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Battlefield of Bandages: A Case Study on Sanitation Policy, Medical Reform, and Disease Prevention During the War of Rebellion

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**BATTLEFIELD OF BANDAGES: A CASE STUDY ON SANITATION POLICY,
MEDICAL REFORM, AND DISEASE PREVENTION
DURING THE WAR OF REBELLION**

A Master's Thesis

Presented to

The Graduate College of
Missouri State University

In Partial Fulfillment

Of the Requirements for the Degree

Master of Arts, History

By

Ashley L. Simpson

May 2020

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BATTLEFIELD OF BANDAGES: A CASE STUDY ON SANITATION POLICY, MEDICAL REFORM, AND DISEASE PREVENTION DURING THE WAR OF REBELLION

History

Missouri State University, May 2020

Master of Arts

Ashley L. Simpson

ABSTRACT

The American Civil War was a devastating conflict costing over 750,000 lives and millions of dollars in the aftermath. However, the most urgent threat was not musket balls, cannons or grapeshot. Afflictions such as typhoid fever, malaria, smallpox, measles, pneumonia, and diarrhea contracted from crowded, unsanitary camp and hospital conditions were responsible for two-thirds of all Civil War casualties. In April 1861, a group of Union women met at church to organize a relief agency whose goal was to aid the thousands of Union soldiers dying from disease. Armed with enlightenment ideas about medical care and sanitation, the Women's Central Association of Relief (later renamed the United States Sanitary Commission) was able to achieve government recognition, appoint a qualified Surgeon General who supported their philanthropic goals, and lobby for sanitation policy that succeeded in improving the mortality rate of those suffering from infection and disease. While the Union reformed an outdated Army Medical Bureau, the Confederacy built one. Under the direction of Surgeon General Moore and the Women's Relief Agency led by Felicia Grundy Porter of Nashville, Tennessee, Confederate medical education and army medicine was regulated and reformed. Conclusively, the decrease in the number of fatalities from disease, especially typhoid, are confirmed by an original case study survey of over 10,000 fatalities in thirty-eight Civil War general hospitals across the divided United States. The dramatic reductions in soldier fatalities from disease during the years of collective medical reform, confirm that sanitation campaigns, vaccinations, and medical improvements, implemented by Surgeon Generals Hammond, Moore, and subsequent relief agencies, were highly successful despite the unique challenges posed by environmental factors such as geography and climate in varying communities.

KEYWORDS: Civil War Medicine, Disease, Reform, General Hospitals, Typhoid, Case Study.

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May 2020

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In the interest of academic freedom and the principle of free speech, approval of this thesis indicates the format is acceptable and meets the academic criteria for the discipline as determined by the faculty that constitute the thesis committee. The content and views expressed in this thesis are those of the student-scholar and are not endorsed by Missouri State University, its Graduate College, or its employees.

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I dedicate this thesis to my father, Thad Robert Swinney

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CHAPTER ONE: INTRODUCTION

The American Civil War was a devastating conflict that cost tens of thousands of lives, millions of dollars, and years of reconstruction in the aftermath. New estimates suggest that around 750,000 soldiers died in the Civil War, nearly two percent of the total population.¹ Deadly diseases spread through prisoner exchanges, poor hospital conditions, malnutrition, and crowded camps killed more soldiers than combat wounds.² Disorganization within the army medical bureaus of both the Union and Confederate States of America further complicated wartime medical care. Traditional army medical policies and procedures fueled the spread of infection and disease, rather than prevented it. This was especially true for the Confederacy whose army medical department was built virtually overnight. Both Union and Confederate physicians were woefully ill trained, undersupplied, and understaffed for the harsh realities of war. The lack of federally employed physicians on both sides of the conflict illuminated the need for civilian medical volunteers in camps, field hospitals, and later general hospitals.

The spread of infectious disease exploded with army recruitment. Entire companies, Union and Confederate, died from camp diseases before seeing armed combat. Additionally, soldiers who fought in the first battles of the war received little medical care on the field, and the devastation witnessed in the first major battle at Manassas Junction (Bull Run), highlighted the inadequacies of Civil War medical care. Because of medical failures on the battlefield and the rapid spread of disease among recruiting regiments, a group of New York Utilitarian women

¹ Shauna Devine, *Learning from the Wounded the Civil War and the Rise of American Medical Science*, (Chapel Hill: University of North Carolina Press, 2014), 1; Jeffery Smith, and B C. Frueh, "Counting the Costs of the Civil War," (The New York Times, November 7, 2013), McPherson, James, *Battle Cry of Freedom the Civil War Era*, (New York: Oxford University Press, 1988) 854.

<https://opinionator.blogs.nytimes.com/2013/11/07/counting-the-costs-of-the-civil-war/>.

² *Ibid.*

established the Women's Central Association of Relief (WCA) later known as the United States Sanitary Commission (USSC), to address the mass numbers of Union sick and wounded unreceiving of adequate medical care in field, regimental, and community hospitals. Likewise, women in Richmond established the Women's Society of Relief (WSR).³

As outlined in *The Philanthropic Results of War in America* published in 1864 by the USSC, relief organizations and specifically the USSC focused on "designing dispassionate, scientific solutions to promote the health and vigor of the armies."⁴ Union and Confederate relief organizations understood the importance of proper sanitation, medical care, supplies, and food provisions underestimated by the Union medical service and newly addressed within the medical department of the Confederacy.⁵ Civilian relief organizations such as the WCA and the WSR provided hospital and camp supplies to soldiers in the field with the goal of achieving improved sanitation, efficient battlefield trauma care, transportation, and disease prevention. Other organizations such as the Western Sanitation Commission (WSC) which was responsible for relief in the west, aided in the war effort far from the opposing capitals.⁶ Collectively, relief organizations saw the medical profession as an application of science rather than a vocational

³ Community relief societies charged with making clothes for the soldiers also formed across the divided United States. However, the agendas of community relief societies and the agendas of the USSC and WSR differed significantly. While community women focused on staying on the home front and sewing for the soldiers, relief organizations such as the WCA (later known as the USSC), WSC, and WSR focused on medical reform. The women of the USSC and the WSR did not stay on the home front but rather, went to Civil War hospitals across the country providing their services as nurses and in many cases especially in the Confederacy, running general hospitals.

⁴ L. P. Borckett, *The Philanthropic Results of the War In America*, (New York: Linus Pierpont, 1864, Mercantile Library Special Collections, St. Louis, Missouri); Devine, *Learning from the Wounded*, (2014); Jane T. Censer, ed., *The Papers of Fredrick Law Olmsted Defending the Union the Civil War and the U.S. Sanitary Commission 1861-1863*, (Baltimore and London: John Hopkins University Press, 1986), 1-3.

⁵ *The Philanthropic Results of War in America*; Censer, *The Papers of Fredrick Law Olmsted Defending the Union the Civil War and the U.S. Sanitary Commission 1861-1863*.

⁶ Borckett, *The Philanthropic Results of the War In America*, Forman, J G. *The Western Sanitation Commission a Sketch of its Origin, History, Labors for the Sick and Wounded of the Western Armies, and Aid Given to Freedman and Union Refugees, with Incidents of Hospital Life*, (St. Louis: Library of Congress, 1864. Mercantile Library Special Collections, St. Louis, Missouri).

practice established by apprenticeship. Consequently, the organizations sought to advocate for and implement sanitation regulations, organize and educate medical volunteers, and revamp medical education to ensure the competency of those appointed to serve the sick and wounded.⁷ The agendas of the WCA and WSR gained the backing of elite physicians such as Dr. William Hammond (Union) and Dr. Samuel Preston Moore (Confederate) who had studied abroad and subscribed to progressive medical thought such as germ theory and attention to camp and hospital sanitation, that aligned with the WCA and WSR's proposed medical reforms. In early 1861, Hammond and Moore left their private practices to serve their countries, Moore by request of the president of the Confederacy, Jefferson Davis, and Hammond through the efforts of the WCA, later established as the United States Sanitary Commission (USSC).

For most of the war, Moore and Hammond served as opposing Surgeons General with a common cause: disease prevention.⁸ Wartime medical reforms implemented by Surgeons General Hammond and Moore included the reorganization of the American ambulance system, the establishment of the nursing corps and women as hospital administrators, and the construction of federally regulated general hospitals. Reforms in medical education were also a significant factor in improving patient care and reducing fatality rates. Moore and Hammond's medical competency exams and Medical Examining Boards identified unqualified and inexperienced doctors and replaced them with vetted medical professionals. The opposing

⁷ *The Philanthropic Results of War in America*, 34; *The Papers of Frederick Law Olmsted Defending the Union the Civil War and the U.S. Sanitary Commission 1861-1863*, 1-3.

⁸ Margaret Humphreys, *Marrow of Tragedy: The Health Crisis of the American Civil War*, (Baltimore: Johns Hopkins University Press. 2013), 10; "Dr. William Hammond Surgeon General United States Army," *Harpers Weekly*, (November 21, 1863), <http://www.sonofthesouth.net/leefoundation/civil-war/1863/november/dr-william-hammond.htm>; William Hammond, *A Treatise on Hygiene: with Special Reference to Military Service*, (Philadelphia: J.B. Lippincott and Co., 1863), vii. <https://archive.org/stream/62510670R.nlm.nih.gov/62510670R#page/n5/mode/2up>; "Samuel Preston Moore, Confederate Surgeon General, Civil Practice to Civil War: The Medical College of the State of South Carolina 1861-1865," n.d. Accessed September 19, 2018, <http://waring.library.musc.edu/exhibits/civilwar/Moore.php>.

Surgeons General built, ran, and organized massive state-of-the-art medical centers, and oversaw hundreds of smaller wartime hospitals across the divided United States. With the aid of Civil War relief agencies such as the USSC and the WSR, Surgeons General Moore and Hammond organized and enforced the largest medical reforms in the history of the United States, reforms that fundamentally changed American medicine and medical education.

Methods

This study assesses the prevalence of wartime disease through a wide variety of primary sources such as original Civil War hospital muster rolls, letters, weekly reports, employee lists, photographs, official correspondence, hospital manuals such as surgical manuals and hospital stewards guides, and special orders composed by both Union and Confederate officers, soldiers, physicians, government officials, civilians, and relief agencies (see figure 1). The goal of this project is to examine the effectiveness of Surgeons General Moore and Hammond's wartime sanitation policy, medical advancements in education, and wartime medical standardization. This thesis seeks to understand the prevalence of wartime

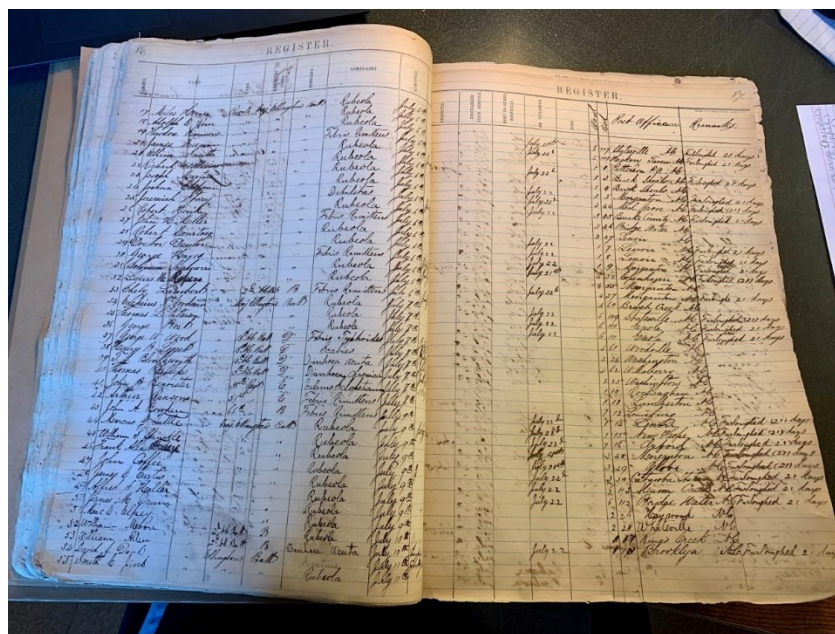


Figure 1. Hospital Muster Roll or Patient Register

disease in specific geographic regions, how wartime illness affected outcomes of war in various communities, and what factors help to explain their relative successes and failures.

Primary source material used in this thesis were collected from the National Archives Records Administration in Washington, D.C. and College Park, Maryland; the University of Texas at Austin; the University of North Carolina at Chapel Hill; the Alabama Department of Archives and History, Montgomery, Alabama; Mercantile Library at the University of Missouri, St. Louis; and Wilsons Creek National Battlefield in Springfield, Missouri. Case study data was extracted from the hospital muster rolls of thirty-nine Civil War general hospitals.⁹ In order to compare disease patterns and prevalence in opposing regions, figures and statistics derived from case study data are used to examine soldier fatalities recorded in four regions of the divided United States (see figure 2). This study describes these regions as the political centers, the northwest, the Deep South, and the Stout region. Hospital data recorded in the northwest region, the Deep South, and Stout region are examined in comparison to those recorded from general hospitals in proximity to both the Union and Confederate political centers. Percentages and statistics derived from case study data provide insight regarding the rate of increase or decline in deaths from a specific set of diseases, the years in which declines or increases occurred, changes

⁹ A muster roll or in this instance, patient register, is a record of Civil War hospital patients. Muster rolls are organized similarly to a ledger and include several columns both horizontally and vertically on the page which create specific data entry fields and columns. There are usually over one hundred entries per page with the muster roll opening and bound like an oversized book- sometimes with patient information on each page while others have the “ledger” spanning the width of both pages. The information included in these volumes are generally the patient’s name, date of admission, admission diagnosis, regiment, furlough or death date, and cause of death. In some cases, notes regarding the patient are also included in the note section on the far right of the page. Please note that “muster roll” is a general term. There are muster rolls of individual company men, army supplies, furloughs, and livestock. The muster roll records used in this study are general hospital patient records. Additionally, several hospitals in this study consist of separate, numbered wards. For example, Chimborazo was one hospital but there were five wards within the institution. Wards were labeled one through five and hospital records were kept for each ward. Consequently, Chimborazo hospital number one, two, three, and five are all examined both separately and combined in various chapters.

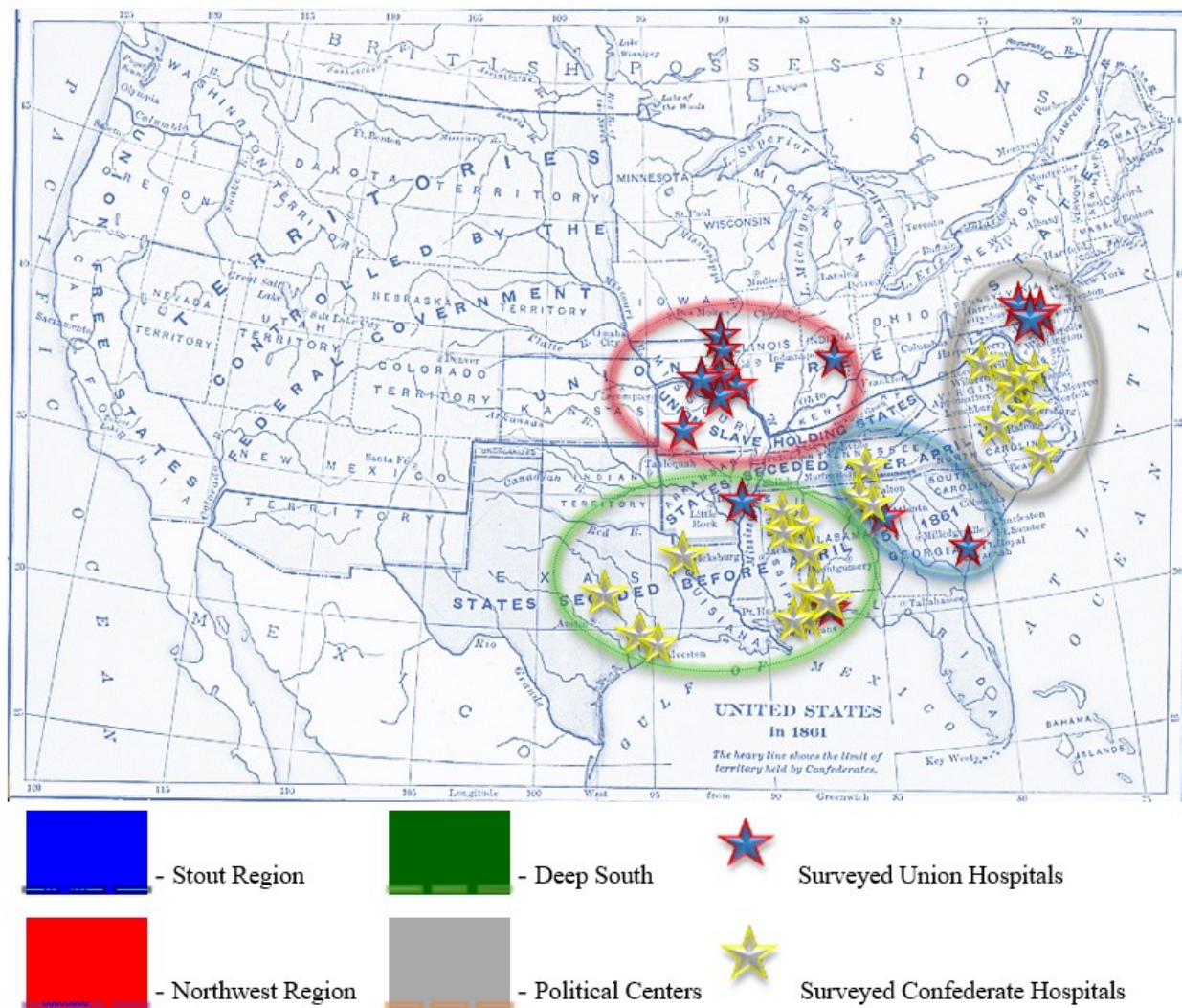


Figure 2. Map of Surveyed Hospitals and Case Study Specific Regions

in regional disease environments, and which hospitals in comparison to others more successfully lowered soldier fatality rates from disease. Factors such as climate, available resources, proximity to battlefields, political environment, policy, length of operation, and staff are all considered in the evaluation of case study data. This study does not track the increase or decrease

in *cases* of disease but rather, examines the number of soldiers who *died* from disease in case study specific, geographic regions.¹⁰

The northwest region consists of data from St. Louis City (see appendix A-1), Fifth Street (see appendix A-2), and Larson general hospitals (see appendix A-3), St. Louis, Missouri; Quincy general hospital (see appendix A-4), Quincy, Illinois; City general hospital (see appendix A-5), Indianapolis, Indiana; Keokuk general hospital (see appendix A-6), Keokuk, Iowa; Springfield general hospital (see appendix A-7), Springfield, Missouri; and Jefferson City post hospital (Union) (see appendix A-8), Jefferson City, Missouri. The Stout region consists of data from general hospitals under the control of Dr. Samuel Stout and consists of data from St. Mary's hospital (see appendix B-1) and Dalton post hospital (see appendix B-2), Dalton, Georgia; Receiving and Distributing hospital (see appendix B-3) and Fairgrounds hospitals number one (see appendix B-4) and two (see appendix B-5), Atlanta, Georgia; Savannah general hospital (see appendix B-6), Savannah, Georgia; and Newsome hospital (see appendix B-7), Chattanooga, Tennessee. The third region, the Deep South, consists of data from Houston general hospital, Houston, Texas (see appendix C-1); Galveston general hospital (see appendix C-2), Galveston, Texas; Franklin general hospital (see appendix C-3), Franklin, Texas; Ross

¹⁰ Test hospital data, especially Confederate patient records, are much harder to locate than the political center general hospital records. Even locating the names of southwestern Confederate hospitals to search for surviving records was spotty at best. For these reasons, the Confederate test hospital data, although amounting to close to the same random sample size as that of the Union, is taken from substantially more general hospitals than its counterpoint. These hospitals were chosen from the same geographical region in order to comply with the principles of this case study, in which geography is a primary concern. The same method is used for the study's western Union hospitals. Many Union general hospitals, especially in St. Louis, were open only a few years before closing. Encouragingly, when one closed, another opened. None of the western general hospitals on either side of the conflict were open for the duration of the war like those near the political centers. Consequently, data from neighboring general hospitals are used to fill gaps in years of operation. For example, in the case of Larson, Fifth Street, and St. Louis City hospitals, the data sets utilize hospitals that, in combination, span the entire length of the war. Their relative location to one another makes these data sets compatible when examining the effects of geography on disease. No combinations of hospitals were recorded in this way unless they were opened and closed in the same vicinity or within the same hospital system, such as at Chimborazo and Fair Grounds general hospitals. General breaks in the survey data are due to the absence of recorded fatalities or the consequence of missing records.

hospital (see appendix C-4), Mobile, Alabama; Fort Morgan post hospital (see appendix C-5), Fort Morgan, Alabama; Newsome hospital (see appendix C-6), Gainesville, Alabama; Shreveport general hospital (see appendix C-7), Shreveport, Louisiana; Fort Barranacas general hospital (see appendix C-8), Pensacola, Florida; Columbus hospital, Camp Blewett hospital and Citizen's hospital (see appendix C-9), Columbus, Mississippi; and Arkansas general hospital (see appendix C-10), Helena, Arkansas. Finally, the political center region consists of data from the muster rolls of Satterlee general hospital (see appendix D-1), Summit house hospital (see appendix D-2), and Turner's Lane hospital (see appendix D-3), Philadelphia, Pennsylvania; Charlottesville general hospital (see appendix D-4), Charlottesville, Virginia; general hospital number four (see appendix D-5), Wilmington, North Carolina; unknown general hospital (see appendix D-6), Petersburg, Virginia; Pettigrew general hospital (see appendix D-7), Raleigh, North Carolina; and Chimborazo General Hospitals number one (see appendix D-8), two (see appendix D-9), three (see appendix D-10), and five (see appendix D-11) Richmond, Virginia.

In each general hospital, fourteen causes of death were recorded for this thesis. While the prevalence of other afflictions not limited to syphilis, rheumatism, debility, exhaustion, and heat stroke were noticeable in hospital registers, this thesis is concerned with diseases caused by the man-made environmental contamination of food and water supplies or the prevalence of insect carriers of disease due to poor sanitation, and those spread seasonally through the air or by contaminated droplets. Diseases caused by poor sanitation or contaminated food and water supplies include dysentery, diarrhea, cholera, bacterial infection, typhus fever, and typhoid fever. Seasonal, airborne or droplet spread diseases such as measles, tuberculosis, and smallpox were also surveyed. Other afflictions such as pneumonia and general fevers are also examined as both side effects of underlying disease. Because of environmental factors such as cold, damp, army

camp conditions and a lack of warm clothing and blankets. Fatalities from wounds are also counted in case study data sets. Conclusively, the afflictions counted in this study include typhoid fever, typhus, pneumonia, tuberculosis, measles, malaria, wounds, diarrhea, fever, cholera, bacterial infection, malnourishment, dysentery, scurvy, and smallpox. In total, 10,842 fatalities from the fourteen causes of death listed above were recorded and compared.¹¹

¹¹ Hospital Register, Arkansas General Hospital, Helena, Arkansas, 1862-1865, Record Group 94, Registers 45, 46, 48, (National Archives Records Administration: Washington, D.C.); Hospital Register Charlottesville General Hospital, Charlottesville, Virginia, 1861-1865, Ch. 6, vol. 214, (National Archives Records Administration: Washington, D.C.); Hospital Register, Chimborazo Hospital number one, Richmond, Virginia., 1861-1863, (National Archives Records Administration: Washington, D.C.); Hospital Register, Chimborazo Hospital number two, Richmond, Virginia, 1863-1865, (National Archives Records Administration: Washington, D.C.); Hospital Register, Chimborazo Hospital number three, Richmond, Virginia, 1863-1865, Ch. 6, vols. 19, 53, 21, 64, 62, 69, 226, 105, 101, 56, (National Archives Records Administration: Washington, D.C.); Hospital Register, Chimborazo Hospital number five, Richmond, Virginia, 1863-1865, Ch. 6, vols.23, 17, 63, 64, 65, 70, 20, (National Archives Records Administration: Washington, D.C.); Hospital Register, General Hospital No. four Wilmington, North Carolina, 1862-1864, Ch. 6 vols. 285, 244 ½, 278, 270, 282, 156, (National Archives Records Administration: Washington, D.C.); Hospital Register, Fairgrounds Hospital No. 1, Atlanta, Georgia, *Samuel Hollingsworth Stout Papers, 1837 (1860-1865)*, Box 2L3, (Center for American History, the University of Texas at Austin); Hospital Register, Fairgrounds Hospital No. 2, Atlanta, Georgia, *Samuel Hollingsworth Stout Papers, 1837 (1860-1865)*, Reel 2 item D, (Center for American History, the University of Texas at Austin); Hospital Register, Fifth Street General Hospital, St. Louis, Missouri, 1861-1863, (National Archives Records Administration: Washington, D.C.); Hospital Register Ft. Morgan General Hospital, Fort Morgan, Alabama, 1863-1864, Ch. 6 vol. 3, (National Archives Records Administration: Washington, D.C.); Hospital Register, Galveston General Hospital, Galveston, Texas, 1864-1865, Ch. 6 vol. 275, (National Archives Records Administration: Washington, D.C.); Hospital Register, Huston General Hospital, Huston, Texas, 1861-1863, Ch. 6 vols. 275, 417 ½, 276, (National Archives Records Administration: Washington, D.C.); Hospital Register, Indianapolis General Hospital, Indianapolis, Indianapolis, 1862-1864, Record Group 94, Registers 102, 62, 63, 64 IN, (National Archives Records Administration: Washington, D.C.); Hospital Register, Keokuk General Hospital, Keokuk, Iowa, 1862-1865, Record Group 94, Register 53 IA, (National Archives Records Administration: Washington, D.C.); Hospital Register, Larson General Hospital, St. Louis, Missouri, 1863-1864, (National Archives Records Administration: Washington, D.C.); Hospital Register, Newsome Hospital, Chattanooga, Tennessee, 1862-1864, *Samuel Hollingsworth Stout Papers, 1837 (1860-1865)*, Box 22, FILM 381, (Center for American History, the University of Texas at Austin); Hospital Register, Pettigrew General Hospital, Raleigh, North Carolina, 1861-1865, Ch. 6, Vols. 290, 395, 523, (National Archives Records Administration: Washington, D.C.); Hospital Register, Post Hospital, Dalton, Georgia, 1865, Record Group 94, Register 19 GA., (National Archives Records Administration: Washington, D.C.); Hospital Register, Quincy General Hospital, Quincy, Illinois, 1861-1865, Record Group 94, Register 412, 544 IL, (National Archives Records Administration: Washington, D.C.); Hospital Register, Ross General Hospital, Mobile, Alabama, 1863-1865, Ch. 6, vol. 2, (National Archives Records Administration: Washington, D.C.); Hospital Register, Savannah General Hospital, Savannah, Georgia, 1864-1865, Record Group 94, Register 8, 423, GA, (National Archives Records Administration: Washington, D.C.); Hospital Register, Satterlee General Hospital, Philadelphia, Pennsylvania, 1862-1865, (National Archives Records Administration: Washington, D.C.); Hospital Register, Shreveport General Hospital, Shreveport, Louisiana, 1864-1865, Ch. 6, vol. 297 ¼, (National Archives Records Administration: Washington, D.C.); Hospital Register, St. Louis City Hospital, St. Louis, Missouri, 1861-1863, (National Archives Records Administration: Washington, D.C.); Hospital Register, St. Mary's Hospital, Dalton, Georgia, 1862-1863,

In this study, hospitals located in the political center region act as control groups. Chimborazo and Satterlee general hospitals were in or close to their national capitals and were well supplied, state-of-the-art military hospitals designed specifically by Surgeons General Moore and Hammond. Consequently, the political center hospitals are prime examples of how the Surgeon Generals *meant* for their army medical hospitals to operate and perform.¹² Both Chimborazo and Satterlee provide healthy patient records and are a good comparison measure to the remaining test hospitals. The test hospitals account for the remaining regions surveyed and are used to evaluate how well wartime sanitation policy fared in hospitals isolated from the political centers.

Geography, political atmosphere, climate, and the availability of labor and supplies are key variables considered when evaluating case study data. For example, case study results conclude that diseases such as malaria and smallpox were contracted at much higher rates in marsh areas and river towns. Likewise, numbers of fatalities from battle wounds were also dependent on geographical location. While western hospitals saw higher numbers and a more diverse range of diseases, general hospitals close to the political centers saw comparatively more deaths from battle wounds undoubtedly due to their proximity to significant battlefields such as Gettysburg and Antietam. The examination of fatalities from wounds is a vital comparison

Ch. 6, vol. 274, (National Archives Records Administration: Washington, D.C.); Hospital Register, Summit House Hospital, Philadelphia, Pennsylvania, 1862-1865, Record group 94, Registers 249, 242, 250, 254, 252, PA, (National Archives Records Administration: Washington, D.C.); Hospital Register, Receiving and Distributing hospital, Atlanta, Georgia, *Samuel Hollingsworth Stout Papers, 1837 (1860-1865)*, Box 22, FILM 381 item c, (Center for American History, the University of Texas at Austin); Hospital Register, Ft. Barrancas Hospital, Pensacola, Florida, 1862-1865, Record Group 94, Registers 79, 74, FL, (National Archives Records Administration: Washington, D.C.); Hospital Register, Turner's Lane Hospital, Philadelphia, Pennsylvania, 1862-1865, Record group 94, Register 249 PA, (National Archives Records Administration: Washington, D.C.); Hospital Register, Unknown Hospital, Petersburg, Virginia, 1864-1865, Ch. 6 vols. 38, (National Archives Records Administration: Washington, D.C.).

¹² H. H. Cunningham, "Confederate General Hospitals: Establishment and Organization," *The Journal of Southern History* 20, no. 3 (August 1954): 376-94, 380-382, 382.

measure as modern statistics claim three-fourths of soldiers died from disease in contrast to battle wounds.¹³

The goal of this thesis is to highlight the measures taken toward disease prevention across the divided United States and the unspoken soldiers who fought the impossible war on Civil War disease. While conclusively, the American Civil War was a catastrophic event and problems within American medicine were by no means resolved because of the war, the medical reforms of the period saved lives on both sides of the conflict. In her book, *Marrow of Tragedy*, historian Margret Humphries argues that the Confederate medical service failed. She asserts that the decentralization of Confederate relief organizations and Surgeon General Moore's "stubborn dedication to his higher ambitions" created a disconnect between Moore and the ever-changing situation of wartime medicine. However, as she explains in her introduction, Humphries focus is unevenly centered on the Union side of the conflict and her analysis of Moore and Confederate medicine is limited. Her reasoning for this is that the Union and Confederate medical systems operated almost identically.¹⁴ While this is true, this work hopes to produce a more balanced focus between Union and Confederate medical systems and disease prevalence across the divided United States while at the same time, attempts to better highlight the successes of especially Confederate medicine and Surgeon General Moore, rather than dwell on their faults.

While Humphries work is one of the most masterful in Civil War medical historiography, it seems her assumptions about Moore are stunted. While she admits that the Confederate medical system failed to not the sole responsibility of her Surgeon General, Humphries fails to credit Moore and the Confederate medical system for the extraordinary feat of constructing a medical department from the ground up. Additionally, outside factors far surpassing the control

¹³ Devine, *Learning from the Wounded*, 1.

¹⁴ Humphreys, *Marrow of Tragedy*, 206-207.

of the Confederate home front, which her book details, seem to be more appropriate culprits for the failure of the Confederate medical system. A lack of supplies caused by Union blockades, a dwindling army, and defeat on the horizon in the late months of 1864- early 1865, greatly disadvantaged the already strained Confederate medical system. This work aims to demonstrate these hardships through the prevalence of deaths from disease and afflictions such as scurvy, dysentery, and diarrhea in the closing years of the war.

Other scholars such as historian H.H. Cunningham in his *Doctors in Gray*, and his article “Confederate General Hospitals: Establishment and Organization,” focus on the organization of the Union and Confederate medical systems and political reforms. Additionally, Ira Rutkow and James McPherson address the infrastructure of the Union and Confederate medical systems in their works, *Bleeding Blue and Gray* and *Battle Cry of Freedom*. While these works are plentiful in administrative, military, and political history, they are in no way social histories of Civil War medical care or relief organizations such as the USSC and WSR who played a significant role in hospital administration and medical treatment.

Most works written on Civil War medicine discuss the Union and Confederate army medical systems through either a new-left, social history perspective or neoconservative analysis of medical practice and procedure. An example of the contrasting approaches within Civil War medical historiography are seen in the works, *This Republic of Suffering*, by Drew Gilpin Faust in comparison to the straightforward works of Cunningham and McPherson. In his book, Faust examines the cultural impacts of facing the crippling numbers of dead and dying during and after the close of the Civil War. While the book is focused on the home front and the ways culture and personal lives were affected by the war, Faust’s book makes no effort to analyze Civil War medical policies. However, Faust does discuss the work of the USSC.

Concerning social history, this thesis seems to fit more directly within the works of Jane Schultz's, "The Inhospitable Hospital: Gender and Professionalism in Civil War Medicine," and Margaret Humphries' work in *Marrow of Tragedy*, in regard to highlighting the contributions of women, Union and Confederate, to wartime medicine, medical care, and disease prevention. The voices of women working in hospitals are also included in this works through autobiographies and diaries such as *Nurse and Spy in the Union Army* by Emma Edmonds, *In Hospital and Camp* by Sophronia Bucklin, and *Reminiscences of my Life in Camp with the 33d United States Colored Troops*, by Susie King Taylor. At the same time, this study is dedicated to its original case study data used to test the effectiveness of sanitation policy and measure the hospital procedures outlined clearly by historians like Cunningham, McPherson, and Shauna Devine in her works, *Learning from the Wounded*.

There are countless works within Civil War historiography examining the social and cultural history of religion and dying, the lasting effects of medical innovation spurred by the war, the rise of female professionalism in the workforce, and the generational impact of the mass casualties suffered on Civil War battlefields. All of which, in opposing fashion to the more straightforward works of Cunningham and McPherson, tend to omit the administrative medical reforms enacted throughout the war. Other works such as Frank Freeman's *Gangrene and Glory*, boast endless, fascinating statistics and figures surrounding Civil War medical procedures, gruesome treatments, wounds, and illness. This thesis hopes to meet these historiographic approaches somewhere in the middle. While this study uses original case study data and statistics to trace disease prevalence and fatality rates across case study specific geographic regions, it also hopes to use the data to justify or oppose the voices, hardships, and triumphs of civilian

volunteers and army medical staff who devoted the war years to providing comfort, service, and relief to wounded and sick soldiers.

Navigating Case Study Source Material

The decision to use general hospital records came after much deliberation. While fatality rates of surveyed afflictions were undoubtedly higher in field and regimental hospitals compared to general hospitals, field medical records are difficult to locate, especially for the Confederacy. Available regimental records are usually incomplete or severely damaged. Due to their proximity to battlefields and camps, regimental and field hospitals were on the front lines of disease and death by trauma wounds. However, if doctors in these environments kept patient records at all, they traveled with the armies.¹⁵ Exposure to the elements, quick retreats, or surrenders rendered many field and regimental hospital documents lost or illegible. While legible regimental and field hospital records do exist, they are generally less helpful than general hospital records. As physicians acted quickly to treat the wounded and dying on the battlefield, there was no time for the comparatively detailed record-keeping present in general hospital muster rolls. Additionally, field and regimental hospitals had no permanent location. While geography could be used as a variable in examining soldier fatalities by year within a specific regiment as the regiment traveled, the lack of detailed and missing records coupled with the inability to determine exactly where soldiers died is problematic for this study.

¹⁵ Field and regimental hospitals were not required to keep detailed records of their company or regiment's medical treatment. Many of the records simply list furloughs and deaths with little or no information regarding cause of death or place of death. In some cases, this information is present however, the documentation is not consistent which poses a problem when collecting soldier fatality data. There were also no Union or Confederate officials who monitored and regulated patient documentation in field and regimental hospitals, such as in general hospitals. Regimental records are more detailed and preserved than are field hospital records. However, the same problems persist.

Further, examining fatalities in this manner would yield an extremely limited analysis of a narrow span of time and geography. Individual regiments usually disbanded after a few years of service and soldiers reenlisted with new recruiting regiments. Regimental medical records ceased with the regiment's disbandment. To maintain consistency, two or more regiments who traveled relatively the same type of terrain, in relatively the same conditions (seasons) would need to be examined against an additional two or more regiments held to the same research criteria. Examining fatalities using this method would be tedious and is likely impossible. Due to missing records and illegible data, it is likely a researcher would find only one set of regimental hospitals, most likely Union, to compare. More data and geographical area are needed to determine broader trends such as the effects of sanitation policy on a national level.

Additionally, regimental data yields no clear control groups. There were no "model" regimental hospitals to which data can be compared. In contrast, the environments of general hospitals were relatively the same in both Union and Confederate establishments. As Surgeons General Hammond and Moore set up nearly identical medical bureaus, hospital regulations, and built advanced, state-of-the-art hospitals for the period, the conditions of especially the political centers serve as a well-balanced control for the remaining regions.

Further, sanitation policies were enforced in all general hospitals under control of the Army Medical Bureaus in both the Union and the Confederacy. This does not mean that both systems in practice, functioned or carried out sanitation policy in the same way or in the same period, but general hospitals typically located in urban centers were more visible to the public eye and military officials.¹⁶ Therefore, these hospitals seem to be better regulated, monitored, and documented by hospital personnel and Surgeons General Hammond and Moore. General

¹⁶ H. H. Cunningham, "Confederate General Hospitals: Establishment and Organization," *The Journal of Southern History* 20, no. 3 (August 1954): 376-94, 380-382.

hospitals were strategically placed in port towns, on railroad lines or main roads with quick access to supplies and freshwater. For these reasons, cities such as St. Louis, New Orleans, Chattanooga, Atlanta, and Alexandria became medical havens for the sick and wounded. As part of wartime medical reforms, detailed records were to be kept of all patients, and army hospital inspectors appointed by Surgeons General Hammond and Moore oversaw this.¹⁷ While camp inspectors were also put in place to ensure the cleanliness of Civil War camps, camp inspections were not concerned with field medical procedures. Rather, camp inspections were concerned with the placement of latrines, the cleanliness of food preparation areas, and water supplies which army soldiers, slaves, and contrabands were responsible for maintaining.

Another disadvantage of using regimental medical records is determining *who* treated patients and whether they followed army medical procedures. After the enactment of sanitation legislation by Union and Confederate congresses, regimental hospitals were run by vetted army doctors for most the war.¹⁸ However, civilian doctors also treated patients on the battlefield when battles raged in their hometowns. The lack of physician names and credentials listed on regimental or field hospital muster roll entries obscures data as sanitation policies were regulations of the opposing armies, not private citizens. Therefore, it cannot be determined if civilian doctors who contributed to patient records and care were educated on army medical regulations. Consequently, the data cannot be used to evaluate the success of sanitation policy when some of those practicing within the system were not educated on or held to, at least in any formal sense, the same army regulations measured by this study.

In contrast, all officially recognized relief organizations were held to the standard of federal sanitation law and were familiar with wartime army medical literature detailing general

¹⁷ Humphreys, *Marrow of Tragedy*, 9-12.

¹⁸ Cunningham, "Confederate General Hospitals," 380-382.

hospital regulations and procedures. Medical and surgical instruction manuals and hospital steward's guides were printed and distributed to members of relief agencies and hospital staff in both the Union and the Confederacy. Consequently, even if hospital personnel failed to follow army regulations, it is known that in some form, they were aware of them. Confirmation of hospital staff's knowledge of army medical regulations allows for an honest examination of sanitation policy within general hospitals based on the records left by army educated doctors, nurses, and hospital stewards.¹⁹

The physical records of Civil War general hospitals were difficult to work with but so were post-war sources such as the *Medical and Surgical History of the War of the Rebellion*. Historian Jack D. Welsh examines problems with Confederate hospital records, especially concerning the published post-war analysis of Chimborazo general hospital (Richmond, VA) records. Welsh's discussion focuses on the federal examination of Confederate fatalities from disease as documented in the *Medical and Surgical History of the War of the Rebellion*.²⁰ He argues that while Union troops confiscated a full series of hospital registers from Chimborazo, federal analysis of the material is lacking. First, the data is scattered throughout volumes of the *Medical and Surgical History of the Rebellion*, making a complete analysis of Confederate records difficult. Second, the organization of the data is misleading. The 77,889 patients admitted to Chimborazo were separated into three categories: sick, those who died from sickness, and those who were transferred to other hospitals, wounded and furloughed. Of the recorded hospital admissions, 12,057 had no recorded diagnosis, and 821 were recorded as

¹⁹ *The Army Surgeons Manual*, N.p.: Surgeon General of the United States of America, (1861); Joseph J Woodward MD., *The Hospitals Stewards Manual*, (Philadelphia: J. B. Lippincott and Company Publishers, 1862); The only exception to this aspect of the study is dealing with Confederate slave and Union contraband labor. As many slaves were illiterate, it would have been impossible for most of them to have read army medical manuals. However, they were instructed and trained by hospital staff who were educated on general hospital regulations.

²⁰ Jack D. Welsh, *Two Confederate Hospitals and Their Patients Atlanta to Opelika*, (Macon: Mercer University Press, 2005), 4-5.

convalescents and malingerers.²¹ Further, 18,039 patients were furloughed with no record of their mortality afterward.

Welsh suggests that the federal analysis of Chimborazo's hospital records is telling in three key areas. First, the data highlights the trouble with Civil War hospital records as being incomplete because of the lack of consistent data used to construct accurate statistics, without being "incomplete." While the "diagnosis" was recorded for 821 convalescents and malingerers, this does not help determine statistics on fatality rates from disease, wounds, or infection due to the inability to trace patient mortality.²² The inability to trace mortality after patients were released from Chimborazo undoubtedly skews overall data as many patients were likely released and soon after died because of the disease, wound, or infection they were treated for at Chimborazo.

Second, the federal analyses of the total recorded deaths from disease are inaccurate as well. Federal analysts calculated death rates by excluding the number of patients who were recorded as wounded, had no recorded diagnosis, malingerers, convalescents, and soldiers with a diagnosis but with no documentation of results totaling seventy percent of the federal sample size. Only 23,849 cases out of the total 77,889 are included in federal analysis results published in the *Medical and Surgical History of War and Rebellion*. Fifty-three percent of the excluded fatalities were medical cases, and many diagnoses such as typhoid, pneumonia, and anemia were combined into one category of disease.²³ The failure to examine typhoid independently of other causes of death seems odd as typhoid was one of the deadliest diseases among Civil War

²¹ Welsh, *Two Confederate Hospitals*, 142-144.

²² *Ibid*, 142-143.

²³ Welsh, *Two Confederate Hospitals*, 140-141.

soldiers. Fatalities from typhoid are a significant aspect of this thesis and contribute immensely to original case study data.

Additionally, Welsh points out that there are no specifications outlining how fatality percentages were calculated in the post-war Federal analysis used in the *Medical and Surgical History of the Rebellion*. It is unclear if the data was collected using the patient's listed cause of death or with their admitting diagnosis.²⁴ If data was recorded using patient diagnosis upon admission, at least some of the disease fatality calculations are inaccurate. For example, soldiers admitted to general hospitals with typhoid fever often developed chronic diarrhea or pneumonia as a side effect of typhoid fever. Therefore, a soldier could have been admitted for typhoid fever but have chronic diarrhea listed as a cause of death. While these connections can be made based on a comparison of admission diagnosis and cause of death, there is no way to confirm these assumptions.

The mass amounts of missing information within the federal analysis of the Chimborazo data, especially concerning total disease population and fatalities, renders it unreliable as an overall depiction of wartime disease. As the total number of fatalities from disease were calculated using less than half of the original number of admissions with no outlined specifications explaining how fatalities were collected and analyzed, the data and statistics recorded in *The Medical and Surgical History of the War of the Rebellion* are not accurate or conclusive interpretations of Chimborazo hospital registers.

Aside from the post-war federal analysis of Confederate records, additional problems present themselves in the death documentation of especially Confederate soldiers. The discrepancies in Confederate data may have led to errors in death records and therefore, errors in

²⁴ *The Medical and Surgical History of the Civil War*, 12 vols. (Wilmington, NC: Broadfoot, 1992) 5:30; Welsh, *Two Confederate Hospitals and Their Patients Atlanta to Opelika*, 152.

the documentation of soldier causes of death and location. For example, Oakwood Cemetery, which served as the main burial ground for Chimborazo general hospital holds over 17,000 Confederate graves, most of them unmarked.²⁵ However, the headstone of Private Silas M. Garrison states he died of pneumonia at Chimborazo (see appendix E).²⁶ While sifting through military records for Silas Garrison, one muster sheet from Chimborazo lists pneumonia as Garrison's cause of death while the other lists typhoid.²⁷ It is possible that Garrison died from pneumonia as a complication of typhoid fever- what some records list as typho-pneumonia. While the causes of death are inconsistent, the day of admission, regiment, and death date, are consistent with various other records. Garrison's headstone at Oakwood Cemetery, added sometime after the war in front of the soldier's unmarked gravestone, is also consistent with the date of death recorded on the Chimborazo muster sheets.²⁸ However, an additional muster roll presumably filed for request of a military pension, lists Garrison's death place as Knoxville, Tennessee.²⁹ Garrison's Alabama unit listed on the Knoxville muster roll matches the Chimborazo documentation, but it is inconsistent with the previous medical diagnoses from Chimborazo.

Further inconsistencies emerge in 1863 documentation when another Silas M. Garrison enlisted in the 51st Alabama Partisan Rangers as a Private (see appendix E-1).³⁰ These records

²⁵ Dan Parvin, "Lafayette Parvin - The Battle of Gettysburg & Pickett's Charge," Fold3, Last modified January 2015. <https://www.fold3.com/page/641408712-lafayette-parvin>.

²⁶ Ashley Simpson, "Photo of Silas M. Garrison's Headstone," Oakwood Cemetery Richmond, Virginia, 2019.

²⁷ "Silas Garrison Report of Sick and Wounded Chimborazo Hospital April 1862," Fold3, <https://www.fold3.com/image/8219307>; "Silas Garrison Chimborazo Register April 1862 Deceased Typhoid Fever," Fold3, <https://www.fold3.com/image/8219323>.

²⁸ "Photo of Silas M. Garrison's Headstone," Oakwood Cemetery; "Silas Garrison Chimborazo Register April 1862 Deceased," Fold3, <https://www.fold3.com/image/8219322>; "Silas Garrison Private 9th Alabama Infantry 1862," Fold3, <https://www.fold3.com/image/8219305?terms=war,m,confederate,silas,civil,garrison>.

²⁹ "Silas Garrison Register July 6, 1863 Deceased," Fold3, <https://www.fold3.com/image/8219313>.

³⁰ "Silas Garrison Private 51st Alabama Partisan Rangers 1863," Fold3, <https://www.fold3.com/image/13073218>.

are likely the elder Silas Garrison, but census records for the family list them living in Banks County Georgia in 1860, not Alabama (see appendix E-2).³¹ Why would the Garrisons have enlisted in an Alabama regiment rather than a Georgia regiment if they were residents of Banks County, Georgia? The elder Garrison's records also have discrepancies as Garrison's original documented cause of death, rubella (German measles), was crossed out and replaced with a diagnosis of chronic diarrhea.³² The only clear, consist aspect of Garrison Sr.'s documentation is his place of death being at St. Mary's Hospital in Dalton, Georgia.³³

Errors in post-war analysis of especially Confederate records are undoubtedly due to the nature of the source material, missing records, and confusion due to inconsistent or incomplete documentation. While the Union gained hospital sites throughout the war through occupation of Confederate sites, the Confederates lost hospitals, and with the sites, so went many of the patient records. Retreating Confederate troops burned or hid documents before Union occupation. Likewise, Confederate medical records left behind were usually burned or confiscated by Union troops. Consequently, the further into the war, the harder it is to find complete Confederate general hospital records. This is especially true for Confederate test hospitals as invasion of Union troops in many of the Confederacy's predominant cities and ports began early in the war.

