Pathosis, Pathos, and Digits
Diseases in the War Between the States

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In 1861 armies mobilized on both sides of the Mason-Dixon Line with such rapidity that little thought was initially given to medical care for the soldiers. The war was projected to be over quickly. The U.S. Army, only 16,000 strong, had no more than twenty clinical thermometers at the outset of the war. The Confederate Army, composed virtually exclusively of volunteer units and no regular army in the beginning, had none. Both sides were tremendously unprepared for a large, conventional conflict.

The U.S. Army Medical Department was certainly not designed for the huge number of soldiers entering the army in the massive mobilization that occurred. Doctors (referred to as "surgeons" by the Army whether they were, or not) were supposed to be assigned to the regimental level. However, there was a shortage of trained doctors and it was years before official board certifications came into use. This resulted in the induction of both competent and incompetent "surgeons" ---- some of whom would be classified as no better than 'quacks'. Most of those who were trained and educated as doctors had never dealt with trauma wounds such as those inflicted by large, lead bullets or shell fragments and shrapnel that smashed and shattered bones. The large numbers of seriously wounded could easily overwhelm the medical resources of each army ----- and often did. What was dangerous many times was the treatment in which "cross-contamination" occurred.

Surgeons conducting the treatment of open wounds, or, removing limbs, failed to sanitize any of the instruments. They were commonly re-used by wiping them on the surgeon's smock. In fact, of those who suffered from amputation (the common treatment for gunshot wounds to the limbs), about half of the men subsequently died of gangrene infection. For those who have seen the fictional movie, "Dances With Wolves", the opening scene demonstrates the fear of having a limb amputated. Soldiers knew that the chances of survival were not good and Lieutenant Dunbar escaped the surgeon to take his chances.

On top of these issues fell the problem of masses of men who were given only the most rudimentary medical examinations upon enlistment. These soldiers brought all types of medical issues with them from civilian service that were likely undetected since the primary concerns were only the obvious symptoms of disease, or illness. Missing appendages and teeth were the focus of the recruiting physicals since both were needed to handle a firearm (opposing teeth needed to bite the end-off of the paper cartridges). Those with tuberculosis could usually be gleaned (a common ailment among many immigrants seeking induction into the armies, especially in the north). Many were inducted with preexisting conditions that were exacerbated in camps and on campaign.

In an age of "modern medicine", it is difficult to believe that *two out of every three soldiers who died* in the War Between the States did not die as a result of combat but of medically related reasons, mostly disease. General ignorance of bacteria and their effects meant that age-old, sometimes horrible diseases, flourished in the cramped conditions of camps and barracks. Some, like Joseph Lister were aware of "germ theory" but it wasn't until 1867 that his findings were widely published…too late for the soldiers of the American armies. According to author, Christopher McFadden, the death rate for infection dropped from 60 to 4 percent with Lister's techniques of disinfecting. How many lives this might have saved during the war would have been very significant.

However, Lister concentrated on infection from surgeries and medical care. Much of what he discovered had the ancillary effect on other issues such as field sanitation and the prevention of diseases caused by terrible hygiene. Most of the medically related deaths occurred from pathogens (germs and viruses). How could this happen?

Louis Pasteur and Robert Koch began serious experiments regarding germ theory in 1860 to validate their theories. Of course, the war in America was in full-bloom while they were experimenting. The results of their experiments were not published until near the end of the war and afterwards, thereby having little, to no effect on American war-time medicine. What Pasteur and Koch determined though is that the prevailing medical theories regarding the causes of diseases were wrong.

While it may seem somewhat humorous today, many educated people believed that "bad air", or "miasma" caused disease. One explanation was that rotting organic matter produced "poisonous" or "foul" air which directly led to diseases. Odors were considered bad vapors. It seems silly to us today but this theory lasted until the 1880s when scientific results of germ theory finally predominated. With this line of reasoning, it is easy to understand how armies suffered from massive disease casualties. If the effect of "bad air" is disease ---- including vector borne disease like malaria ---- then the "cure" was to avoid the "bad air" or the rotting matter. It seems reasonable enough for the times but it failed to answer the causes of diseases when no "miasma" was present.

Confederate surgeons accidently discovered that germs were killed by boiling although they never were able to directly connect the cause and effect. Silk, used in the pre-war times (and in the north during the war) to suture wounds was done with thread imported from China. With the imposition of the blockade, silk became very difficult to obtain in the South. Instead, surgeons substituted horse hair. Boiling the otherwise stiff hair made it soft enough to use as medical sutures. *Voilà*, it also resulted in few cases of gangrene! Therefore, horse hair must be the reason for the positive results. It wasn't until later that the connection to boiling and killing the bacteria was made.

So, what diseases did soldiers die from? ANSWER: Those caused by lack of proper sanitation.

