Blood transfusion had been developed to prevent death from blood loss. But blood could not be stored so had to be direct from donor to patient.

The Western Front

By end 1914 much of N France and Belgium occupied by Germany, became a static war based on defensive trenches.
Defended by barbed wire and machine gun.
Artillery + gas used to weaken enemy; then troops would attack across No Man's Land.
Communications trenches would connect front line with support/reserve trenches further back.
Soldiers would rest / shelter from bombardment in dugouts.

Key battles

1st Ypres (1914). British lost +50,000 troops. However, by keeping control of the town of Ypres, the British still controlled the English Channel ports, so could supply troops.

2nd Ypres (1915). Germans used Chlorine gas against British = first use of gas as a weapon

Somme (1916). Major British attack to divert German attention from Verdun. First day = 20,000 British dead and 58,000 casualties. Over 5 months 400,000 British casualties. First use of tanks (slow, unreliable) and creeping barrage (artillery fired just ahead of advancing troops).

Arras (1917). Miles of tunnels had been dug in Arras area to shelter from German attack. 24,000 troops who had been hiding in tunnels attacked Germans. Made immediate progress, but then stopped and suffered 160,000 casualties.

3rd Ypres. Major attempt to push Germans back from Ypres. Terrible weather conditions = waterlogged ground. British advanced 7 miles, 245,000 casualties.
Cambrai (1918)Les warning from artillery barrage; first mass use of tanks. More effective.

Medical problems

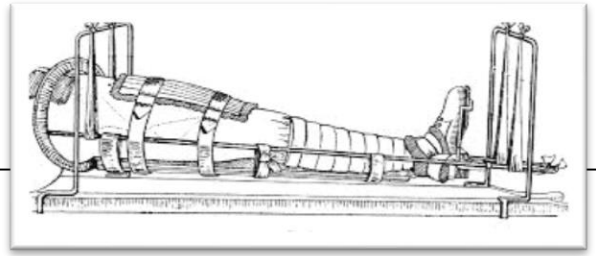
Rifles and explosives:
artillery/shrapnel = 58% of all injuries; bullets = 38%. Mainly arms / legs – Brodie Helmet introduced in 1915 to protect head.
when shrapnel or bullet entered body, often included bit of fabric from uniform.
Region of Western front had lots of tetanus and gas gangrene bacteria.
Anti-tetanus injection from 1914.
No cure for gas gangrene.

Gas.
Chlorine, phosgene and mustard gas. Used first by Germany, but by both sides.
Only 6,000 died from gas, but caused major panic.
Soldiers issued with gas masks – got more sophisticated as war went on.

Trench Foot Swelling caused by being constantly wet. Amputation was only solution if gangrene developed.

Trench Fever flu-like symptoms, caused by lice. Approx 500,000 men affected.

Shellshock nightmares, tiredness, headaches, shaking, mental breakdown caused by stress. Affected 80,000, but many were accused of cowardice.



Key terms

Artillery – big guns fired shells at enemy

Dugout – hole dug in side of trench where soldiers would shelter / rest

FANY – female nurses. First arrived in Western Front in 9114, but British army would not allow them. From 1916 +450 used by British to drive ambulances

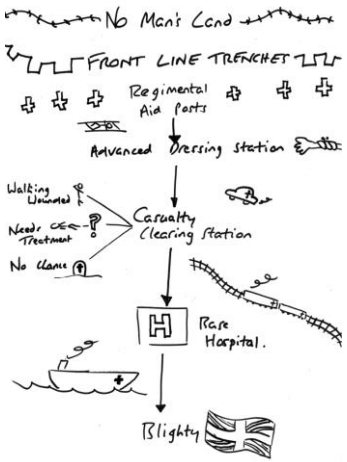
Gas gangrene – infection found in soil of Western Front. Could not be cured.

Shrapnel –fragment of shell forced into the body by an explosion

Thomas Splint – splint designed to stop broken leg bone from breaking skin

Transfusion – passing blood from one person to another

Evacuating the injured



Transport:
Faster a soldier was treated, the higher the chances of survival.
Roads destroyed by artillery, so moving injured troops difficult.
Casualties carried from Front Line by **stretcher bearers**.
At first **horse-drawn** ambulances used, but bumpy ride often made injuries worse. British government sent **motor ambulances** – but they could not be used in muddy terrain.
Canal barge or **ambulance train** used to take large numbers of wounded to Base Hospitals.

Stages:
Regimental Aid Post: basic first aid in communication trenches near front line
Advanced/Main Dressing Station: 400m-1/2 mile back. In dugout, abandoned building or tent. 10 medical officers, could tend to casualty for one week.
Casualty Clearing Station: could operate on most serious injuries. Often in factory buildings, near train line. 3rd Ypres: 24 CCSs treated 200,000, only 3.7% died. Later in war dealt with more infections, as needed quick treatment.
Base hospital: Located on French/ Belgian coast. Men treated until they could return to fighting, or travel back to Blighty. Surgeons would specialise in a particular type of injury and just treat those casualties.

Medical experiments

Wound excision = cutting away infected flesh to stop spread.
If failed, amputation. +240,000 men lost limbs.
Carel-Dakin Method = salt water solution passed over wound. But solution could not be stored, so did not have supplies if lots of casualties.

When broken bone from leg pierced skin caused major blood loss / infection. Thomas Splint developed to keep the leg from moving when being transported to CCS for operation. Survival rate increased from 20%-80%

Mobile x-ray units could be moved to where they were most needed. Not as good as the static units, but helped locate shrapnel.

From 1915 blood transfusions carried out to stop patients dying of blood loss. By 1917 routine blood transfusions given as CCSs to treat shock.
1917 for the first time blood was stored at the blood bank at Cambrai. Stored blood used on 20 wounded patients, 11 survived.

Brain surgery. Approx 20% of injuries to head. Very little neurosurgery (brain surgery) before war. But doctors began to try new methods.
Harvey Cushing = magnets to remove shrapnel and use of local anaesthetic to reduce swelling of brain.

Plastic Surgery. Harold Gillies involved in research of new methods of facial reconstruction to rebuild the faces of men with severe facial wounds.