For example, examining a New Orleans general hospital would have served as a like comparison both of geography and sample size to the St. Louis hospitals surveyed. However, the city fell to Union troops in the Battle of New Orleans in late April 1862.³⁴ While the hospital

³¹ "Fifth Military District Census Banks County, Georgia July 20, 1860," Fold3, <https://www.fold3.com/image/34166289?rec=34166446>.

³² "Silas Garrison register listing death at St. Mary's Hospital, admission date, effects, and cause of death March 1863," Fold3, <https://www.fold3.com/image/13073235>.

³³ "Silas Garrison effects list- St. Mary's Hospital March 1863," Fold3, <https://www.fold3.com/image/13073222>; "Silas Garrison register listing death at St. Mary's Hospital March 1863," Fold3, <https://www.fold3.com/image/13073229>; "Silas Garrison register listing death at St. Mary's Hospital, admission date, effects, and cause of death March 1863."

³⁴ McPherson, *Battle Cry of Freedom*, 418; Humphreys, *Marrow of Tragedy*, 219.

data from 1861-1862 could be compared to Fifth Street general hospital and St. Louis City Hospital for those years, any New Orleans hospital records after 1862 would have been insufficient as a Confederate western hospital contributor. While the Union and Confederate medical bureaus had almost identical policies in place, splitting the years by occupation would lend itself to countless variables that could impact the accuracy of the data sets.³⁵ It would be difficult to determine if existing record books were used or new registers started upon Union occupation. Identifying if patients left behind by Confederate staff were counted in the new Union record books would also be problematic. Additionally, noticeable effects of sanitation policy were not seen until late 1862 into early 1863.³⁶ Union hospital records after 1863 could have been examined as a test hospital contributor. However, no complete records from New Orleans that fit this study's parameters were found.

Due to the shuffling of records, troops, hospitals, and town occupation, Confederate records that are available are scattered across the country in state libraries, local historical society archives, and personal collections. Especially official executive records were split up among several parties when Confederate defeat was eminent. Many of Jefferson Davis' records, including personal letters, were taken to Montreal, Canada for safe keeping.³⁷ Others were sent to New Orleans with family friends of the Davis' including a trunk of papers, which housed General Robert E. Lee's personal papers. The trunk and various other records were retrieved

³⁵ Variables such as missing records from the time of occupation regarding the patients left behind in the hospital, unknowing of whether those soldiers were recorded in Union patient registers upon occupation or if they were moved to prison camps as prisoners of war, is problematic from this study. If those patients died in the hospital upon Union occupation, there is likely no record of that in Union hospital registers.

³⁶ Additionally, the general hospital system was established in mid-1862. The results of reforms and the effects of the construction of a general hospital system on both sides of the conflict were not seen until early 1863. Robert Reilly MD, "Medical and Surgical care during the American Civil War, 1861-1865," Baylor University Medical Center, (Last modified, 2016), <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4790547/>, 4; Cunningham, 379.

³⁷ Dallas Irvine, "The Fate of Confederate Archives: Executive Office," *The American Historical Review*, Vol. 44, No. 4 (Jul, 1939), 823-841, 825.

from Washington, Georgia and sent to New York where they were housed in a warehouse for several years following the war.³⁸ Other records were removed little by little from the Confederate capital and scattered throughout personal homes, businesses, and libraries. On the night of the Confederate evacuation, most of the Confederate archives were transported to Charlotte, North Carolina by railcar to be stored in the Charlotte county courthouse.

After the federal release of many Confederate officials, the search for Confederate records began. Even in the 1870s the location of prominent Confederate records were unknown. Greed on the part of private record keepers created confusion as documents were removed from original collections, transferred to personal collections, or sold. Jefferson Davis himself sought return of his official records and after his release from federal custody, Davis visited Montreal and used hidden Confederate documents to write his *Rise and Fall of the Confederate Government*.³⁹ Since the 1870s, many Confederate records have been donated or bought by the federal government and are housed at the National Archives Records Administration in Washington, D.C. Today, the National Archives houses a large collection of Confederate records including the records of Chimborazo general hospital in Richmond, Virginia. Hundreds of available general hospital records housed at the National Archives were examined, and many are used in this case study.⁴⁰

³⁸ Dallas Irvine, "The Fate of Confederate Archives," 825.

³⁹ *Ibid.*

⁴⁰ Hospital Register Arkansas General Hospital, Helena, AR., 1862-1865; Hospital Register Charlottesville General Hospital, Charlottesville, VA. 1861-1865; Hospital Register of Chimborazo Hospital number 1; Hospital Register Chimborazo Hospital number 2; Hospital Register Chimborazo Hospital number 3; Hospital Register Chimborazo Hospital number 5; Hospital Register General Hospital No. 4 Wilmington, NC; Hospital Register Fairgrounds Hospital No. 1; Hospital Register Fairgrounds Hospital No. 2; Hospital Register Fifth Street General Hospital; Hospital Register Ft. Morgan General Hospital; Hospital Register Galveston General Hospital; Hospital Register Huston General Hospital; Hospital Register Indianapolis General Hospital; Hospital Register Keokuk General Hospital; Hospital Register Larson General Hospital; Hospital Register Newsome Hospital; Hospital Register Pettigrew General Hospital; Hospital Register Post Hospital; Hospital Register Quincy General Hospital; Hospital Register Ross General Hospital; Hospital Register Savannah General Hospital; Hospital Register Satterlee General Hospital; Hospital Register Shreveport General Hospital; Hospital Register St. Louis City Hospital; Hospital Register St. Mary's Hospital; Hospital Register Summit House Hospital; Hospital Register Receiving and

Due to concerns with post-war analysis of hospital data as presented by Welsh, source inconsistencies as in the case of Silas Garrison, and missing records, this study's examination of disease is limited. As the purpose of this thesis is not to gain an understanding of total Civil War fatalities from disease within one specific hospital, the Chimborazo survey data is reliable and accurate in the parameters of this study. However, like the federal analysis of Chimborazo records, fatalities without a cause of death are excluded from the data sets. Because the fluctuation of fatality rates in general hospitals operated in various geographical regions is the primary concern of this study rather than calculating total soldier fatality rates, the exclusion of this data is unavoidable. However, muster rolls used in this study were chosen based on location and the complexity of the records. Therefore, these exclusions are limited in number. There is no effort to trace soldier mortality after hospital discharge as deaths occurring *in* general hospitals are the primary focus of this thesis. As the cause of admission was not always the cause of death as previously discussed, fatalities in this study are recorded based on the documented cause of death, not the admission diagnosis.

While Welsh's arguments, the Garrison records, and errors in the federal analysis of hospital data exhibit crucial documentation errors in both original Confederate records and popular source data on Civil War disease, substantial patient information is also missing from Union muster rolls. Scores of pages in Satterlee general hospital records list no furloughs,

Distributing hospital; Hospital Register Ft. Barranacas Hospital. ; Hospital Register Turner's Lane Hospital; Hospital Register Unknown Hospital; Three month reports of hospital deaths in Mississippi hospitals, *Alabama Department of History and Archives*, 1862; Note that over 350 muster rolls and record volumes available at the National Archives in which much of this research was conducted, both Confederate and Union, were viewed and analyzed. Many were eliminated due to a lack of information or for lacking criteria that was required for this case study. The research for this study was not limited to the hospitals chosen for this thesis and all available resources were considered and examined. Further, many Confederate records were eliminated due to the way in which they were recorded. Because Stout copied Confederate fatalities into his own records, and in alphabetical order, there is no way to know where these soldiers died or of what cause. Only original muster rolls and records recorded from the hospital staff themselves fit the criteria for this thesis.

transfers, deaths, or patient diagnosis. While this could indicate another record book was used in place of the incomplete ledger, after close to twenty pages the patient registers again document Satterlee patients. There is no way to know who passed away in the timespan of a few months or even years that are missing from the records. Additionally, fatality counts obtained from patient muster rolls do not match pharmacy prescription books used to document patient treatments and medications for various afflictions (see appendix F).⁴¹ The discrepancies within patient registers and muster rolls raise suspicion regarding the accuracy of patient charting, regardless of federal regulations that governed the process.⁴² Consequently, it is questionable that both Satterlee and Chimborazo general hospitals had the astounding survival rates historians have long claimed.⁴³

⁴¹ Hospital Register, Arkansas General Hospital; Hospital Register, Charlottesville General Hospital; Hospital Register, Chimborazo Hospital number one; Hospital Register, Chimborazo Hospital number two; Hospital Register, Chimborazo Hospital number three.; Hospital Register, Chimborazo Hospital number five; Hospital Register, General Hospital No. four; Hospital Register, Fairgrounds Hospital No. one; Hospital Register, Fairgrounds Hospital No. two; Hospital Register, Fifth Street General Hospital; Hospital Register, Ft. Morgan General Hospital; Hospital Register Galveston General Hospital; Hospital Register Huston General Hospital; Hospital Register, Indianapolis General Hospital.; Hospital Register, Keokuk General Hospital; Hospital Register, Larson General Hospital; Hospital Register, Newsome Hospital; Hospital Register, Newsome Hospital; Hospital Register, Pettigrew General Hospital; Hospital Register, Post Hospital; Hospital Register, Quincy General Hospital; Hospital Register, Ross General Hospital; Hospital Register, Savannah General Hospital; Hospital Register, Satterlee General Hospital; Hospital Register, Shreveport General Hospital; Hospital Register, St. Louis City Hospital; Hospital Register, St. Mary's Hospital; Hospital Register, Summit House Hospital; Hospital Register, Receiving and Distributing hospital; Hospital Register, Ft. Barranacas Hospital; Hospital Register, Turner's Lane Hospital; Hospital Register, Unknown Hospital.

⁴² *The Army Surgeons Manual*, Surgeon General of the United States of America, 1861, 16, 18.

⁴³ Nathaniel West, *History of the Satterlee U.S.A. Gen. Hospital, at West Philadelphia, PA., from October 8, 1862, to October 8, 1863*, (Philadelphia: Hospital Press, 1883), 36; Frank R. Freeman, *Gangrene and Glory Medical Care during the Civil War*, (Chicago: University of Illinois Press, 2001); Adam Clements, University City Historical Society, Last modified April 22, 2010, http://www.uchs.net/pdf/Satterlee_General_Hospital-Adam_Clements.pdf; Parvin, "Lafayette Parvin - The Battle of Gettysburg & Pickett's Charge."

Among the discrepancies, missing records, and confusion, the Stout papers, which remain the most extensive collection of Confederate medical records, were of grand service to this project. Appointed by General Braxton Bragg as medical director of the Army of Tennessee, Dr. Samuel H. Stout built and managed the most expansive system of general hospitals in the Confederacy (see figure 3).⁴⁴ Stout's hospitals spanned the length of Georgia and extended into eastern Alabama.⁴⁵ Miraculously, Stout managed to preserve over 1,500 pounds of Confederate medical records and papers by the close of the war, many of which are housed at the Dolph Briscoe Center for American History at the University of Texas at Austin.⁴⁶ Jack Welsh's work, *Two Confederate Hospitals*, which details Stout's hospitals from Atlanta to Opelika, including Fairgrounds hospital number one and two, was exponentially helpful in studying the Stout region.

While much of the original records housed within the Stout collection are used within this thesis both in the survey data and in constructing a narrative of the development of the Confederate Medical Department, some records from the collection were unusable. Stout preserved a substantial number of Confederate medical records by making copies of them from original hospital registers, which were

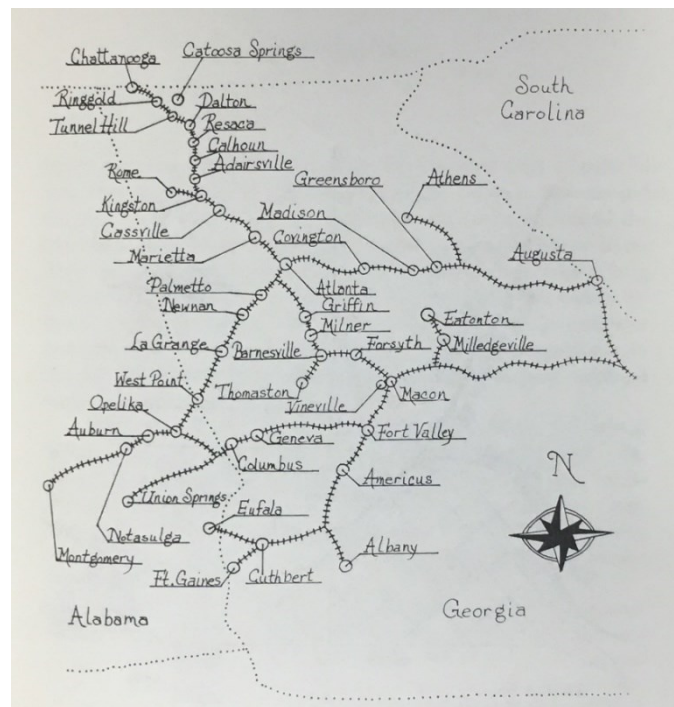


Figure 3. Map of the Stout Hospitals

⁴⁴ Welsh, *Two Confederate Hospitals*, Photo, vii.

⁴⁵ *Ibid*, 1.

⁴⁶ *Ibid*, 4-5.

likely destroyed thereafter.⁴⁷ However, Stout copied much of the Confederate medical muster rolls alphabetically by soldier name. While Stout's organization of records is useful for locating death dates of specific Confederate soldiers the volumes do not list the location of soldier deaths and were not of aid to this project. Therefore, all survey data used for both Union and Confederate hospitals were taken from original patient registers or weekly hospital reports.⁴⁸ While the data collected in this case study are recorded verbatim, note that errors in the original documentation, some of which are outlined here, are and always will be present in the data sets both in this thesis and the post-war analyses of Civil War disease and fatalities. Due to missing or incomplete original records on both sides of the conflict, fatality rates recorded for all survey hospitals are educated estimates of overarching patterns of disease and the successes of wartime sanitation policy.

Organization and Thesis

While most scholarship written on Civil War medicine examines the practice of medicine, medical reforms, women's contribution to the war effort, gender roles, and the prevalence of disease, this thesis allows for an in-depth examination of disease prevalence and prevention in contrasting geographical regions of the country during the Civil War. It offers a unique look at Civil War diseases, the struggles some communities faced over others, how geography and climate affected disease contraction and recovery, and why the standardization of medical care was necessary and successful.

⁴⁷ Irvine, *The Fate of Confederate Archives*, 829.

⁴⁸ The hospital reports used in this study list the number of patients who died and what they died from by the week. The reports count patient totals, death totals, and furloughs. Only three hospitals and Andersonville prison were surveyed using weekly patient reports.

Chapter one of this thesis examines both pre-war problems concerning Civil War-era medicine and issues that arose because of war.⁴⁹ Chapter two examines the deadliest diseases that plagued Civil War camps, prisons, and hospitals, typhoid and typhus fever. Fatal cases of malaria and the effects of geography, as determined by case study data are also examined here. Chapter three outlines the construction and reconstruction of the Union and Confederate Army Medical Bureaus and wartime medical reforms in response to the outbreak of endemic disease. Finally, chapter four is a thorough examination and analysis of case study results; their significance, how they both affirm and contradict known assumptions of Civil War medicine, and how successful wartime sanitation policy was in terms of geographical region. All case study data sets, including charts, original research notes and observations, the Garrison documents and muster rolls, and additional photos are accessible to the reader in the appendices.

The successes of Surgeons General Moore and Hammond were unprecedented for the period. Separately, the Surgeons General improved their army medical systems, revamped medical education and transitioned medical care to federally run and regulated operations. Aside from Moore and Hammond's successes in Washington and Richmond as Surgeons General, aid from the home front contributed significantly to the successes of the opposing Army Medical Departments and the care of the sick and wounded. While most of this thesis focuses on the long reach of wartime medical reforms across the divided United States, the average American fighting on the battlefield and on the home front, are not forgotten in this work.

One soldier's recollection of Confederate women published in *The Alabama Beacon* in June 1861, recalled young ladies lined up, waving their handkerchiefs declaring, "would to God I

⁴⁹ As much of the chapter examines pre-war medicine, keep in mind the term 'pre-war medicine' refers to pre-war America and there was no differentiation between Union and Confederate in this period.

was a man I would go to war!”⁵⁰ The women who played such a monumental part in Civil War medicine and relief, the community doctors who worked for free and housed sick soldiers, the mothers who buried her sons, they went to war, too. The American Civil War was far more than Lincoln and Lee, north and south, black and white, slave or free. The war, its motivations, actions and consequences even within army medical care, are far too complex to convey completely in this thesis. The Civil War was a diverse war and women, community doctors, slaves, contrabands, and children were on the frontlines at home, in hospitals, and on the battlefield.

More than anything, the Civil War was a human experience; men and women died, states burned, women and children became refugees, soldiers needed socks. In March 1863, a Union prisoner incarcerated in northern Mississippi praised the work of relief agencies and Confederate women and young girls “who contributed greatly to the comforts of the wounded” by supplying the soldiers with warm winter socks and blankets. The soldier closed the letter declaring that “the brightest pages of history will record their noble deeds”⁵¹ Some of these deeds are recorded in this thesis. Admittedly, this study fails to properly address the contributions of Civil War army doctors who gave years of dedicated service to Union and Confederate soldiers. Often charged with treating patients on both sides of the conflict, Civil War physicians and surgeons looked past political disagreements, saved lives, and comforted soldiers as they died. Rural community doctors often worked for free.⁵² Despite the conflicts explored in this thesis, Civil War doctors, well trained or not, did their best to aid Civil War soldiers and dedicated their time and skill to

⁵⁰ Mr. Editor: for the Beacon, Published in the Alabama Beacon, June 21, 1861, (*The Alabama Department of History and Archives*, Montgomery, Alabama), SG011159 aid society folder #12.

⁵¹ Excerpt from Letter of a wounded Confederate prisoner in north Mississippi, published in Mobile Adventures and Register, March 27, 1863, (*Alabama Department of History and Archives*, Montgomery, Alabama), SG011159 aid society folder #12.

⁵² Autobiography of Dr. Nathan Hobbs, (*The Alabama Department of History and Archives*, Montgomery, Alabama), SG011128 folder #9.

those on both sides of the conflict. They too, were champions of the war effort, wartime medical reform, and patient care.

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CHAPTER TWO: PRE-WAR PROBLEMS

Neither the Union nor the Confederate States of America could have predicted the enormity of the American Civil War. It was widely believed that the war would last only three months and consequently, the length and scope of the conflict came as a shock to the opposing sides, who were not adequately prepared. In 1860, the Union Army Medical Bureau employed one-hundred thirteen physicians for the care of nearly 16,000 army personnel.⁵³ In the early months of 1861, twenty-four of the one-hundred thirteen army physicians deserted for the Confederacy and three were dismissed for disloyalty, leaving fewer doctors to aid in the Union war effort and the Confederacy still scrambling to recruit army trained physicians.⁵⁴ Having to construct an Army Medical Bureau from the ground up, the Confederacy was woefully understaffed, and Jefferson Davis quickly retained Dr. Samuel Preston Moore as Surgeon General of the Confederacy on March 16, 1861.⁵⁵

Civil War nurse Mary Livermore recalled the shortage of army medical personnel, writing, “some regiments had no surgeon, not a surgical instrument, nor a particle of medicine with them.”⁵⁶ However, even if the armies were adequately staffed and supplied, the lack of medical skill and experience would have remained. A lack of proper medical training left most doctors to treat thousands of severely wounded soldiers with little to no previous experience doing so. Not only did the opposing governments lack organization in their medical departments,

⁵³ Thomas Sweeney and William Piston, *Portraits of Conflict*, (University of Arkansas Press, 2009), 201.

⁵⁴ Mary C. Gillett, *the Army Medical Department 1818-1865*, (Washington, D.C.: Library of Congress, 1987), 151-176.

⁵⁵ John H. Eicher and David J. Eicher, *Civil War High Commands*, (Stanford University Press, 2001), 72.

⁵⁶ Mary Livermore, *My Story of the War a Women's Narrative of Four Years Personal Experience as Nurse in the Union Army, and in Relief work at Home, in Hospitals, Camps, and at the Front, During the War of the Rebellion*, (New York: Da Capo Press, 1887), 197.

but they failed to supply adequate arms and training to soldiers by the time of the first major battle at Bull Run in July 1861.⁵⁷ The lack of supplies, military, and medical training left both Union and Confederate troops vulnerable and further strained the ill-trained and unequipped medical bureaus to treat soldiers on and off the battlefield.

Pre-War Medicine

The lack of an efficient and regulated the antebellum medical education system contributed greatly to the dire situation that arose with the onset of the Civil War. Before the conflict, many army-trained physicians were scattered throughout western territories and treated patients only as the need arose.⁵⁸ Beside the treatment of cholera endemics, pre-war medicine had never seen the scale and degree of those injured in the Civil War. Most army doctors had lived in the Wild West however, the majority had never treated a gun-shot wound.⁵⁹ Even in the rare case that a pre-war civilian physician had treated a gunshot wound, new munitions such as

⁵⁷ James McPherson, *Battle Cry of Freedom*, (New York: Oxford University Press, 1988), 347-349; Humphreys, Margaret, *Marrow of Tragedy the Health Crisis of the American Civil War*, (Baltimore: John Hopkins University Press, 2013) 7.

⁵⁸ The discussion of civilian physicians is not to be confused with army trained physicians. At this time there were 113 army physicians who had been trained to treat soldiers. However, this did not mean that army doctors had ever treated a gunshot wound. While there was a higher probability of encountering this type of trauma while serving as an army doctor in comparison to a civilian doctor, the last major war prior to 1860 was the Mexican American War which ended in February 1848. The number of casualties suffered in the Mexican American war were no comparison to the two percent of the population lost in the Civil War. The Mexican American war raged on the Mexican American border, not across the country like those of the Civil War. Consequently, a limited number of army physicians were employed and treated soldier wounds. Like their counterparts, army doctors were not well-trained regarding surgery and certainly not amputation as anesthetic was not introduced until late 1847. Surgeries performed with anesthesia were generally preformed in prestigious urban hospitals such as Massachusetts hospital in Boston prior to the Civil War. While the number of surgeries and amputations increased with the use of anesthesia, these procedures were still a rarity considering the mass numbers of surgeries and amputations preformed during the Civil War.

⁵⁹ Loren Humphrey, *Quinine and Quarantine Missouri Medicine through the Years*, (Columbia: University of Missouri Press, 2000).

the minié ball and grapeshot presented an urgent problem as no doctor in the army or otherwise, had treated injuries caused by these munitions.

Pre-war frontier medicine did not compare to treating war trauma and gunshot wounds and rendered even the most “qualified” doctors unqualified to treat mass casualties or perform surgical procedures. While a select few frontier physicians did have surgical experience, it was not a skill commonly taught in the medical education system outside of textbook pictures and readings. This was largely due to the legal inability to obtain bodies for scientific study, which made routine surgical training nearly impossible. Medical students who did attend surgical courses grave robbed in order to obtain cadavers.⁶⁰ This was the case at Dr. Joseph McDowell’s Medical College, which later served as the Union’s Gratiot Street Jail, in St. Louis, Missouri (see figure 4).⁶¹ In McDowell’s medical college, the practice of grave robbing was integrated into the basic curriculum.⁶² This earned McDowell a regrettable place in St. Louis society but gave his students the opportunity to obtain a skill that for most medical students was not possible. Certainly, this special knowledge was utilized by both army and civilian physicians during the war as St. Louis became the largest medical hub west of the Appalachian Mountains.⁶³

Outside of St. Louis, the rarity of surgical training reigned. Between 1837 and 1847, only thirty-nine surgical amputations were performed at Massachusetts hospital, one of the most

⁶⁰ Sweeney, Piston, *Portraits of Conflict*, 203.

⁶¹ Victoria Cosner and Lorelei Shannon, *Mad Dr. McDowell*, (Charleston: History Press, 2014), photo.

⁶² Cosner and Shannon, *Mad Dr. McDowell*, 49; Humphrey, *Quinine and Quarantine*, (2000), 30-31.

⁶³ Sweeney, Piston, *Portraits of Conflict*, 203.

advanced and prestigious hospitals in the country.⁶⁴ After the introduction of anesthesia in 1847, the number of surgical amputations more than doubled over the next decade (1847-1857) to one-hundred eighty-nine procedures performed at Massachusetts general hospital.⁶⁵ Over the course of the Civil War, the number of amputations skyrocketed to over 60,000 (see figure 5).⁶⁶

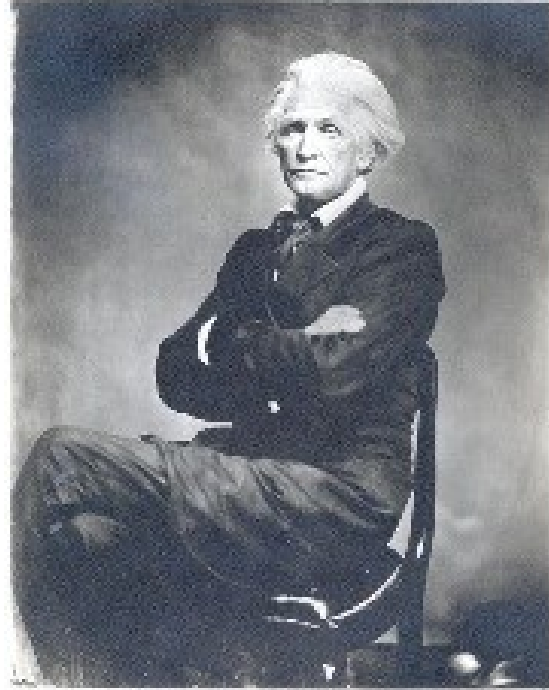


Figure 4. Dr. Joseph McDowell, founder of McDowell Medical College in St. Louis, Missouri.

It was well known among soldiers that doctors had little experience with surgical procedures such as amputations. As a result, army hospitals were often a more unfavorable place than the battlefield as many soldiers believed that their “limbs (were) in as much danger from the ardor of young surgeons as from the missiles of the enemy.”⁶⁷ Civil War nurse and spy Emma Edmonds recalled, “I once saw a young surgeon amputate a limb, and I could think of nothing else than a Kennebec Yankee whom I once saw carve a turkey; it was his first attempt at carving, and the way he disjointed those limbs I shall

⁶⁴ Sweeney, Piston, *Portraits of Conflict*, 203; Daniel H. Robinson and Alexander H. Toledo, “Historical Development of Modern Anesthesia,” *Medline* 25, no. 3 (January 2012): 141-49. Anesthesia was first used by a dentist, Dr. William T.G. Morgan, who successfully preformed an extraction using nitrous oxide as an anesthetic. On October 16, 1847, Dr. Morgan and Massachusetts hospital physician Dr. John Collins Warren, preformed the first successful surgery in the country using anesthesia at Massachusetts hospital; J N. Hays, *Burdens of Disease Epidermis and Human Response in Western History*, 2nd ed, (New Jersey: Rutgers University Press, 2009), 221.

⁶⁵ Sweeney, Piston, *Portraits of Conflict*, 203.

⁶⁶ U.S. National Library of Medicine, “Maimed Men”; “Honorable Scars.” U.S. National Library of Medicine. <https://www.nlm.nih.gov/exhibition/lifeandlimb/honorablescars.html>.

⁶⁷ David H. Donald, *Gone for a Soldier: The Civil War Memoirs of Private Alfred Bellard*, (Boston: Little Brown and Co., 1975), Photo. 221.

⁶⁸ Sweeney, Piston, *Portraits of Conflict*, 203.

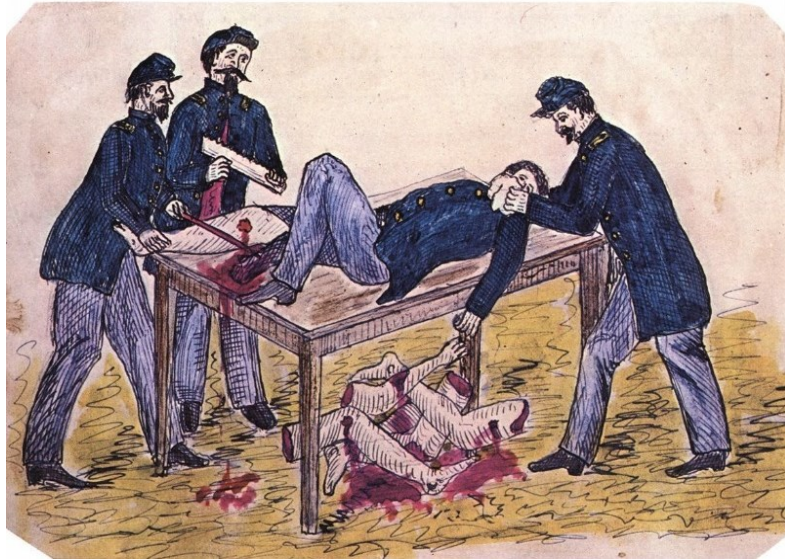


Figure 5. “The doctors were busy in probing for balls, binding up wounds, and in cutting off arms and legs, a pile of which lay under the table.” From drawing from the diary of Alfred Bellard.

never forget.”⁶⁸ The distrust of the pre-war army medical system and of physicians in general, proved to be a correct assumption as two-thirds of the total Civil War fatalities were from diseases such as gangrene and diarrhea caused by unsanitary procedures, camps, prisons, and hospital conditions.⁶⁹ The disregard for

sanitation was not just an oversight but a general misunderstanding of germ theory, something that did not come into focus until later in the war. Dr. William Hammond wrote about the lack of information regarding germ theory and hygiene and confessed that he knew of only one publication that discussed the topic in the post-war period. However, he disappointingly reported that while the treatise “contained many valuable hints in regard to the health of the soldier, (it) was not intended by its author as a treatise on the subject.”⁷⁰ While some medical doctors such as Hammond and Moore completed their medical degree overseas, which offered a more progressive curriculum concerning germ theory, those elite physicians were scarce.

Perhaps the most detrimental element of pre-war medical education was the lack of regulations regarding medical licensing. With federal medical regulation non-existent and state

⁶⁸ Emma Edmonds, *Nurse and Spy in the Union Army*, (Hartford: Jones Brothers and Co., 1865), 373.

⁶⁹ Devine, *Learning from the Wounded*. Other diseases such as malaria and smallpox had less to do with sanitation and instead were contracted due to the proximity of disease carriers such as mosquitos and others infected with smallpox.

⁷⁰ William Hammond, *A Treatise on Hygiene: with Special Reference to Military Service*, (Philadelphia: J.B. Lippincott and Co., 1863), <https://archive.org/stream/62510670R.nlm.nih.gov/62510670R#page/n5/mode/2up>, viii.

licensing inconsistent, there were sometimes an abandonment of restrictions altogether.⁷¹ The most common avenue to obtain medical licensure was by apprenticeship in which physicians worked under the observation of a currently licensed physician for a two-year time period before obtaining a medical license. There were no prerequisite requirements for licensure by apprenticeship such as higher education or even the ability to read or write leaving some doctors unable to read labels, write prescriptions, or give written patient instructions.⁷²

Civil War medication was not regulated in this period either, and “snake oil salesmen” were present everywhere in the medical marketplace, presenting patients with concoctions that served as placebos at best and advanced the disease process at worst.⁷³ The use of opium and mercury as favored treatments for various ailments caused cases of addiction and poisoning.⁷⁴ As antibiotics were not widely used for another eight decades, most Civil War medications worked to alleviate the symptoms of disease and illness rather than cure them. However, treatment through medication was experimental and subjective, as even highly trained American medical physicians had only limited knowledge of pharmacology. Even the prominent Dr. Joseph McDowell sold an elixir for the treatment of cholera, which contained opium and black pepper. Dr. McDowell created his cholera medicine with the intent of treating the disease, however his pepper and opium-based serum caused dehydration and ultimately sped up the disease process.⁷⁵ In 1883, Dr. Robert Koch successfully isolated the cholera bacilli and determined that cholera was effectively treated by flushing out bacterial infection through constant hydration.⁷⁶ Despite

⁷¹ Devine, *Learning from the Wounded*, 20-25; *The Army Surgeons Manual*, Surgeon General of the United States of America, 1861, 20-22.

⁷² Devine, *Learning from the Wounded*, 20-25.

⁷³ Cosner and Shannon, *Mad Doctor McDowell*, 48-49.

⁷⁴ Humphrey, *Quinine and Quarantine*, (2000), 33-35.

⁷⁵ Cosner and Shannon, *Mad Doctor McDowell*, 49.

⁷⁶ Howard-Jones N. Robert Koch and the cholera vibrio: a centenary, *British Medical Journal* 288, 379-381, 1984.

his efforts, Dr. McDowell's elixir quickly dehydrated the patient causing a quicker and more painful death.

Disarray in the Union Army Medical Bureau

In addition to an unregulated medical education and pharmacological system, the United States Army Medical Bureau was in disarray. Dr. Thomas Lawson was the sitting Surgeon General when Fort Sumter fell on April 13, 1861 (see figure 6).⁷⁷ Lawson's laissez faire attitude toward army medical education and reform had hindered medical innovation in the pre-war era leaving the armies with century old medical treatments and a seniority system that operated in place of a merit system that drew upon academic credentials.⁷⁸ Eighty years old and set in his ways, Lawson was largely out of touch with the provisions needed to supply the Union army. This included adequately staffing army physicians and supplying army field doctors with necessities such as bandages and medication. Following the fall of Fort Sumter Surgeon General Lawson passed away leaving



Figure 6. Surgeon General Lawson

⁷⁷ Ira M. Rutkow, *Bleeding Blue and Gray Civil War Surgery and the Evolution of American Medicine*, (New York: Random House, 2005) 76; "Surgeon General Lawson," American Civil War Medicine and Surgical Antiques, Photo.
http://www.medicalantiques.com/civilwar/Images_2/images/Lawson,%20Surg.%20General%201861%20CDV.jpg.

⁷⁸ Devine, *Learning from the Wounded*, 20-25.

the next in line, Dr. Clement Finley, to succeed him on May 15, 1861 (see figure 7).⁷⁹



Figure 7. Surgeon General Finley

Taking office at age 64, the new Surgeon General shared many opinions of Surgeon General Lawson. Instead of bending to the needs and urgency of war, Surgeon General Finley adhered to tradition and made little effort to reform the army medical system. In turn, the start of the Civil War left the department understaffed, ill equipped, and ignorant regarding how to organize provisions, mobilize staff, and hinder the spread of camp and hospital diseases.

Further, the Bureau and specifically Surgeon General Finley took no responsibility for the rapid spread of disease and infection among army soldiers. The 1861 bill that established the United States Sanitary Commission (formerly known as the Women's Central Association) cited green troops and their unfamiliarity with "rigid regulation" as the cause of camp disease. The legislation made no mention of inadequate medical practices or incompetent army doctors.⁸⁰ The Bureau's refusal to take responsibility for the medical crisis posed by the Civil War clearly demonstrated the department's disconnect from the realities of the conflict. Frederick Law Olmsted, secretary of the United States Sanitary

⁷⁹ Cosner and Shannon, *Mad Doctor McDowell*, 49; "Clement Alexander Finley (1797-1879)." Dickinson College Archives and Special Collections. Last modified, 2005. <http://archives.dickinson.edu/people/clement-alexander-finley-1797-1879>.

⁸⁰ Social Welfare History Project, "U.S. Sanitary Commission: 1861."

Commission voiced his frustration with the lack of governmental responsibility and leadership when he asserted that “men (were) dying daily for want of a tolerable Surgeon General.”⁸¹

Complaints, acquisitions, and suggestions from relief agencies flooded the desks of Army Medical Bureau staff and eventually, Surgeon General Finley, but it was all in vain. In his 1863 *Treatise on Hygiene*, Dr. William Hammond (who would replace Finley as Surgeon General in the spring of 1862) asserted that “a strict adherence to routine hinders the development of medical science.”⁸² Hammond’s assertion was undoubtedly a criticism of the Union’s Surgeons General Finley and Lawson’s medical professionalism and education. It was clear that refusing to adapt to modern medical innovation set the Union medical service behind in organization and efficacy. However, Finley remained married to his views and disregarded outside concerns.

Finley’s disregard of the concerns of public reformers and medical professionals became a point of contention between many elite physicians and the sitting Surgeon General. Many army physicians came forward with concerns pertaining to the function and effectiveness of Union medical care.⁸³ In early 1861, Dr. Charles Tripler advocated for more beds in hospitals along the Potomac and scouted for suitable buildings in which to establish medical facilities (see figure 8). Tripler disagreed with Finley about the establishment of hospitals in churches, private homes, and factories, which were not structurally ideal, Tripler lobbied for strategically placed, pavilion style hospitals to be built from the ground up.⁸⁴ Finley denied Tripler’s request. Frustrated, Tripler made small improvements within the medical facilities under his command and continued to lobby Washington for medical reform. Ultimately, additional disagreements with Tripler led to

⁸¹ Devine, *Learning from the Wounded*, 14.

⁸² Hammond, *a Treatise on Hygiene*, 1863.

⁸³ "Charles Stuart Tripler Medical Corps," U.S. Army Medical Department. Photo.

⁸⁴ "Obituaries," *The Army Medical Bulletin*, No. 61 (April 1942), 176-81.

Surgeon General's court martial, delivering another blow to Finley's already battered reputation.⁸⁵

To make matters worse, Finley did not support the service of any civilian volunteers in field or army hospitals. Finley's denial of outside volunteers left some regiments without medical aid completely. President Abraham Lincoln supported Finley in the denial of civilian medical volunteers at the beginning of the war. When asked to fund the Women's Central Association of Relief, (later known as the United States Sanitary Commission) Lincoln asserted his fear that the

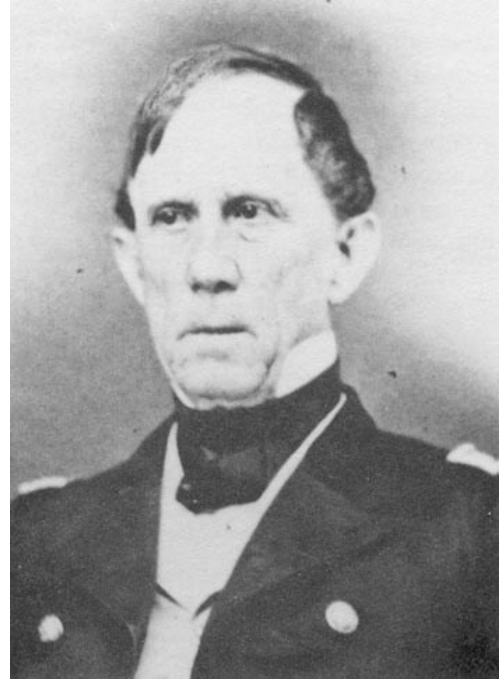


Figure 8. Dr. Charles Tripler

organization being made up of predominantly women would be a "fifth wheel to the coach."⁸⁶ Justifications for the denial of especially women within Union hospitals stemmed from the traditional domestic sphere that exalted women as homemakers.⁸⁷ Both Finley and Lincoln argued that a woman's place was at home 'sewing for the soldiers.'⁸⁸ Additionally, women who followed army regiments were generally prostitutes and the social stigma surrounding women who did so, even when working as nurses remained.⁸⁹ Surgeon General Finley did not support

⁸⁵"Obituaries," 176-81.

⁸⁶ William Maxwell, *Lincoln's Fifth Wheel: The Political History of the United States Sanitary Commission*, (New York: Longmans, Green and Company, 1956).

⁸⁷ Catherine Clinton and Nina Silber, *Divided houses: Gender and the Civil War*, (New York: Oxford University Press, 1992); Nancy F. Cott, *The Bonds of Womanhood: "Woman's Sphere" in New England, 1780-1835*, 2nd ed. (New Haven: Yale University Press, 1997).

⁸⁸ Elizabeth Robinson, "The Union's 'Other Army': The Women of the United States Sanitary Commission," https://www.gilderlehrman.org/sites/default/files/inline-pdfs/Elizabeth%20Robertson_0.pdf.

⁸⁹ Devine, *Learning from the Wounded*. As late as 1864, the presence of women in Civil War camps was outlawed.

civilian physicians and male medical volunteers leaving regiments without options concerning the employment of medical staff.

While Surgeon General Finley struggled to see past his traditional whims, the rest of the country did. Following the battle of First Manassas (Bull Run) in July 1861, it was publicly apparent that the Army Medical Bureau was not doing enough to care for the massive number of Union soldiers dying from disease and battle wounds.⁹⁰ The shortage of army doctors and the rejection of civilian volunteers spurred outrage in Union communities. The public depiction of death and disease in local newspapers instilled even more distrust in the Army Medical Bureau and private citizens, like Tripler, felt the urgency to lobby Washington for medical reform.⁹¹

While the Union scrambled to organize their ranks, Confederate generals were tasked with building an army medical department from scratch. While the Union Medical Bureau continued business as usual following Confederate victory at Fort Sumter, Jefferson Davis invited Dr. Samuel Preston Moore to join the Confederacy as her Surgeon General. Moore accepted Davis' invitation and was inducted as the Surgeon General of the Confederate States of America on July 30, 1861.⁹² As an elite physician educated in Europe and a veteran of the Mexican-American war, Moore was familiar with the shortcomings of the Union Army Medical Bureau and ventured to create a state-of-the-art, progressive medical system based on rigid regulation, medical science, and certifiable competence.⁹³ Moore graduated from the Medical

⁹⁰ Gillett, "the Army Medical Department."

⁹¹ H. H. Cunningham, *Doctors in Gray the Confederate Medical Service*, (Baton Rouge: Louisiana University Press, 1958) 163.

⁹² Frank R. Freeman, *Gangrene and Glory Medical Care during the Civil War*, (Chicago: University of Illinois Press, 2001); "Samuel Preston Moore, Confederate Surgeon General, Civil Practice to Civil War: The Medical College of the State of South Carolina 1861-1865," <http://waring.library.musc.edu/exhibits/civilwar/Moore.php>; Jack D. Welsh, *Two Confederate Hospitals and Their Patients Atlanta to Opelika*, (Macon: Mercer University Press, 2005).

⁹³ "Samuel Preston Moore, Confederate Surgeon General." The Waring Historical Library. Last modified, 2020. <http://waring.library.musc.edu/exhibits/civilwar/Moore.php>.

College of South Carolina and was formally appointed assistant surgeon in the regular army. The Confederate Surgeon General served in the Mexican American War and participated in tours of duty across the country including Iowa, Kansas, Missouri, Louisiana, Florida, and New York. Moore was well versed in typical army regulation and medical care and sought, above all, to elevate southern medicine and revise medical education.⁹⁴

Unlike most Union forces, enslaved people were the main workforce for the Confederacy.⁹⁵ While the Union government paid soldiers, hired hands, and government employees to build hospitals, put up and take down army camps, care for the sick and wounded, and as cooks and laundresses, the Confederate government had a healthy source of unpaid labor allowing more fiscal resources to build the Confederate hospital system.⁹⁶ Between 1863 and 1864 Chimborazo hospital number two employed sixty percent more free African Americans and slaves than white workers (see table 1).⁹⁷ Of that sixty percent, fifty-five percent were slaves. Only nine percent of Chimborazo's African American workers were free citizens who required reimbursement for their labor. Women, making up a significant portion of hospital employees were paid no more than forty cents and one ration per day for their services as matrons, laundresses, and nurses.⁹⁸ However, slaves flocked to Union lines as soon as the war began and the Union army utilized contraband and free slave labor for the entirety of the war.

⁹⁴ Cunningham, *Doctors in Gray*, 28; Humphries, *Marrow of Tragedy*, 206-207.

⁹⁵ Some Union companies did bring slaves along with them. Later in the war, Southern slaves would be captured as contrabands or "released" as free slaves, but the majority would find themselves working in Union army camps or on Union collective farms for the remainder of the war, for little to no pay. After the war, and especially in the south, tenant farming became the main source of income for African Americans. This which some historians label "the second slavery," persisted into the 1960s and was a primary factor in the severe poverty of African Americans that persisted after the American Civil War.

⁹⁷ Register of employees Chimborazo Hospital number Two, 1864-1865, National Archives Records Administration, (Washington, D.C.).

⁹⁸ William Grace, General Orders number 54, August 3, 1864, *Army Surgeons Manual for the use of Medical Officers, Cadets, Chaplains, and Hospital Stewards*, January 1st, 1861, to April 1st, 1865, (New York, 1865), 30.

The abundance of workers allowed the Confederacy to build, move, and operate military facilities smoothly and efficiently from the onset of the war. While the Union would also have a

Table 1. Number of Employees by Race 1864-1865 Chimborazo Hospital Number Two

<u>Number of Employees by Race 1864-65</u>	<u>Free</u>	<u>Slave</u>	<u>Total</u>
African American Workers	9	92	101
White Employees	67	0	67
			168

healthy supply of contraband labor by early 1862, the Confederacy had a larger unpaid workforce at the onset of the war. Despite this, the Confederacy struggled to implement steadfast medical reforms as many of its personnel were trained within the long established and dubiously flawed American medical and Army Medical Bureau systems. Like Hammond, Surgeon General Moore needed to recertify and retrain physicians to ensure that enlightened medical standards were implemented and enforced. On September 3, 1861, a petition sent on behalf of Charlottesville general hospital to President Jefferson Davis alleged that one-fifth of the army was sick “and the surgeons of the army (were) wholly unfit for their positions especially those who have been confined in the Confederate service (see appendix G).”⁹⁹

Economic hardship was not alleviated because of the Confederate workforce. The Confederacy lacked industrialized centers of production to manufacture supplies such as textiles, lumber, tools, household furnishings, and hospital supplies. Union blockades also hindered the import of supplies.¹⁰⁰ Confederate naval commerce raiders and blockade runners penetrated Union blockade lines and imported and exported goods from Cuba, France, and Europe (see

⁹⁹ Petition from Charlottesville hospital to Jefferson Davis, September 1861, (National Archives and Records Administration).

¹⁰⁰ Humphries, *Marrow of Tragedy*, 217.

figure 9).¹⁰¹ For much of the war and especially before the Union occupation of Mobile bay in 1863, blockade running was the main source of weapons, whiskey, and textiles within the Confederacy.¹⁰² Before the establishment of the Confederate navy, women were the main suppliers of army tents, “Confederate grays,” and the gathering of plants and berries for medications.¹⁰³

Despite economic hardships, Moore’s appointment was an important advantage for the Confederate medical department. While the Union had employed three surgeon generals in the period following the fall of Fort Sumter in April 1861 through the spring of 1862, Dr. Samuel Preston Moore was the only Confederate surgeon



Figure 9. Model of the Confederate Naval Commerce Raider, C.S.S. Alabama

general after his appointment in July 1861.¹⁰⁴ While Confederate slave labor provided the Confederate army with a built-in work force that weighed heavily on the speed and efficiency in which hospitals and headquarters were built and staffed, the presence of a steady and progressive Surgeon General was a critical element to the quick organization and of general hospitals. The steady employment of Surgeon General Moore allowed the Confederacy to organize their ranks

¹⁰¹ Humphries, *Marrow of Tragedy*, 217; Simpson, Ashley, U.S.S. Alabama Warship and Museum Exhibits, Mobile, Alabama. Photo.

¹⁰² Mary L. Marshall, "Nurse Heroines of the Confederacy," *Tulane University School of Medicine*, (New Orleans, LA: 319-36), 319.

¹⁰³ Marshall, "Nurse Heroines of the Confederacy," 319.

