Outline

Thesis: Medical advances with blood transfusions, vaccines, and antibiotics caused a shift from infection being the most significant cause of combat fatalities to trauma causing the most deaths.

I. Introduction: Not all fatalities in war are combat related.
   A. There are two types of fatalities in war
      1. The first is death caused by infection.
         a. “Camp diseases” like dysentery, cholera, typhus, typhoid fever, smallpox and the influenza
      2. The second type of fatality is death caused by trauma injuries.
         a. Trauma wound is known as an injury to living tissue caused by an extrinsic agent.
         b. Examples of extrinsic agents include: bullets, shrapnel, or blunt force injuries.

II. There are two Eras of War
   A. Infection Era (1775-1918) This era was plagued by fatalities due to infection.
      1. WWI was the pinnacle of the Infectious era.
      2. The ratio of infectious deaths to combat deaths was 4.34:1 in the wars previous to WWII and the medical advances.
         a. The WWI ratio was 1.1:1
B. Trauma Era (1941-Present) This era presented a shift in which more soldiers died from battle injuries than infections.

1. WWII was the beginning of the Trauma Era of war.
   a. There were .06 infectious deaths to each trauma related death.

III. Types of Advances

A. Blood Transfusions

1. Blood transfusions are the transfer of red blood cells, white blood cells, platelets, and plasma from one individual to another.
2. There were significant problems with transfers before 1930.
3. The discover of blood types in 1930 allowed doctors to successfully transfer blood without adverse side effects.
4. This practice became common in WWII and allowed field surgeons to save more lives

B. Vaccines

1. Vaccines are weakened or dead strains of viruses.
2. Even though they were originally developed in China in 200BC they were not officially put into large-scale practice until the 1940’s.
3. Soldiers in WWII were immunized against smallpox, typhoid fever, cholera, plague, tetanus, yellow fever, and typhus.

C. Antibiotics

1. Antibiotics are considered to be the miracle drug of the 20th century.
2. In 1929 they were invented by Alexander Fleming.
James Wanamaker

3. Antibiotics prevented and destroyed foreign bacteria in the body thus preventing infections after an injury.

IV. Quantifiable Results of the Advances

A. The transition from WWI to WWII showed a dramatic drop in fatalities due to infections.
   1. Tetanus had a 20-58% mortality rate in WWI in WWII there were only 11 cases and 4 fatalities among 11 million soldiers. This was a direct impact of vaccines and antibiotics.
   2. After a yellow fever vaccine was developed in 1940 not a single US soldier contracted the disease.

B. Penicillin was a turning point when it came to fatalities in war.
   1. By D-Day 100 billion units of penicillin were produced each month.
   2. Allied military deaths as a result of infection were approximately 0 after this date.

V. Conclusion: Medical advances caused a shift in the eras of war.

A. Combat fatalities compared to disease fatalities before and after the medical advances were dramatic.

B. Even though weaponry between WWI and WWII were similar there was a drastic difference in the type of deaths
   1. Infectious disease is no longer a significant threat in war compared to trauma related injuries.