Amazingly, many of the soldiers had absolutely no educational background or information on the linkage between sanitation, germs, and diseases. None. Officers of the Regular Army had a modicum of knowledge. However, with the rapid build-up of the armies, it was difficult to transfer the knowledge effectively. Examining army manuals of the period show no instructions on the establishment of camps. In fact, in my collection of army manuals going back to the 1840s, it is only those from the Spanish-American War forward that instructions for the lay-out of camps are illustrated and discussed. The result is that many camps were established with the "sinks" (latrines) and animal corrals and picket lines upstream from the water source for the soldiers. The result is predictable with our 20/20 hindsight.

Despite movies like "Glory" that show soldiers being served in mess lines, soldiers did not receive their rations in that fashion. Rations were issued individually and the soldiers prepared their own meals. Generally, they formed a "mess" ---- a small group of tent or squad mates who cooked together. Cleaning utensils and cookware was then up to the soldiers who used their own mess gear. Inadequate means to clean food off of utensils due to lack of water and soap meant that intestinal issues were common though not always fatal. It was not until WWI that this issue was addressed regarding the cleaning of mess equipment.

Contaminated water caused the major disease killers in the armies. Water was contaminated by fecal matter that found its way into the drinking water. Both human and animal waste upstream from water sources used to fill canteens and cook-with was rife with bacteria. The leading causes of Dysentery and Typhoid Fever were related to dirty water. According to the author of "Civil War Diseases" (Civil War Academy), diseases that were the primary killers were:

- Dysentery ("Quick Step") – An intestinal infection passed mostly by those who already have the disease. Swimming or bathing in contaminated water was also a method of acquiring the disease. Lack of hygiene such as washing hands allowed the bacteria to be passed and ingested. It was the most common disease in the armies. 45k U.S. Army soldiers and 50k Confederate soldiers died of Dysentery.
- Typhoid Fever ("Camp Fever") – Caused by contaminated water. One-third of those who contracted it, died.
- Pneumonia – One in six died. Approximately 20k U.S. soldiers and 17k C.S. soldiers died of pneumonia.
- Measles – A highly contagious viral infection. One in twenty died during the war due to complications. It was a major killer at the beginning of the war when soldiers in crowded camps and no immunities passed it from person-to-person. More than 11k cases reported.
- Malaria – 3 million cases in both the U.S. and C.S. armies. Passed by mosquitoes. 30,000 deaths were reported. This is the only disease they figured-out how to successfully treat with quinine.
- Tuberculosis – Both armies suffered about 14k deaths from Tuberculosis.
- Typhus - Bacterial infection passed by lice, ticks, mites, and fleas. Only a relatively small number of soldiers died of Typhus --- about three times the amount that died with Custer at the Little Bighorn, estimated to be no more than 1k.

According to Dr. Bonnie B. Dorwart, diarrhea and other intestinal problems caused deaths that were attributed to Dysentery. ("Disease in the Civil War" by Dr. Bonnie Brice Dorwart, https://www.essentialcivilwarcurriculum.com/disease-in-the-civil-war.html).

Interestingly, measles have largely been eradicated today although many of us who grew up in the 1940s-1970s had the disease when young. U.S. Army records from 1976 to 1979 show that measles led to 3% of soldiers developing pneumonia. Another 17% developed bronchitis. 29% developed middle ear infection, 25% developed sinusitis, and 31% developed hepatitis. It would be fair to infer that measles caused the same, exact problems in the War Between the States even though the statistics have not been located by me.

Medical issues not directly related to diseases included rheumatism, abscesses, and arthritis which drained units of troop strength. These were not classified as necessarily preventable and were largely incident to active duty in the field or, were pre-existing conditions not discovered during enlistment.

Beginning with WWI, the U.S. military for the first time in its history, suffered fewer casualties to disease than to battle casualties if one discounts the influenza pandemic that struck in 1917-1919 (a whole subject of its own). Sanitation and much improved medical care to include vaccinations made a huge difference in maintaining the health of the force.

As a last note, when I joined the Army in 1971, our medical instruction included the mantra of "Fingers, flies, feces, and food" (4-Fs of Sanitation). Our mess kits were washed in large, heated garbage cans (mess kits are no longer used) insuring that we cleaned them properly. The 4-Fs were the elements of good sanitation and reminders to pay attention to each of them to prevent sickness. We were told to memorize these factors and use the four fingers on our left hand --- one finger for each factor (discounting the thumb). Not to be outdone, our tactics instruction included the four rules of offensive tactics, to wit: "Find 'em, fix 'em, fight 'em, finish 'em" (4-Fs of Offensive Combat). We were instructed that we were to use our right hand fingers so we did not confuse them with the medical sanitation factors which might result in interesting permutations like: "Flies, find 'em, feces, fight 'em". That might have led to battlefield confusion, if not defeat. I have never forgotten those rules. And I've never gotten Dysentery.