¹⁰⁴ Cunningham, *Doctors in Gray the Confederate Medical Service*, 27.

and build state-of-the-art pavilion style hospitals, including the largest military facility in the world, before the Union Army Medical Bureau employed a steady surgeon general. \

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http://www.medicalantiques.com/civilwar/Images_2/images/Lawson,%20Surg.%20General%201861%20CDV.jpg

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CHAPTER THREE: DISEASE AS ENEMY NUMBER ONE

Before examining the enactment of sanitation policy and medical education reform, it is essential to understand the disease environment ignited and fostered by the Civil War. Disease was more devastating to Civil War soldiers than grapeshot or minié balls. Case study results show that in total, deaths from disease and illness accounted for seventy-seven percent of all recorded fatalities. Thirty-two percent of fatalities from disease were deaths from typhoid fever.¹⁰⁵ Military camps and hospitals were especially susceptible to *salmonella typhi* otherwise

¹⁰⁵ Hospital Register, Arkansas General Hospital, Helena, Arkansas, 1862-1865, Record Group 94, Registers 45, 46, 48, (National Archives Records Administration: Washington, D.C.); Hospital Register Charlottesville General Hospital, Charlottesville, Virginia, 1861-1865, Ch. 6, vol. 214, (National Archives Records Administration: Washington, D.C.); Hospital Register, Chimborazo Hospital number one, Richmond, Virginia., 1861-1863, (National Archives Records Administration: Washington, D.C.); Hospital Register, Chimborazo Hospital number two, Richmond, Virginia, 1863-1865, (National Archives Records Administration: Washington, D.C.); Hospital Register, Chimborazo Hospital number three, Richmond, Virginia, 1863-1865, Ch. 6, vols. 19, 53, 21, 64, 62, 69, 226, 105, 101, 56, (National Archives Records Administration: Washington, D.C.); Hospital Register, Chimborazo Hospital number five, Richmond, Virginia, 1863-1865, Ch. 6, vols.23, 17, 63, 64, 65, 70, 20, (National Archives Records Administration: Washington, D.C.); Hospital Register, General Hospital No. four Wilmington, North Carolina, 1862-1864, Ch. 6 vols. 285, 244 ½, 278, 270, 282, 156, (National Archives Records Administration: Washington, D.C.); Hospital Register, Fairgrounds Hospital No. 1, Atlanta, Georgia, *Samuel Hollingsworth Stout Papers, 1837 (1860-1865)*, Box 2L3, (Center for American History, the University of Texas at Austin); Hospital Register, Fairgrounds Hospital No. 2, Atlanta, Georgia, *Samuel Hollingsworth Stout Papers, 1837 (1860-1865)*, Reel 2 item D, (Center for American History, the University of Texas at Austin); Hospital Register, Fifth Street General Hospital, St. Louis, Missouri, 1861-1863, (National Archives Records Administration: Washington, D.C.); Hospital Register Ft. Morgan General Hospital, Fort Morgan, Alabama, 1863-1864, Ch. 6 vol. 3, (National Archives Records Administration: Washington, D.C.); Hospital Register, Galveston General Hospital, Galveston, Texas, 1864-1865, Ch. 6 vol. 275, (National Archives Records Administration: Washington, D.C.); Hospital Register, Huston General Hospital, Huston, Texas, 1861-1863, Ch. 6 vols. 275, 417 ½, 276, (National Archives Records Administration: Washington, D.C.); Hospital Register, Indianapolis General Hospital, Indianapolis, Indianapolis, 1862-1864, Record Group 94, Registers 102, 62, 63, 64 IN, (National Archives Records Administration: Washington, D.C.); Hospital Register, Keokuk General Hospital, Keokuk, Iowa, 1862-1865, Record Group 94, Register 53 IA, (National Archives Records Administration: Washington, D.C.); Hospital Register, Larson General Hospital, St. Louis, Missouri, 1863-1864, (National Archives Records Administration: Washington, D.C.); Hospital Register, Newsome Hospital, Chattanooga, Tennessee, 1862-1864, *Samuel Hollingsworth Stout Papers, 1837 (1860-1865)*, Box 22, FILM 381, (Center for American History, the University of Texas at Austin); Hospital Register, Pettigrew General Hospital, Raleigh, North Carolina, 1861-1865, Ch. 6, Vols. 290, 395, 523, (National Archives Records Administration: Washington, D.C.); Hospital Register, Post Hospital, Dalton, Georgia, 1865, Record Group 94, Register 19 GA., (National Archives Records Administration: Washington, D.C.); Hospital Register, Quincy General Hospital, Quincy, Illinois, 1861-1865, Record Group 94, Register 412, 544 IL, (National Archives Records Administration: Washington, D.C.); Hospital Register, Ross General Hospital, Mobile, Alabama, 1863-1865, Ch. 6, vol. 2, (National Archives Records Administration: Washington, D.C.); Hospital Register, Savannah General Hospital, Savannah, Georgia, 1864-1865, Record Group 94, Register 8, 423, GA, (National Archives Records Administration: Washington, D.C.); Hospital Register, Satterlee General Hospital, Philadelphia, Pennsylvania, 1862-

known as typhoid fever.¹⁰⁶ Given the right environment, typhoid had the power to devastate populations. While diseases such as yellow fever, scurvy, and malaria were limited to specific geographical regions, typhoid was not. Because typhoid spreads through contaminated food and water supplies, the disease was not limited to swampy, humid environments like malaria, passed and contracted by the bite of an *Anopheles* mosquito.

Civil War camps and hospitals were crowded, unsanitary, and until the enactment of sanitation policy, unregulated. Latrines placed next to food preparation areas or positioned downstream from camps became problematic when troops moved down-river soon thereafter. Camp living quarters allowed insects to thrive, multiply, and spread quickly from soldier to soldier. Even after sanitation policy, flies and lice carried *salmonella typhi* and often contaminated soldier's food, cooking utensils, pots, pans, and canteens. It was also likely that meals were prepared by human carriers of the typhoid bacilli. The disease was consequently transmitted through meals prepared by infected cooks and thereafter consumed by Civil War camp soldiers or patients convalescing in wartime hospitals.

In addition to typhoid, typhus fever appeared in the crowded, unsanitary conditions of Civil War hospitals and camps throughout the war. Typhus is spread by the bite of a *pediculus*

1865, (National Archives Records Administration: Washington, D.C.); Hospital Register, Shreveport General Hospital, Shreveport, Louisiana, 1864-1865, Ch. 6, vol. 297 ¼, (National Archives Records Administration: Washington, D.C.); Hospital Register, St. Louis City Hospital, St. Louis, Missouri, 1861-1863, (National Archives Records Administration: Washington, D.C.); Hospital Register, St. Mary's Hospital, Dalton, Georgia, 1862-1863, Ch. 6, vol. 274, (National Archives Records Administration: Washington, D.C.); Hospital Register, Summit House Hospital, Philadelphia, Pennsylvania, 1862-1865, Record group 94, Registers 249, 242, 250, 254, 252, PA, (National Archives Records Administration: Washington, D.C.); Hospital Register, Receiving and Distributing hospital, Atlanta, Georgia, *Samuel Hollingsworth Stout Papers, 1837 (1860-1865)*, Box 22, FILM 381 item c, (Center for American History, the University of Texas at Austin); Hospital Register, Ft. Barranacas Hospital, Pensacola, Florida, 1862-1865, Record Group 94, Registers 79, 74, FL, (National Archives Records Administration: Washington, D.C.); Hospital Register, Turner's Lane Hospital, Philadelphia, Pennsylvania, 1862-1865, Record group 94, Register 249 PA, (National Archives Records Administration: Washington, D.C.); Hospital Register, Unknown Hospital, Petersburg, Virginia, 1864-1865, Ch. 6 vols. 38, (National Archives Records Administration: Washington, D.C.).

¹⁰⁶ H. Curschmann, *Typhoid Fever and Typhus Fever*, (Philadelphia: W.B. Sanders and Co., 1902).

humanus corporis (a clothes louse), commonly referred to as a “cootie” in the Civil War period.¹⁰⁷ When infected with *rickettsia prowazekii*, clothes lice are the bearers of debilitating, deadly scourge. While typhus fever accounted for point seven percent of the total soldier fatalities surveyed, it was no doubt devastating to the soldiers who contracted it in Civil War camps and hospitals.¹⁰⁸ Conclusively, typhoid was the deadliest disease of all those surveyed which included malaria, cholera, smallpox, dysentery, tuberculosis, pneumonia, fever, scurvy, diarrhea, dysentery, and measles- each of which ranged from point one three percent to ten percent of the total surveyed fatalities from disease.¹⁰⁹

For clarity, this chapter is divided into three sections: the first two concern the history and transmission of typhoid fever and typhus fever. The third is an analysis of survey data concerning fatalities from typhus and typhoid fever. The first two subsections will include a brief history of typhoid and typhus, its discovery, disease symptoms, and side effects. Although inserted throughout, the third section will look closely at case study data regarding cases of typhoid and typhus fever. Malaria will also be examined in accordance with cases of typhomalarial co-infections. While case study data is useful for examining overall disease

¹⁰⁷ Jonathan J Moore, *Dreadful Diseases and Terrible Treatments the Story of Medicine through the Ages*, (New York: Metro Books, 2017), 139.

¹⁰⁸ Hospital Register, Arkansas General Hospital; Hospital Register, Charlottesville General Hospital; Hospital Register, Chimborazo Hospital number one; Hospital Register, Chimborazo Hospital number two; Hospital Register, Chimborazo Hospital number three.; Hospital Register, Chimborazo Hospital number five; Hospital Register, General Hospital No. four; Hospital Register, Fairgrounds Hospital No. one; Hospital Register, Fairgrounds Hospital No. two; Hospital Register, Fifth Street General Hospital; Hospital Register, Ft. Morgan General Hospital; Hospital Register Galveston General Hospital; Hospital Register Huston General Hospital; Hospital Register, Indianapolis General Hospital.; Hospital Register, Keokuk General Hospital; Hospital Register, Larson General Hospital; Hospital Register, Newsome Hospital; Hospital Register, Newsome Hospital; Hospital Register, Pettigrew General Hospital; Hospital Register, Post Hospital; Hospital Register, Quincy General Hospital; Hospital Register, Ross General Hospital; Hospital Register, Savannah General Hospital; Hospital Register, Satterlee General Hospital; Hospital Register, Shreveport General Hospital; Hospital Register, St. Louis City Hospital; Hospital Register, St. Mary’s Hospital; Hospital Register, Summit House Hospital; Hospital Register, Receiving and Distributing hospital; Hospital Register, Ft. Barranacas Hospital; Hospital Register, Turner’s Lane Hospital; Hospital Register, Unknown Hospital.

¹⁰⁹ *Ibid.*

patterns in case study specific geographical regions, it is not helpful in calculating statistics on hospital contracted typhoid and typhus fever. As most general hospital records do not indicate if typhoid was acquired in or out of the general hospital, there is no way to determine where that soldier contracted it outside of the general region. Only one survey hospital noted in their patient register that many soldiers were “bad off when got here” or “beyond help.”¹¹⁰ Therefore, there are no figures concerning hospital contracted typhoid or typhus. The only affliction used to analyze hospital medical care are cases of gangrene and bacterial infections after documented amputations as these procedures were performed in Civil War medical facilities - if not in the admitting hospital, in nearby field hospitals.

The History and Transmission of Typhoid Fever

Before 2006, it was believed that typhoid fever was first described by historian Thucydides during the plague of Athens in 430-426 BC in which twenty-five percent of the city’s population fell victim (see figure 10).¹¹¹ However, a lack of evidence of Thucydides’ correct diagnosis of typhoid has long raised the eyebrows of researchers and historians.¹¹² Speculation was curbed in a 2006 study in which dental pulp and DNA testing of corpses believed to be victims of the Athens plague, concluded that typhoid fever was indeed the cause

¹¹⁰ Muster Roll, Keokuk General Hospital.

¹¹¹ RJ Littman, "The Plague of Athens: Epidemiology and Paleopathology," *Mount Sinai Journal of Medicine* 76, no. 5 (October 2009): 456-67. <https://www.ncbi.nlm.nih.gov/pubmed/19787658>; Sweerts, Michael. "Plague in an Ancient City." Los Angeles County Museum of Art. <https://collections.lacma.org/node/183358>. Photo.

¹¹² Manolis J. Papagrigorakis, Christos Yapijakis, Phillippos N. Synoinos, and Effie Baziotopoulou-Valavani, "DNA examination of ancient dental pulp incriminates typhoid fever as a probable cause of the Plague of Athens," *International Journal of Infectious Diseases* 10, no. 3: 206-14.

of the epidemic.¹¹³ Therefore, it is likely the documented origins of typhoid fever began, as Thucydides' indicated, in Ancient Greece.

The first documented case of Typhoid in North America occurred in the Virginia Colony and almost immediately became



Figure 10. Michael Sweerts' Circa 1650-1652 oil painting, "The Plague of an Ancient City" depicting the plague of Athens from 430-426 BC

an epidemic.¹¹⁴ In 1643, English Physician Thomas Wills officially described Typhoid fever in his *Treatise on Fevers*.¹¹⁵ However, the methods of transmission remained a mystery until 1839 when physician William Budd Gerhard determined typhoid was spread through contaminated water supplies (see figure 11).¹¹⁶ Gerhard's work, *Typhoid Fever* was not published until 1873, too late to be helpful to Union or Confederate officials.¹¹⁷ Despite this, the deadly spread of typhoid led to implementation of sanitation policy as many elite American doctors, such as Surgeon Generals Moore and Hammond, studied overseas in England and Paris and subscribed

¹¹³ Papagrigorakis, et. al., "DNA Examination of Ancient Dental Pulp," 206-214.

¹¹⁴ Gordon W. Jones, "The First Epidemic in English America," *The Virginia Magazine of History and Biography* 71, no. 1 (January 1963): 1-10, <https://www.jstor.org/stable/pdf/4246912.pdf>, 10.

¹¹⁵ Berry J. Anson, "Thomas Willis' Practice of Physick, Treatise on Fevers," *Quarterly Bulletin of Northwestern University Medical School* 16, no. 1 (1942): 69-77.

¹¹⁶ Robert Moorhead, "William Budd and Typhoid Fever," *Journal of the Royal Society of Medicine* 95 (November 2002): 561-64, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1279260/pdf/0950561.pdf> ; "An illustration showing various ways that a water well may be infected by typhoid fever bacteria." *Vore Sygdome; Bind II, side 1146*, 1939. Photo.

¹¹⁷ Moorhead, "William Budd and typhoid fever," 563.

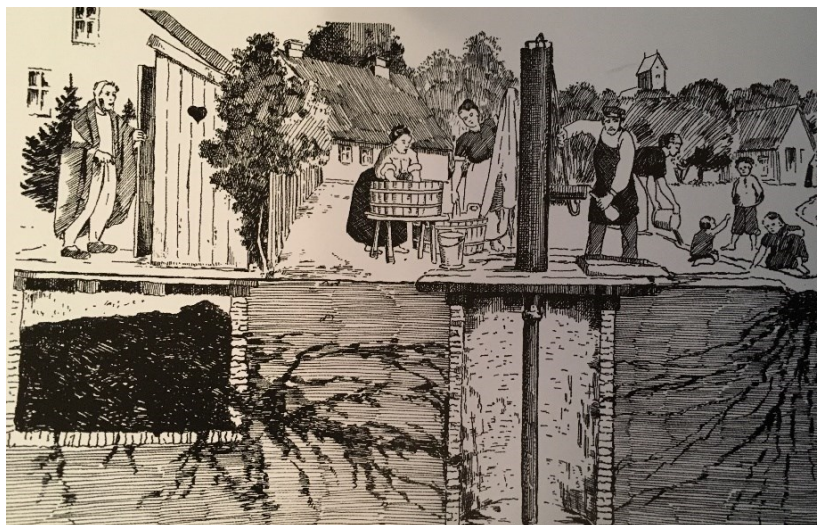


Figure 11. Diagram depicting how Typhoid can infect drinking water by infiltration of underground contaminants

to theories such as William Gerhard's. Twenty years after the start of the Civil War, the bacterium responsible for Typhoid fever, *Salmonella typhi*, was discovered by Karl Joseph Eberth in 1880.¹¹⁸ It

took an additional four years before the first traces of typhoid

were found in human stool indicating that *Salmonella typhi* was carried in the intestine and could be transmitted from a human carrier even if the host had no visible symptoms of the disease.¹¹⁹

Because Typhoid can be carried in the intestine with no ill side effects to the carrier, contamination of food and water through close contact with fecal matter is the primary cause of the disease.¹²⁰ This includes drinking from bodies of water such as rivers or streams near makeshift latrines, using unclean hands to prepare food, and the seepage of fecal matter into underground water supplies when latrines were housed too close to drinking wells. Additionally, flies who visited latrines before landing on soldier's dinner plates also aided in the spread and

¹¹⁸ Marineli, Fillio, Gregory Tsoucalas, Marianna Karamanou, and George Androutsos, "Mary Mallon (1869-1938) and the History of Typhoid Fever," *Annals of Gastroenterology* 26, no. 2 (2013): 132-34. <https://doi.org/https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3959940/>, 132.

¹¹⁹ *Ibid*, 561; S.N. Khosla, Typhoid Fever its Cause, Transmission, and Prevention, (N.p.: Atlantic Publishers and Distributors, 2008), 4. Typhoid Mary is the most famous example of the transmission of typhoid through a human carrier. Mary was eventually exiled after she refused to stop her career as a cook for private families and in hospitals; J.N. Hays, *Burdens of Disease Epidemics and Human Response in Western History*, 2nd ed, (New Jersey: Rutgers University Press, 2009), 250-253; Kraut, Alan, *Silent Travelers Germs Genes, and the "Immigration Menace,"* (Baltimore: John Hopkins University Press, 1994), 97-104.

¹²⁰ CDC, "Typhoid Fever."

transmission of typhoid.¹²¹ As Civil War camps were extremely crowded and dirty with an absence of clean water, Civil War army camps were incubators for disease.

Additionally, Civil War prison camps, jails, and hospitals were prime locations for the transmission of typhoid. Confederate prisoner of war, A.H. Lewis, recorded the deplorable conditions of McDowell College Jail, known as Gratiot Street Prison in his diary. Several entries record the number of sick or dead from diseases such as typhoid, measles, and pneumonia. On January 17, 1862, just nineteen days after arriving at the prison, Lewis recorded that “up to today 18 have died in the prison and 190 are sick.”¹²² If Lewis’ count is accurate, the prison lost soldiers at the rate of one death per day.

Typhoid fever has various symptoms, all of which brought agony to Civil War soldiers. Symptoms of typhoid fever include headache, lethargy, high fever, stomach pain, loss of appetite, cough, chills, and constipation or diarrhea.¹²³ A rosy, spotted rash on the trunk may also occur. The most devastating of these symptoms for Civil War soldiers was diarrhea. Diarrhea killed twenty percent of the 10,842 soldier fatalities surveyed making it the deadliest side effect of diseases such as typhoid and unsanitary camp and hospital conditions. Eventually, the typhoid bacilli caused proliferation of the intestine resulting in septic shock.¹²⁴ Factors such as dehydration and malnutrition were also dangerous side effects of typhoid. While not all deaths from diarrhea were related to a diagnosis of typhoid, there is a significant possibility that at least some of the cases of diarrhea were an underlying symptom of *Salmonella Typhi*.

¹²¹ CDC, "Typhoid Fever."

¹²² A. H. Lewis, "Diary of A.H. Lewis," Missouri Digital Heritage, 18.

¹²³ Center for Disease Control, "Typhoid Fever and Paratyphoid Fever," <https://www.cdc.gov/typhoid-fever/symptoms.html>.

¹²⁴ E. Hazouard, M. Ferrandiere, B. Cattier, P.F. Deguin, and A. Legras, "Septic Shock with coma revealing typhoid fever," *Press Med* 5, no. 27 (September 1999): 1275-76, <https://www.ncbi.nlm.nih.gov/pubmed/9765646>.

Likewise, cases of pneumonia among camp soldiers were often the consequence of typhoid fever. At any stage of typhoid, the infected could develop lobar pneumonia.¹²⁵ Because cough and bronchial symptoms were not uncommon with the onset of typhoid, the possibility of pneumonia, especially for the sedentary soldier left out in the elements, were significant. To prevent afflictions such as pneumonia, ladies benevolent and aid societies formed to “knit socks, make cloth, and sew fall and winter clothing” for Civil War soldiers.¹²⁶ Upon receipt of socks, shoes, and clothing to the 13th Alabama Regiment, Samuel Sellers assured the women of Wilcox, Alabama that the company “was enjoying excellent health” as a result of the societies’ donations.¹²⁷ Colonel Jasper McCown in charge of the 3rd and 5th Missouri Infantry, also expressed his appreciation for the ladies of Alabama. In his thank you letter, McCown concluded that “next to Missouri, do we cherish the ladies of Alabama.”¹²⁸

Requests were also sent to relief agencies for supplies when harsh winters, dwindling resources, and disease presented themselves such as in the case of Major Lindsay, an officer in General Price’s brigade stationed in Missouri. Frustrated with the lack of provisions and support from his home state, Lindsay exclaimed, “these soldiers are fighting for us - will not every women and little girl in Greene County knit one or more pair of socks!?”¹²⁹ In October 1862, J.L. Reese surgeon in charge of Camp Recovery in Tyree Station, Tennessee, also appealed to the ladies of Alabama relief societies in an *Alabama Beacon* article. Reese pleaded with relief

¹²⁵ Webster W. Belden, "A Case Report of Typhoid Pneumonia," *Radiology* 5, no. 5 (November 1925): 435-36, 435; Curschmann, *Typhoid Fever and Typhus Fever*, 32.

¹²⁶ South Western Baptist call for women to join aid societies, July 1861, (*Alabama Department of History and Archives*, Montgomery, Alabama), SG011159, Aid Society folder #12.

¹²⁷ Camp Near Fredericksburg thank you letter to the Women of the Wilcox Relief Society, February 1863, (*Alabama Department of History and Archives*, Montgomery, Alabama, SG011159, Aid Society Folder #12.

¹²⁸ Letter to Montevallo, AL Ladies Aid Society from Col. Jas. McCown, 3rd and 5th Missouri Regiments, (*Alabama Department of History and Archives*, Montgomery, Alabama, SG011159, Aid Society folder #12.

¹²⁹ To the Ladies, letter from Major Lindsay, published in *The Alabama Beacon*, August 22, 1862, (*The Alabama Department of History and Archives*, Montgomery, Alabama), SG011159 aid society folder #12.

societies to donate adequate winter supplies for his camp. "I cannot sit quietly by and see the gallant men with disease upon the ground and scaffolds in tents and see the cold blasts of winter approaching. The men under my charge are chiefly from Alabama and I now ask the ladies of their state and my state to send everything that will keep a sick man warm."¹³⁰ Soldiers such as Silas Garrison, who died at Chimborazo a year prior from pneumonia, may have benefited significantly from the use of warm clothes and adequate bedding.

The onset of pneumonia caused by typhoid was recorded in hospital muster rolls as *pneumo-typhus*. Out of 1,267 recorded cases of pneumonia, only seven were documented as *pneumo-typhus*.¹³¹ Other cases of pneumonia were likely due to factors such as exposure to elements and untreated upper-respiratory infections. Additionally, similarities between *pneumo-typhus*, tuberculosis, and respiratory symptoms of typhoid made medical determinations difficult and often led to misdiagnosis.¹³² Diarrhea was also a side effect of typhoid and accounted for twenty percent of total fatalities surveyed, a number which typhoid itself surpassed by nineteen percent.¹³³ Cases of pneumonia accounted for twelve percent of the total 10,842 soldier fatalities surveyed, a striking difference compared to fatalities from diarrhea (see table 2).

¹³⁰ An Appeal to the Ladies of Alabama, published in *The Alabama Beacon*, October 3, 1862, (*The Alabama Department of History and Archives*, Montgomery, Alabama), SG011159 aid society folder #12.

¹³¹ An Appeal to the Ladies of Alabama, published in *The Alabama Beacon*, October 3, 1862.

¹³² Belden, "A Case Report of Typhoid Pneumonia," 436.

¹³³ Hospital Register, Arkansas General Hospital; Hospital Register, Charlottesville General Hospital; Hospital Register, Chimborazo Hospital number one; Hospital Register, Chimborazo Hospital number two; Hospital Register, Chimborazo Hospital number three.; Hospital Register, Chimborazo Hospital number five; Hospital Register, General Hospital No. four; Hospital Register, Fairgrounds Hospital No. one; Hospital Register, Fairgrounds Hospital No. two; Hospital Register, Fifth Street General Hospital; Hospital Register, Ft. Morgan General Hospital; Hospital Register Galveston General Hospital; Hospital Register Huston General Hospital; Hospital Register, Indianapolis General Hospital.; Hospital Register, Keokuk General Hospital; Hospital Register, Larson General Hospital; Hospital Register, Newsome Hospital; Hospital Register, Newsome Hospital; Hospital Register, Pettigrew General Hospital; Hospital Register, Post Hospital; Hospital Register, Quincy General Hospital; Hospital Register, Ross General Hospital; Hospital Register, Savannah General Hospital; Hospital Register, Satterlee General Hospital; Hospital Register, Shreveport General Hospital; Hospital Register, St. Louis City Hospital; Hospital Register, St. Mary's Hospital; Hospital Register, Summit House Hospital; Hospital Register, Receiving and Distributing hospital; Hospital Register, Ft. Barranacas Hospital; Hospital Register, Turner's Lane Hospital; Hospital Register, Unknown Hospital.

An additional side effect of typhoid may have been depletion of the vitamin thiamine, or vitamin B-1, which can cause the disease beriberi.¹³⁴ Conditions such as malnourishment, exposure to the elements, unsanitary conditions, and overexertion increased the chances a soldier

Table 2. First and Second Cause of Death by Region 1861-1865

<u>Cause of death</u>	<u>Stout</u>	<u>PC</u>	<u>DS</u>	<u>NW</u>	<u>Totals</u>
Typhoid	258	1326	299	779	2662
Diarrhea	385	645	195	905	2130
Fever	207	346	220	143	916
TB	24	199	36	177	436
Wounds	249	1466	52	499	2266
Measles	57	202	104	134	497
Bac. Infec.	10	98	16	43	167
pneumonia	258	684	129	196	1267
Malnourishment (mandamus)	0	6	0	0	6
Cholera	3	7	5	0	15
Smallpox	3	28	9	13	53
Malaria	3	28	41	8	80
Scurvy	0	0	22	0	22
Dysentery	65	143	93	24	325
Totals	1522	5178	1221	2921	10842

¹³⁴ Jones, "The First Epidemic in English America," 8; Ernest A. Spiegel, "The Neurological Aspects of B avitaminosis," *Confinia Neurologica Borderlands of neurology*, 1, no. 1 (1938): 40-48.

would develop beriberi.¹³⁵ Beriberi comes in two forms: wet and dry. Wet beriberi affects the heart and circulatory system while the latter affects the nerves, eventually causing muscle paralysis.¹³⁶ Beriberi commonly occurs in individuals who have experienced prolonged diarrhea or vomiting and those who abuse alcohol.¹³⁷ As rot-gut whiskey was a favored beverage and the most commonly prescribed medication for ill Civil War soldiers, it is plausible that the combination of typhoid fever, malnutrition due to gastrointestinal distress, dehydration, and alcohol consumption further emaciated soldiers infected with typhoid fever or possibly, beriberi. Symptoms of dry beriberi include decreased muscle function, tingling or loss of feeling in the lower extremities, pain, confusion, vomiting, difficulty speaking, involuntary eye movement, and paralysis.¹³⁸ While there were no documented cases of beriberi in the general hospital muster rolls or documents examined in this study, it is likely Civil War soldiers who recovered from typhoid were thereafter plagued with beriberi.

Aside from pneumonia and beriberi, malarial typhoid also plagued Civil War soldiers. Three cases of typhoid recorded at Chimborazo hospital number one were recorded as malarial typhoid.¹³⁹ First described in 1862 by army doctor J. J. Woodward, typhomalaria caused devastating infection. The disease occurred in soldiers suffering from symptoms of typhoid fever accompanied with the fever patterns of malaria.¹⁴⁰ Similar to typhoid, symptoms of malaria

¹³⁵ Alan Hawk, "The Great Disease Enemy, Kak'ke (Beriberi) and the Imperial Japanese Army," *Military Medicine* 71, no. 4 (2006): 333-39, <https://watermark.silverchair.com/milmed.171.4.333.pdf>, 335.

¹³⁶ U.S. National Library of Medicine, "Beriberi," <https://medlineplus.gov/ency/article/000339.htm>.

¹³⁷ Chitra Badii, Matthew Solen, and Lauren Reed-Guy, "What is beriberi?" *Healthline*, <https://www.healthline.com/health/beriberi>; F.H. Lewy, "The neurological aspects of B avitaminosis," *Hospital of the University of Pennsylvania Medical School* 1, number 1 (1938): 40-48, <https://www.karger.com/Article/Pdf/106274#>.

¹³⁸ Badii, et.al, "What is beriberi?"

¹³⁹ Hospital Register of Chimborazo Hospital number one; Hospital Register Chimborazo Hospital number two; Hospital Register Chimborazo Hospital number three; Hospital Register Chimborazo Hospital number five.

¹⁴⁰ Brian Keong, and Wahinuddin Sulaiman, "Typhoid and Malaria Co-Infection – An Interesting Finding in the Investigation of a Tropical Fever," *The Malaysian Journal of Medical Science* 3, no. 1 (2006): 74-75, <https://doi.org/https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3347907/>.

include fever, headaches, vomiting, body aches, sweats, fatigue, and chills.¹⁴¹ Severe symptoms include respiratory distress, anemia, delirium, and hyper-parasitemia (five percent of blood infected with parasites).¹⁴² Malaria is caused by the intake of gametocytes grown and multiplied in the human liver and then in the red blood cells of humans. Once ingested by an Anopheles mosquito, human blood parasites multiply in the mosquito's stomach and produce the parasite, sporozoite which migrates to the salivary glands of the mosquito. When the mosquito bites an individual, the new parasites are transferred to the human blood stream.¹⁴³ It is the sporozoite parasites that are responsible for producing symptoms of malaria. For any type of immunity to occur, malaria must be contracted and suffered several times and even then, an individual only develops semi-immunity.¹⁴⁴

Because both typhoid and malaria thrive in similar circumstances, both diseases plagued army camps.¹⁴⁵ However, malaria was most common in swamp or marsh regions and river towns where infected female Anopheles mosquitos circulated the disease.¹⁴⁶ Case study results support this and indicate that while typhoid was not affected by geography, the contraction of malaria was. Consequently, fatalities from malaria were present in only seven of the thirty-nine general hospitals surveyed: Houston general hospital Houston, TX, Chimborazo Hospital number three in Richmond, VA, general hospital number four, Wilmington, NC, Springfield general hospital, Springfield, MO, Arkansas general hospital, Helena, AR, St. Mary's hospital, Dalton, GA, and St. Louis City hospital, St. Louis, MO. The largest number of fatalities occurred in the Deep

¹⁴¹ "Malaria," Center for Disease Control, <https://www.cdc.gov/malaria/about/disease.html>.

¹⁴² "Malaria," Center for Disease Control.

¹⁴³ "Lifecycle of Malaria," Center for Disease Control and Prevention, <https://www.cdc.gov/malaria/about/biology/index.html>.

¹⁴⁴ *Ibid.*

¹⁴⁵ Jonathan J Moore, *Dreadful Diseases and Terrible Treatments the Story of Medicine through the Ages*, (New York: Metro Books, 2017), 168.

¹⁴⁶ Moore, *Dreadful Diseases*, 168, Moore, *Dreadful Diseases*, photo, 196.

South region and accounts for fifty-three percent of all surveyed fatalities from malaria.¹⁴⁷

However, the seven hospitals span all four case study specific geographic regions. Because malaria was spread by mosquitos the wet, warm climates of the survey hospitals plagued with the disease were certainly factors in outbreaks of malaria.

In the case of the Confederacy's Houston general hospital, typhoid and malaria were the two highest causes of death from 1861- 1863 accounting for a combined fifty-one percent of the patients who died in that period.¹⁴⁸ While neither hospital muster rolls recorded cases of typhomalaria, it is possible that some of the soldier fatalities were from a typhoid-malaria co-infection. This is especially possible since typhomalaria was not identified until 1862 and all but ten of the recorded fatalities from malaria were recorded before that year.¹⁴⁹ In 1864, the

¹⁴⁷ Hospital Register, Arkansas General Hospital; Hospital Register, Charlottesville General Hospital; Hospital Register, Chimborazo Hospital number one; Hospital Register, Chimborazo Hospital number two; Hospital Register, Chimborazo Hospital number three.; Hospital Register, Chimborazo Hospital number five; Hospital Register, General Hospital No. four; Hospital Register, Fairgrounds Hospital No. one; Hospital Register, Fairgrounds Hospital No. two; Hospital Register, Fifth Street General Hospital; Hospital Register, Ft. Morgan General Hospital; Hospital Register Galveston General Hospital; Hospital Register Huston General Hospital; Hospital Register, Indianapolis General Hospital.; Hospital Register, Keokuk General Hospital; Hospital Register, Larson General Hospital; Hospital Register, Newsome Hospital; Hospital Register, Newsome Hospital; Hospital Register, Pettigrew General Hospital; Hospital Register, Post Hospital; Hospital Register, Quincy General Hospital; Hospital Register, Ross General Hospital; Hospital Register, Savannah General Hospital; Hospital Register, Satterlee General Hospital; Hospital Register, Shreveport General Hospital; Hospital Register, St. Louis City Hospital; Hospital Register, St. Mary's Hospital; Hospital Register, Summit House Hospital; Hospital Register, Receiving and Distributing hospital; Hospital Register, Ft. Barranacas Hospital; Hospital Register, Turner's Lane Hospital; Hospital Register, Unknown Hospital.

¹⁴⁸ Hospital Register Huston General Hospital.

¹⁴⁹ Hospital Register, Arkansas General Hospital; Hospital Register, Charlottesville General Hospital; Hospital Register, Chimborazo Hospital number one; Hospital Register, Chimborazo Hospital number two; Hospital Register, Chimborazo Hospital number three.; Hospital Register, Chimborazo Hospital number five; Hospital Register, General Hospital No. four; Hospital Register, Fairgrounds Hospital No. one; Hospital Register, Fairgrounds Hospital No. two; Hospital Register, Fifth Street General Hospital; Hospital Register, Ft. Morgan General Hospital; Hospital Register Galveston General Hospital; Hospital Register Huston General Hospital; Hospital Register, Indianapolis General Hospital.; Hospital Register, Keokuk General Hospital; Hospital Register, Larson General Hospital; Hospital Register, Newsome Hospital; Hospital Register, Newsome Hospital; Hospital Register, Pettigrew General Hospital; Hospital Register, Post Hospital; Hospital Register, Quincy General Hospital; Hospital Register, Ross General Hospital; Hospital Register, Savannah General Hospital; Hospital Register, Satterlee General Hospital; Hospital Register, Shreveport General Hospital; Hospital Register, St. Louis City Hospital; Hospital Register, St. Mary's Hospital; Hospital Register, Summit House Hospital; Hospital Register, Receiving and Distributing hospital; Hospital Register, Ft. Barranacas Hospital; Hospital Register, Turner's Lane Hospital; Hospital Register, Unknown Hospital; Three-month reports of hospital deaths in Mississippi hospitals, 1862.

Union's Satterlee general hospital recorded multiple deaths from typhomalarial fever.¹⁵⁰ The period in which these deaths were recorded fits the period in which Civil War doctors discovered and began diagnosing typhomalaria.

At the turn of the century, typhomalaria was determined not a hybrid disease but identified as a co-infection of both typhoid and malaria.¹⁵¹ Co-infections can occur concurrently or superimposed on one another.¹⁵² From 1863-1865, the Union's Satterlee General Hospital saw seventy-six cases of fatal typhoid fever. It is estimated that at least one third of those deaths were from the contraction of a typhomalarial co-infection before the disease was officially classified.

Typhus Fever

Epidemic typhus fever, otherwise known as *Rickettsia prowazekii*, has been responsible for the destruction of armies since the time of Hippocrates.¹⁵³ The clothes louse, or *pediculus humanus corporis*, is the most common carrier of typhus fever (see figure 12).¹⁵⁴ Especially during the Renaissance when cleanliness was considered sinful, lice and consequently typhus, thrived.¹⁵⁵ Known as "Napoleon's greatest foe," typhus decimated armies. Ignoring a warning from his chief surgeon forbidding the invasion of Poland due to an outbreak of typhus, Napoleon brought the disease back to France. Within a months' time, "over 80,000 French soldiers died" because of the campaign.¹⁵⁶ While every individual can carry the body louse on their skin and in their clothes, the parasites are only dangerous if they contract *rickettsia prowazekii*, which

¹⁵⁰ Hospital Register Satterlee General Hospital.

¹⁵¹ Keong and Sulainman, "Typhoid and Malaria Co-Infection," 74.

¹⁵² *Ibid*, 74.

¹⁵³ H. Curschmann, Typhoid Fever and Typhus Fever, (Philadelphia: W.B. Sanders and Co., 1902), 475.

¹⁵⁴ Jonathan Moore, *Dreadful Diseases*, 142, Photo.

¹⁵⁵ *Ibid*, 142,

¹⁵⁶ *Ibid*, 147.

happens after the louse bites an infected rodent such as a rat or squirrel.¹⁵⁷ Human contraction of typhus happens when an individual rubs the louse's excretion into a cut or open wound allowing the *rickettsia prowazekii* bacilli to enter the bloodstream. Typhus also travels through the air in a dust-like form inhaled once the feces of the clothes louse, dries. Fleas are also carriers of typhus.¹⁵⁸



Figure 12. *Pediculus humanus corporis*- Body Louse

Once lice become infected with *rickettsia prowazekii*, they die after ten days as lice, just like their hosts, do not have immunity to the disease.¹⁵⁹ Clothes louse are also heat sensitive. Once the parasite's host develops fever, the lice search for a cooler host. Likewise, when soldiers die, the lice abandon their host in search of a warmer environment. For these reasons, typhus can spread quickly as lice multiply and soldiers fall ill or die. Because the infected feces of a clothes louse can remain engrained in fabric and clothing for several years, outbreaks of typhus often reappear years apart as small bursts of endemic disease.¹⁶⁰

Symptoms of typhus fever resemble those of typhoid fever. Soldiers who contracted typhus experienced fever and chills, headache, body and muscle aches, cough, nausea, vomiting, confusion, rapid breathing, and rash.¹⁶¹ Like typhoid fever, individuals infected with typhus can carry the disease for years after they fall ill. However, typhoid fever does not require that an

¹⁵⁷ "Epidemic Typhus," Center for Disease Control, <https://www.cdc.gov/typhus/epidemic/index.html>.

¹⁵⁸ "Typhus," U.S. National Library of Medicine, Last modified (April 2019), <https://doi.org/https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3347907/>.

¹⁵⁹ Moore, *Dreadful Diseases*, 143.

¹⁶⁰ *Ibid.* 144.

¹⁶¹ "Epidemic Typhus," CDC.

individual suffer the disease to be a carrier whereas typhus fever does. Because individuals can carry typhus after recovering from the disease, sufferers of typhus can develop Brill-Zinsser disease, months or even years after recovering from typhus fever.¹⁶² Brill-Zinsser disease occurs in the body when remnants of the typhus bacilli stored in internal organs are reactivated due to faulty autoimmune defenses.¹⁶³ The symptoms of Brill-Zinsser disease are very similar to those of typhus, are almost always mild, and are not life-threatening. However, those who contract Brill-Zinsser disease suffer its symptoms for seven to ten days and never gain immunity.¹⁶⁴

The sharing of linens infected with rickettsia prowazekii also spread the typhus contagion. Possible sources of typhus include blankets, uniforms, towels, carpetbags, socks, and medical packing material. Lieutenant John W. Fisher, a soldier in the 10th Calvary Regiment of the Missouri State Guard, recorded the close quarters of camp and the sharing of supplies such as blankets, which would have carried the louse responsible for spreading typhus throughout army camps.¹⁶⁵ Inevitably, Fisher wrote home that he believed he had a mild case of typhus fever on November 12, 1861.¹⁶⁶ Without proper sanitation which requires washing linens in extremely hot water which kills body lice, there was often no way to eliminate the spread of typhus in Civil War camps.¹⁶⁷ As Civil War soldiers often piled six to a tent, shared blankets, slept on the ground, endured harsh elements, and were often overworked with little food, it is clear how both typhus and typhoid fever, and all their horrific side effects, ravaged army camps and hospitals.

¹⁶² "Epidemic Typhus," CDC.

¹⁶³ William A. Petri, M.D., "Epidemic Typhus," Merck Manual Professional Version. Last modified February 2019, <https://www.merckmanuals.com/professional/infectious-diseases/rickettsiae-and-related-organisms/epidemic-typhus>.

¹⁶⁴ Petri, M.D., "Epidemic Typhus."

¹⁶⁵ John R. Fisher, "John W. Fisher Diary - Oct. 1861 to Jan. 1862," Missouri Digital Heritage, <http://cdm.sos.mo.gov/cdm/ref/collection/mack/id/1369>, 34.

¹⁶⁶ Fisher, "John W. Fisher Diary, 48.

¹⁶⁷ "Epidemic Typhus," CDC.

An Analysis of Survey Data Concerning Fatalities from Typhus and Typhoid

Typhoid and its variations were deadlier than typhus within the survey data by eighty-six percent. However, the low number of deaths from typhus could be due to the nature of general hospital muster rolls. These types of muster rolls and patient registers do not account for all soldier deaths that occurred in field and regimental hospitals. If the survey material had included field and regimental hospitals, the results would be drastically different. While it is impossible to know where the soldiers surveyed contracted the diseases that caused their deaths, the survey results do indicate that both diseases were present in camps and hospitals and were deadly for soldiers fighting the Civil War. Although John Fisher survived the illness, many soldiers, especially those in Civil War prison camps and hospitals, did not. In his November 1861 diary entry, Fisher also wrote that “the Drs we have don’t know what to do with it (typhus), we have more sick in our Regiment than in any other in the army I believe. One man in Comp E died yesterday and all for the want of proper treatment.”¹⁶⁸ Fisher’s diary entries indicate that typhus was deadlier in Civil War camps as those who died in Fisher’s regiment, at least those he wrote about, were never transferred to general hospitals. Further, it is possible that misdiagnosis or faulty documentation may explain the low numbers of recorded deaths from typhus.

Overall, case study data reveals that typhoid fever was a far more common cause of death than typhus in general hospital patient registers. As the survey results suggest, the implementation of both Surgeon Generals Moore and Hammond’s sanitation policies seems to have succeeded in reducing fatalities from typhoid which decreased seventy-three percent from 1862 to 1865 (see figure 13).¹⁶⁹ In Chimborazo alone, typhoid was reduced by fifty-five percent

¹⁶⁸ Fisher, "John W. Fisher Diary," 49.

¹⁶⁹ Hospital Register, Arkansas General Hospital; Hospital Register, Charlottesville General Hospital; Hospital Register, Chimborazo Hospital number one; Hospital Register, Chimborazo Hospital number two; Hospital

in just the first year of sanitation policy.¹⁷⁰ It is possible that the same was true for the already less common typhus fever, as proper sanitation aided in slowing the spread of Civil War disease.

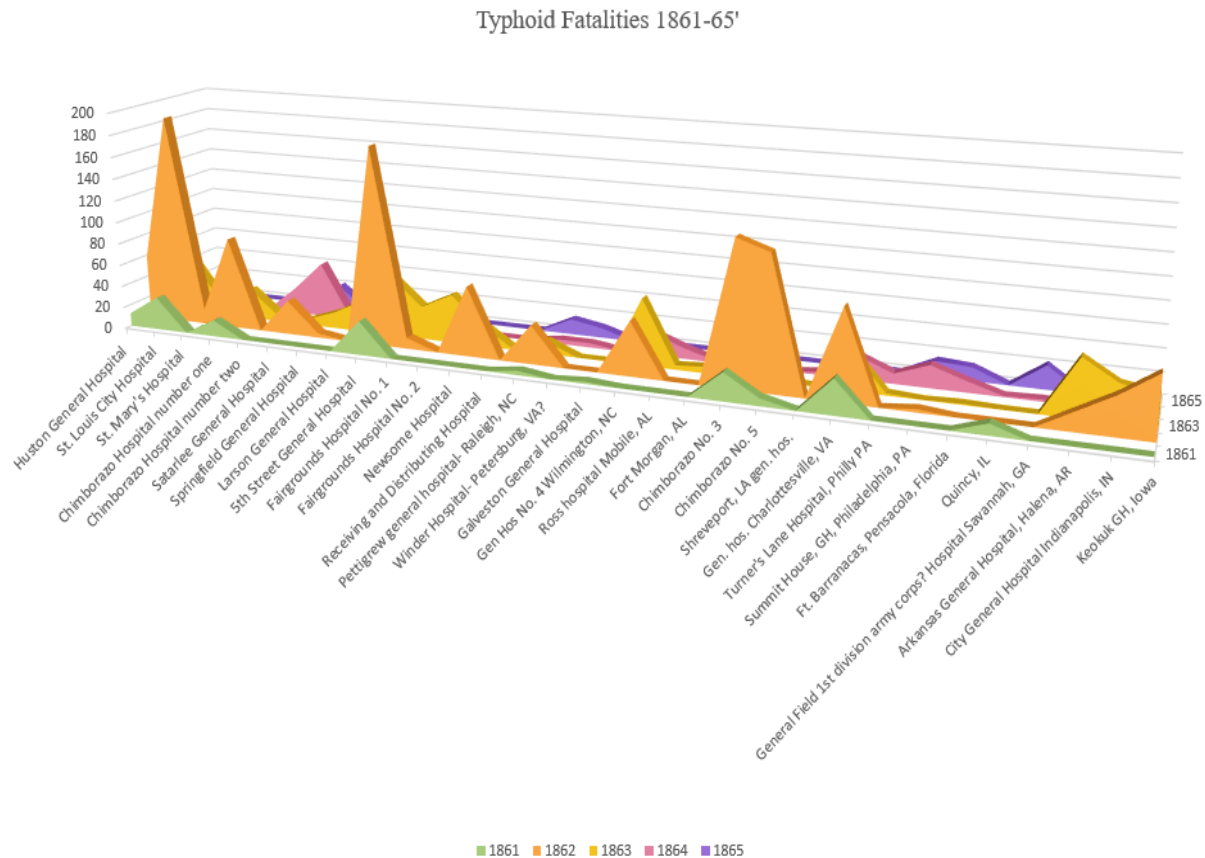


Figure 13. Select Typhoid Comparison

Register, Chimborazo Hospital number three.; Hospital Register, Chimborazo Hospital number five; Hospital Register, General Hospital No. four; Hospital Register, Fairgrounds Hospital No. one; Hospital Register, Fairgrounds Hospital No. two; Hospital Register, Fifth Street General Hospital; Hospital Register, Ft. Morgan General Hospital; Hospital Register Galveston General Hospital; Hospital Register Huston General Hospital; Hospital Register, Indianapolis General Hospital.; Hospital Register, Keokuk General Hospital; Hospital Register, Larson General Hospital; Hospital Register, Newsome Hospital; Hospital Register, Newsome Hospital; Hospital Register, Pettigrew General Hospital; Hospital Register, Post Hospital; Hospital Register ,Quincy General Hospital; Hospital Register, Ross General Hospital; Hospital Register, Savannah General Hospital; Hospital Register, Satterlee General Hospital; Hospital Register, Shreveport General Hospital; Hospital Register, St. Louis City Hospital; Hospital Register, St. Mary's Hospital; Hospital Register, Summit House Hospital; Hospital Register, Receiving and Distributing hospital; Hospital Register, Ft. Barranacas Hospital; Hospital Register, Turner's Lane Hospital; Hospital Register, Unknown Hospital; The breaks in the survey data are either due to the absence of recorded fatalities, the closing or opening of hospital wings such as in the case of Chimborazo Hospital number One and Two, or the consequence of missing records. In many cases such as with Larson, Fifth Street, and Chimborazo General Hospitals, the data sets utilize hospitals which in combination, span the entire length of the war. Their relative location to one another make these data sets culpable when examining the effects of geography on disease. No two hospitals are recorded in this way unless they were opened and closed in the same vicinity or within the same hospital system, such as at Chimborazo.

¹⁷⁰ *Ibid.*

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CHAPTER FOUR: REIMAGINING ARMY MEDICAL SYSTEMS

From the beginning of the Civil War, it was clear that disease prevention needed to be a top priority of the Union and Confederate medical bureaus. Consequently, various relief agencies were established by civilian women across the country. Relief agencies, consisting predominantly of women, were a key workforce behind Civil War medical reforms. Women of relief agencies worked as nurses, laundresses, matrons, and especially in the South, hospital administrators. While relief organizations needed powerful politicians and elite physicians to support their agendas to gain federal recognition, women of relief agencies were consistently the backbone of hospital management, sanitation policy, and fundraising.

In early 1861, a group of Utilitarian women met at Sunday night church to discuss their options to aid in the care of the Union's sick and wounded. It was the gathering of these women, the topics discussed and the organization that was subsequently established, that helped transform Union army medicine. By June 1861, Union legislation formally recognized the Women's Central Association of Relief (WCA) as a government organization and renamed it the United States Sanitary Commission (USSC).¹⁷¹ For the remainder of the war, the USSC was responsible for the distribution of supplies, volunteers and enlightenment ideals to medical hubs throughout the country. In addition, the political influence and work force of the USSC helped pioneer and enforce new medical regulations within the Union Army Medical Bureau. New

¹⁷¹ Borckett, *The Philanthropic Results of the War In America*, Forman, J G. *The Western Sanitation Commission a Sketch of its Origin, History, Labors for the Sick and Wounded of the Western Armies, and Aid Given to Freedman and Union Refugees, with Incidents of Hospital Life*, (St. Louis: Library of Congress, 1864. Mercantile Library Special Collections, St. Louis, Missouri), 26-28.

legislation also allowed for the appointment of a new Surgeon General whose education and qualifications adhered to the agenda of the USSC.¹⁷²

From April 1862 until August of 1864, Dr. William Hammond and the United States Sanitary Commission collaborated to implement various medical reforms.¹⁷³ Under Surgeon General Hammond, Union medicine was consolidated, standardized and regulated by new education and medical practice standards, government policies, and sanitation laws. The reform of the Army Medical Bureau and the addition of women as volunteers in army hospitals improved hospital conditions, revived medical science, and lowered mortality rates from disease and infection in especially general hospitals.

Likewise, Confederate women formed various relief agencies. The Women's Relief Society founded by well-known Nashville philanthropist, Felicia Grundy Porter, organized supplies, treated soldiers wounded or dying from disease, and in many cases, operated Civil War general hospitals.¹⁷⁴ With the help of the Women's Relief Society, Surgeon General Moore pioneered a progressive Confederate medical system backed by a powerful workforce of women and slaves; a workforce closely resembling the Union's later in the war.¹⁷⁵ Together, relief agencies and the opposing Surgeons General improved mortality rates from disease, reformed American medical education, built unprecedented general hospital systems, and standardized American medical care.

¹⁷² Borckett, *The Philanthropic Results of the War In America*, 26-28.

¹⁷³ *Ibid.*

¹⁷⁴ "Samuel Preston Moore, Confederate Surgeon General, Civil Practice to Civil War: The Medical College of the State of South Carolina 1861-1865," <http://waring.library.musc.edu/exhibits/civilwar/Moore.php>.

¹⁷⁵ Ulysses S. Grant, *Personal Memoirs of U.S. Grant*, (Boston: Belknap Press, 2017), 66; Elizabeth H. Botume, *First Days amongst the Contrabands*, (New York: Arno Press, 1968); Benjamin Butler, *the Butler Book*, Volume I, p. 259; Ella Forbes, *African American Women during the Civil War*, (New York: Garland Publishing, 1998), 55.

The Road to Union Medical Reform

One month before the first major battle of the Civil War at First Manassas Junction, a group of New York Utilitarian women formed the Women's Central Association of Relief (WCA) (see figure 14).¹⁷⁶ This newly established volunteer organization sought to aid the government in the care of wounded and those sick or dying from disease. In order to gain access to army hospitals and provide the type of relief the WCA desired, formal recognition from the Union government was needed as women were not legally allowed to volunteer as nurses in army camps or hospitals.¹⁷⁷ Consisting completely of women, the association knew it needed the support of prominent men in political society to obtain congressional recognition. This was achieved through the association's



Figure 14. Members of the Women's Central Association of Relief conduct business in their headquarters office.

pastor, Henry W. Bellows who later became President of the USSC.¹⁷⁸

Having a son who was studying at Harvard University with Abraham Lincoln's son, Robert, Bellows was a good pick to lobby for the WCA in Washington. Bellows also had a high standing connection within the Church of All Souls and therefore with many of New York's elite. Bellow's connections ranged from newspaper editors to prominent industrialists such as

¹⁷⁶ Borckett, *The Philanthropic Results of the War in America*, 26-28.

¹⁷⁷ William Maxwell, *Lincoln's Fifth Wheel: The Political History of the United States Sanitary Commission*, (New York: Longmans, Green and Company, 1956).

¹⁷⁸ Borckett, *The Philanthropic Results of the War in America*, 26-28.

Peter Cooper, who supplied the venue for the first meeting of over 4,000 WCA women.¹⁷⁹ The women of the church of all souls also had powerful connections and WCA supporters such as Dr. Elizabeth Blackwell, founder of the New York Infirmary for Women and the first woman to receive a medical degree in the United States, helped promote the organization within Congress.¹⁸⁰ With the help of Bellows who lobbied for the Association in Washington, D.C., and the support of various New York elites, U.S. Congress enacted legislation on June 9, 1861, establishing the WCA as an official government agency and renamed the group, the United States Sanitary Commission.¹⁸¹

Once approved, the USSC went straight to work. The Commission had several agendas they believed would improve mortality rates of Union soldiers. This agenda included improving soldier nutrition, the allotment of adequate medical supplies, the establishment of sanitation laws, and proper education requirements for practicing physicians. In addition, the 1861 legislation ordered the Commission “to inquire into the recruiting services in various States and bring them to a common standard.”¹⁸² This saddled the Commission with the enormous task of standardizing the army medical recruitment system, eventually achieved through the efforts of Dr. William Hammond. The second provision allowed the Commission “to inquire into the subjects of diet, clothing, cooks, camping grounds, (and) everything connected with the prevention of disease.”¹⁸³ For the first time, the Union government recognized the medical need

¹⁷⁹ The Lehrman Institute. "Mr. Lincoln and New York." <http://www.mrlincolnannewyork.org/new-yorkers/henry-w-bellows-1814-1882/>.

¹⁸⁰ Virginia Commonwealth University. "Elizabeth Blackwell (1821-1910) - America's first women physician." <https://socialwelfare.library.vcu.edu/programs/health-nutrition/blackwell-elizabeth-1821-1910/>.

¹⁸¹ Social Welfare History Project.

¹⁸² *The Philanthropic Results of War in America*. (New York: United States Sanitary Commission, 1864), 37.

¹⁸³ *The Philanthropic Results of War in America*, 37.

for supplies such as blankets, quality diets, shoes, and cleanliness, provisions that Surgeons General Finley and Lawson believed were a waste of funds.¹⁸⁴

The third provision of the legislation ordered the Commission “to discover methods by which private and unofficial interest and money might supplement the appropriations of the Government.”¹⁸⁵ To help fund their endeavors, the USSC raised money through the organization of sanitary fairs across the country. USSC sanitation fairs aided in the accumulation of over 25 million dollars in both money and supplies over the course of the war (see figure 15).¹⁸⁶

To solidify and maintain USSC’s progress within Civil War hospitals, legislation was needed to establish and enforce sanitation laws through military court martial. Consequently, a complete reorganization of the Army Medical Bureau was essential. Because Surgeon General



Figure 15. Quilts for Sale at the Mississippi Valley Sanitary Fair in St. Louis, Missouri 1864

Finley’s opinions of the medical necessities of war were at odds with those of the Sanitary Commission, it became clear that to achieve their goals the Union needed a new Surgeon General.¹⁸⁷ Between Finley’s tattered reputation and the USSC’s persistence, Surgeon General Finley was removed as Surgeon General of the Union and reassigned elsewhere in early 1862.¹⁸⁸

¹⁸⁴ Devine, *Learning from the Wounded*, 18.

¹⁸⁵ *The Philanthropic Results of War in America*, 37.

¹⁸⁶ *Ibid*, 37.

¹⁸⁷ Devine, *Learning from the Wounded*, 19.

¹⁸⁸ Humphreys, *Marrow of Tragedy*, 107.

Finley's removal allowed the Commission to change leadership within the Army Medical Bureau and establish a system that prized merit over seniority. The merit system eliminated past practices of appointment through seniority which had historically elevated unqualified officials to office, including to the position of Surgeon General.¹⁸⁹ In April 1862, with recommendations from elites within Union government agencies, the USSC's pick, Dr. William Hammond was appointed the eleventh Surgeon General of the United States. Hammond was the third Union Surgeon General since the onset of the Civil War.¹⁹⁰

Dr. William Hammond was a decorated surgeon. Hammond organized military hospitals in the Northeast in the pre-war period, served as an assistant surgeon in 1849 following the Mexican American war, and taught as the chair of anatomy and physiology at the University of Baltimore, Maryland (see figure 16).¹⁹¹ Hammond spent time abroad observing medical techniques and practices within European hospitals, giving him exceptional merit and experience that surpassed the average American doctor. Hammond rejoined the Union army in late 1861 and practiced as a camp inspector in the state of Maryland where he first requested policies for improved hygiene to prevent the spread of camp disease.¹⁹² After his appointment to the office of Surgeon General, Hammond wrote *A Treatise on Hygiene* where he asserted that, "The most intelligent members of the medical community recognize that their efforts should be directed to the prevention of disease rather than to its cure."¹⁹³ As Surgeon General, Hammond made disease prevention, sanitation, proper nutrition, hydration, and germ theory his top priorities.¹⁹⁴

¹⁸⁹ Devine, *Learning from the Wounded*, 19.

¹⁹⁰ *The Army Surgeons Manual*, N.p.: Surgeon General of the United States of America, 1861, 41.

¹⁹¹ "Dr. William Hammond Surgeon General United States Army," (*Harpers Weekly*, 1863).

¹⁹² Pat Leonard, "William Hammond and the End of the Medical Middle Ages," New York Times, 2012.

¹⁹³ Hammond, *A Treatise on Hygiene*, 1863, vii.

¹⁹⁴ Jane T. Censer, ed, *The Fredrick Olmsted Papers Defending the Union the Civil War and the U.S. Sanitary Commission 1861-1863*, (Baltimore and London: John Hopkins University Press, 1986).

Hammond's views and qualifications, coupled with his strong, steady, and insistent manner, drew the USSC to Hammond. Likewise, Hammond had long advocated for change within the Army Medical Bureau and the Civil War itself provided the right circumstances for strong medical community leaders to step in and establish proper medical regulations and education standards.¹⁹⁵ It was the mutually beneficial relationship between the USSC and Surgeon General Hammond that fundamentally changed Union military medicine.



Figure 16. Surgeon General Hammond.

Hammond's Reforms

Perhaps the most immediate threat to Union medicine was the prevalence of unqualified, undereducated army physicians practicing in field and community hospitals. One of the first measures needed to reform the army medical system was to weed out unqualified physicians and replace them with well-educated professionals. Under Hammond, all doctors currently enlisted or requested to enlist as a physician were required to complete and pass a rigorous examination. Competency exams tested scholarship in the areas of writing, anatomy, chemistry, clinical experience, physiology, toxicology, and hygiene.¹⁹⁶ Medical examinations consisted of two oral parts, one written exam, an essay, and a clinical exam in which doctors were to examine a cadaver, perform a surgical procedure, and treat patients in a hospital. Practitioners who failed

¹⁹⁵ Devine, *Learning from the Wounded*, 16.

¹⁹⁶ *Ibid.*, 17.

competence exams were immediately removed from service or rejected for service as military doctors. Physicians who failed their exams could retake the exam after a two-year period with no third chance offered.¹⁹⁷ To ensure objectivity and compliance, all examinations were evaluated by newly assembled medical examining boards. Using medical competency exams, the Union “rooted and booted” unqualified physicians and surgeons and replaced them based on merit and skill. In addition to competency exams, Hammond circulated hospital steward and surgeon’s manuals to all medical staff employed with the Union army. Hammond’s manuals included instructions on the operation of general hospitals and the responsibilities assigned to each member of the medical staff. For example, the hospital steward’s manual instructed staff on how to make a hospital bed, when to change sheets and dressings, recipes for hospital meals, specific times when meals were to be served, the chain of command among employees, and patient observation schedules.¹⁹⁸

Aside from addressing medical education, one of the most significant components of the reorganization of the Union medical system was the formation and development of the general hospital system.¹⁹⁹ Before 1862, there were no standardized, government-run hospital systems in place but rather, township general hospitals used by the army when needed. This meant that gravely injured patients were treated on the field with inadequate supplies and inexperienced doctors or transported hours away by wagon to larger cities with established community hospitals.

¹⁹⁷ Devine, *Learning from the Wounded*, 16-18.

¹⁹⁸ Joseph Woodward, M.D., *The Hospital Steward's Manual: For the instruction of Hospital Stewards, Ward-Masters, and Attendants, in their Several Duties*, (Philadelphia: J.B. Lippincott and Co., 1862).

¹⁹⁹ Jeffery Smith, and B C. Frueh, "Counting the Costs of the Civil War," (*The New York Times*, November 7, 2013).

When community hospitals were not within immediate reach, private homes, churches, and schoolhouses were used as field hospitals for those who could be treated on the battlefield or as overflow hospitals when general hospitals became full. A soldier stationed at Fort Donelson and then transferred to St. Louis, Missouri for medical care recalled three of their “wounded officers were taken to the widow’s home where they were nursed as tenderly as if they (were) her sons” and cared for long after the army left.²⁰⁰ However gracious the hosts were, the use of private homes were often costly, time-consuming, and improperly ventilated for hospital use. Further, the hosting families were often left with nothing when patients left and sometimes endured the financial burden of the prolonged care of convalescing soldiers.

To address the problems with Union field and community hospitals, Hammond relied on the work and research of Florence Nightingale. Surgeon General Hammond was intrigued by Nightingale’s medical innovations and research and her writing lent direction to his wartime medical reforms.²⁰¹ At the close of the Crimean War in Europe (1853-1856), Nightingale concluded “the inadequacies of army hospitals stemmed from the absence of permanent base hospitals on the scale with which the war demanded.”²⁰² While private homes, churches, and schoolhouses served their purposes as field hospitals, their isolation from urban medical hubs in which proper supplies and medical staff were in abundance, negatively impacted soldier survival rates. Makeshift hospitals were also improperly ventilated and over-crowded.

Nightingale also addressed hospital ventilation in her 1863 book, *Notes on Hospitals*. In her works, Nightingale attributed high soldier fatality rates within makeshift army hospitals to a lack of sunlight and ventilation and recommended the use of open-air pavilion style hospitals

²⁰⁰ Livermore, *My Story of War*, 186-187.

²⁰¹ William T. Campbell, "The Innovative Design of Civil War Pavilion Hospitals," National Museum of Civil War Medicine, Last modified February 20, 2010. <http://www.civilwarmed.org/pavilion-hospitals/>.

²⁰² Bucy, "Quiet Revolutions," 221.

(see figure 17).²⁰³ In contrast to homes, warehouses, churches, and storefronts, pavilion hospitals included long open wings in which patient beds were placed between large floor-to-ceiling



windows. This allowed for ample natural light and optimal ventilation.²⁰⁴ The pavilion design also utilized space and allowed for more patients to be treated in the same room, at the same time. Medical staff could also collectively see their patients and move freely among them.²⁰⁵

Figure 17. Illustration of Florence Nightingale

In the summer of 1862, Surgeon General Hammond built his first pavilion-style general hospital in Philadelphia, Pennsylvania, Satterlee general hospital (see figure 18).²⁰⁶ The sprawling sixteen acre, three-thousand five-hundred bed facility boasted seven acres of floors and hundreds of hospital tents on the foregrounds to accommodate soldiers when the hospital became full.²⁰⁷ The massive facility boasted an observatory where the hospital band performed, three kitchens complete with the services of two French cooks, and a milk department that produced “950 quarts of milk per day in the winter and 1700 per day in the summer.”²⁰⁸ The hospital also had a reading room and

²⁰³ Florence Nightingale, *Notes on Hospitals*, (London: Savill and Edwards, 1863).
<https://ia801401.us.archive.org/21/items/notesonhospital01nighgoog/notesonhospital01nighgoog.pdf>, 15-16.

²⁰⁴ Campbell, "The Innovative Design of Civil War Pavilion Hospitals."

²⁰⁵ *Ibid.*

²⁰⁶ Library of Philadelphia Digital Collections, "Satterlee U.S.A. General Hospital, West Philadelphia,"
<https://libwww.freelibrary.org/digital/item/38067>; Nathaniel West, *History of the Satterlee U.S.A. Gen. Hospital, at West Philadelphia, PA. From October 8, one86two, to October 8, one86three*, (Hospital press, 1863).

²⁰⁷ West, *History of the Satterlee U.S.A. Gen. Hospital*, 30.

²⁰⁸ *Ibid.*, 30-33.

printing department that published “The Hospital Register” beginning in February 1863. Satterlee’s printing department served as the publisher for several other Union army hospitals and military departments.²⁰⁹

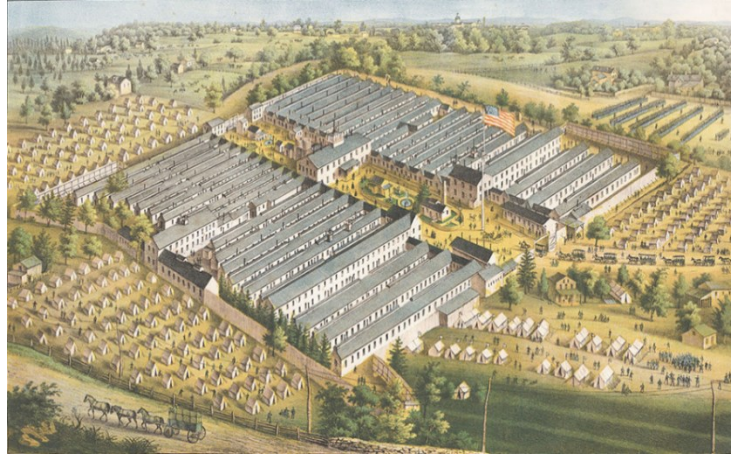


Figure 18. Satterlee General Hospital

A healthy food supply coupled with the extended luxuries, medical and otherwise, at Satterlee made Surgeon General Hammond’s first pavilion style general hospital the oasis of Union medicine. Post-war records indicate that only two-hundred sixty deaths out of 12,773 patient admissions occurred at Satterlee general hospital throughout the war.²¹⁰ By these figures, Satterlee had a patient survival rate of close to ninety-eight percent.²¹¹ If Satterlee’s patient survival rate was accurate, there is no doubt Surgeon General Hammond accredited it to “the nearly perfect” ventilation in the wards and the “neatness and cleanliness” of the facility as noted by the hospital’s Chaplin, Nathaniel West.²¹²

For many historians, the task of establishing the army general hospital system was Hammond’s greatest accomplishment during his tenure as Surgeon General. Hammond’s reorganized system created centralized medical hubs in which qualified professionals flocked. Additionally, the general hospital system reduced the need for long-term, makeshift hospitals ill-suited for hospital use.²¹³

²⁰⁹ West, *History of the Satterlee U.S.A. Gen. Hospital*, 29-30.

²¹⁰ Library of Philadelphia Digital Collections, "Satterlee U.S.A. General Hospital, West Philadelphia."

²¹¹ *Ibid*; West, *History of the Satterlee U.S.A. Gen. Hospital*.

²¹² West, 6-7.

²¹³ While the general hospital system aided in alleviating some of the problems with makeshift general hospitals, the general hospital system itself did not eliminate the problem. Over the course of the war, private homes, churches, storefronts, and schoolhouse continued to be used as Civil War hospitals. In some case, Union and

Aside from the construction of general hospitals, Surgeon General Hammond, alongside Dorothea Dix and Elizabeth Blackmore, established the Nursing Corps. The Nursing Corps was essential in reorganizing volunteer medical practices as civilian volunteers flooded Union general, community, and field hospitals. The organization and education of female nursing volunteers established women as unofficial but permanent members of the Army Medical Bureau and provided an outlet for women such as Dorothea Dix, Mary Livermore, and Clara Barton to continue and expand their humanitarian work (see figure 19).

The nursing corps created a massive workforce of medical professionals that lent themselves entirely to the medical needs of the Union Army. Additionally, the education of female nursing volunteers allowed women the opportunity to escape the traditional domestic sphere and serve their country alongside their male counterpoints.²¹⁴ Although many army doctors disliked the idea of women as medical staff, the Corps set standards and education processes for practicing nurses in hope of eliminating tensions between inexperienced nurses, elite physicians, and the stigma



Figure 19. Portrait of Mary Livermore

Confederate general hospitals were established in existing buildings despite requests from medical staff for new general hospitals to be built from the ground up. Due to lack of provisions, climbing lumber prices, and the speed at which hospitals were needed, the continued use of makeshift buildings was unavoidable. However, the general hospital system was a key component to the standardization of American medicine as centralized medical hubs and improved ambulance systems allowed for faster transport of patients to more advanced medical facilities such as Satterlee or Chimborazo general hospitals.

²¹⁴ Elizabeth Robinson, "The Union's "Other Army": The Women of the United States Sanitary Commission," https://www.gilderlehrman.org/sites/default/files/inline-pdfs/Elizabeth%20Robertson_0.pdf, 2-3.

surrounding women's inexperience in the workforce.

Just as their white counterparts, African American women, slave and free also nursed soldiers in Union and Confederate army camps and hospitals (see figure 20). Although the Union Army denied African American women the opportunity to work as nurses, Susie King Taylor, a



Figure 20. Susie King Taylor

free women working as a laundress for the Union army recalled being hired as a laundress but “doing very little of it.”²¹⁵ Consequently, Taylor wrote about treating soldiers infected with smallpox and asserted that she was “not in the least afraid of the small-pox” even as “in spite of good care and attention” many soldiers succumbed to the affliction.²¹⁶ Taylor also described

treating wounded soldiers in Union general hospitals. “How we hurry to assist in alleviating their pain, bind up their wounds, and press cool water to their parched lips, with feelings only of sympathy and pity.”²¹⁷

Female contrabands also assisted in Army hospitals.²¹⁸ Sister Lydia Penny, a nurse at Camp Delaware, was described as nursing soldiers wounded in the battle of Deep Bottom in 1864. Her husband, Thomas Penny, asserted that Sister was “the only woman present, like an angel from above, giving words of cheer, and doing all in her power to relieve the suffering of

²¹⁵ Susie Taylor, *Reminiscences of my Life in Camp with the 33d United States Colored Troops*, (1902), 21.

²¹⁶ Taylor, *Reminiscences of my Life in Camp*, 10.

²¹⁷ *Ibid.*, 19.

²¹⁸ *Ibid.*; Contrabands refer to slaves who were either confiscated from southern plantations or slaves who escaped and joined Union forces as soldiers or as workers in Union army camps. Eventually, contrabands were relocated to collective farms organized by General Ulysses S. Grant.

the wounded and dying.”²¹⁹ Harriet Tubman also recalled going “to the hospital every morning to bathe the wounds” which entailed “swatting away the flies and changing her water basin frequently” as it quickly became saturated with blood.²²⁰ Secretary of State William Seward acknowledged Tubman’s work as a nurse in a letter in support of Tubman to Major General Hunter following the war in which he asserted, “Harriet Tubman, a colored woman, has been nursing our soldiers during nearly all the war.”²²¹ In addition, African American contrabands assembled and distributed herbal remedies to soldiers in need.²²² Both Taylor and Tubman made “medicinal concoctions from herbs which (they) gave away to the sick soldiers.”²²³

Abraham Lincoln once opposed to female medical volunteers publicly addressed women’s role in the Civil War and thanked them for their service only second to the men who fought on the battlefields. Not only did Lincoln address the many innovations that took place in the field of medical science in the period, but he attributed those innovations to the women of the USSC. Lincoln proclaimed, “In this extraordinary war extraordinary developments have manifested themselves, such as have not been seen in former wars; nothing has been more remarkable than these fairs for the relief of the suffering soldiers and their families. And the chief agents in these fares are the women of America.”²²⁴ The acknowledgment of the Commission’s women by the Union President was a historic achievement for the women who were once told to ‘stay home and sew.’²²⁵

²¹⁹ Forbes, *African American Women*, 53.

²²⁰ *Ibid*, 52.

²²¹ *Ibid*, 39.

²²² *Ibid*, 55-56.

²²³ *Ibid*, 52.

²²⁴ Abraham Lincoln, "Remarks at Closing of Sanitary Fair, Washington, D. C.," (March 18, 1864). <https://quod.lib.umich.edu/l/lincoln/lincoln7/1:558?rgn=div1;view=fulltext;q1=Eliza+P.+Gurney>.

²²⁵ Robinson, “The Union’s “Other Army,” 3-5.

Under the leadership of Surgeon General Hammond, both male and female volunteers aided in the war effort. For the first time, women became a recognized focal point in American wartime medicine.²²⁶ Stepping out of the traditional domestic sphere, white women stood alone in their nursing endeavors rather than behind their male counterpoints. While the Nursing Corps was not established as an official government organization until 1900, the work of Dix and her staff paved the way for women in the medical field and provided honorable service to the Union and Surgeon General Hammond, during the war.²²⁷

With the establishment of an army general hospital system and the workforce in place to run the institutions, Surgeon General Hammond turned his attention to improving patient transportation with the revision of the ambulance corps. Being the largest medical hub west of the Appalachian Mountains, St. Louis, Missouri was a prime destination for the mortally wounded.²²⁸ Its proximity to the Mississippi River, main roads, and access to railroads made it a prime destination for Union general hospitals. The use of hospital ships, trains, and the ambulance system efficiently transported patients from isolated battlefield and regimental hospitals to urban medical hubs (see figure 21).²²⁹ Weeks after individual battles ended, soldiers were housed until they were well enough to travel and then transported by train car, ambulance wagon, or hospital boat to convalescent homes, general hospitals, back to their regiments, or home to recover on furlough.

²²⁶ Please note the Civil War was not the first time in American history that women were involved in medical care and the war effort. Rather, the Civil War marked the beginning of the recognition and organization of women's nursing and wartime labors on a scale unmatched by any other period.

²²⁷ U.S. Army Medical Department Office of Medical History, "Welcome to Army Nurse Corps History Preserving our past to guide our future," <http://history.amedd.army.mil/ancwebsite/anchome.html>.

²²⁸ Loren Humphrey, *Quinine and Quarantine*, (Columbia: University of Missouri Press 2000), 44.

²²⁹ Humphrey, *Quinine and Quarantine*, 44.

Following the battle of Wilson's Creek near Springfield, Missouri, seven hundred twenty-one Union and Confederate soldiers were transported to Rolla by railcar and then to St. Louis to be treated in the city's general hospitals.²³⁰ Not only did the ambulance corps and its many forms of transportation allow doctors to remove

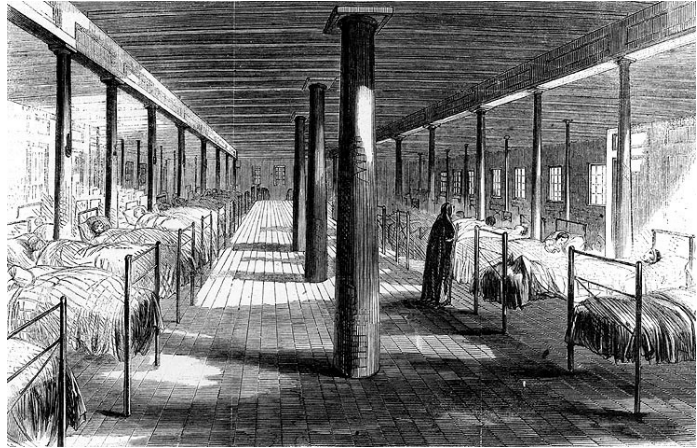


Figure 21. "The Floating Hospital on the Mississippi," a Harpers Weekly drawing of the inside of the Red Rover Hospital Ship which frequented the St. Louis area, transporting patients to the city's general hospitals.

the wounded from battlefields quickly and efficiently, it allowed experienced army surgeons and physicians to remain in urban medical hubs that fostered a consistency of leadership and care not experienced in regimental and field hospitals. The efficient transport of the wounded to large general hospitals benefited the patient and hospital staff alike as it allowed wounded soldiers to receive medical care in a timely manner and freed space in field and regimental hospitals for soldiers unable to travel.²³¹

Under Hammond, the Union government backed and supported the elite medical community, took advice from qualified physicians, and implemented policy based on their suggestions. Prior to Surgeon General Hammond's appointment, no medical institution was operated by the federal government. Through Hammond's policies, medical care transitioned from state dictated policy, to a system subjected to federal policies, presence, and enforcement.²³² Under Hammond's leadership, women became a recognized and vital

²³⁰ Humphrey, *Quinine and Quarantine*, 44.

²³¹ *Ibid.*

²³² Devine, *Learning from the Wounded*. While General Hammond is credited with many wartime reforms, he was not the first physician to propose medical reforms but rather the first to convince congress they were good,

component to Civil War medical care and education, and the efficiency of hospital staffing and patient transportation were significantly improved.

Building the Confederate Medical Service

Many laws and policies enacted by Moore over the course of the Civil War were almost identical to those of the Union. While Moore arguably established his regulations sooner than Surgeon General Hammond, the results of progressive policies in the Confederacy did not come to fruition until around the same time as the Union's in late 1862 to early 1863. Like Hammond, Moore established sanitation regulations, required medical competency exams, hired camp and hospital inspectors, and circulated surgeons' manuals and guidebooks to instruct army medical staff on proper hospital procedures (see figure 22). With the help of women, slave labor, and

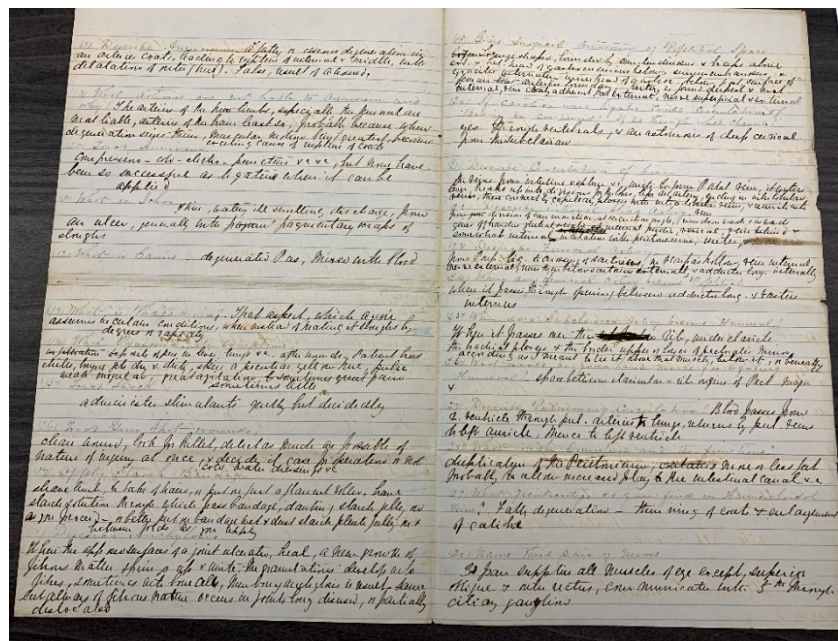


Figure 22. Medical competency examination of Alexander Lockhail Mackay, age 30. Taken May 14, 1863.

elite medical doctors, Moore successfully designed and constructed Chimborazo, the largest military hospital in the world and pioneered the most expansive system of general hospitals in the country. Moore's state-of-the-art facilities gained national

implementable ideas. While Hammond officially established a clear working hierarchy within army hospitals, Charles Tripler had already implemented this within his own medical staff long before Hammond took the position of Surgeon General. Tripler also established review boards to get rid of unqualified physicians practicing under his authority and designed the Tripler ambulance. Both of which were later implemented by Hammond.

even the USSC appreciated the innovation and care given to soldiers in the Confederate capitol at Richmond, Virginia.²³³

Perhaps Moore's greatest accomplishment during his tenure as Surgeon General was the establishment of the hospital system of the Army of the Tennessee, also referred to as the Stout hospital system. Pioneered by Surgeon General Moore and ran by Dr. Samuel Stout, the Stout hospital system was the most expansive hospital system during the Civil War.²³⁴ While the construction and organization of Stout's hospitals were rooted in old Army regulation, medical standards and care evolved with the war.²³⁵ Much like Surgeon General Hammond, Moore and Stout were familiar with the disadvantages of the former system and unlike Finley and Lawson, preferred modern medical techniques and practices over age-old regulation and seniority. Additionally, Moore knew the Confederacy needed general hospitals that could be deconstructed, moved, and rebuilt when invading forces moved to seize them (see figure 23). Instead of losing supplies, patients, and doctors to the Union, Confederate forces were able to pack up and move general hospitals in the Stout region to safer locations. While the abandonment of documents and patients too sick to travel were common, the mobility of the Stout hospitals made them more resilient to threats of danger and invasion.

²³³ *Documents of the United States Sanitary Commission*, (3 vols, New York, 1866), II No. 89, 6-8.

²³⁴ Jack D. Welsh, *Two Confederate Hospitals and Their Patients Atlanta to Opelika*, (Macon: Mercer University Press, 2005), 3.

²³⁵ Welsh, *Two Confederate Hospitals*, 3.

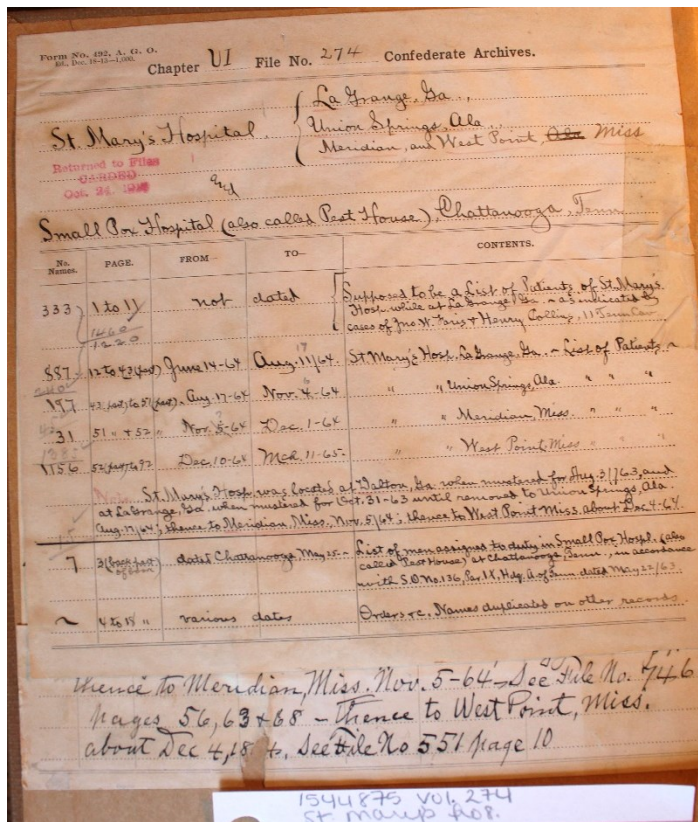


Figure 23. St. Mary's hospital register detailing the locations of the hospital from 1864 and 1865

Additionally, by 1863, the Confederate capital city at Richmond, Virginia was the highly acclaimed medical center of the Confederacy. On October 11, 1861, Surgeon General Moore opened his first tailor-made general hospital on Chimborazo hill overlooking the York River in Richmond, Virginia (see figure 24). At the time, Chimborazo was the largest military hospital in the world.²³⁶ The massive establishment had a patient capacity of over eight thousand and included over one hundred fifty buildings including a bakery, pharmacy, Russian bathhouses, five icehouses, and a brewery in which four hundred kegs of beer were brewed at a time.²³⁷ Winder hospital was the second largest and most advanced military hospital in Richmond. Opened in April 1862, Winder spanned one hundred twenty five acres, had the capacity for almost five thousand



Figure 24. The former site of Chimborazo general hospital overlooking the railroad and the York River, Richmond, VA

²³⁶ Cunningham, "Confederate General Hospitals," 385-383.

²³⁷ *Ibid.*

patients, and boasted the most advanced “Russian, steam, plunge, and shower baths.”²³⁸ Winder, like Chimborazo also had a bakery, two canal boats to retrieve food supplies, and several icehouses. The third largest hospital built in summer 1863, was Jackson hospital. Jackson had the capacity for twenty-five hundred patients and included a bakery, garden, and housed sixty cows on the premises.²³⁹ Richmond was home to more than one-hundred seventy-five hospitals throughout the war (see figure 25).²⁴⁰

Just as in the Union, Confederate relief societies played a significant role in managing

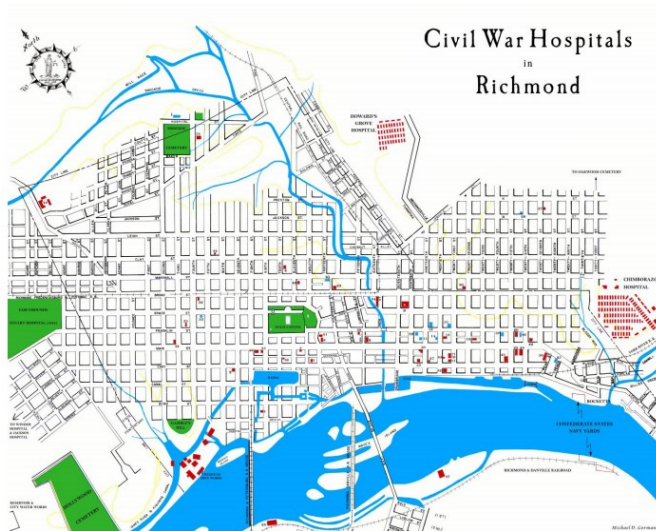


Figure 25. Map of Richmond Hospitals

and supplying general hospitals and caring for sick and wounded soldiers far from the Confederate political center and predating the Richmond hospital boom. Before the construction of major general hospitals such as Chimborazo, it was common for Richmond newspapers to request that women of the community “comfort the soldiers by sending baked custards, eggs,

milk,” blankets, and clothing to designated training and army camps.²⁴¹ While Moore continually built hospitals throughout the Confederacy, he relied significantly on the women of local relief agencies to staff and supply them. In March 1862, Dr. N. Friend appealed to the ladies of Confederate relief societies to supply the “rapid construction” of “Brigade hospital which will

²³⁸ Alexander G. Lane, “The Winder Hospital of Richmond, Virginia,” in *Southern Practitioner*, XXVI (January 1904), 37.

²³⁹ Cunningham, “Confederate General Hospitals,” 384.

²⁴⁰ Michael Gorman, “Index of Hospital Richmond,” Civil War Richmond, Last modified, 2015. <https://www.civilwarrichmond.com/hospitals/206-index-of-hospitals-in-richmond-va-during-the-civil-war>.

²⁴¹ “Sick Soldiers.” *Richmond Daily Dispatch*, April 30, 1861. <https://www.civilwarrichmond.com/written-accounts/newspapers/295-1861-04-30-richmond-dispatch-provisions-needed-at-camp-lee-hospital>.

soon accommodate two-hundred twenty-five patients.”²⁴² Due to its location “in a poor and sparsely settled country, no hospital supplies can be obtained.”²⁴³ Relief agencies supplied linens, lint for packing wounds, bandages, blankets, clothing, and shoes to hospitals across the Confederacy.²⁴⁴ However, shortages of hospital supplies continued to be problematic for the Confederacy well into 1863 (see appendix G).

On September 25, 1863, *The Alabama Beacon* published an add requesting the donation of hospital supplies for a hospital in Danville, Virginia ran by Alabama native Sallie Swope.²⁴⁵ Hundreds of articles and letters were published in *The Alabama Beacon* requesting donations and supplies for both established and newly built hospitals across the Confederacy. Additionally, at an 1864 meeting of the Association of Army and Navy Surgeons, it was clear Surgeon General Moore was still concerned with “hygienic matters, sanitation, and disinfection— and rightfully so.”²⁴⁶ In May 1864, reports of neglect by army surgeons flooded Moore’s desk. P.B. Scott wrote to the Alabama medical directors office reporting that a recent admit from Shelby Springs hospital had the “appearance of bad neglect (see appendix H).”²⁴⁷ The month following Scott’s letter to Shelby Springs, the transfer of Confederate surgeons to Chimborazo hospital sparked another petition addressed to the Surgeon General expressing shared discontent with current hospital accommodations (see figure 26). “The wards of this hospital being hastily and

²⁴² To the Soldier’s Aid Societies, Published in *The Alabama Beacon*, March 7, 1862, (*The Alabama Department of History and Archives*, Montgomery, Alabama, SG011159 aid society folder #12.

²⁴³ To the Soldier’s Aid Societies.

²⁴⁴ “Richmond Dispatch; ladies of Church and Union Hills will meet today at Springfield Hall to make bandages.” Last modified April 24, 1861. <https://www.civilwarrichmond.com/written-accounts/newspapers/283-1861-04-24-richmond-dispatch-ladies-of-church-and-union-hills-will-meet-today-at-springfield-hall-future-gh-26-to-make-bandages>.

²⁴⁵ Hospital Supplies Wanted, published in *The Alabama Beacon*, September 25, 1863, (*Alabama Department of History and Archives*, Montgomery, Alabama), SG011159 aid society folder #12.

²⁴⁶ Cunningham, “Confederate General Hospitals,” 389.

²⁴⁷ Letter from P.B. Scott to Surgeon B.H. Thomas of Shelby Springs Hospital, Shelby Springs, Alabama, (National Archives and Records Administration), record group 1544834, VOL 452.

imperfectly constructed would require a thorough remodeling or even an entire rebuilding to render them tenable during the coming winter.”²⁴⁸ Soon thereafter, Moore ordered several Richmond hospitals be shut down including the famed Winder hospital and one ward of Chimborazo. Moore, possibly to please his staff, agreed

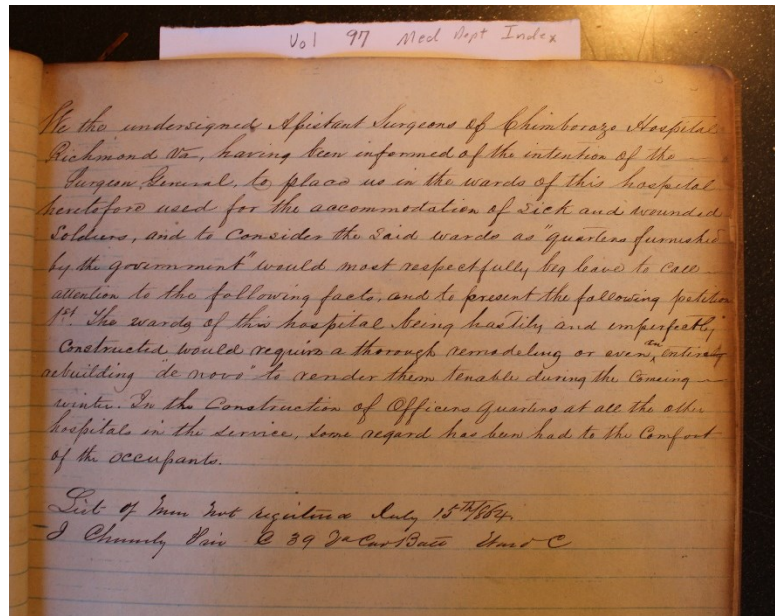


Figure 26. Letter to Surgeon General Moore regarding hospitals accommodations at Chimborazo hospital July 1864

the hospitals needed to be dismantled and rebuilt elsewhere with improved designs for maximum ventilation and fire resistance.²⁴⁹ In many cases, hospital matrons were reassigned to field duty by request of head surgeons when hospitals were closed. General Bragg continued to close Richmond hospitals citing them as insufficient well into the spring of 1864, to the discontent of Surgeon General Moore.²⁵⁰

Unlike records of Union relief societies, there is not an abundance of literature regarding the work of Confederate women in comparable roles. Available WSR records are limited in scope. This is likely due to the loss of personnel records in the burning of Surgeon General Moore’s office in 1864. However, the president and founder of the Women’s Society of Relief (WSR), Felicia Grundy Porter, and her family remain highly acclaimed icons in Tennessee

²⁴⁸ Letter to Surgeon General Moore from the Surgeons at Chimborazo hospital, July 15, 1864, (National Archives and Records Administration), VOL. 97 Medical Department Index.

²⁴⁹ Cunningham, "Confederate General Hospitals," 389.

²⁵⁰ Letter from Phoebe Pember to Mrs. J.F. Gilmer, April 16, 1864, in Mrs. Phoebe Y. Pember Letters, 1861-1865, (University of North Carolina Library).

history (see figure 27). Unlike the church establishment of the USSC, the WSR was founded by



Figure 27. Felicia Grundy Porter

Porter and her daughters who campaigned for the support of other Richmond women. Porter's WSR successfully aided in the care of the Confederacy's sick and wounded and advocated for proper sanitation, soldier diet, and adequate medical supplies.

Porter's family served the state of Tennessee since their arrival to Nashville in 1807. Porter's mother was heavily involved in establishing the First and Second Presbyterian church, opened the first Sunday school in Nashville, established the House of Industry for orphan girls, and a Women's Mission Home "to bring fallen women back to a path of virtue."²⁵¹ Raised by her strong willed, God-fearing mother, Felicia Porter had never been a stranger to public service, and she spent much of her pre-war time serving in her mother's orphan's asylum with her sister, Anne. While Porter's mother, Louisa, didn't receive credit for her endeavors in Nashville until much later, the lasting effects of her philanthropy lived on through her children, one of which is seen in Felicia Grundy Porter's work in Civil War medicine (see figure 28).

²⁵¹ Carole S. Bucy, "Quiet Revolutions: The Grundy Women and the Beginnings of Women's Volunteer Associations in Tennessee," *Tennessee Historical Quarterly* 54, no. 1 (1995): 40-53, 42.

After the fall of Nashville in 1862, Porter organized the Soldiers' Relief Society of Tennessee. Porter was a prime candidate for establishing the Women's Society of Relief. Her knowledge of both the workings of volunteer organizations and medical care acquired from her work in her mother's organizations, schools, and asylums gave her medical and

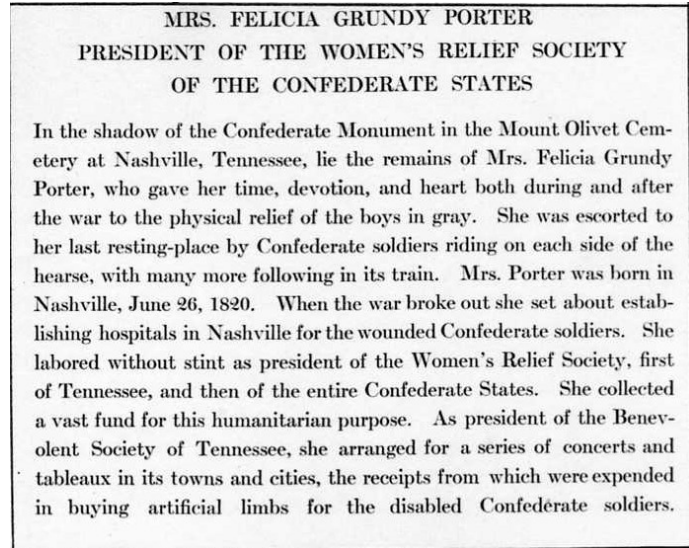


Figure 28. Felicia Grundy Porter's obituary, 1889.

administrative skills most women of the period could not obtain. Additionally, Porter's brother-in-law, Dr. John Berrien Lindsley, was the founder of the University of Nashville Medical School which remained open until Union occupation in 1862.²⁵² Porter's prominent connections and reputation in Nashville served her well throughout the Confederacy and the Women's Society of Relief was soon granted permission by Jefferson Davis to run Confederate hospitals in the medical system of the Army of the Tennessee. Private relief agencies ran by local women aided Porter's WSR by making cloth, sewing clothes, and collecting donations for the soldiers abroad. Receiving supplies from an Alabama relief society, Colonel Jasper McCown named "every lady a sister and a mother. Their homes sheltering our wounded, sick, exiled soldiers, speaks in silent yet sublime eloquence of the noble deeds preformed" by the patriotic women of the Ladies Relief Society.²⁵³

²⁵² Bucy, "Quiet Revolutions," 44-45.

²⁵³ Letter to Montevallo, AL Ladies Aid Society from Col. Jas. McCown, 3rd and 5th Missouri Regiments, , (Alabama Department of History and Archives, Montgomery, Alabama), SG011159, Aid Society folder #12.

While soldiers in the field were thankful for the efforts and donations of women's relief societies, throughout the war Porter and other women of relief agencies experienced opposition from Confederate doctors and administrators who disliked the Society's newly appointed authority. Dr. Samuel Stout, the appointed superintendent of the medical system of the Army of the Tennessee, was no stranger to these tensions. While the Women's Society of Relief provided tireless aid to wounded soldiers in Tennessee, Alabama, and Georgia general hospitals, the tensions surrounding women working in hospitals often caused unrest and hindered cohesive partnerships between relief agencies and hospital physicians.²⁵⁴ The presence of women in a formal army setting such as a military hospital was a blow to the ego of Civil War surgeons who had been working independently, their own way, for decades in the pre-war era. Much like Surgeon General Finley and Lawson, the masculine, old ways of medicine seemed supreme to the suggestions of young, unmarried nurses and volunteers. While some wartime physicians wanted women removed completely from the hospital workforce, others sought to work alongside them, under the condition they remained subordinate to male hospital administrators.²⁵⁵

In an article written by Dr. Samuel Stout sometime after the war, he recalled working closely with the Women's Society of Relief. The tension between men and women within the hospital system, specifically between nurses and army doctors, are evident in his prose. Before Stout's introduction as hospital administrator of Gordon general hospital, the Women's Society of Relief ran the hospital.²⁵⁶ Women of the Society were responsible for calling in "civilian

²⁵⁴ S H. Stout, "Some Facts of the History of the Organization of the Medical Service of the Confederate Armies and Hospital," *Southern Practitioner* vol. 24 (January 1, 1902): 160-64, 161.

²⁵⁵ Stout, "Some Facts of the History of the Organization of the Medical Service of the Confederate Armies and Hospital," 161-162.

physicians to treat patients, hiring cooks and laundresses, feeding patients, and taking patient prescriptions to local pharmacies to be filled.” Stout protested the society’s pick of employees dismissing them as “lazy and dishonest” and requested a patient roster and prescription book be kept of all patients. Stout expressed his disbelief when the women of the relief society objected to his authority and argued they were acting under the command of Surgeon General Moore and President Davis, in which they possessed a letter of authorization.²⁵⁷

The fight for authority and control over Gordon hospital persisted. After a septic system clog shut the hospital down, Stout took a firm stance regarding the limits of the Women’s Relief Society’s authority and place within Gordon hospital.

After the hospital was reopened, every person was informed that he or she must submit cheerfully to orders and were subject to punishment if disobedient. Some of the women seemed disgruntled that all their supposed authority over the management of the hospital had passed out of their hands. The ladies then delegated one of their number to wait upon me. She said the ladies feared I did not want their help. I replied: “In this you are mistaken, I do want your help. But as a commissioned officer of the Confederate Army, I was bound in honor to observe and carry out the spirit of regulations. Therefore, the assumption of authority to control the sick and wounded men of the army by outsiders, if not prevented or resisted by a surgeon or assistant surgeon in charge of them would be subject to trial by a court martial for failure to do his duty.”

“But,” she said, “I am afraid the ladies through their President, by appeal to the Surgeon General, may have you broken of your office, for you have incurred the disapproval of many of them.”

In reply I said: “It is not in the province of the Surgeon General even if instigated by all the good ladies of the land, unless it can be proven that I have been guilty of malfeasance or misfeasance in office; such arbitrary proceedings would rather cost the official heads of either or both these officials, and not my own. I sincerely desired the aid and co-operation of the good ladies of the Society, but their opposition I would not brook.”²⁵⁸

Stout’s account of the disagreement with the Women’s Society of Relief is representative of common conflicts in both Union and Confederate hospitals. Women had never worked alongside

²⁵⁷ Stout, “Some Facts of the History,” 161.

²⁵⁸ *Ibid*, 160-64.

men in a formal setting, let alone *instructed* men on how to do a “man’s” job. Further, many of the nurses associated with relief societies were civilian volunteers and not formal members of the army, even as authority for them to serve in army hospitals were given by President Davis. Unlike the Union, the Confederate States never established a nursing corps and respect for female hospital nurses and staff dwindled with consistent disagreements over authority and government recognition.

Despite miscommunications, squabbles, and internal conflicts, by 1863 the Confederacy succeeded in constructing and operating massive military hospitals that transformed her capital city into a premier medical hub. Like Hammond, Moore successfully imposed sanitation laws, required medical competency exams, and enforced army medical staff regulations.²⁵⁹

Newspapers across the country praised the efforts of the Confederate medical department and the top-notch general hospitals that were, in many cases, maintained and run by Richmond women.²⁶⁰ In an 1861 *Richmond Dispatch* article announcing the grand opening of Richmond’s St. Francis de Sales hospital, it was the hospital’s “gentle and devoted women who (were) the ark” upon troubled waters.²⁶¹ After the war, even the United States Sanitary Commission applauded Richmond’s Jackson hospital in their 1865 report on care and sanitation asserting that “few hospitals of our own surpass it.”²⁶²

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²⁶⁰ Cunningham, 389.

²⁶¹ "Hospital of St. Francis de Sales," *Richmond Dispatch*, May 3, 1861.

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CHAPTER FIVE: CASE STUDY ANALYSIS

As disease devastated whole companies before they saw the battlefield, Hammond and Moore aimed to combat unsanitary camp conditions, contaminated water supplies, and incompetent medical personnel. The regulation and implementation of medical education and sanitation policies helped to prevent wartime disease. The employment of medical examining boards and properly trained physicians and nurses established competency standards and fostered efficacy and regulation not seen with the onset of the war. In part, Hammond and Moore were successful in curbing disease in Civil War general hospitals across the country. This was specifically true regarding soldier fatalities from typhoid, which case study results determined were decreased overall by seventy-three percent from 1862-1865, fifty percent in the first year of sanitation policy.²⁶³

²⁶³ Hospital Register, Arkansas General Hospital, Helena, Arkansas, 1862-1865, Record Group 94, Registers 45, 46, 48, (National Archives Records Administration: Washington, D.C.); Hospital Register Charlottesville General Hospital, Charlottesville, Virginia, 1861-1865, Ch. 6, vol. 214, (National Archives Records Administration: Washington, D.C.); Hospital Register, Chimborazo Hospital number one, Richmond, Virginia., 1861-1863, (National Archives Records Administration: Washington, D.C.); Hospital Register, Chimborazo Hospital number two, Richmond, Virginia, 1863-1865, (National Archives Records Administration: Washington, D.C.); Hospital Register, Chimborazo Hospital number three, Richmond, Virginia, 1863-1865, Ch. 6, vols. 19, 53, 21, 64, 62, 69, 226, 105, 101, 56, (National Archives Records Administration: Washington, D.C.); Hospital Register, Chimborazo Hospital number five, Richmond, Virginia, 1863-1865, Ch. 6, vols.23, 17, 63, 64, 65, 70, 20, (National Archives Records Administration: Washington, D.C.); Hospital Register, General Hospital No. four Wilmington, North Carolina, 1862-1864, Ch. 6 vols. 285, 244 ½, 278, 270, 282, 156, (National Archives Records Administration: Washington, D.C.); Hospital Register, Fairgrounds Hospital No. 1, Atlanta, Georgia, *Samuel Hollingsworth Stout Papers, 1837 (1860-1865)*, Box 2L3, (Center for American History, the University of Texas at Austin); Hospital Register, Fairgrounds Hospital No. 2, Atlanta, Georgia, *Samuel Hollingsworth Stout Papers, 1837 (1860-1865)*, Reel 2 item D, (Center for American History, the University of Texas at Austin); Hospital Register, Fifth Street General Hospital, St. Louis, Missouri, 1861-1863, (National Archives Records Administration: Washington, D.C.); Hospital Register Ft. Morgan General Hospital, Fort Morgan, Alabama, 1863-1864, Ch. 6 vol. 3, (National Archives Records Administration: Washington, D.C.); Hospital Register, Galveston General Hospital, Galveston, Texas, 1864-1865, Ch. 6 vol. 275, (National Archives Records Administration: Washington, D.C.); Hospital Register, Huston General Hospital, Huston, Texas, 1861-1863, Ch. 6 vols. 275, 417 ½, 276, (National Archives Records Administration: Washington, D.C.); Hospital Register, Indianapolis General Hospital, Indianapolis, Indiana, 1862-1864, Record Group 94, Registers 102, 62, 63, 64 IN, (National Archives Records Administration: Washington, D.C.); Hospital Register, Keokuk General Hospital, Keokuk, Iowa, 1862-1865, Record Group 94, Register 53 IA, (National Archives Records Administration: Washington, D.C.); Hospital Register, Larson General Hospital, St. Louis, Missouri, 1863-1864, (National Archives Records Administration: Washington, D.C.); Hospital Register, Newsome Hospital, Chattanooga, Tennessee, 1862-1864, *Samuel Hollingsworth Stout Papers, 1837 (1860-1865)*,

There are noticeable differences between the geographical regions discussed in this thesis concerning the prevalence of wartime disease. The comparisons made possible by original case study data allow for a specific, in-depth examination of disease prevalence in study-specific geographic regions. While some regions, such as the political centers, experienced substantially more fatalities from battle wounds compared to the smaller, rural test hospitals, the test hospitals in the Deep South and Stout region saw significantly more fatalities from a more diverse range of diseases. While sanitation policies put in place by Hammond and Moore were almost identical, case study results show that both the Union and Confederate medical service had difficulties establishing and enforcing sanitation policies. Private and government organized relief agencies, the workforce for which was predominantly women, traded their sewing needles for the battlefield and bandages to aid in wartime disease prevention. While the political centers saw most of the fatalities from battle wounds (2,266), the devastation of disease far surpassed them. Over three-fourths of soldiers surveyed in this study, equating to 8,394 of the total 10,842

Box 22, FILM 381, (Center for American History, the University of Texas at Austin); Hospital Register, Pettigrew General Hospital, Raleigh, North Carolina, 1861-1865, Ch. 6, Vols. 290, 395, 523, (National Archives Records Administration: Washington, D.C.); Hospital Register, Post Hospital, Dalton, Georgia, 1865, Record Group 94, Register 19 GA., (National Archives Records Administration: Washington, D.C.); Hospital Register, Quincy General Hospital, Quincy, Illinois, 1861-1865, Record Group 94, Register 412, 544 IL, (National Archives Records Administration: Washington, D.C.); Hospital Register, Ross General Hospital, Mobile, Alabama, 1863-1865, Ch. 6, vol. 2, (National Archives Records Administration: Washington, D.C.); Hospital Register, Savannah General Hospital, Savannah, Georgia, 1864-1865, Record Group 94, Register 8, 423, GA, (National Archives Records Administration: Washington, D.C.); Hospital Register, Satterlee General Hospital, Philadelphia, Pennsylvania, 1862-1865, (National Archives Records Administration: Washington, D.C.); Hospital Register, Shreveport General Hospital, Shreveport, Louisiana, 1864-1865, Ch. 6, vol. 297 ¼, (National Archives Records Administration: Washington, D.C.); Hospital Register, St. Louis City Hospital, St. Louis, Missouri, 1861-1863, (National Archives Records Administration: Washington, D.C.); Hospital Register, St. Mary's Hospital, Dalton, Georgia, 1862-1863, Ch. 6, vol. 274, (National Archives Records Administration: Washington, D.C.); Hospital Register, Summit House Hospital, Philadelphia, Pennsylvania, 1862-1865, Record group 94, Registers 249, 242, 250, 254, 252, PA, (National Archives Records Administration: Washington, D.C.); Hospital Register, Receiving and Distributing hospital, Atlanta, Georgia, *Samuel Hollingsworth Stout Papers, 1837 (1860-1865)*, Box 22, FILM 381 item c, (Center for American History, the University of Texas at Austin); Hospital Register, Ft. Barranacas Hospital, Pensacola, Florida, 1862-1865, Record Group 94, Registers 79, 74, FL, (National Archives Records Administration: Washington, D.C.); Hospital Register, Turner's Lane Hospital, Philadelphia, Pennsylvania, 1862-1865, Record group 94, Register 249 PA, (National Archives Records Administration: Washington, D.C.); Hospital Register, Unknown Hospital, Petersburg, Virginia, 1864-1865, Ch. 6 vols. 38, (National Archives Records Administration: Washington, D.C.).

fatalities, were killed by disease and illness rather than battle wounds throughout the war (see figure 29).

Some of the differences in case study data weigh heavily on how diseases were contracted, their incubation period, and the environments that various bacilli required to thrive. There are two kinds of disease examined in this study, those such as dysentery, diarrhea, cholera, bacterial infection, and typhoid fever, caused by the man-

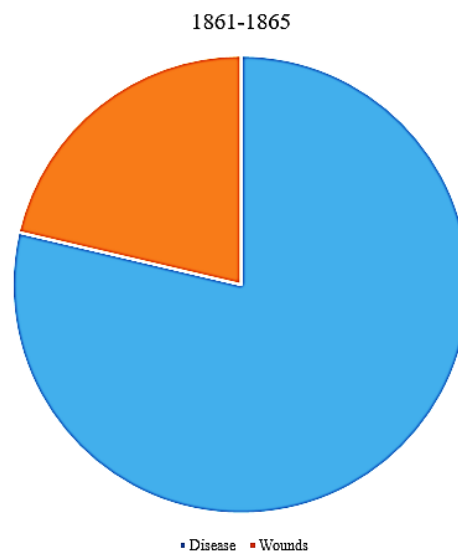


Figure 29. Disease and Wound Comparison 1861-1865

made environmental contamination of food, water supplies, or caused by poor sanitation; and seasonal diseases such as measles, malaria, tuberculosis, and smallpox spread through airborne transmission, droplets, or mosquitos. The way diseases were contracted and spread had a significant impact on Civil War disease and case study data. For example, smallpox was far more prevalent in the political centers than in the Deep South region, which had the highest fatality rates from malaria of all case study data. Because smallpox thrived in cool, dry climates, the disease was more prevalent in the winter months and its transmission tended to slow toward summer.²⁶⁴ In contrast, the hot, humid, swampy climate in Texas, Alabama, and Florida were

²⁶⁴ Elizabeth A. Fenn, *Pox Americana the Great Smallpox Epidemic of 1775-82*, (New York: Hill and Wang, 2001), 156-157; Hospital Register, Arkansas General Hospital; Hospital Register, Charlottesville General Hospital; Hospital Register, Chimborazo Hospital number one; Hospital Register, Chimborazo Hospital number two; Hospital Register, Chimborazo Hospital number three; Hospital Register, Chimborazo Hospital number five; Hospital Register, General Hospital No. four; Hospital Register, Fairgrounds Hospital No. one; Hospital Register, Fairgrounds Hospital No. two; Hospital Register, Fifth Street General Hospital; Hospital Register, Ft. Morgan

perfect breeding grounds for mosquitos, and fatality rates from malaria rose with the spring temperatures.²⁶⁵ Because malaria is carried and contracted by the female *Anopheles* mosquito, it was somewhat of an outlier to the two categories of disease as the contraction of malaria was dependent on the organic environment of individual soldiers, although these factors were largely out of the control of the infected.

Diseases contracted from contaminated food and water supplies are much easier to examine in relation to geographical regions than those contracted seasonally, through the air or by human contact. Because diseases such as smallpox carried with them a twelve-day incubation period, it was possible the disease was contracted in one region and brought to another by traveling soldiers. Therefore, the documented fatality would have been recorded in the region the soldier was traveling to rather than where the illness was contracted. This muddles case study data to some degree. However, in regions such as the Deep South, the area is far larger than the other regions and is farther away from most of the battles fought in the war. Consequently, it is likely those who contracted seasonal, airborne diseases within especially Galveston and Franklin, Texas indeed contracted and suffered the disease in those locations. However, the movement of men, supplies, food, and animals were all factors in the spread of disease.²⁶⁶ In the political centers, where diseases were contracted is harder to decipher. While Chimborazo saw high

General Hospital; Hospital Register Galveston General Hospital; Hospital Register Huston General Hospital; Hospital Register, Indianapolis General Hospital.; Hospital Register, Keokuk General Hospital; Hospital Register, Larson General Hospital; Hospital Register, Newsome Hospital; Hospital Register, Newsome Hospital; Hospital Register, Pettigrew General Hospital; Hospital Register, Post Hospital; Hospital Register, Quincy General Hospital; Hospital Register, Ross General Hospital; Hospital Register, Savannah General Hospital; Hospital Register, Satterlee General Hospital; Hospital Register, Shreveport General Hospital; Hospital Register, St. Louis City Hospital; Hospital Register, St. Mary's Hospital; Hospital Register, Summit House Hospital; Hospital Register, Receiving and Distributing hospital; Hospital Register, Ft. Barranacas Hospital; Hospital Register, Turner's Lane Hospital; Hospital Register, Unknown Hospital.

²⁶⁵ *Ibid*; "Lifecycle of Malaria," Center for Disease Control and Prevention, <https://www.cdc.gov/malaria/about/biology/index.html>.

²⁶⁶ Fenn, *Pox Americana*, 32.

numbers of fatalities from smallpox and malaria, it was possible that soldiers who died in Chimborazo contracted smallpox or malaria elsewhere and were then transported to the Confederate capital. For these reasons, airborne diseases are not appropriate tools to measure sanitation policy. Illnesses contracted through contamination are the focus in determining the success of sanitation policy.

Was Sanitation Policy Effective?

The short answer is yes, sanitation policy was effective in slowing the progression of disease, especially typhoid- but that was true for a specific set of afflictions. Therefore, the benefits of sanitation policy cannot be taken at face value. While there were noticeable reductions in typhoid by fifty percent in the first year of sanitation policy from 1862-1863, and an overall reduction rate of seventy-three percent by 1865, other factors likely contributed to the slow of general disease.²⁶⁷ Growing immunity and the use of vaccinations (inoculation) during the Civil War period likely impacted community and camp disease environments more than

²⁶⁷Hospital Register, Arkansas General Hospital; Hospital Register, Charlottesville General Hospital; Hospital Register, Chimborazo Hospital number one; Hospital Register, Chimborazo Hospital number two; Hospital Register, Chimborazo Hospital number three; Hospital Register, Chimborazo Hospital number five; Hospital Register, General Hospital No. four; Hospital Register, Fairgrounds Hospital No. one; Hospital Register, Fairgrounds Hospital No. two; Hospital Register, Fifth Street General Hospital; Hospital Register, Ft. Morgan General Hospital; Hospital Register Galveston General Hospital; Hospital Register Huston General Hospital; Hospital Register, Indianapolis General Hospital.; Hospital Register, Keokuk General Hospital; Hospital Register, Larson General Hospital; Hospital Register, Newsome Hospital; Hospital Register, Newsome Hospital; Hospital Register, Pettigrew General Hospital; Hospital Register, Post Hospital; Hospital Register ,Quincy General Hospital; Hospital Register, Ross General Hospital; Hospital Register, Savannah General Hospital; Hospital Register, Satterlee General Hospital; Hospital Register, Shreveport General Hospital; Hospital Register, St. Louis City Hospital; Hospital Register, St. Mary's Hospital; Hospital Register, Summit House Hospital; Hospital Register, Receiving and Distributing hospital; Hospital Register, Ft. Barranacas Hospital; Hospital Register, Turner's Lane Hospital; Hospital Register, Unknown Hospital.

Hammond and Moore's sanitation policies.²⁶⁸ Further, diseases such as malaria and tuberculosis were dependent on factors such as the prevalence of mosquitos, outside the reach of sanitation policy. While unsanitary, crowded conditions bred clothes lice who were responsible for the spread and transmission of typhus, mosquitos infected with malaria were not caused by a man-made environment of human contamination, crowded camps, and unsanitary conditions.

Before the Civil War period, it was understood that the most effective tools for disease prevention were inoculation, vaccination, and natural immunity.²⁶⁹ During the Civil War, smallpox inoculations undoubtedly lowered the number of deaths from the disease and had done so since the pre-Revolutionary War period. Smallpox plagued North America since the arrival of Cortez in the Aztec empire and was by no means a new concern in the Civil War period.²⁷⁰ Predating the Revolutionary War, inoculation of smallpox became popular among elites and by the time war broke out with Great Britain, George Washington made scrupulous efforts to protect his troops from Variola (smallpox) through inoculation.²⁷¹ As the war raged on, more inoculations were performed, more soldiers contracted smallpox (with weakened symptoms and a quicker recovery time), and gained immunity. By the end of his campaign, Washington had spearheaded the first state-sponsored immunization campaign in American history.²⁷² After the

²⁶⁸ Vaccination Records, National Archives and Records Administration, (Washington, D.C.); Vaccination Records, *Samuel Hollingsworth Stout Papers, 1837 (1860-1865)*, (Center for American History, the University of Texas at Austin).

²⁶⁹ Natural immunity refers to immunity gained after contracting and suffering a disease such as the measles or smallpox.

²⁷⁰ Fenn, *Pox Americana*, 6-7.

²⁷¹ Inoculation was completed when the smallpox bacilli was scraped from the open sore of a suffering smallpox victim or a cow with diagnosed cow pox and transferred into an open cut on the wrist of a healthy individual. The individual would then contract Variola and thereafter gain immunity to the disease. Contracting the disease through inoculation rather than naturally lent itself to much lighter symptoms than that of naturally contracted Variola and yielded a much higher survival rate than those who contracted the disease through airborne bacilli; Fenn, *Pox Americana*, 16-24.

²⁷² *Ibid*, 134, 260.

close of the Revolutionary War, inoculation became more accessible to the public as long-standing laws and restrictions on the process were lifted.²⁷³

Pre- and post-Revolutionary War inoculations significantly reduced the prevalence of smallpox in the divided United States. While minority groups such as Native Americans and immigrants continued to be susceptible to seasonal diseases like smallpox many Americans had previously been exposed and gained immunity to them.²⁷⁴ While Washington's time predated the Civil War by nearly one-hundred years, immunity built over generations was a powerful prevention for disease contraction. Because soldiers in the Civil War, just as in the Revolutionary War, traveled across the divided United States in large groups with various levels of exposure to airborne illnesses like Variola, it is understandable why relatively small endemic outbreaks of smallpox occurred— but it also explains why diseases like typhoid were more prevalent in the Civil War disease environment. Generations of exposure and Civil War smallpox inoculations built immunities to Variola while typhoid, dysentery, diarrhea, and cholera were products of their environmental conditions and reoccurred as many times as conditions allowed. This was especially true in cases of typhus as even small traces of the *rickettsia prowazekii* bacilli could cause small bursts of endemic disease years after contraction.²⁷⁵ Additionally, diseases like beriberi and Brill-Zinsser disease could emerge at any time after the contraction of typhoid and typhus fever. Despite vaccinations and sanitation laws, cases of smallpox still emerged. In November 1863, following the Gettysburg Address, Abraham Lincoln too, suffered the disease.²⁷⁶

²⁷³ Fenn, *Pox Americana*, 261.

²⁷⁴ Fenn, *Pox Americana*, 260-263; Humphrey, Loren, *Quinine and Quarantine Missouri Medicine through the Years*, (Columbia: University of Missouri Press, 2000), 16-17.

²⁷⁵ Moore, *Dreadful Diseases*, 144.

²⁷⁶ David H. Donald, *Lincoln*, (New York: Simon & Schuster, 1995), 465; "The History of Vaccines Abraham Lincoln." The College of Physicians of Philadelphia. Last modified, 2020. <https://www.historyofvaccines.org/content/abraham-lincoln>.

While smallpox vaccinations fought the spread of infection, there were not vaccinations in the Civil War period for other airborne diseases such as the measles, mumps, and, tuberculosis.²⁷⁷ Smallpox vaccines (inoculations), being predominantly made from bacilli taken from the infected spores of a cow with cowpox, was easy to reproduce and administer.²⁷⁸ However, measles was a human disease, and animals could not contract it.²⁷⁹ Consequently, early experimentation with inoculations was not possible. The prevalence of deaths from the measles compared to deaths from smallpox is reflected in case study data. Deaths from measles were far more common in the data sets totaling four-hundred ninety-six fatalities compared to fifty-three deaths from smallpox. The differences in fatality rates coupled with wartime immunizations indicate that by the time the Civil War began, immunity to smallpox was far more common than immunity to measles. According to case study data sets, a Civil War soldier was eighty-nine percent more likely to contract the measles than Variola.

Along with immunity, physical climate also effected Civil War disease patterns. Out of all the diseases surveyed in this thesis, malaria is an outlier. Because of the cyclical nature of the disease which requires both female *Anopheles* mosquitos and humans to survive, the absence of either infected humans or insects stifle disease contraction.²⁸⁰ The contraction of malaria relied heavily on the physical climate of a region and the conditions in which mosquitos thrived were unavoidable areas for Civil War soldiers. While immunity to measles and Variola could be achieved through inoculation and suffering the disease, those who contracted malaria gained only limited immunity. Malaria was not a one and done disease and therefore, could not be

²⁷⁷ "Measles (Rubella)," Center for Disease Control and Prevention.
<https://www.cdc.gov/measles/about/history.html>.

²⁷⁸ Fenn, *Pox Americana*, 260.

²⁷⁹ "Measles (Rubella)," Center for Disease Control and Prevention.

²⁸⁰ "Lifecycle of Malaria." Center for Disease Control and Prevention.
<https://www.cdc.gov/malaria/about/biology/index.html>.

prevented. Hammond and Moore's sanitation policy would not have eliminated the presence of mosquitos especially in the summer months of the Deep South. Therefore, malaria is a good indicator of the effects of physical climate and geography on disease but is not an appropriate affliction from which to gauge the effectiveness of sanitation policy as it was likely the policies had little to no effect on the contraction or prevention of the disease.

Like malaria, tuberculosis (TB) is also an outlier in the data sets. While sanitation policy may have slowed the spread of the disease, the spread of TB is usually hindered through quarantine. Because TB is transmitted through the air, the likelihood of sanitation policy having any significant effect on contraction of the disease is slim. There were no inoculations for TB and no clear treatment for the disease in the period. While it is possible to trace the movement of troops through the fluctuation of TB fatality rates, deaths from TB are not used to test sanitation policy.

Deaths from wounds are not an indicator of the successes of sanitation policy either. However, bacterial infections such as gangrene and pyemia contracted in trauma wounds (vulmous schofalarium) and incisions are. Of the four regions, the political centers saw the most deaths from bacterial infections totaling ninety-eight of the one-hundred and sixty-five deaths surveyed from the affliction. The northwest region had the second highest with forty-three recorded deaths from infection. Collectively, between 1862 and 1865, deaths from infections decreased by fifty-three percent dropping from sixty-three recorded fatalities to thirty in the period. However, the political centers saw twenty-five of the thirty cases recorded in 1865, an identical fatality count to that of 1862 (see table 3).²⁸¹ Deaths from bacterial infections were

²⁸¹ Hospital Register, Arkansas General Hospital; Hospital Register, Charlottesville General Hospital; Hospital Register, Chimborazo Hospital number one; Hospital Register, Chimborazo Hospital number two; Hospital Register, Chimborazo Hospital number three.; Hospital Register, Chimborazo Hospital number five; Hospital Register, General Hospital No. four; Hospital Register, Fairgrounds Hospital No. one; Hospital Register,

Table 3. First and Second Cause of Death by Region 1861-1865

<u>Cause of death</u>	<u>Stout</u>	<u>PC</u>	<u>DS</u>	<u>NW</u>	<u>Totals</u>
Typhoid	258	1326	299	779	2662
Diarrhea	385	645	195	905	2130
Fever	207	346	220	143	916
TB	24	199	36	177	436
Wounds	249	1466	52	499	2266
Measles	57	202	104	134	497
Bac. Infec.	10	98	16	43	167
pneumonia	258	684	129	196	1267
Malnourishment (mandamus)	0	6	0	0	6
Cholera	3	7	5	0	15
Smallpox	3	28	9	13	53
Malaria	3	28	41	8	80
Scurvy	0	0	22	0	22
Dysentery	65	143	93	24	325
Totals	1522	5178	1221	2921	10842

lowest in the political centers in 1863 with a fatality count of ten. However, in 1864, deaths from

Fairgrounds Hospital No. two; Hospital Register, Fifth Street General Hospital; Hospital Register, Ft. Morgan General Hospital; Hospital Register Galveston General Hospital; Hospital Register Huston General Hospital; Hospital Register, Indianapolis General Hospital.; Hospital Register, Keokuk General Hospital; Hospital Register, Larson General Hospital; Hospital Register, Newsome Hospital; Hospital Register, Newsome Hospital; Hospital Register, Pettigrew General Hospital; Hospital Register, Post Hospital; Hospital Register, Quincy General Hospital; Hospital Register, Ross General Hospital; Hospital Register, Savannah General Hospital; Hospital Register, Satterlee General Hospital; Hospital Register, Shreveport General Hospital; Hospital Register, St. Louis City Hospital; Hospital Register, St. Mary's Hospital; Hospital Register, Summit House Hospital; Hospital Register, Receiving and Distributing hospital; Hospital Register, Ft. Barranacas Hospital; Hospital Register, Turner's Lane Hospital; Hospital Register, Unknown Hospital.

infections hit its highest point accounting for thirty-four deaths in the region. Therefore, it seems that in terms of bacterial infection, sanitation policy in the political centers fell short. This is especially perplexing considering the political centers housed Surgeons General Hammond and Moore's most noted state-of-the-art medical facilities.

Surprisingly, Hammond and Moore's own Satterlee and Chimborazo general hospitals accounted for sixty percent of the one-hundred sixty-five total deaths from bacterial infection. Chimborazo hospital collectively reported fifty-one deaths from bacterial infections while Satterlee general hospital reported fifty-two over the course of the war. Differences in the overall case study sample size may have contributed to the higher rates of bacterial infections in the political centers. However, all four regions reported deaths from bacterial infections indicating that infection was a problem on both sides of the conflict, across the divided United States. Still, the political centers saw the most deaths from infections indicating that sanitation policy was not particularly successful, at least within this study's data, in preventing deaths from gangrene and pyemia. However, deaths from diarrhea in the political centers' region were steadily reduced for all the regions from 1863-1865. In 1862, there were six-hundred sixteen recorded fatalities from diarrhea spanning all four case study regions. The next year, 1863, deaths from diarrhea rose to eight-hundred forty-three deaths. By 1865, the number had decreased sixty-seven percent to two-hundred eighty-one deaths from diarrhea.²⁸² Despite the reductions in fatalities, diarrhea

²⁸² Hospital Register, Arkansas General Hospital; Hospital Register, Charlottesville General Hospital; Hospital Register, Chimborazo Hospital number one; Hospital Register, Chimborazo Hospital number two; Hospital Register, Chimborazo Hospital number three.; Hospital Register, Chimborazo Hospital number five; Hospital Register, General Hospital No. four; Hospital Register, Fairgrounds Hospital No. one; Hospital Register, Fairgrounds Hospital No. two; Hospital Register, Fifth Street General Hospital; Hospital Register, Ft. Morgan General Hospital; Hospital Register Galveston General Hospital; Hospital Register Huston General Hospital; Hospital Register, Indianapolis General Hospital.; Hospital Register, Keokuk General Hospital; Hospital Register, Larson General Hospital; Hospital Register, Newsome Hospital; Hospital Register, Newsome Hospital; Hospital Register, Pettigrew General Hospital; Hospital Register, Post Hospital; Hospital Register ,Quincy General Hospital; Hospital Register, Ross General Hospital; Hospital Register, Savannah General Hospital; Hospital Register, Satterlee General Hospital; Hospital Register, Shreveport General Hospital; Hospital Register, St. Louis City

accounted for twenty percent of the 10,842 fatalities surveyed. While diarrhea was an underlying symptom of typhoid fever, it seems that the number of deaths from the illness would have had close to the same reduction rate as typhoid fever if those cases were in fact, a consequence of one another. Based on case study data, the most remarkable victory of Moore and Hammond's tenures as Surgeons General was the reduction in fatalities from typhoid fever. Overall, deaths from typhoid were reduced seventy-three percent from 1862-1865, and fifty percent in the first year of sanitation policy (see figure 30).²⁸³ Deaths from fever was also reduced over the course of the war, although at a substantially lower rate than deaths from typhoid. While deaths from fever were reduced by sixty percent by the war's end, case study data sets recorded a total of two-thousand six-hundred forty cases of typhoid and only nine-hundred sixteen fatal fevers.²⁸⁴

Hospital; Hospital Register, St. Mary's Hospital; Hospital Register, Summit House Hospital; Hospital Register, Receiving and Distributing hospital; Hospital Register, Ft. Barranacas Hospital; Hospital Register, Turner's Lane Hospital; Hospital Register, Unknown Hospital.

²⁸³ Hospital Register, Arkansas General Hospital; Hospital Register, Charlottesville General Hospital; Hospital Register, Chimborazo Hospital number one; Hospital Register, Chimborazo Hospital number two; Hospital Register, Chimborazo Hospital number three.; Hospital Register, Chimborazo Hospital number five; Hospital Register, General Hospital No. four; Hospital Register, Fairgrounds Hospital No. one; Hospital Register, Fairgrounds Hospital No. two; Hospital Register, Fifth Street General Hospital; Hospital Register, Ft. Morgan General Hospital; Hospital Register Galveston General Hospital; Hospital Register Huston General Hospital; Hospital Register, Indianapolis General Hospital.; Hospital Register, Keokuk General Hospital; Hospital Register, Larson General Hospital; Hospital Register, Newsome Hospital; Hospital Register, Newsome Hospital; Hospital Register, Pettigrew General Hospital; Hospital Register, Post Hospital; Hospital Register ,Quincy General Hospital; Hospital Register, Ross General Hospital; Hospital Register, Savannah General Hospital; Hospital Register, Satterlee General Hospital; Hospital Register, Shreveport General Hospital; Hospital Register, St. Louis City Hospital; Hospital Register, St. Mary's Hospital; Hospital Register, Summit House Hospital; Hospital Register, Receiving and Distributing hospital; Hospital Register, Ft. Barranacas Hospital; Hospital Register, Turner's Lane Hospital; Hospital Register, Unknown Hospital.

²⁸⁴ *Ibid.*

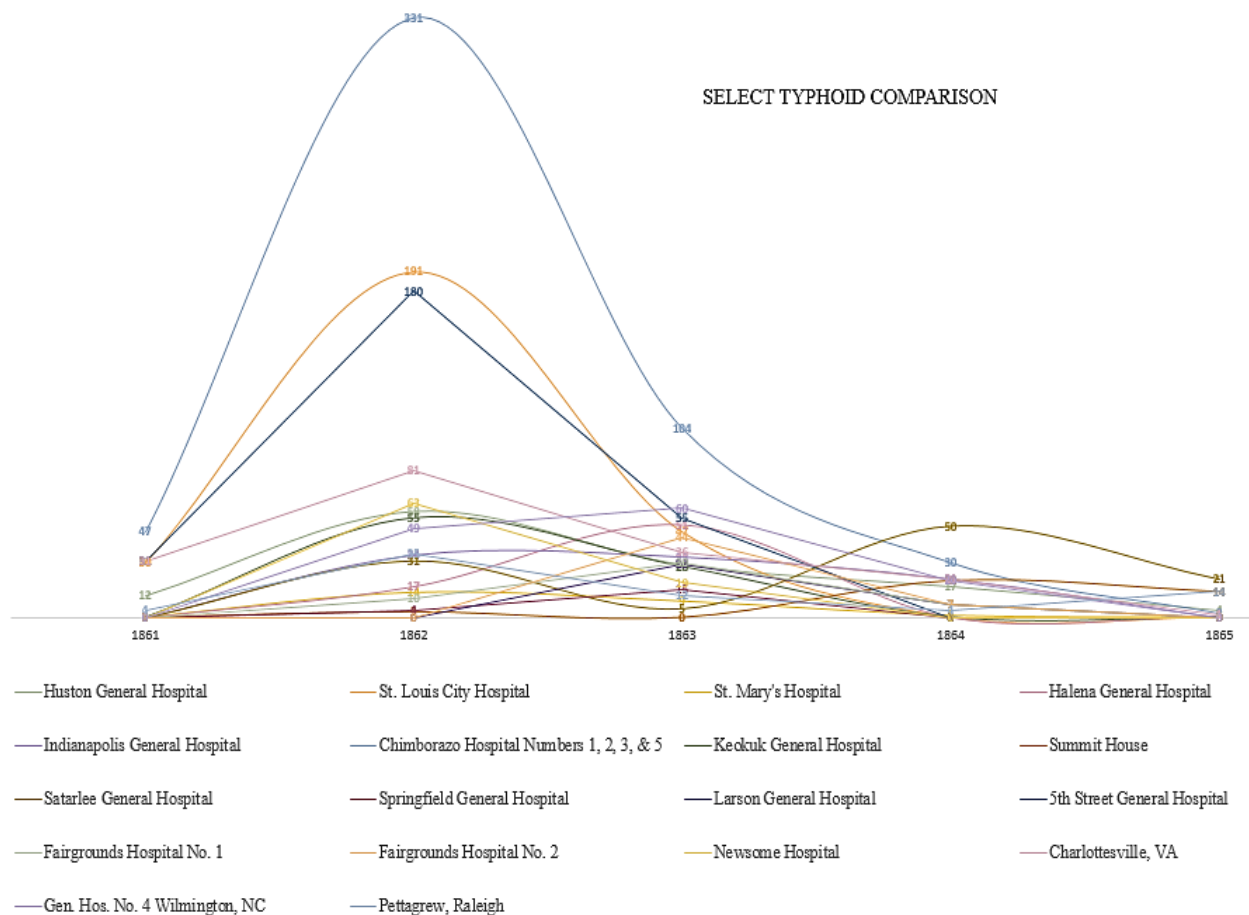


Figure 30. Select Typhoid Comparison 1861-1865

Consequently, the reduction in fevers is not nearly as impressive as reductions in typhoid even as they were reduced by close to the same percentage.

Conclusively, Hammond and Moore's sanitation policies were effective in reducing deaths from especially typhoid and diarrhea. However, the increase in deaths from bacterial infections throughout the war is a concern. While many scholars credit sanitation policy for the successes of wartime disease prevention, it seems sanitation policy was not wholly successful in preventing bacterial infections. In her 1863 book, *Notes on Hospitals*, Florence Nightingale expressed that, "Careful observers are now generally convinced that the origin and spread of

fever in hospitals, or the appearance and spread of hospital gangrene, erysipelas, and pyemia generally, are much better tests of the defective sanitary state of a hospital.”²⁸⁵ I tend to agree.

Although numbers in this case study are limited, they are telling. While typhoid was prevented, for the most part, by enacting provisions to ensure water and food supplies were kept clean and away from contaminants, the prevention of bacterial infections took a different kind of attentiveness within army camps and hospitals. While a contaminated well or stream could cause hundreds of soldiers to fall ill simultaneously, bacterial infections were caused by direct contact between hospital staff, including Civil War surgeons, and wounded soldiers. Therefore, the increase in deaths from infection seem to be a better indication of hospital cleanliness and sterile procedures. Due to the rise in bacterial infections after 1862 when sanitation policy was officially in place on both sides of the conflict, it seems that while sanitation policy was initially successful, strict procedure gave way to more immediate concerns such as dwindling resources and food supplies as the war neared its end. Consequently, fatalities from infection increased.

Additionally, increases in deaths from diarrhea and scurvy speak to the failing conditions of many wartime hospitals on both sides of the conflict. While deaths from diarrhea were reduced by over half by the close of the war, on average they still accounted for five-hundred deaths per year.²⁸⁶ While deaths from diarrhea were reduced, the illness was a significant

²⁸⁵ Lynn, McDonald, ed. *Florence Nightingale and Hospital Reform: Collected Works of Florence*, Vol. 16, (Canada: Wilfrid Laurier University Press, 2012), 85.

²⁸⁶ Hospital Register, Arkansas General Hospital; Hospital Register, Charlottesville General Hospital; Hospital Register, Chimborazo Hospital number one; Hospital Register, Chimborazo Hospital number two; Hospital Register, Chimborazo Hospital number three.; Hospital Register, Chimborazo Hospital number five; Hospital Register, General Hospital No. four; Hospital Register, Fairgrounds Hospital No. one; Hospital Register, Fairgrounds Hospital No. two; Hospital Register, Fifth Street General Hospital; Hospital Register, Ft. Morgan General Hospital; Hospital Register Galveston General Hospital; Hospital Register Huston General Hospital; Hospital Register, Indianapolis General Hospital.; Hospital Register, Keokuk General Hospital; Hospital Register, Larson General Hospital; Hospital Register, Newsome Hospital; Hospital Register, Newsome Hospital; Hospital Register, Pettigrew General Hospital; Hospital Register, Post Hospital; Hospital Register ,Quincy General Hospital; Hospital Register, Ross General Hospital; Hospital Register, Savannah General Hospital; Hospital Register, Satterlee General Hospital; Hospital Register, Shreveport General Hospital; Hospital Register, St. Louis City Hospital; Hospital Register, St. Mary’s Hospital; Hospital Register, Summit House Hospital; Hospital Register,

concern for the Union and Confederate army medical bureaus. The provenance of deaths from diarrhea speaks to the continued struggle to maintain proper supplies, provide adequate food, and maintain sanitary army camps and hospitals as the war progressed.

The deteriorating conditions of Civil War general hospitals as the war neared its end is evident in case study data. In 1864, the Deep South region saw twenty-two fatal cases of scurvy in Fort Barrancas general hospital alone, accounting for the only recorded deaths from scurvy out of the total 10,842 fatalities. The emergence of deaths from scurvy are telling of hospital and camp conditions. Scurvy is caused by a lack of vitamin c as a result of an inadequate diet. As Union troops gained ground, won battles, maintained the Confederate blockade in southern ports, and at this point in the war, decimated Confederate troops at rates far surpassing the Union, Confederate hospitals suffered.²⁸⁷ While patients in Satterlee general hospital enjoyed comparatively adequate food and supplies in 1864, Confederate patients in hospitals such as Winder hospital in Richmond, Virginia resorted to eating rats and insect ridden food.²⁸⁸ Despite these facts, the only cases of scurvy recorded were documented in the Union's hospital at Ft. Barrancas.

The lack of documentation concerning scurvy in Confederate hospitals is likely due to the nature of the Confederate archives. Because many documents were destroyed or hidden after the war, it is possible that cases of scurvy are missing from the record. While there were no surveyed Confederate deaths from scurvy, deaths from diarrhea are telling figures as many Confederate soldiers became ill and died because of dysentery and diarrhea in especially the last year of war.

Receiving and Distributing hospital; Hospital Register, Ft. Barranacas Hospital; Hospital Register, Turner's Lane Hospital; Hospital Register, Unknown Hospital.

²⁸⁷ Margaret Humphreys, *Marrow of Tragedy: The Health Crisis of the American Civil War*, (Baltimore: Johns Hopkins University Press. 2013), 210-211.

²⁸⁸ Humphreys, *Marrow of Tragedy*, 210-213.

As food supplies dwindled, Confederate hospitals were transformed from state-of-the-art medical havens to sanctuaries of starvation and illness.²⁸⁹ In Chimborazo hospital number two, deaths from diarrhea rose from five in 1863 to twenty-three in 1864, deaths from diarrhea doubled in the Deep South's Ross general hospital in the same period. The following year, 1864-1865, deaths from diarrhea again doubled in an unnamed Confederate hospital in Petersburg, Virginia.

While this pattern appeared more commonly in Confederate hospitals, two Union hospitals, Fort Barrancas and Savannah general hospital shared the same trend with substantially higher fatality numbers from diarrhea in the year 1865. In Savannah general hospital, deaths from diarrhea rose from two recorded deaths in 1864 to seventy-four in 1865, an increase of ninety-seven percent in just one year. Likewise, Fort. Barrancas recorded five deaths from diarrhea in 1863, rising to twenty-seven the following year and only decreasing by two fatalities by 1865.

While it is easier to explain why Confederate hospitals saw increased deaths from diarrhea due to poor dietary conditions, the increase in Union deaths from diarrhea illustrates that despite winning the war, the country suffered as a whole. Union hospitals also saw a shortage of supplies, much of the home front burned, Union contrabands along with white women and children displaced, and soldiers wanting for adequate food. By 1865, even the soon to be victors were scavenging for adequate supplies and ways to transport them. With much of the divided United States and especially the south destroyed, telegraph wires cut, and bridges and railroads dismantled, transportation and agricultural production was difficult. Even the best relief agencies could not repair the smoldering countryside to produce the fresh, nutrient rich foods soldiers so desperately needed in the last few years of the war. This was especially true in states like

²⁸⁹ Humphreys, *Marrow of Tragedy*, 210.

Virginia who relied heavily on imported goods from surrounding areas such as Tennessee and the Deep South.²⁹⁰ Economic turmoil and purchase restrictions placed on hospital expenditures also made buying available food difficult. In 1863, Surgeon General Moore restricted the purchase of food stuffs from the marketplace and instructed surgeons to sidestep the ever-rising price points by negotiating with private farmers. Surgeons who paid extravagant prices for food were held “strictly responsible.”²⁹¹

Tracking the Movement of Troops and Disease

While it is possible to track military movements and battles through the survey data based on the fluctuation of fatalities from battle wounds, much is to be said about the disease counts in relation to military occupation. For example, the data from Newsome hospital in Chattanooga, Tennessee for 1862-1863 shows a substantial amount of deaths from disease and illnesses such as typhoid, pneumonia, and fever while the data sets for Atlanta Georgia's Receiving and Distributing (R&D) hospital show wounds to be the greatest cause of recorded fatalities (see figure 31). However, fatalities from wounds recorded at R&D outnumber Newsome's count by only sixteen at its peak and a mere nine at the lowest. While this at the forefront seems to indicate that Georgia was a more militarily active spot in 1863-1864 while Chattanooga battled more cases of disease and illness, the sample size from R&D is substantially smaller than those recorded from Newsome by two-hundred ninety-two surveyed fatalities. Nonetheless, these data sets can be compared in respect to disease, to some degree, because of the significant differences in the number of fatalities.

²⁹⁰ Humphreys, *Marrow of Tragedy*, 224.

²⁹¹ Ibid, 225.

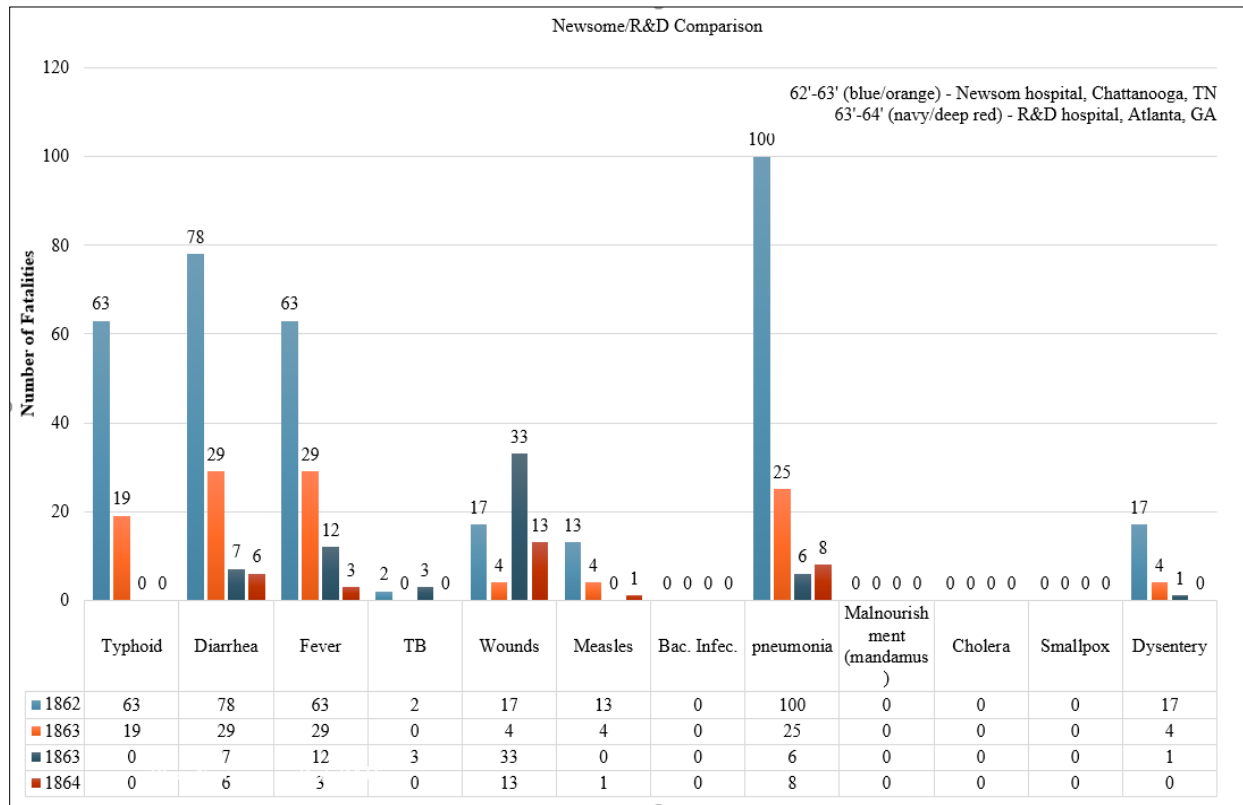


Figure 31. R&D and Newsome Comparison Chart

Because there were no recorded deaths from typhoid in R&D hospital but eighty-two in Newsome, it is plausible that even if two-hundred ninety-two additional fatalities from R&D were recorded, numbers of typhoid would still be higher in Newsome. At best, one-eighths of these additional fatalities only equates to thirty-seven fatalities if the data continues with its current trends. When divided by the eight most recorded afflictions at most, one-fifth of the two-hundred ninety-two equates to fifty-eight fatalities if disease is the only category taken into consideration. Neither of these figures would outnumber Newsome for 1862 counts for typhoid, pneumonia, diarrhea, or fever. It is implausible that all the two-hundred ninety-two fatalities would be from one disease or even split between two afflictions. Therefore, it is reasonable to conclude that especially in 1863, as there is data from both hospitals for that year, Newsome had a higher concentration of disease while R&D had a higher count of vulmus schofolarium (gun

shot and trauma wounds). As the end of 1862- early 1863 were characterized by bloody battles, such as Gettysburg and the battle of Cold Harbor, the higher wound count in R&D could have been affected. However, as Tennessee was an active state militarily, it is also understandable that the disease count is higher than wounds.

Case study results suggest the shuffling of troops and the occupation of a region by the opposing army affected fatality rates from disease. In the political centers, the top three causes of death were typhoid, wounds, and pneumonia with the highest concentration, fifty percent, of deaths from typhoid occurring in Chimborazo general hospital.²⁹² While the high fatality rate from wounds is understandable given the location of political centers in relation to major battlefields, deaths from typhoid and pneumonia are intriguing. The total sample size for fatalities from pneumonia was 1,267 in which Chimborazo hospital contributed fifty-four percent. The percentage of typhoid and pneumonia in the political centers only differ by four percent. Because pneumonia was a common side effect of typhoid (what some hospital muster rolls recorded as typho-pneumonia) it seems possible that some of the cases of pneumonia at Chimborazo were due to underlying typhoid fever.

In the case of Savannah general hospital, the highest cause of fatality in 1864 were wounds. While the hospital was under control of the Confederacy from 1861 to 1863, Sherman's March to the Sea in winter 1864 rendered the hospital under Union occupation. No data was retrieved from the hospital when it was occupied by Confederate troops. While the data from Savannah is useful as a contributor to the Stout region, it is hard to determine if the fatalities recorded after its Union occupation would have differed from the mortality rate when Dr. Samuel Stout was formally in charge. While it is impossible to know what the main causes of

²⁹² Hospital Register, Chimborazo Hospital number one; Hospital Register, Chimborazo Hospital number two; Hospital Register, Chimborazo Hospital number three; Hospital Register, Chimborazo Hospital number five.

fatalities were when the hospital was under control of the Confederate army, it is possible that deaths from both disease and battle wounds were lower than those in 1865. It is likely the new diverse population of soldiers who had marched two-hundred eighty-five miles from Atlanta to Savannah, Georgia brought disease with them.²⁹³ Consequently, Savannah's general hospital may have seen a spike in endemic disease. Likewise, hospitals in Dalton and Atlanta could have also experienced higher fatality rates from disease than in previous years.

While the prevalence of disease cannot be measured by case study data as the Stout regions data only spans from 1862-1864, spikes in fatalities from wounds are helpful in determining troop movements and battle dates. Fairgrounds hospital number one in Atlanta recorded ninety-eight percent more fatalities from wounds in 1863 than in previous years. Fairgrounds hospital number one's wound count only decreased by three fatalities through 1864. Likewise, St. Mary's hospital and R&D general hospitals saw a rise in fatalities from battle and trauma wounds from 1863-1864.

Other regions were also affected as patients from the surrounding regions were transferred to hospitals throughout the divided United States. Houston and Arkansas general hospitals in the Deep South region, Chimborazo hospital numbers two and three, general hospital number four, Satterlee general hospital, Charlottesville general hospital, Turner's Lane general hospital, and Summit House general hospital in the political centers region, all saw increases in wound fatalities in 1863-1864 (see figure 32). Interestingly, increases in fatalities from wounds came earlier for the northwest region who saw their spike in 1862. While major battles such as the battle of Wilsons Creek and Pea Ridge were fought in spring of 1862, the spike in deaths

²⁹³ "Sherman's March to the Sea," State Library of Ohio, https://ohiohistorycentral.org/w/About_Ohio_History_Central.

from wounds in hospitals such as Springfield general hospital and especially St. Louis general hospitals, is not surprising.

Admittedly, it is not possible to trace the month-to-month progression of disease from case study data. However, outbreaks of disease are apparent in the data. Spikes in diseases such as smallpox, measles, and tuberculosis are best seen in 1862. In all case study regions except the Stout region, deaths

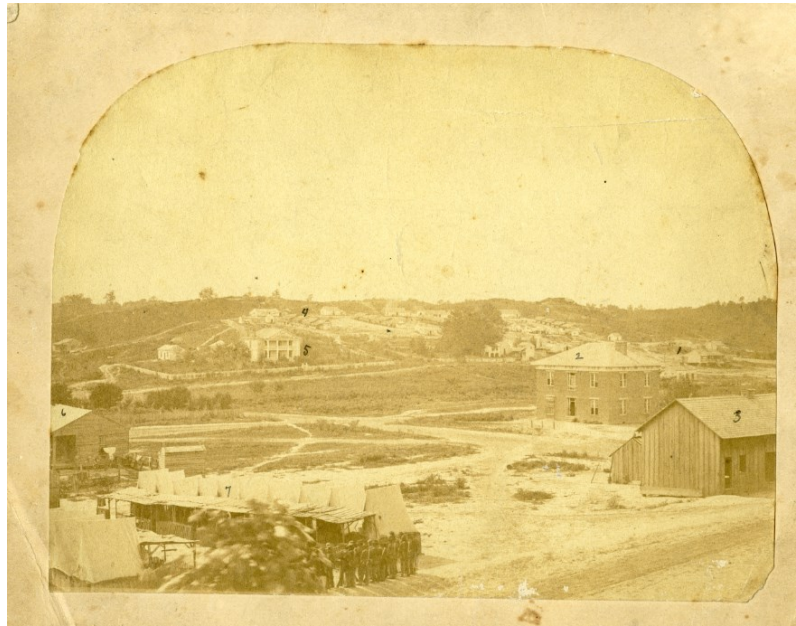


Figure 32. Photograph of Helena general hospital, Helena, Arkansas

from measles were at their highest point in 1862. In the northwest region, Indianapolis City hospital, Jefferson City Post hospital, and Keokuk general hospital all recorded rising fatalities from the measles, increasing by eighty-two percent from deaths recorded in 1861. The northwest region also saw its highest numbers of smallpox during this period, increasing one hundred percent from 1861 and then vanishing in 1863. Fatal cases of tuberculosis also increased ninety-three percent in 1862 and then tapered off by thirty-eight percent the following year. By 1865, there were no cases of TB recorded in the northwest region.

In the political centers region, Chimborazo hospital numbers one, three, and five documented one-hundred twenty fatal cases of the measles in 1862, an eighty-eight percent increase from those recorded in 1861, and the most recorded fatalities from the measles for the entirety of the war. General hospital number four, Pettigrew general hospital, and Charlottesville

general hospital also experienced at least a sixty-two percent rise in deaths from measles - Pettigrew experienced a one-hundred percent increase. Deep South region hospitals such as Houston and Arkansas general hospital saw forty-eight fatal cases of measles, a ninety-eight percent increase in fatalities recorded in 1861.

The Stout region's spike in deaths from the measles did not come until 1865. However, the region maintained steady cases of fatal measles throughout the entirety of the war. The region saw its highest numbers of tuberculosis in 1862. Collectively, four-hundred ninety-six fatal cases of the measles were recorded over all four regions in 1862. By 1863, deaths from measles decreased in all regions except the Stout region, by an average of seventy-five percent with the highest reduction in the political centers' region in which deaths from measles were reduced by eighty-eight percent by 1863.²⁹⁴

Outbreaks of smallpox are also evident in case study data sets. While outbreaks of measles were far more substantial, small bursts of smallpox in the Deep South, political centers, and the Stout regions occurred in 1865. In the Deep South region, deaths from smallpox increased by eighty-six percent. However, the number of deaths were minimal increasing from one death from smallpox in 1862, to seven deaths in 1865. The same was true for the Stout region whose only three recorded deaths from smallpox occurred in 1865. During the outbreak of measles in 1862, the political centers documented fourteen deaths in 1861 and one-hundred twenty fatal cases of measles the following year. Deaths from smallpox rose from four deaths in 1864, to sixteen by 1865, a substantial difference compared to the 1862 measles outbreak.

²⁹⁴ Hospital Register, Arkansas General Hospital; Hospital Register, Charlottesville General Hospital; Hospital Register, Chimborazo Hospital number one; Hospital Register, Chimborazo Hospital number two; Hospital Register, Chimborazo Hospital number three.; Hospital Register, Chimborazo Hospital number five; Hospital Register, General Hospital No. four; Hospital Register, Hospital Register Huston General Hospital; Hospital Register, Indianapolis General Hospital.; Hospital Register, Keokuk General Hospital; Hospital Register, Pettigrew General Hospital; Hospital Register, Jefferson City Post Hospital.

Conclusion

Ultimately, there were factors outside of sanitation policies, such as immunizations, that affected disease prevalence in the Civil War period. While Hammond and Moore's sanitation policies were most effective at reducing deaths from typhoid, they were not successful, according to case study data, in reducing deaths from bacterial infections, impeding general outbreaks of disease, or preventing malaria. Small bursts of endemic disease in case study specific regions illustrate the unpredictability of disease patterns, the movement of troops as conduits of disease, and the inability of sanitation policy to prevent airborne illness. While other afflictions such as diarrhea, pneumonia, and dysentery were reduced over the course of the war, they were significant killers of soldiers each year the conflict drug on.

Whether sanitation policy worked as it was intended to or not, much is to be said about the reform of medical education in the Civil War period. While it was true both the Union and Confederacy needed to replace unskilled physicians, their reforms had a prolonged impact on post-war medical education, the professionalization of women in the medical field, and discussions of women's rights. The prevalence of women in the workplace in the Civil War period set the stage for suffragettes in the following decades.²⁹⁵ While neither the Union nor the Confederate medical systems were perfect, Hammond, Moore, and the women of relief agencies around the country did their best with what they had. Put simply, the war got in the way. While the war itself served as a catalyst for medical reform, the dire situations that arose because of the conflict, especially toward its close, decreased the effectiveness of sanitation policy. While the avoidance of typhoid came from monitoring food and water supplies and the placement of latrines, the prevention of tuberculosis, measles, and malaria, as illustrated by case study results,

²⁹⁵ Humphreys, *Marrow of Tragedy*, 1-3.

were more difficult. However, there was no lack of effort on the part of women on the home front, relief agencies, politicians, army surgeons, and the Surgeons general.

Sophronia Bucklin, Civil War nurse and active member of the USSC, recalled the suffering of soldiers lying dead and dying on the battlefield. She also recalled her work as a member of the United States Sanitary Commission and her eagerness to help when the need arose. However desperate or disadvantaged the situation, Civil War nurses and physicians did all they could to aid and comfort sick and wounded soldiers on the battlefield and in wartime general hospitals.

The field was one vast plain of intense mortal agony, tortured by the sun, and chilled by the night dews, which fell upon them, causing more terror than death itself. Everywhere were groans and cries for help; everywhere were the pleading and glassy eyes of dying men who were speechless in the delirium of death. It was a scene to appall the stoutest hearts, but the excitement nerved us to shut our senses to everything but the task of relieving them as fast as possible. The dead lay by the living; the dying groaned by the dead, and still one hundred ambulances poured the awful tide upon us.²⁹⁶

Emma Edmonds, Union nurse and spy also recalled aiding a dying soldier on the field in her memoirs. She recalled that she “listened with breathless attention to every sound that fell from those lips. (He said) ‘I can trust you and I will tell you a secret. I am a female. I enlisted with the purest intentions and have performed my duties as a soldier faithfully. I am willing to die for the cause of truth and freedom, and I wish you to bury me with your own hands, that none may know that I am other than my appearance.’”²⁹⁷

For the majority of USSC, WSR, army physicians, and contraband, and slave workers, Bucklin and Edmonds’ accounts were the realities of Union and Confederate army medical

²⁹⁶ Sophronia E. Bucklin, *In Hospital and Camp A Women's Record of Thrilling Incidents among the Wounded in the Civil War*, (1869), 154.

²⁹⁷ Emma Edmonds, *Nurse and Spy in the Union Army*, (Hartford: Jones Brothers and Co., 1865), 272-273.

personal throughout the American Civil War. Together, women of relief agencies pushed for medical reforms that were eventually enacted and endorsed by Hammond and Moore. Sanitation policy, although officially proposed and passed by men, were first crafted by women such as Dr. Elizabeth Blackmore, Dorothea Dix, and Florence Nightingale. While Hammond and Moore's sanitation policies were only limitedly effective, they nonetheless saved lives from especially typhoid fever.

Beyond the immediate effects of Hammond and Moore's reforms, the long-term outcomes seem to be far more valuable than the figures representing declines in wartime disease. The Civil War period laid the ground for women's rights and medical research that carried on for centuries following the conflict. In the Civil War period, slaves became nurses, white women became hospital administrators, and male physicians became powerful authorities on public health. For the first time medicine was federally regulated and laws were enacted to ensure the safety of patients and the competence of medical care providers. Hammond and Moore's reforms, the women of the USSC and the WSR, were responsible for that. Together, the Surgeons General and the average American woman fundamentally changed the course of American medicine and medical education.

Historian Margaret Humphries described these medical reforms and pop-up volunteer organizations formed in the Civil War period as a 'call and response' to the dire situation posed by the war. To some degree, it was— but Civil War medical care and reforms were more than that. It was a desperate outpouring of compassion, skill, authority, and grace in a time of unprecedented turmoil.

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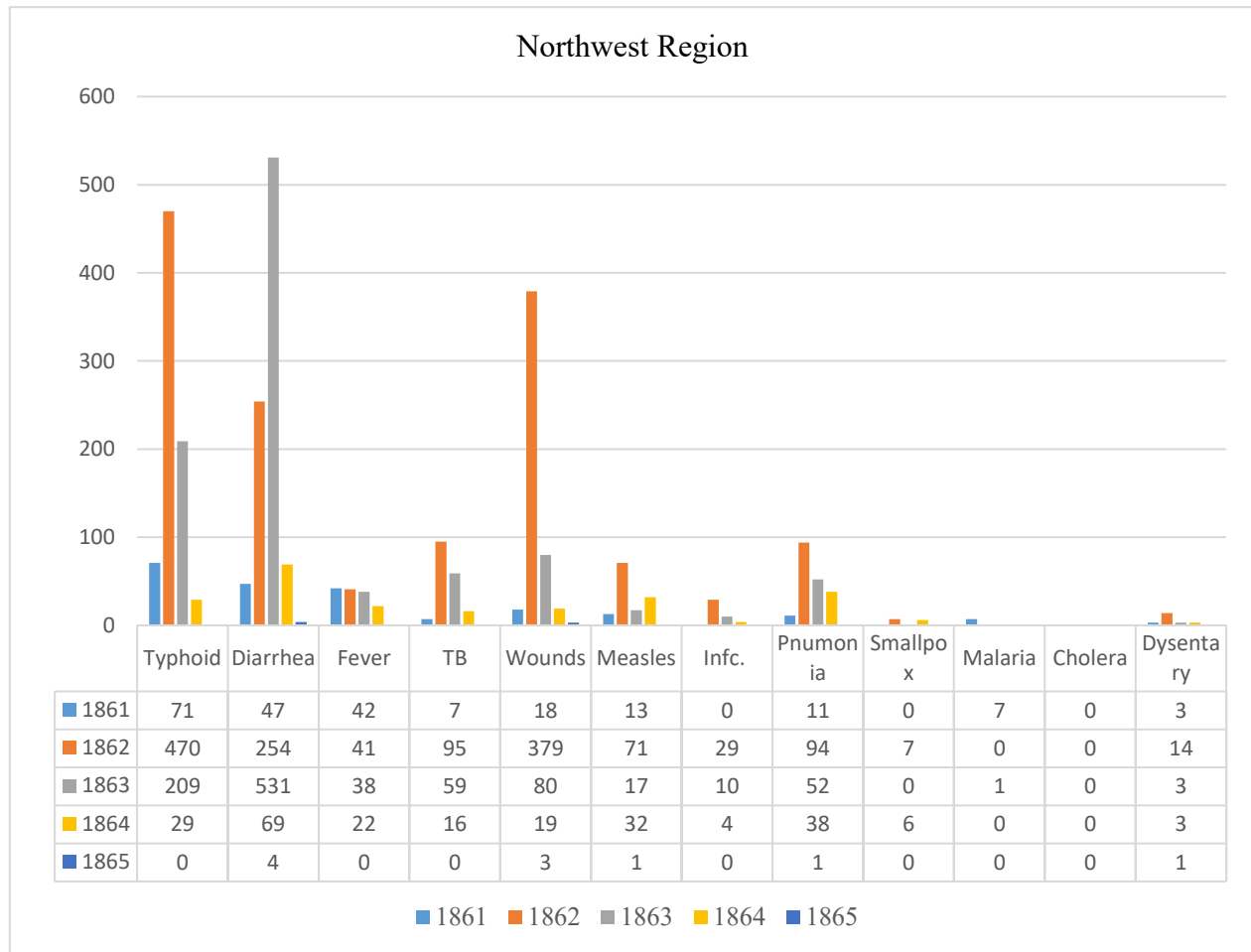
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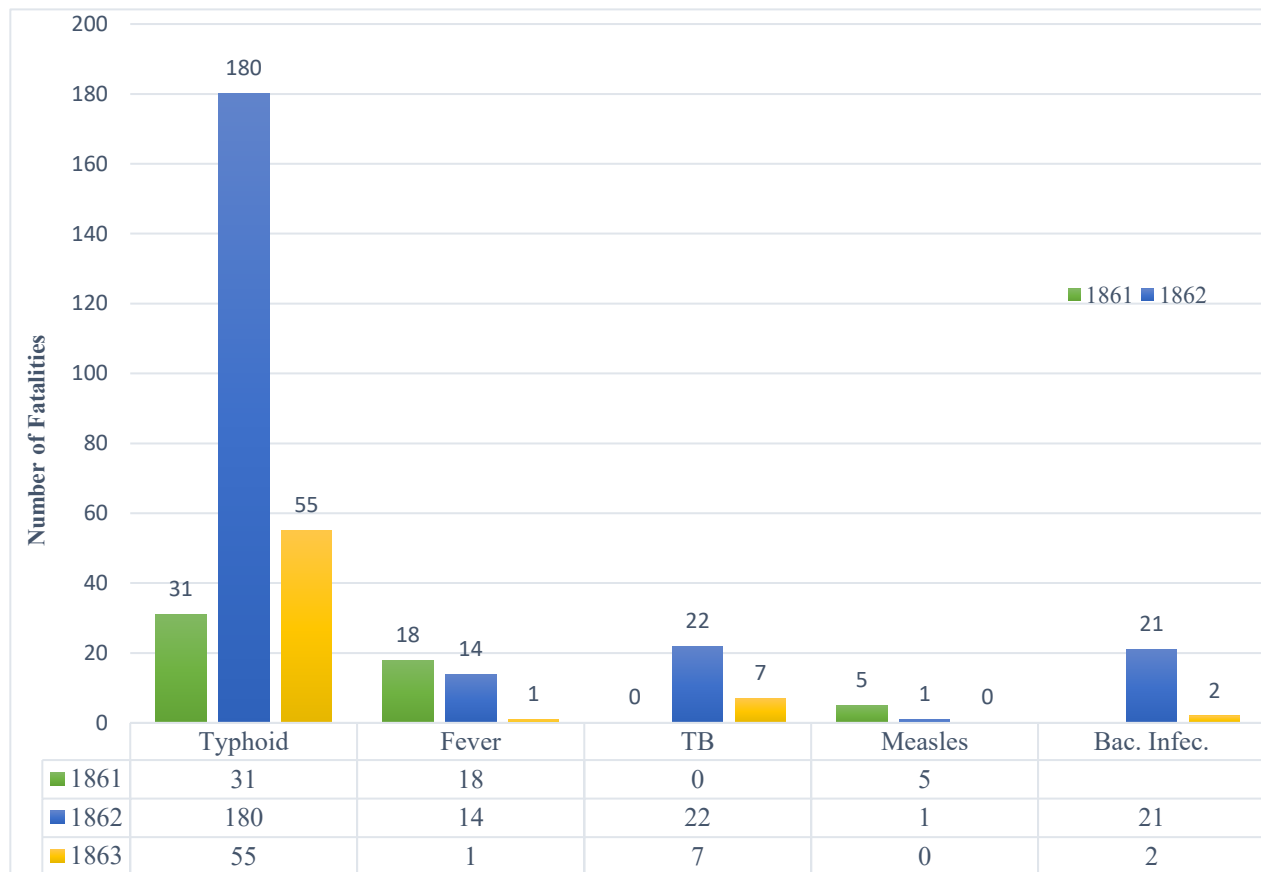
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APPENDICES

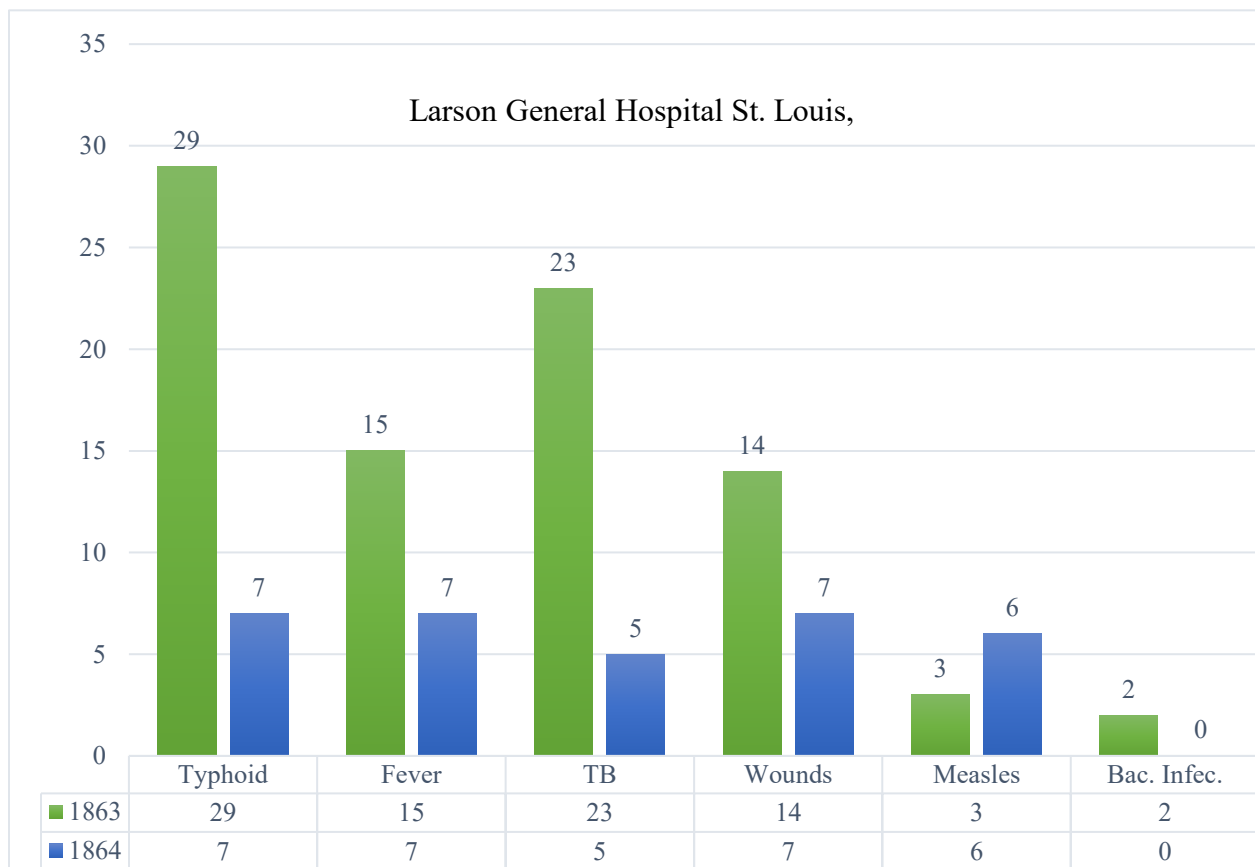
Appendix A. Northwest Region



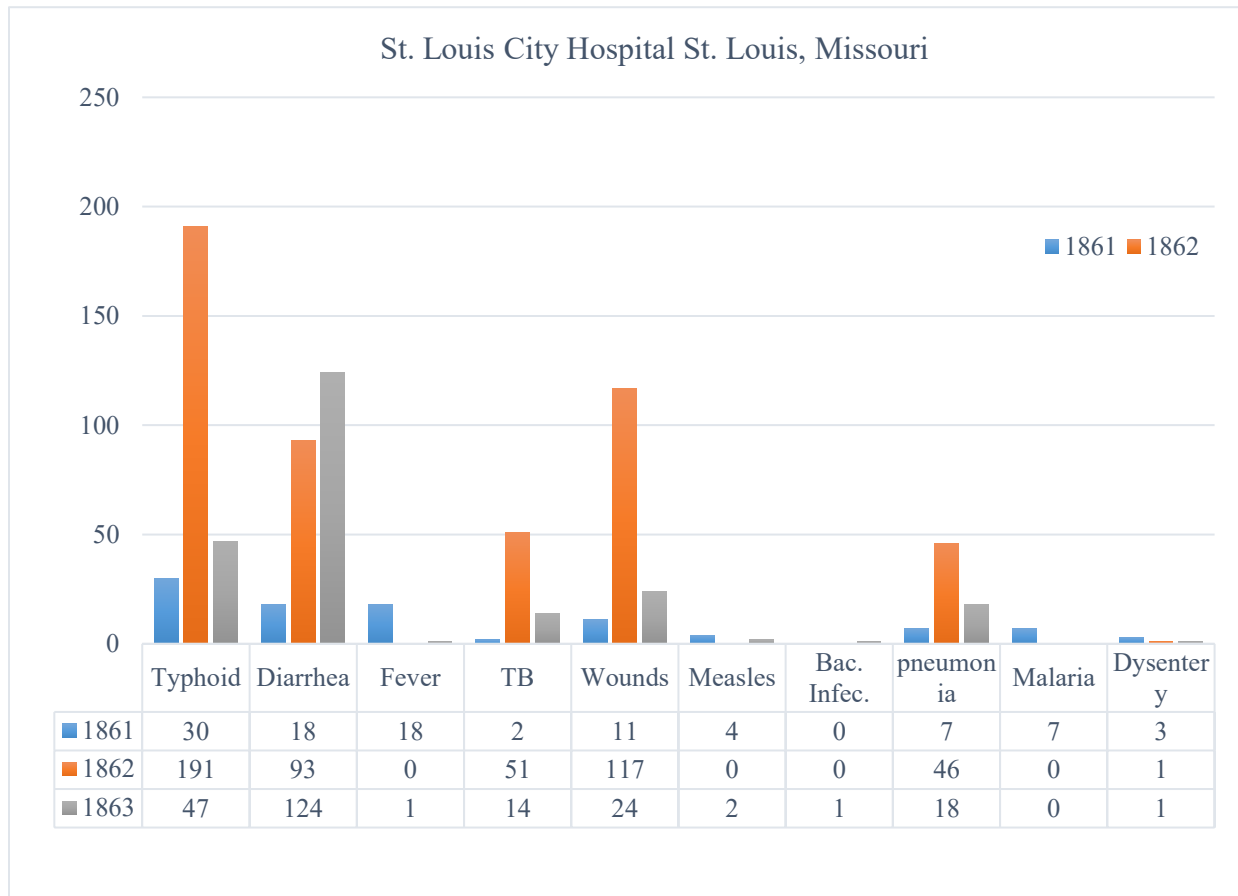
Appendix A-1. Fifth Street General Hospital- St. Louis, Missouri (Union)



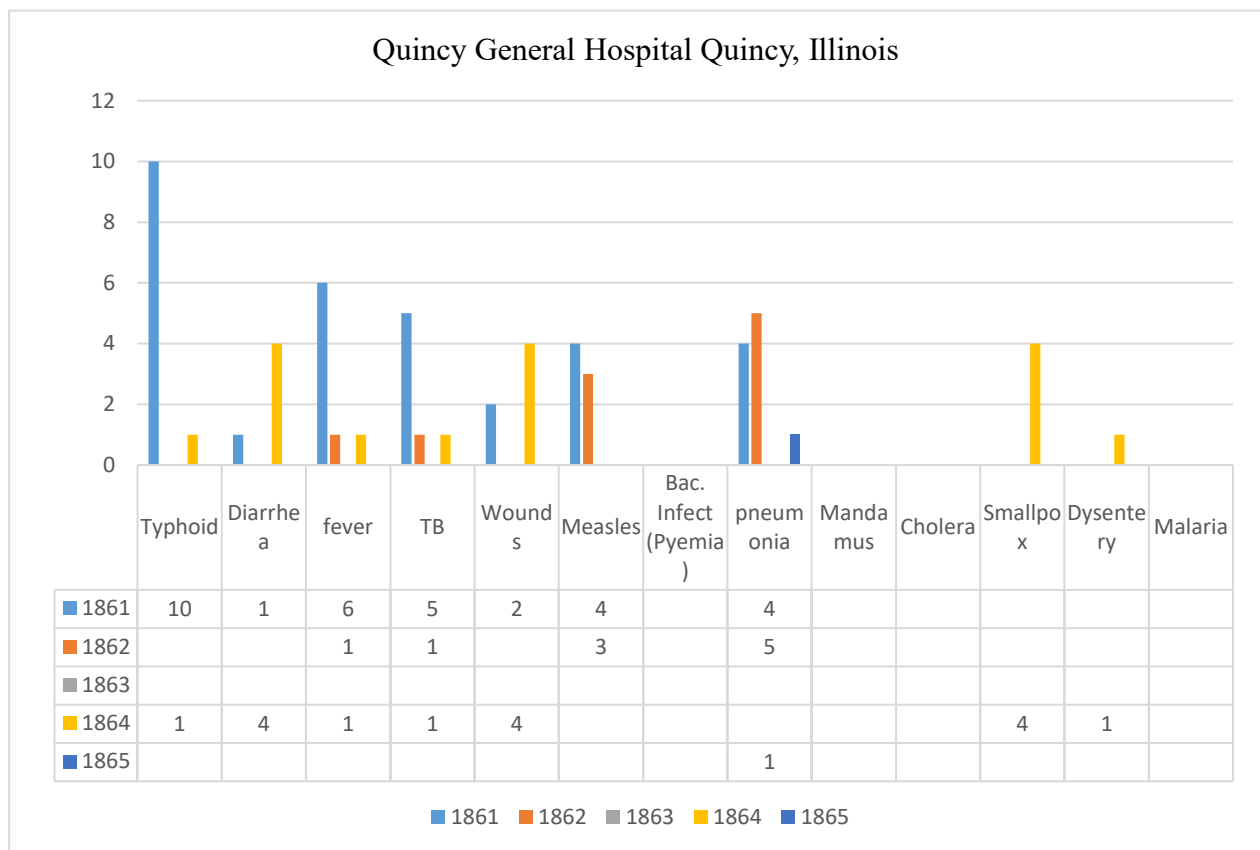
Appendix A-2. Larson General Hospital- St. Louis, MO (Union)



Appendix A-3. St. Louis City Hospital- St. Louis, MO (Union)

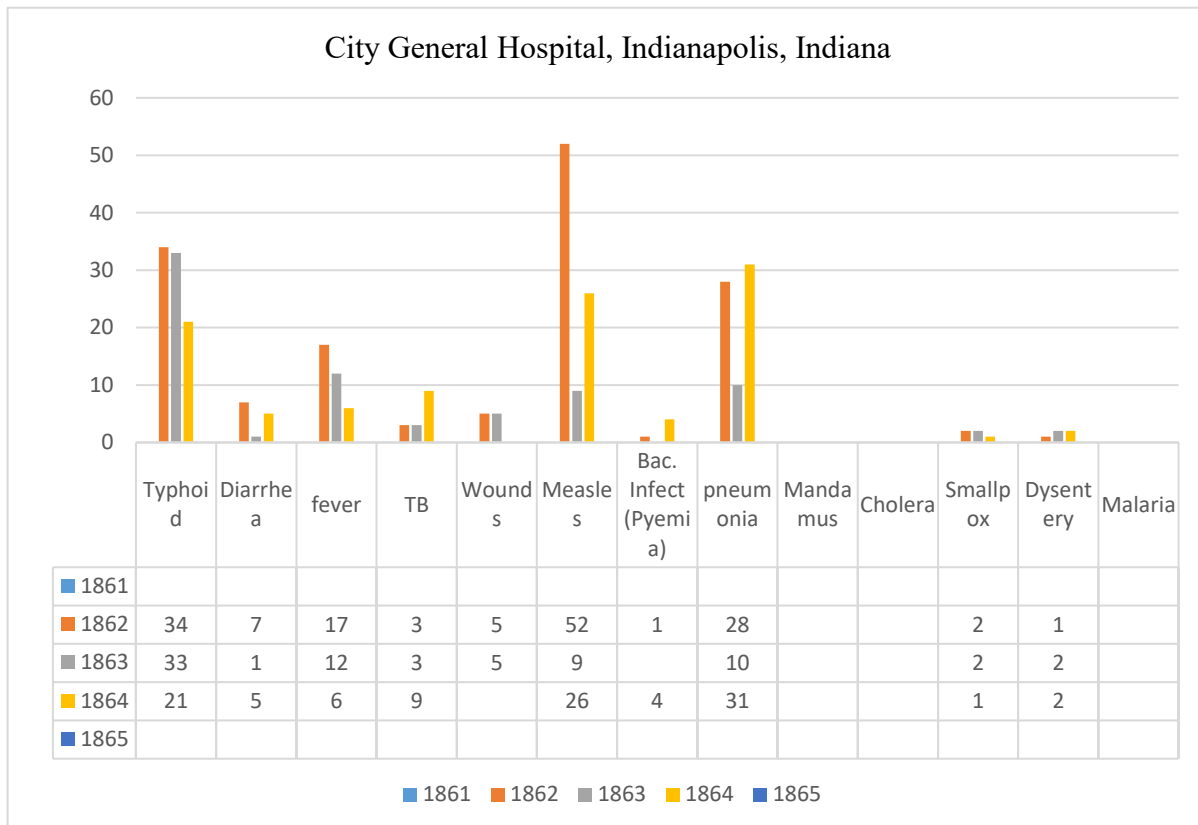


Appendix A-4. Quincy General Hospital- Quincy, Illinois (Union)

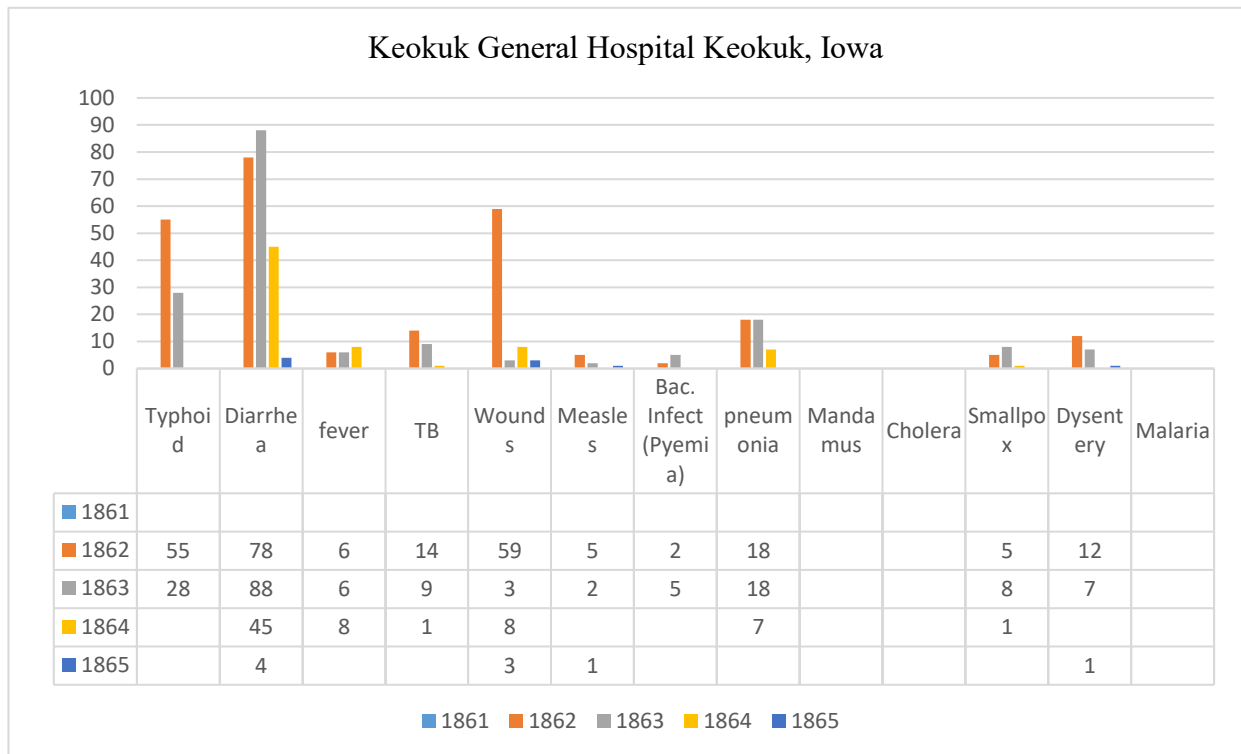


Notes: REG. 142 record group 94, 544-1864 and one 1865 fatality, not much- most of book blank.

Appendix A-5. City General Hospital- Indianapolis, IN (Union)

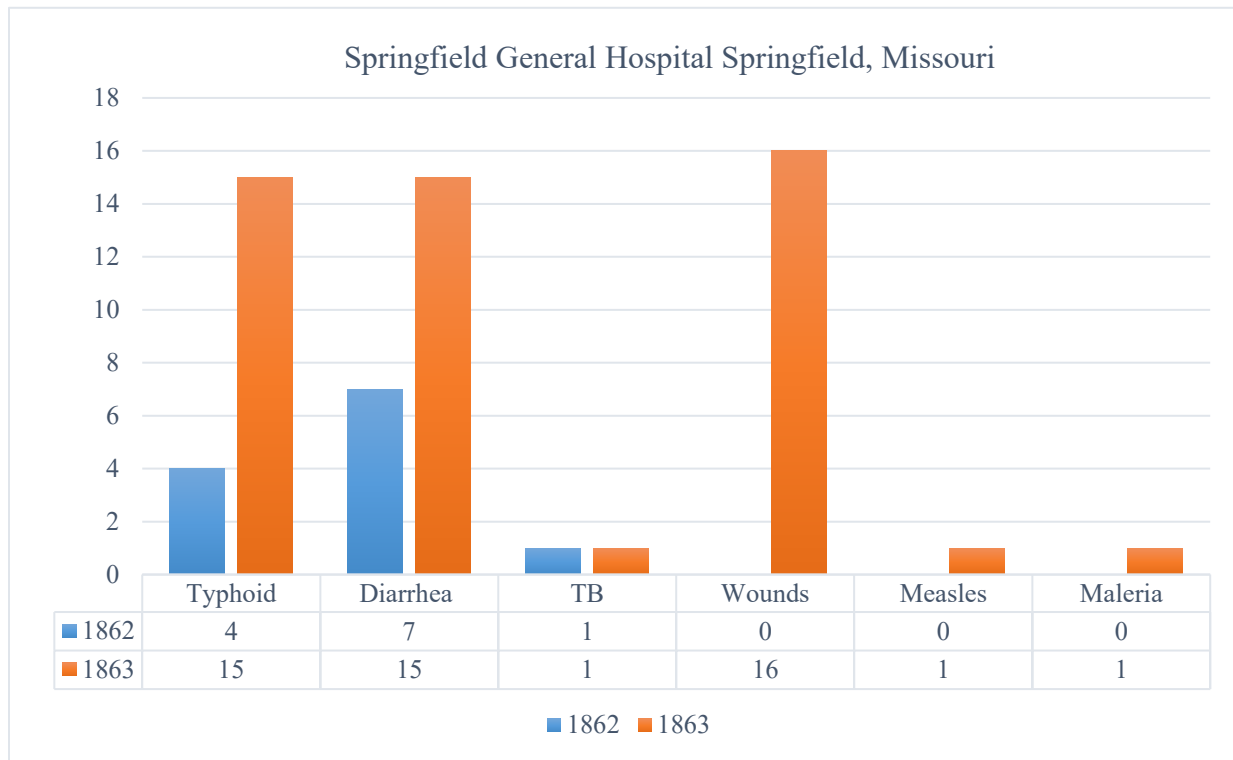


Appendix A-6. Keokuk General Hospital- Keokuk, IA (Union)

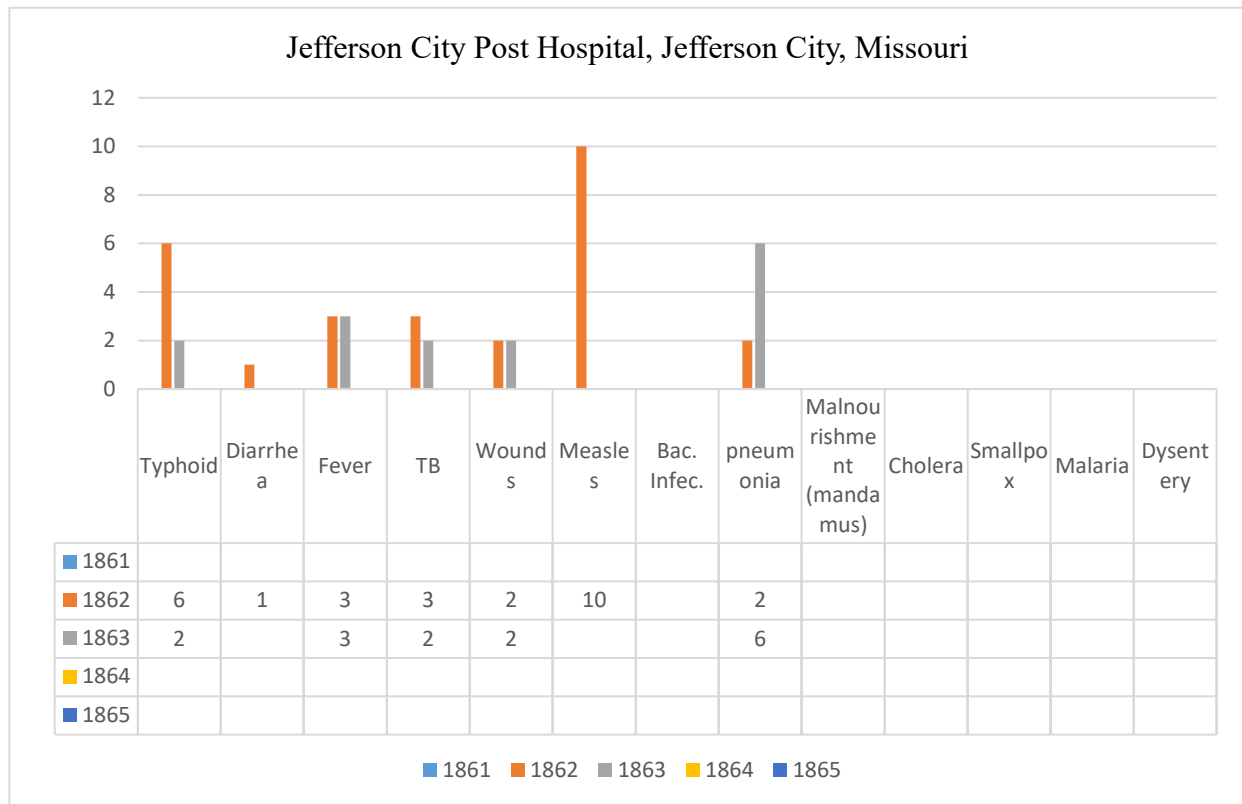


Notes: 94-544 REG 53 IA- beginning in Sep 62, cause of death was seldom documented. All deaths recorded here included a cause of death.

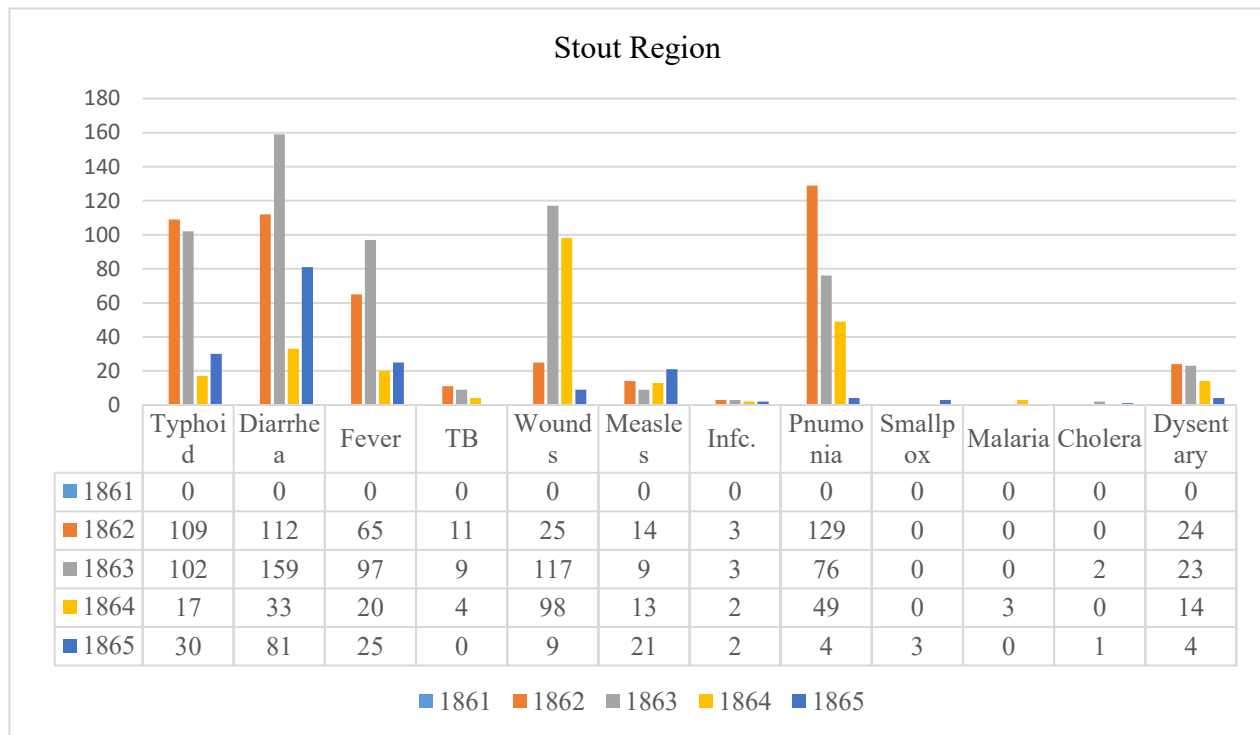
Appendix A-7. Springfield General Hospital- Springfield, MO (Union)



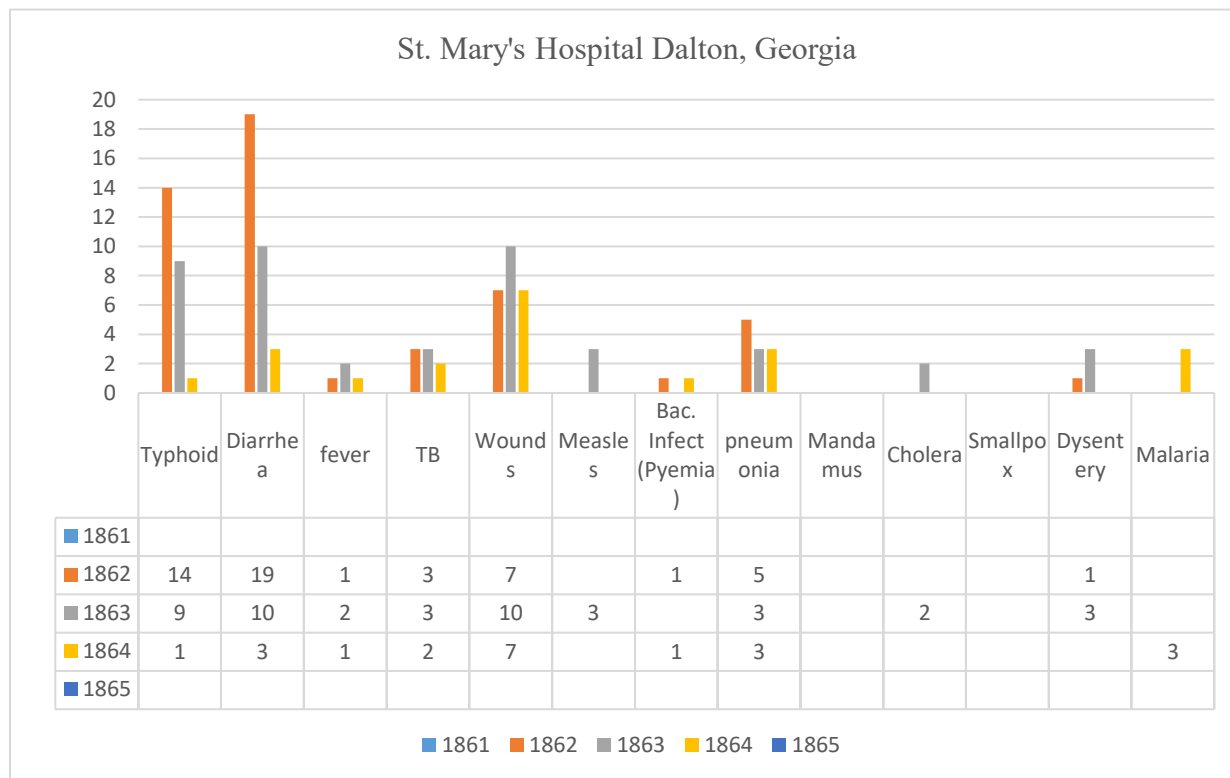
Appendix A-8. Jefferson City Post Hospital- Jefferson City, Missouri (Union)



Appendix B. Stout Region

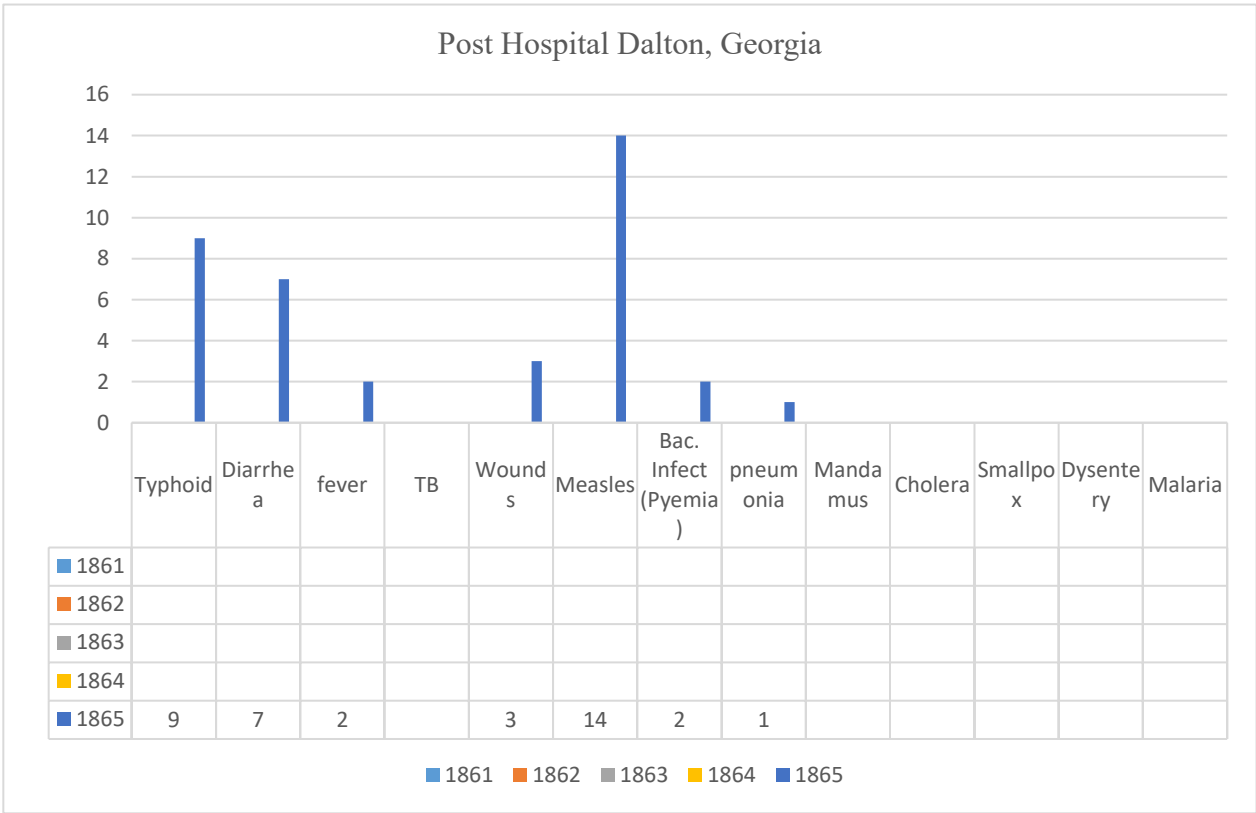


Appendix B-1. St. Mary's Hospital- Dalton, GA (CSA)

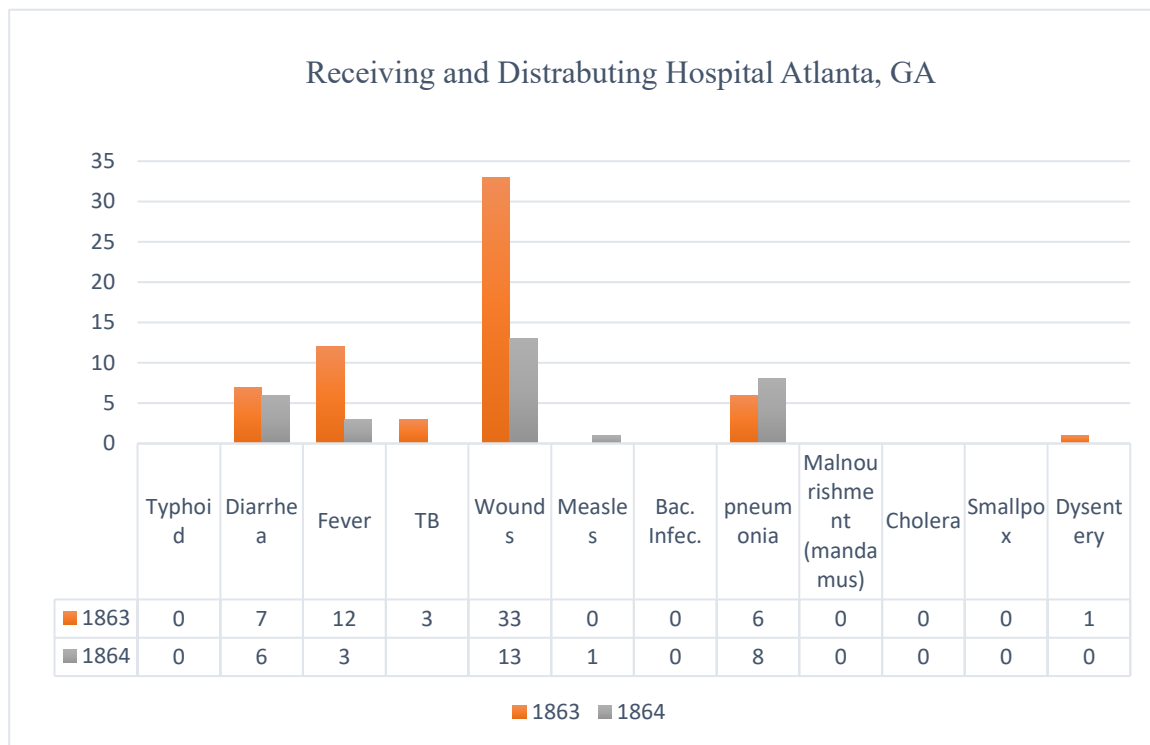


Notes: 1544975 vol. 274; front cover explains that St. Mary's moved their hospital when requisitioned to. The hospital moved to La Grange, GA Oct. 31, 1863, then to Union Springs, AL Aug. 1864 and Meridian, MS Nov. 1864, and then once more to West Point, MS Dec 4, 1864. This record group also includes Pest House Smallpox hospital in Chattanooga, TN. Deaths recorded interweaved in notes. First 11 pages not dated but it can be assumed they are from 1863. Several listed as died with no cause of death listed so they could not be recorded. Several cases of all disease surveyed. Combined with earlier survey data from St. Mary's hospital.

Appendix B-2. Post Hospital Dalton, GA (CSA)

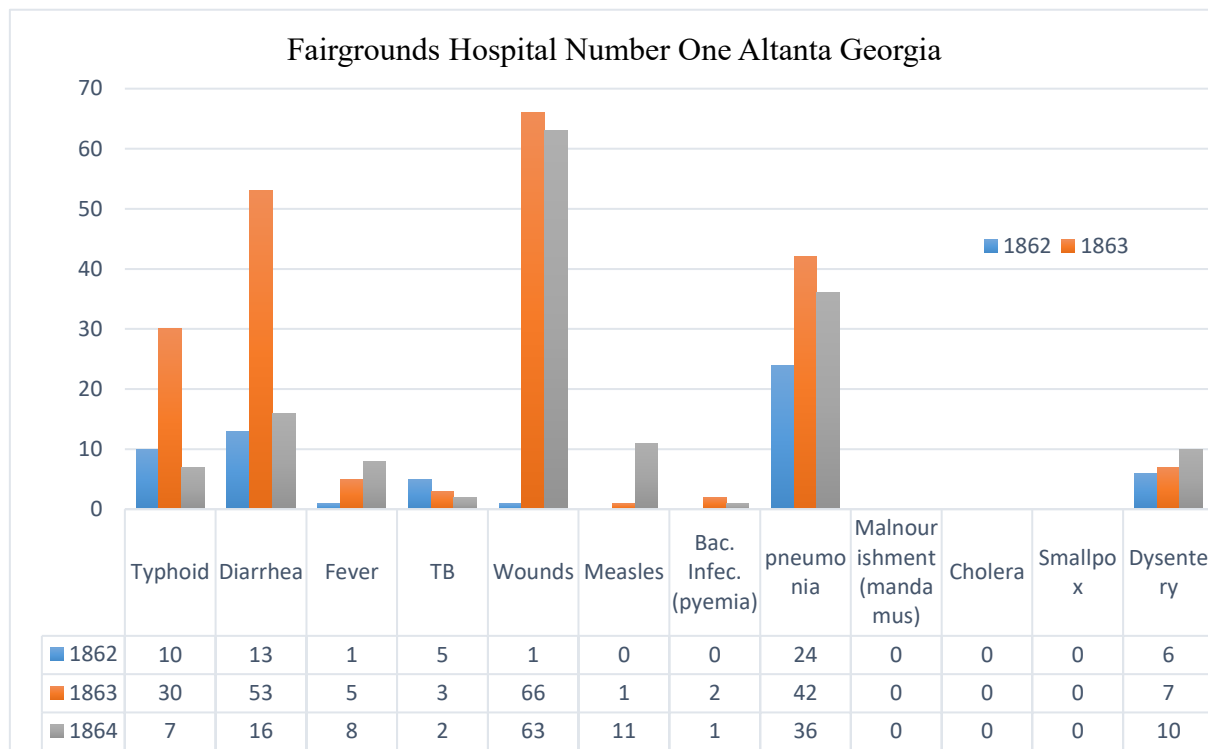


Appendix B-3. Receiving and Distributing Hospital- Atlanta, GA



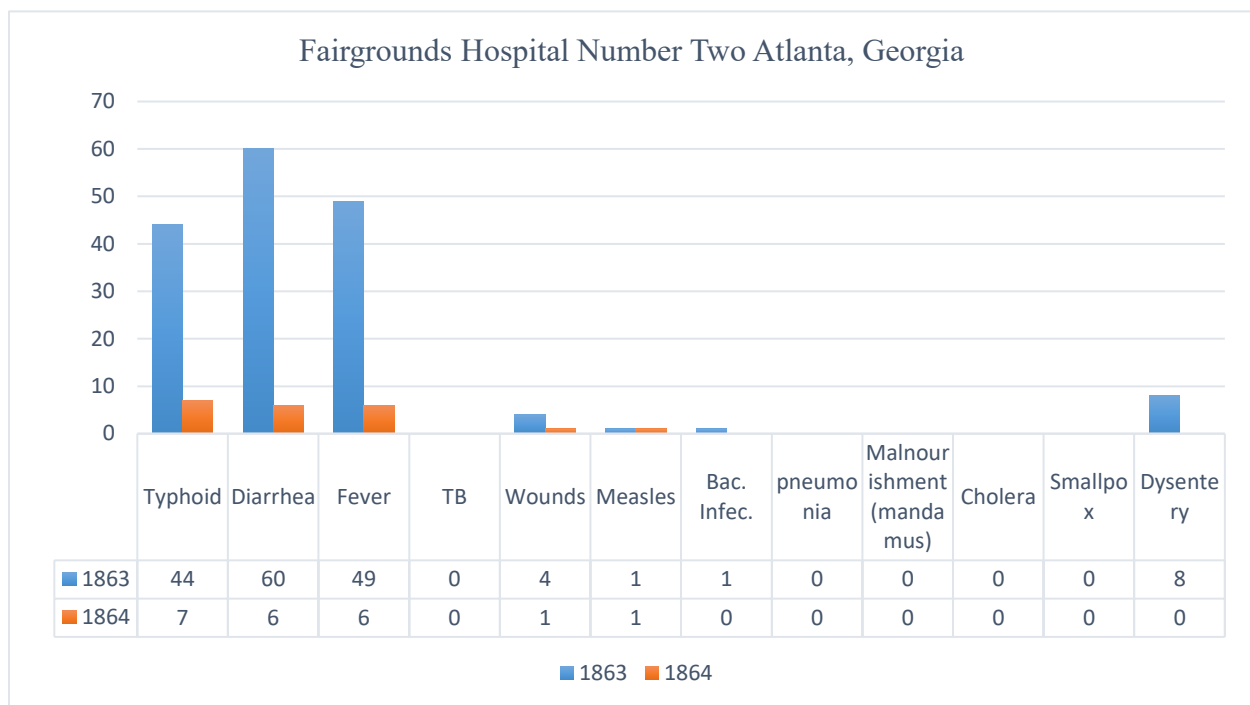
Notes: FOUND IN BOX 22, 381 FILM reel 6 Item c @ the Dolph Briscoe Center for American History, University of Texas, Austin. Labeled as unknown hospital 63-64. Another hospital, receiving and distributing hosp. was documented on the microfilm roll. Several deaths recorded with no cause of death- can't record. Patients recorded by name, not by year with no year specified in the columns— estimated end of 63- 64'. Ford hospital mentioned. Lots of missing causes of death, unreadable material, general organization was odd due to alphabetical filing. Item D is a register of CSA soldiers with information and deaths and causes of death but no listed place of death- that roll was eliminated. Possible this was not a permanent hospital but rather a stopping point for soldiers who were traveling to other medical hubs around the country.

Appendix B-4. Fairgrounds Hospital Number One- Atlanta, GA (CSA)



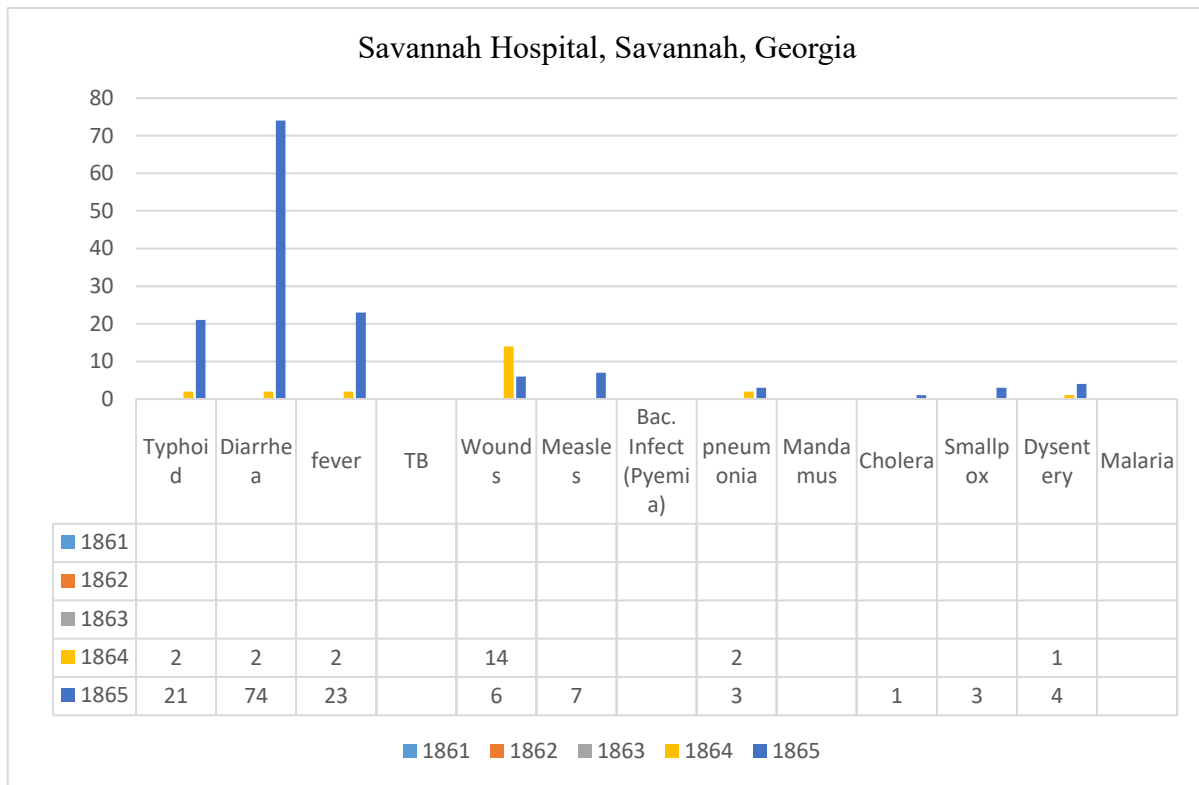
Notes: FOUND IN BOX 2L3 @ the Dolph Briscoe Center for American History, University of Texas, Austin. September 1862-October 1863, missing several pages toward the end. August 23, 1863- November 14, 1864 missing substantially more pages in the back. Pyemia counted as bac. infection— Sepsis; Several cases of epistaxis- nose bleeding/issues due to alcoholism. Number one cause of death overall is wounds except for cases of pneumonia. Fairly complete and organized, easy to read, records.

Appendix B-5. Fairgrounds Hospital Number Two- Atlanta. GA (CSA)



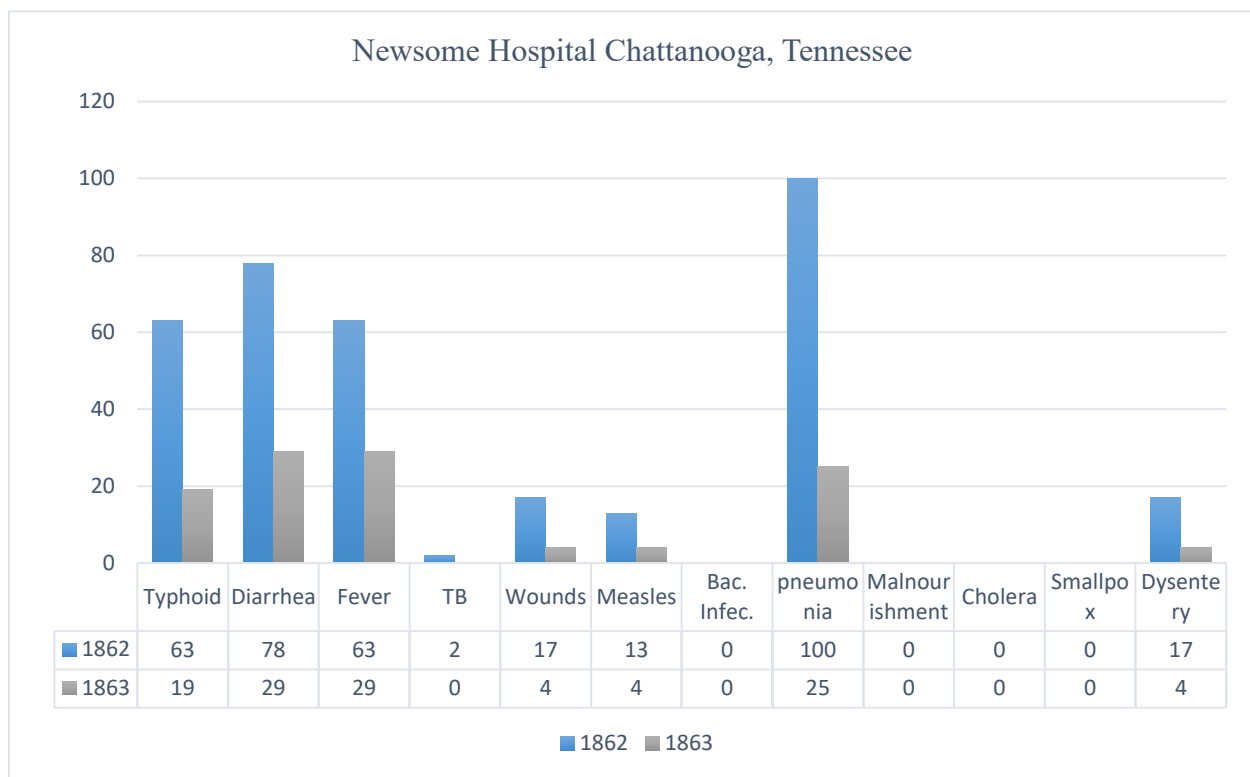
Notes: Reel 2 item D; Feb 63'- Jan 64' a few cases of Scarlet Fever not counted in the general fever count—3 in 63'.

Appendix B-6. Savannah Hospital- Savannah, GA (Union)



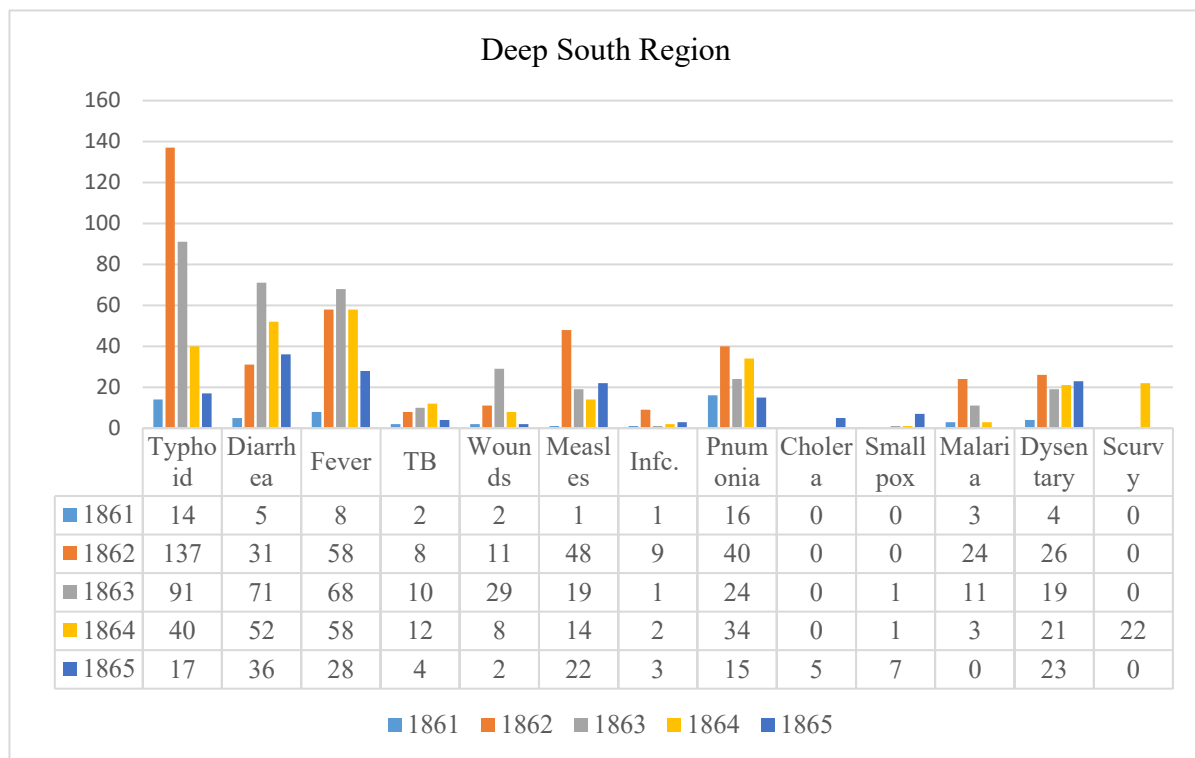
Notes: 94 544 REG 8 Savannah, GA. REG 423. First quarter sick and wounded, majority of the book details wounded. 1864 was retrieved from this volume.

Appendix B-7. Newsome Hospital- Chattanooga, TN (CSA)

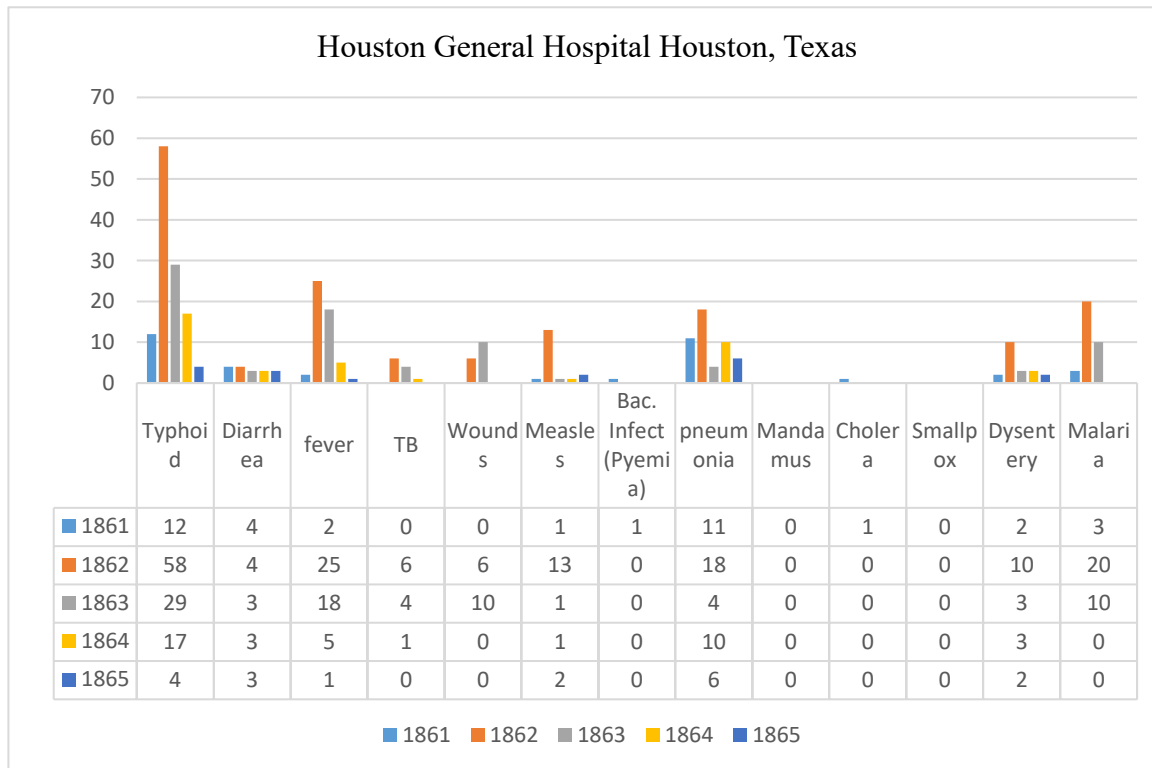


Notes: FOUND IN BOX 22, 381 FILM reel 4 Item A, B, C, D @ the Dolph Briscoe Center for American History, University of Texas, Austin. Half of 1862- 1863 register recorded on cabin reserve book. 8 of the deaths from typhoid crossed out and noted they were sent to convalescent homes. Three separate registers for the same year/hospital. Second book 229 pages long. Separated into 3 lists of wounded patients brought to Newsome in the 1862 register. Ward numbers listed as Number 2, 3, 4, 5, and 6 in the far right-hand column. On the third 1862 muster roll, several bronchitis and some with two causes of death such as chronic diarrhea and pneumonia. Some deaths not recorded due to missing cause of death.

Appendix C. Deep South Region

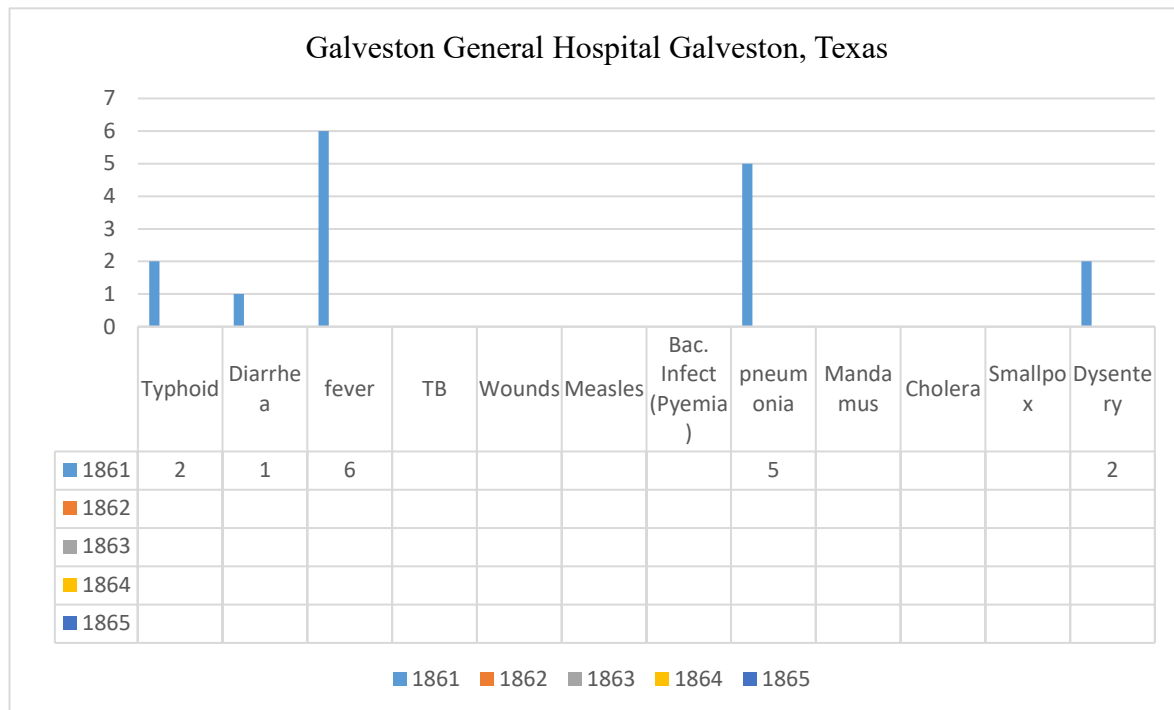


Appendix C-1. Houston General Hospital- Houston, TX (CSA)



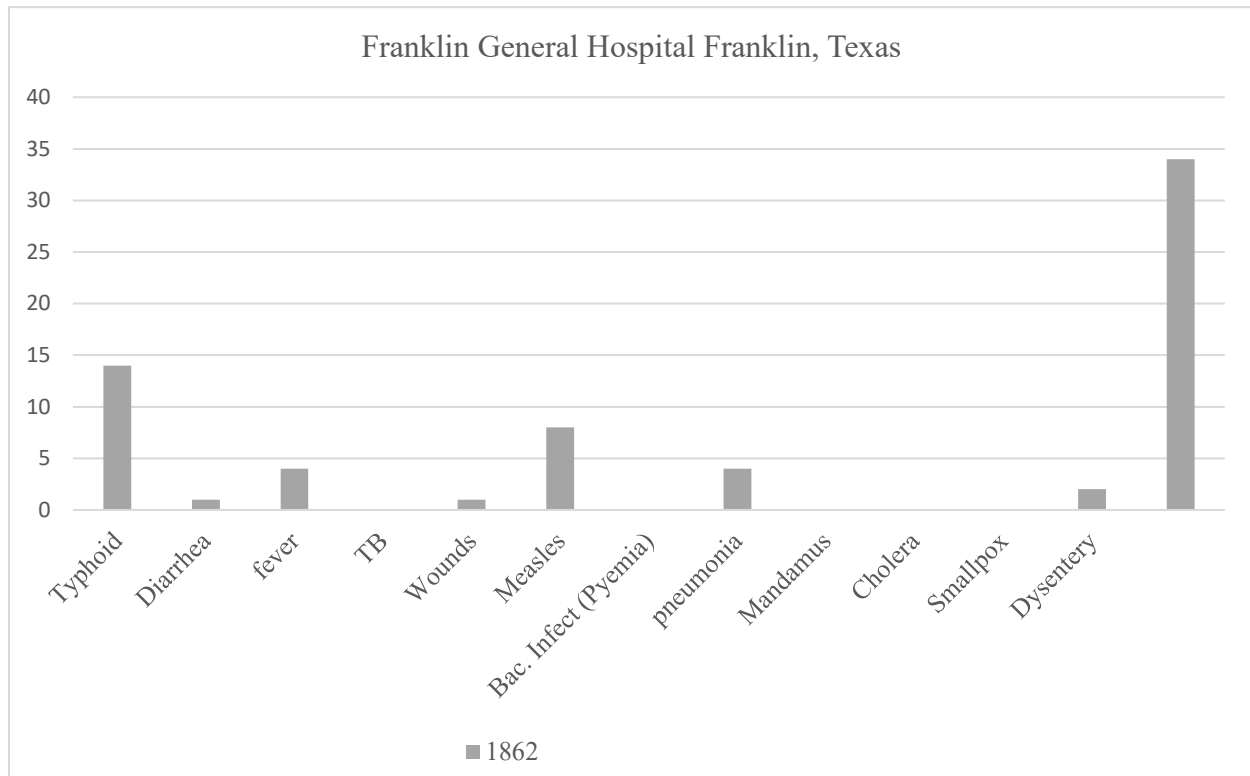
Notes: Case of meningitis. 1555896 Vol. 275 Ch. 6- 64-65 taken from quarterly reports of death by specific disease- see photo. Recorded quarterly- quarterly totals; combined with records from earlier survey of Houston records.

Appendix C-2. Galveston General Hospital- Galveston, TX (CSA)

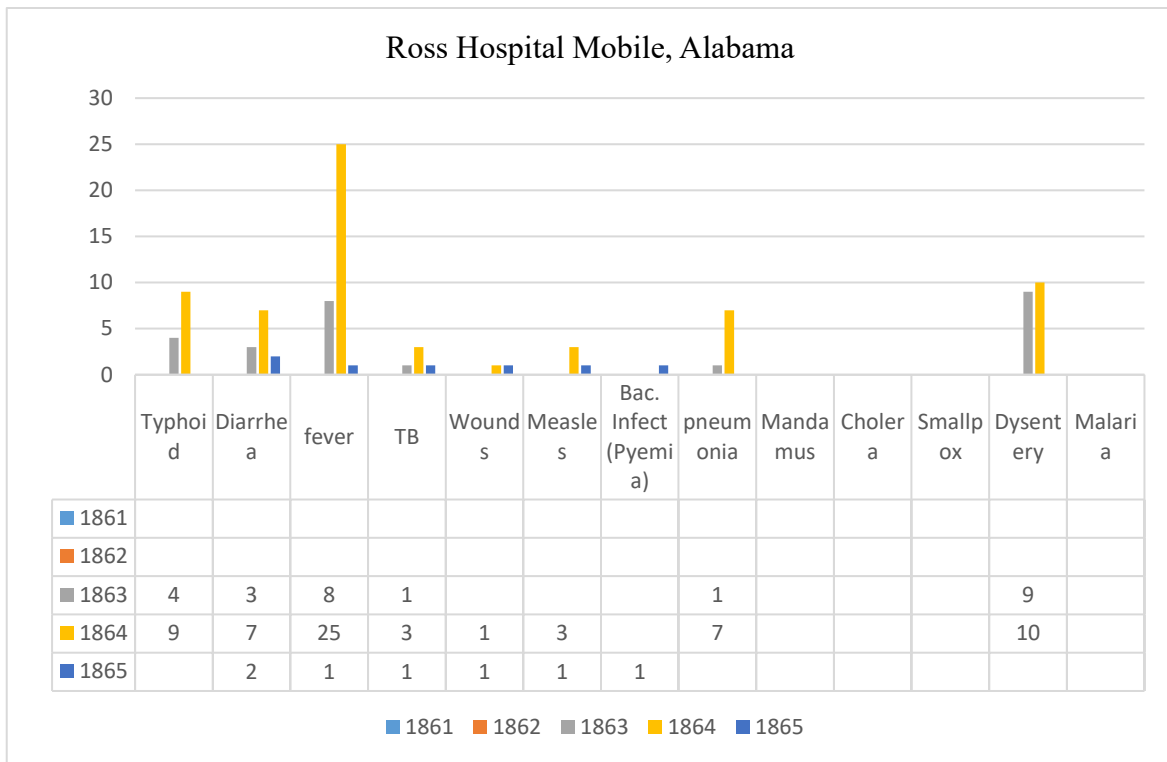


Notes: Houston- Dec 1, 61- Jan 64 Galveston Sep 13, 1861-Nov 27, 61- Several listed as died from "disease". No specificity - Page 37 lists typhoid pneumonia as cause of death. 1555896 Ch. 6, Vol. 275.

Appendix C-3. Franklin General Hospital, Franklin, TX (CSA)

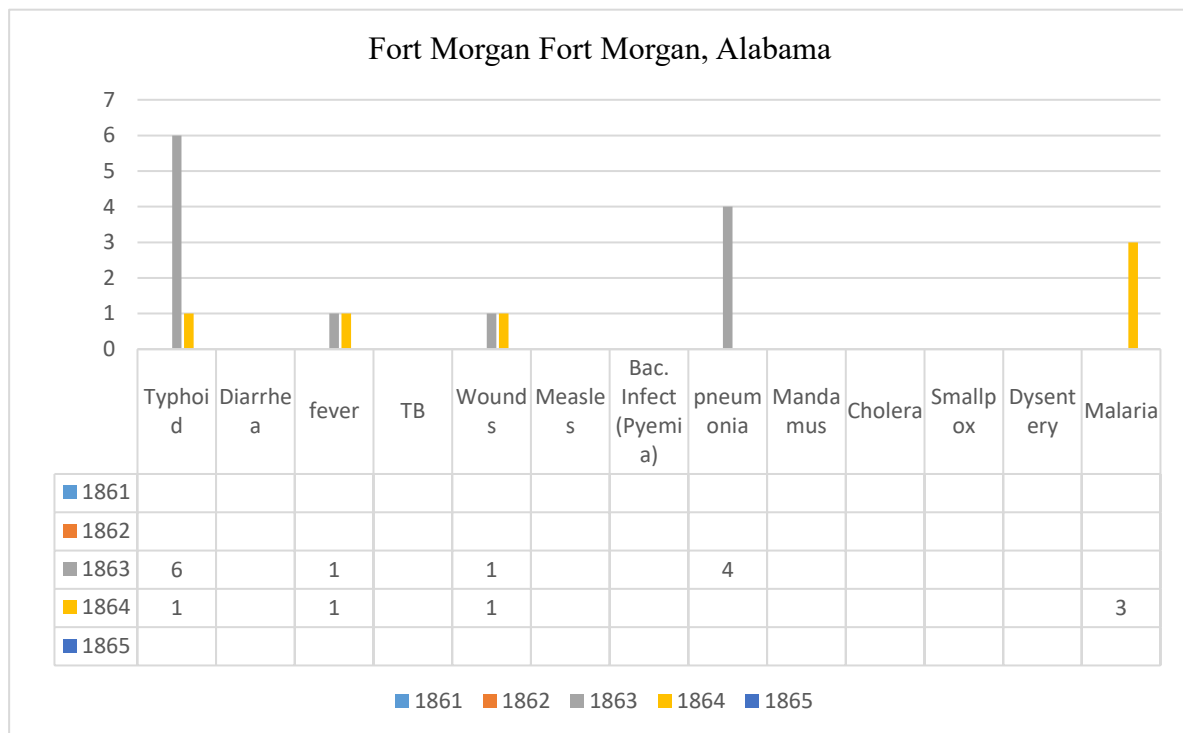


Appendix C-4. Ross Hospital- Mobile, AL (CSA)



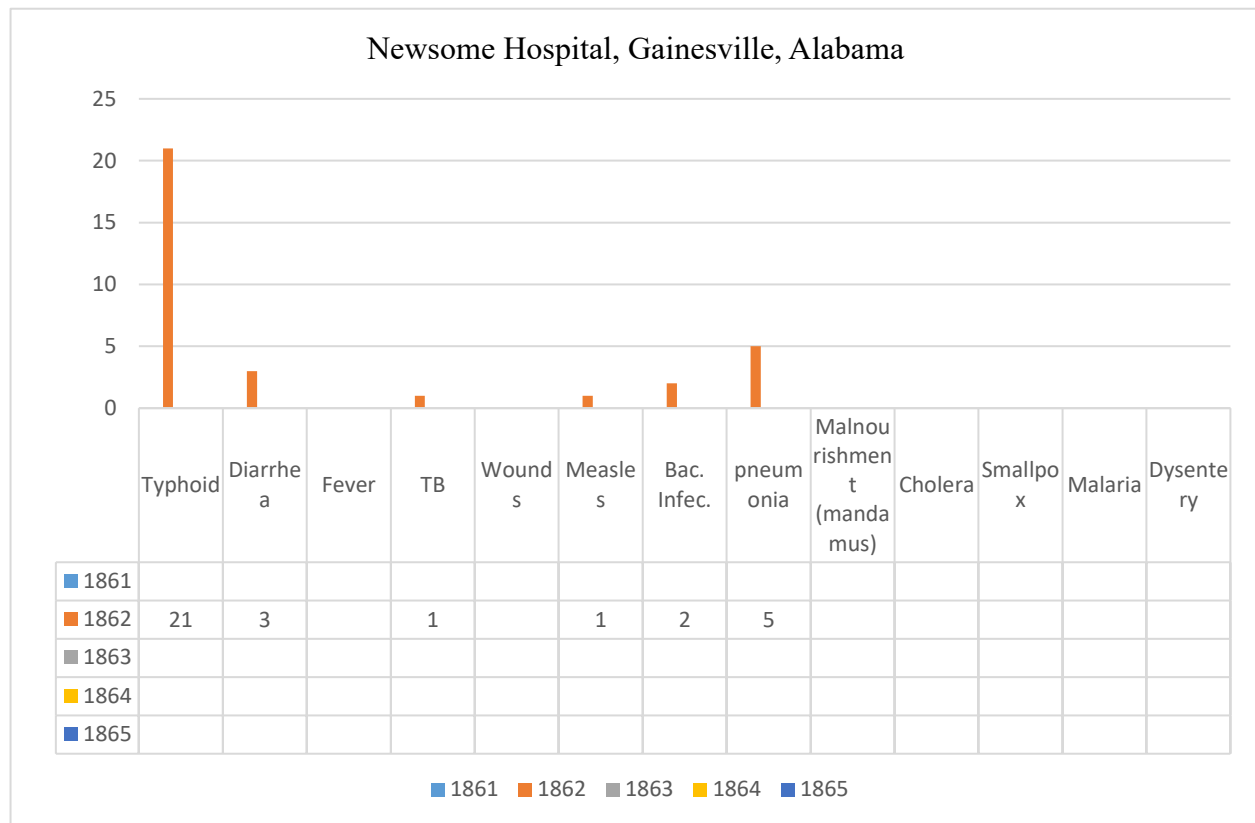
Notes: September 1863-1865. 1544833 vol. 2.; typho-pnumonia listed page77, counted as typhoid; Monthly counts of admitted, died, furloughed, returned to duty, etc. recorded below. Transferred to general hospitals at Cantry and Providence Infirmary? Cases of spiral iniquitous, 82, 92.

Appendix C-5. Fort Morgan Hospital- Fort Morgan, AL (CSA)

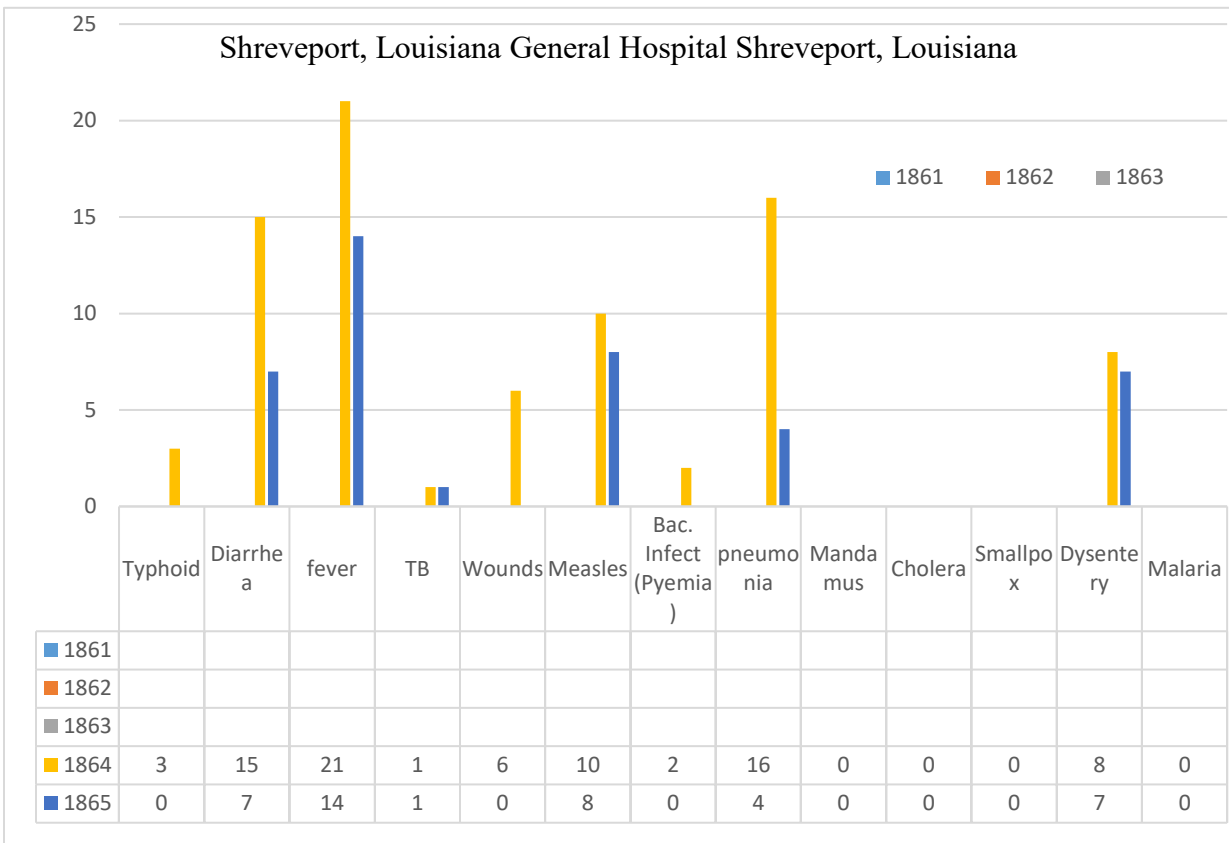


Notes: 1544832 vol. 3 register of patients April 63-64- One case of typhus fever on pg. 12- counted as typhoid- pg. 19. List of total patients, transfers, and furloughs in back.

Appendix C-6. Newsome Hospital- Gainesville, AL (CSA)

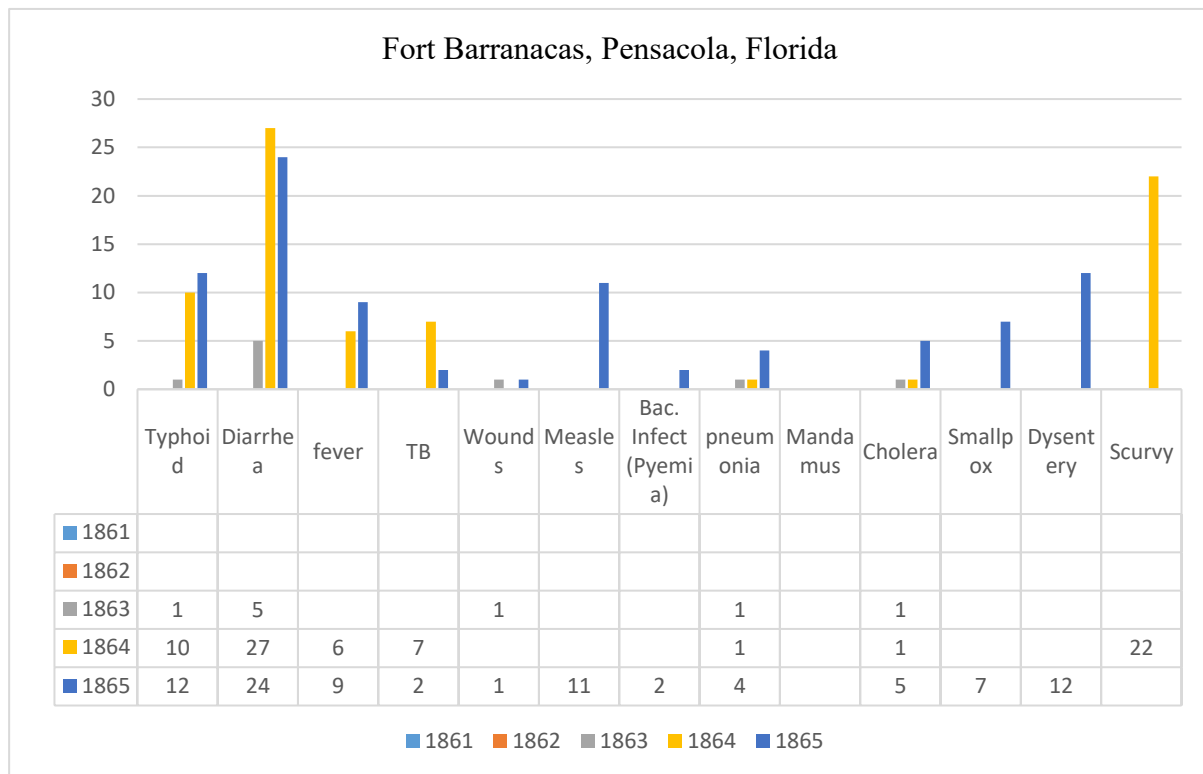


Appendix C-7. Shreveport Louisiana General Hospital- Shreveport, LA (CSA)



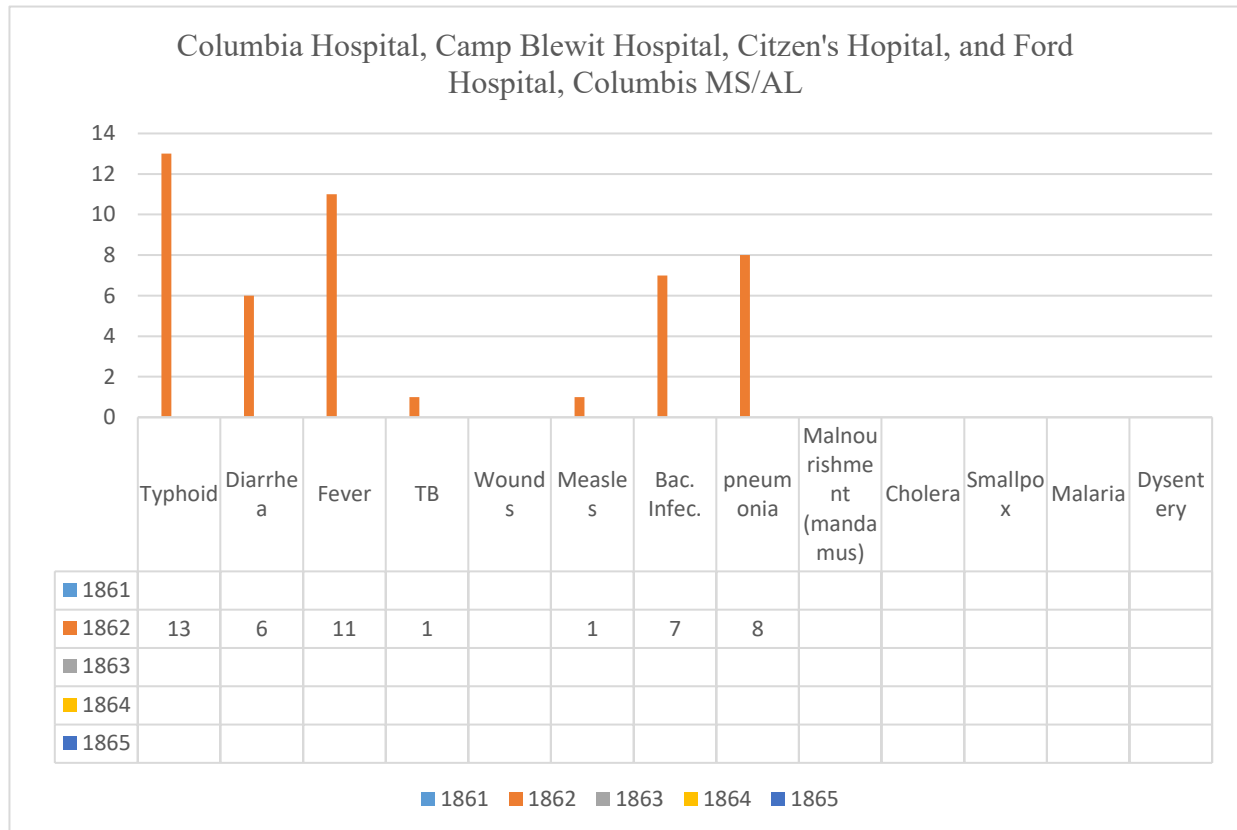
Notes: 1544855 vol. 297 ¼.

Appendix C-8. Fort Barranacas- Pensacola, FL (CSA)

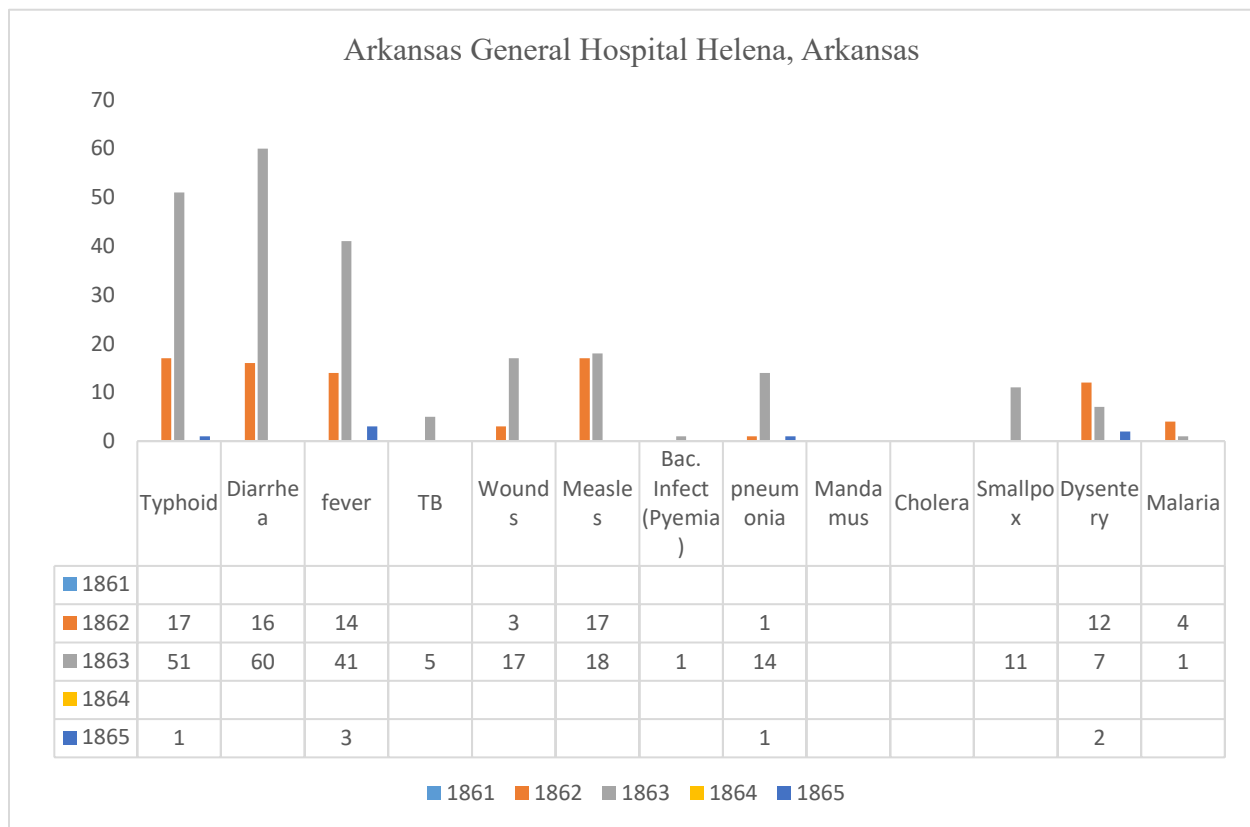


Notes: REG. 79 record group 94, 544- 1870s records, not civil war era, REG 80 1880s records, REG 74 was most helpful- all fatalities recorded from this register 1863-1865.

Appendix C-9. Columbia Hospital, Camp Blewit Hospital, Citizen's Hospital, and Ford Hospital, Columbus MS/AL (CSA)

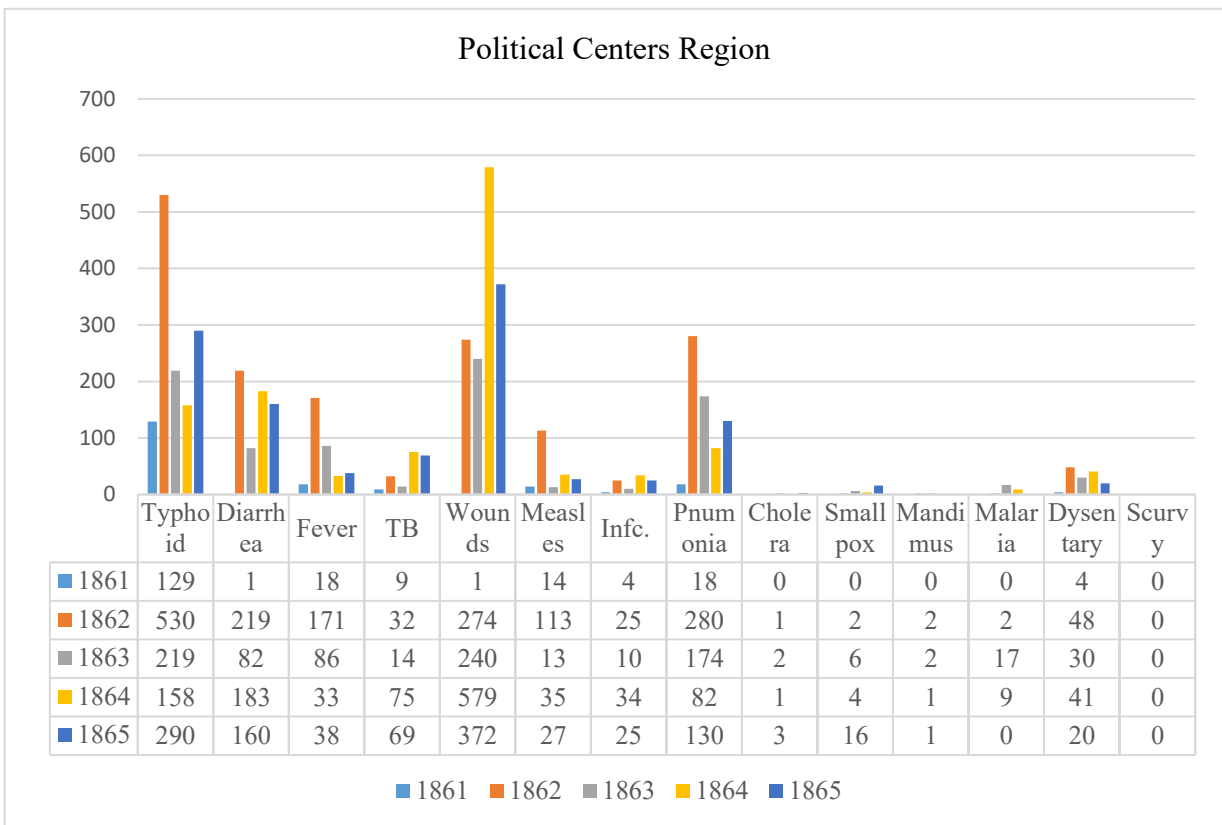


Appendix C-10. Arkansas General Hospital- Helena, AR (CSA)

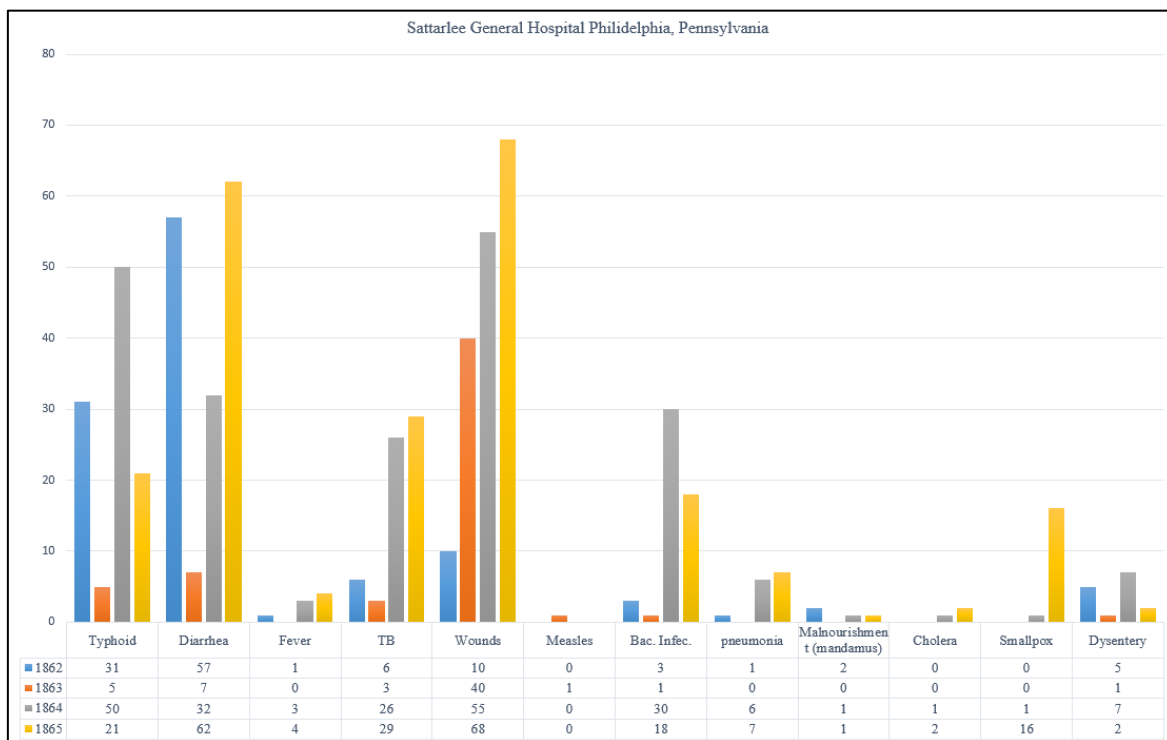


Notes: 94 544 REG 45 Arkansas, REG.46, typhomalaria listed, see photos pg. REG 46 no entries for 64 in any volumes. REG 48- several blank pages in between muster roll entries, many deaths recorded but most without a cause of death. The ones with a cause of death are recorded here for the year 1865.

Appendix D. Political Centers

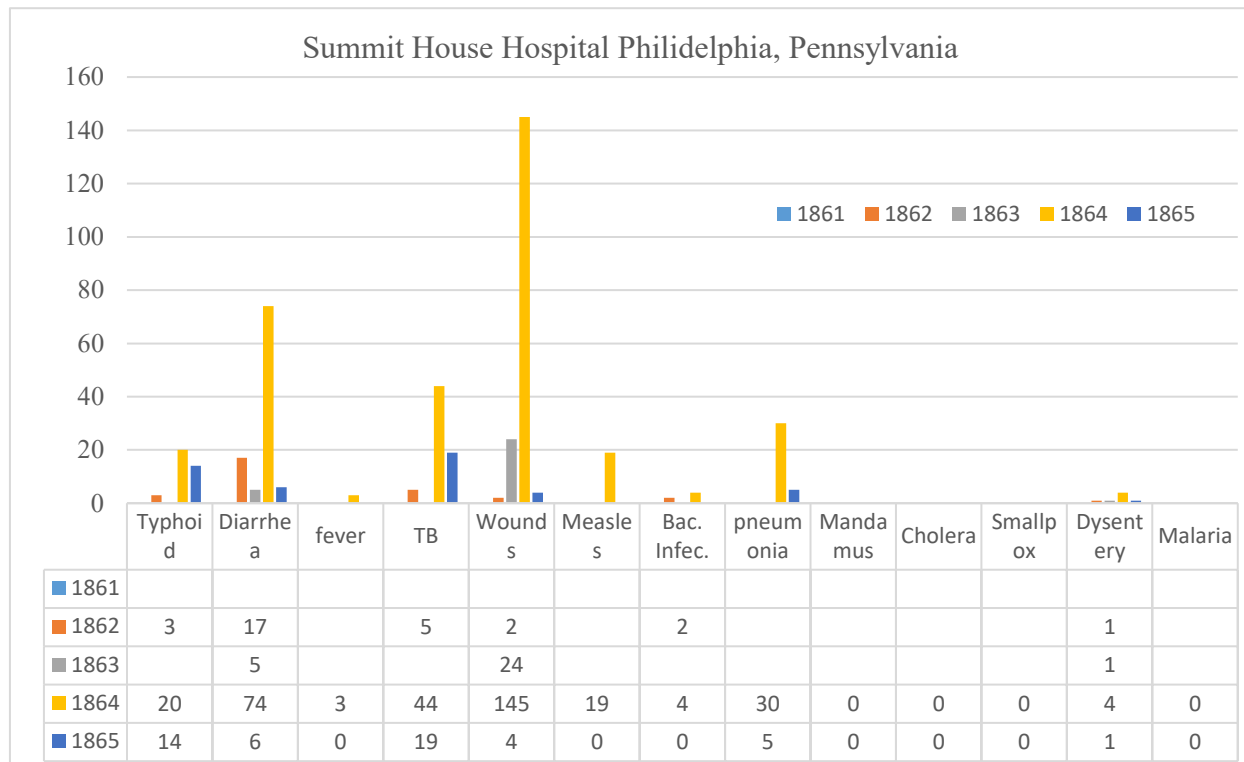


Appendix D-1. Satterlee General Hospital- Philadelphia, PA (Union)



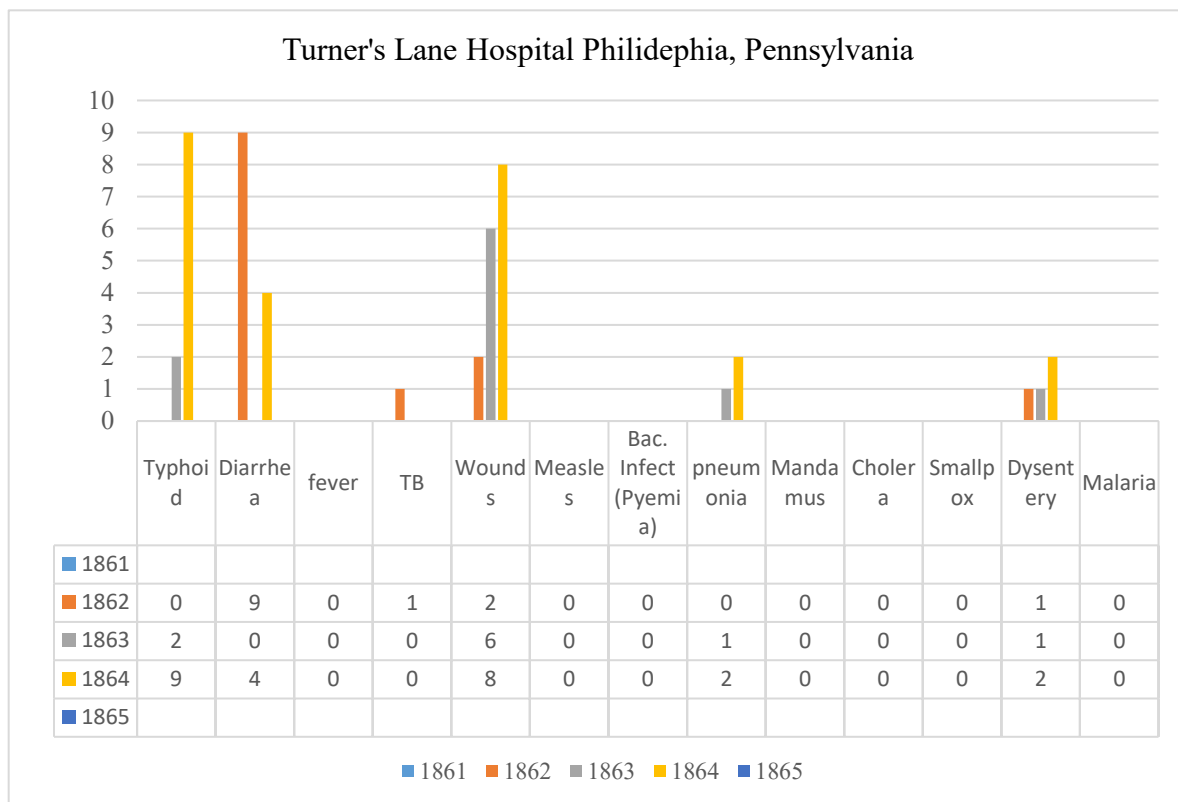
Notes: 19.4% fatality rate if the total number of patients were around 12,000 as according to one source published 1863. Much higher than the 12 percent listed on the source. Also, there is missing documentation on a lot of the records- pages upon pages where no deaths, furloughs, or transfers are listed. No dates of release either. Most likely, there were many unrecorded deaths, at least in this particular record set. High wound fatalities most likely due to geographical location as soldiers wounded at Gettysburg, Antietam, and Petersburg were treated here. Notice also the cases of smallpox which occur only in this hospital in 1865. Also, many cases of typhomalaria fever which were counted as typhoid here. This is also more likely to be related to geographical location.

Appendix D-2. Summit House Hospital- Philadelphia, PA (Union)



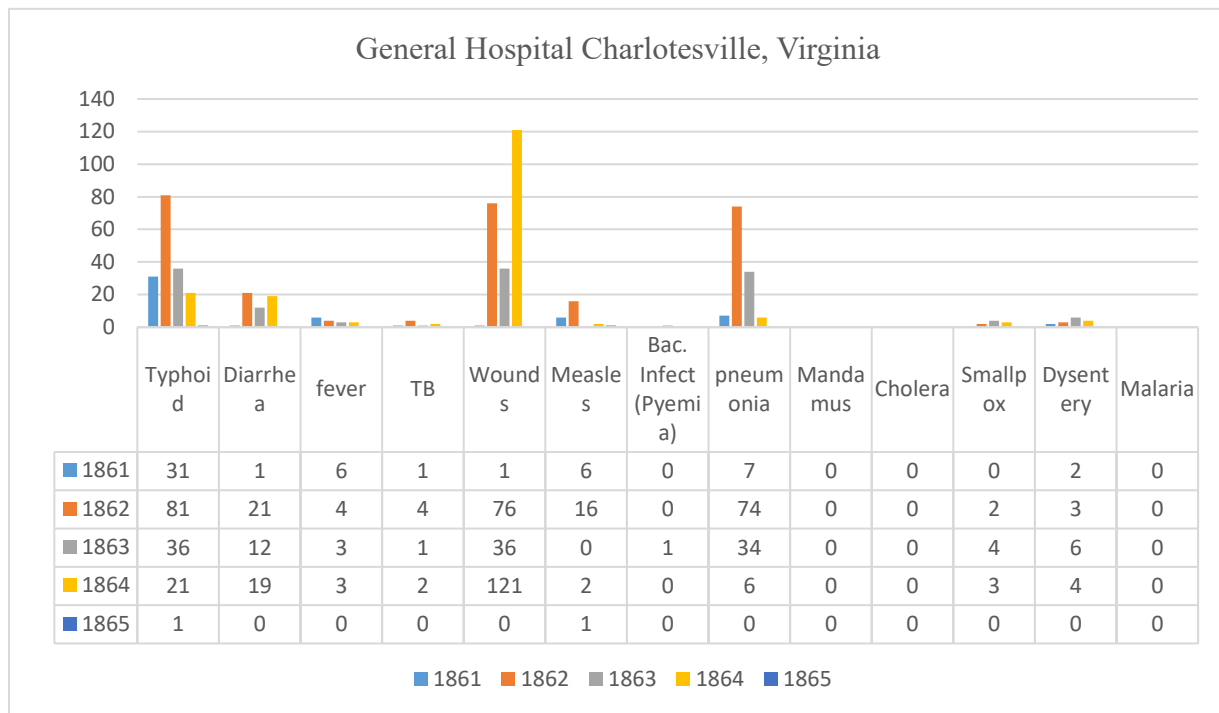
Notes: 94 544- PA Reg. 249 Summit House- majority of book blank with muster rolls spanning two-three pages every so often. Only 9 deaths from wounds recorded. Not much information. REG 249 Summit, first few pages are duplicate of the last roll, rest of book empty. REG 94 250 very helpful- most 1864 info from this register, lots of documented bronchitis. REG 94 vol 250 register of previous- not recorded due to the possibility of duplicates. REG 252- 1865, large volume, most blank. REG 94 vol 253- 62-65 plentiful info. REG 254 most duplicate only July 65 usable.

Appendix D-3. Turner's Lane Hospital- Philadelphia, PA (Union)



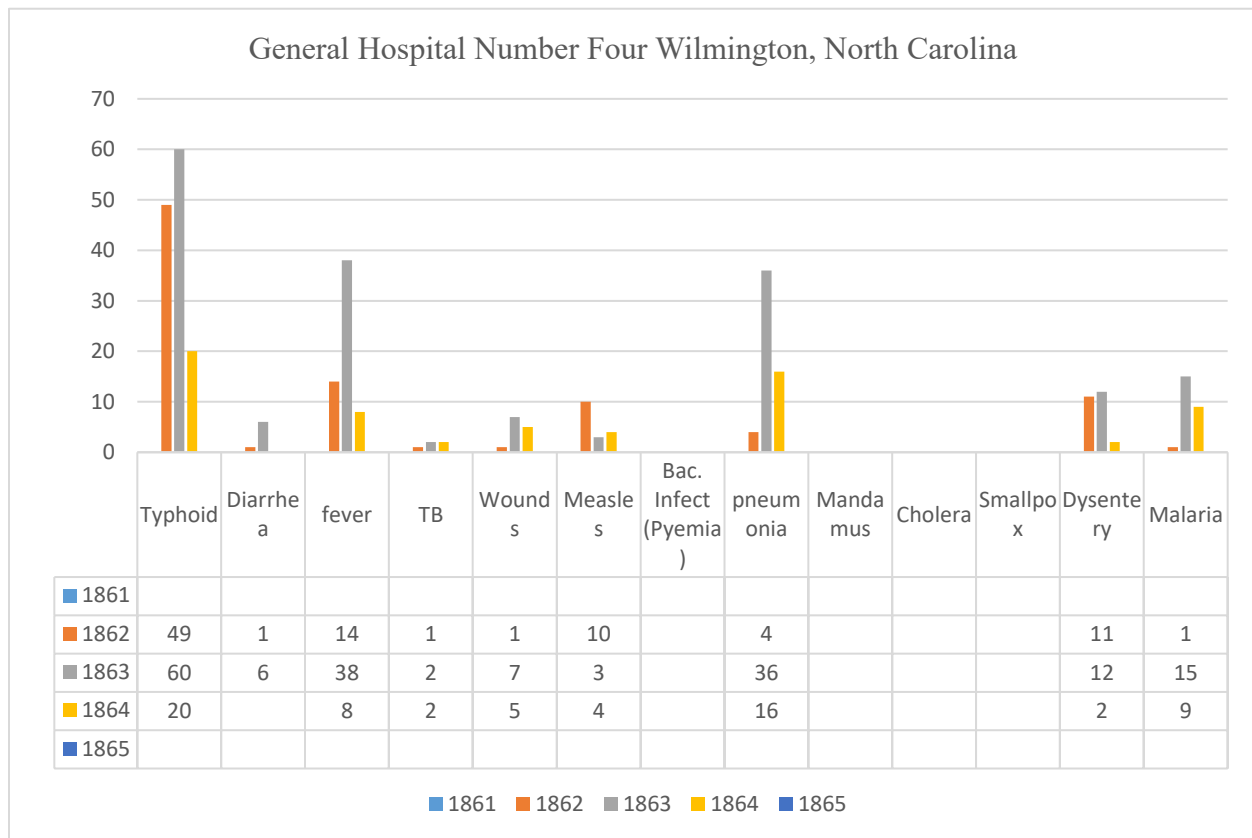
Notes: PA REG. 204 record group 94, 544. No recorded deaths in 65, many patient admissions, lots of diagnosis of functions of the heart as admission diagnosis. It is possible this was a specialty hospital but no source material supporting this was found.

Appendix D-4. General Hospital Charlottesville, VA (CSA)



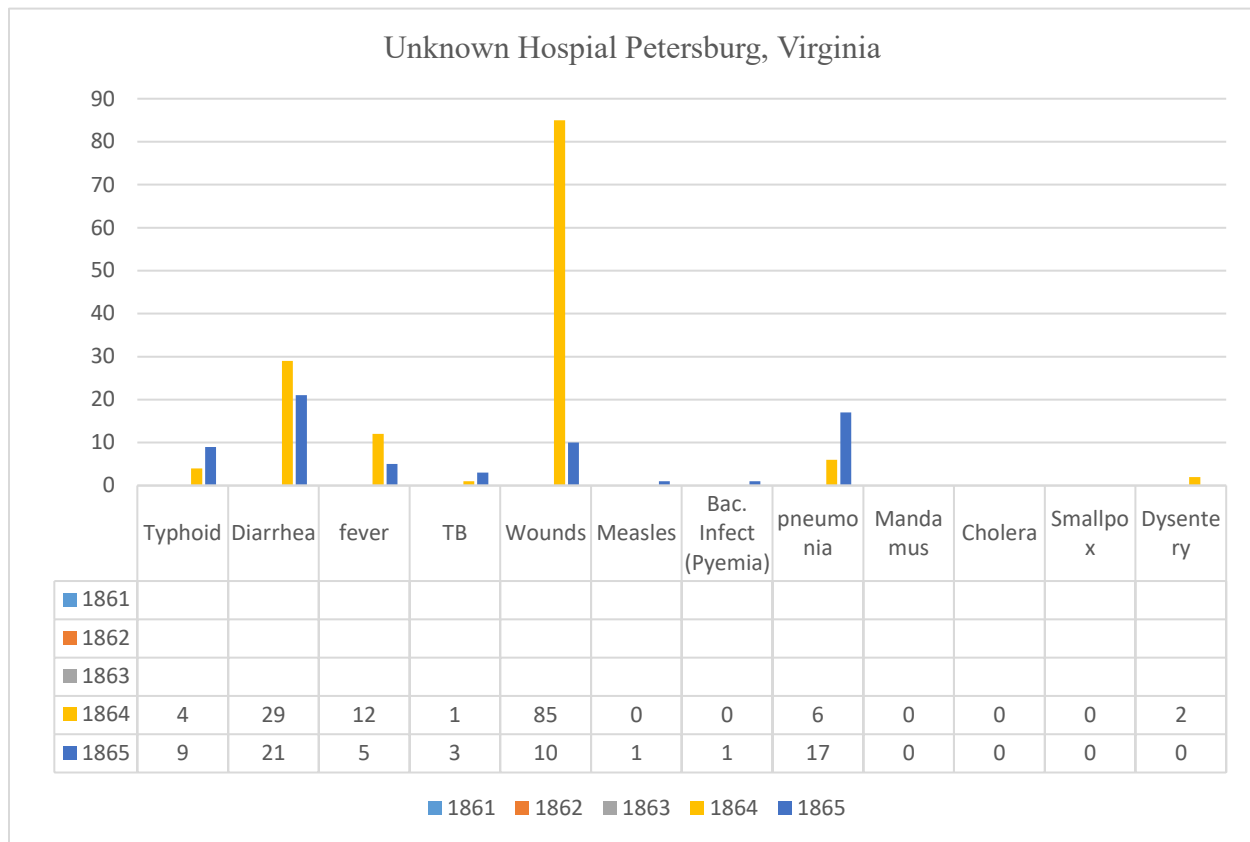
Notes: Documentation stops on page 57 vol. 214. Case of typhus fever page 80, in late summer 64' few deaths recorded in the hospital and almost all patients transferred upon arrival.

Appendix D-5. General Hospital Number Four- Wilmington, NC (CSA)

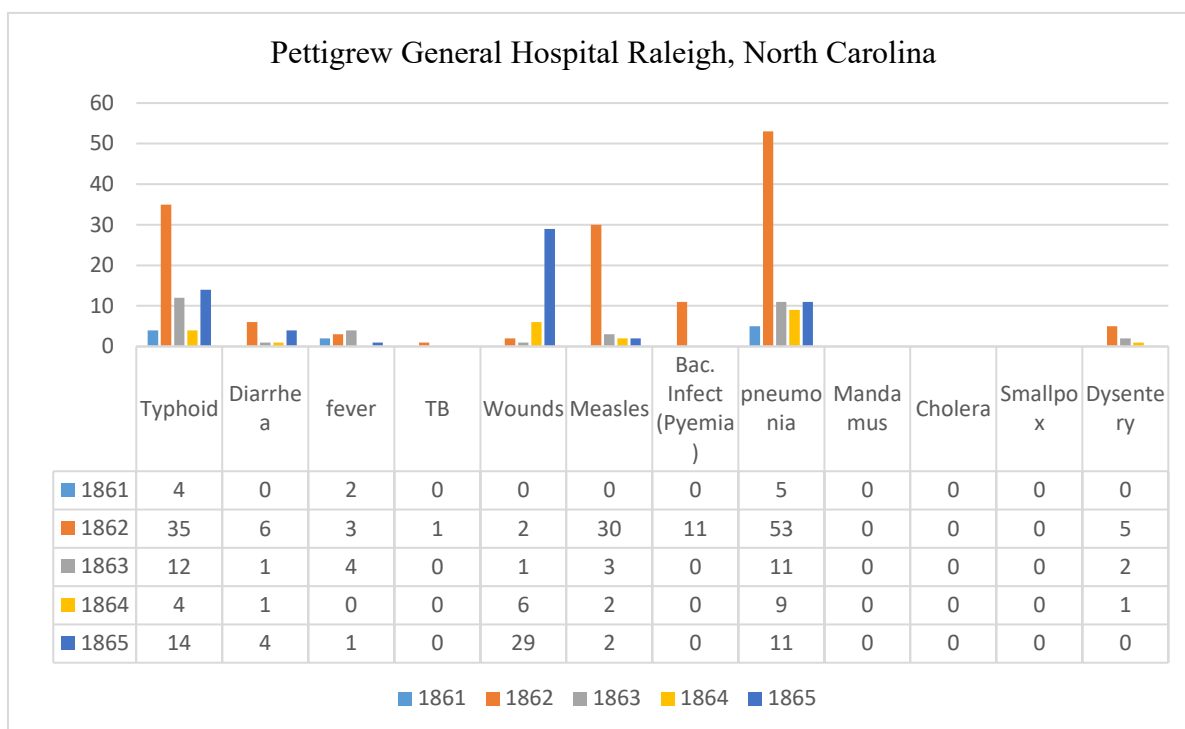


Notes: Pages of rubella, malaria, and typhoid in summer 1863, the majority were diagnosed and the furloughed. Typho-pneumonia documented page 156, 175. 1555720 vols 244 1/2 and 285-286 Ch 6.- 1555720 Ch. 6 Vol. 282-156, typhoid pneumonia, recorded as typhoid.

Appendix D-6. Unknown General Hospital Petersburg, VA (CSA)

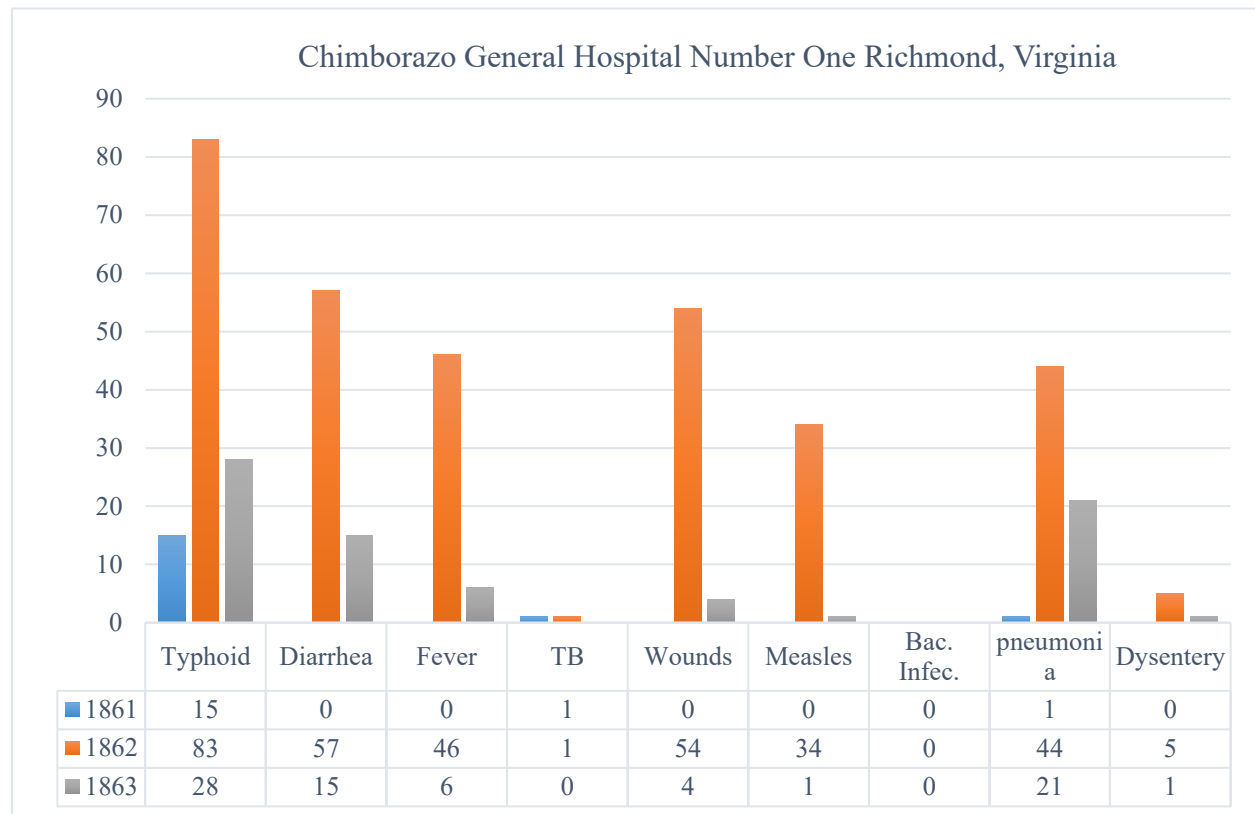


Appendix D-7. Pettigrew General Hospital- Raleigh, NC (CSA)



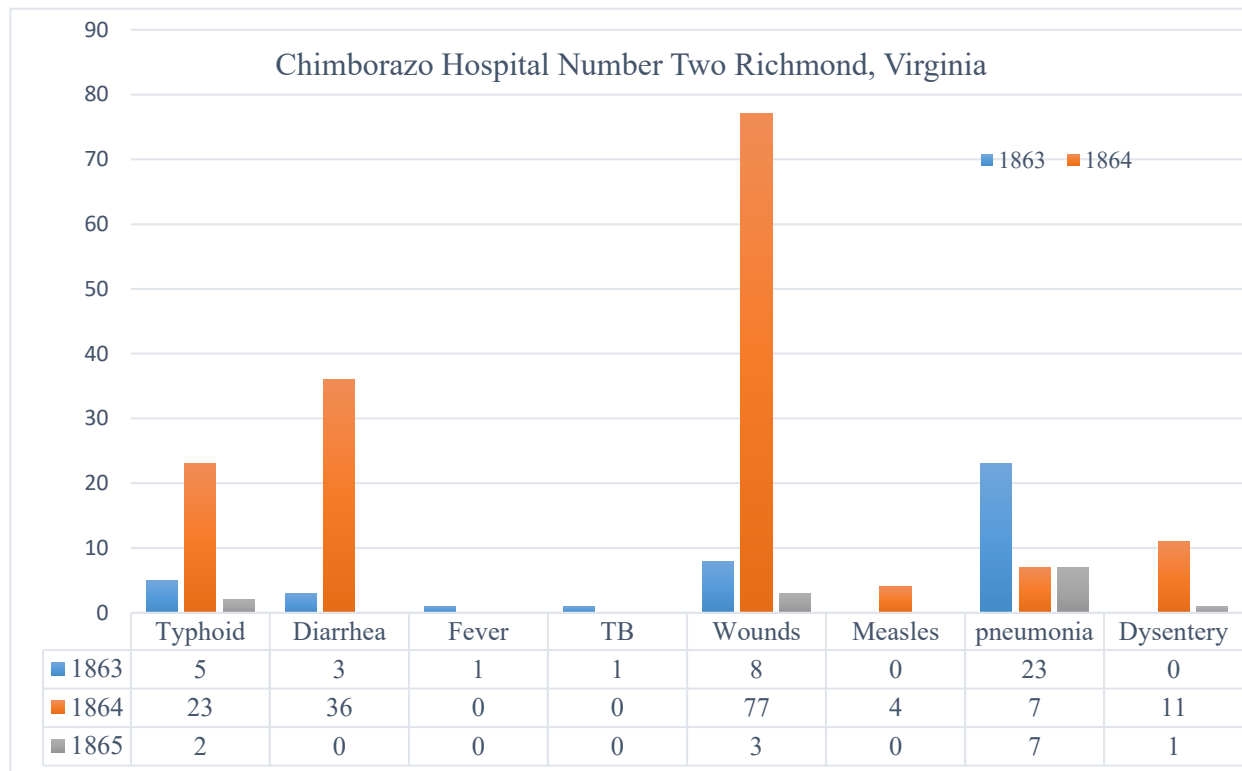
Notes: Starts in Aug 64. One death noted as death from diarrhea with typhoid in parenthesis- probably died of diarrhea because of typhoid- 1864 (page 303). Page 350 rubella typhoid recorded- counted as typhoid- also on page 401, 405. Page 363 documented death from diarrhea because of typhoid- 1865. 2 cases of spiral meningitis record 1865; fever from typhoid and pneumonia listed as cause of death page 383- counted as typhoid. March 11, 1864 increase in wound count. Only records recorded from 289-412. (Chapter IV, VOL. 290). 1861-1863 and some of 1864 recorded from record book disposition of cases in Pettigrew hospital number 13 1553996 vol. 395. Iniquitous recorded, page 3; pg. 7-8 lists over 40 cases of a combination of typhoid pneumonia and pneumonia. Two cases of measles/typhoid combo as cause of death on pg. 11- counted as measles as it is listed first. Same page, diarrhea, erysipelas, and pneumonia listed in combination as a cause of death- counted as bac. infect. as it is listed first- others listed were most likely symptoms or caused by the principle bac. inf. Another listed as diarrhea and pneumonia, counted as diarrhea as it is listed first. Several cases of diphtheria in both volumes and others in this region- not counted in these totals but worth noting. pg. 13- remittens typhoid counted as Measles.

Appendix D-8. Chimborazo Hospital Number One- Richmond, VA (CSA)

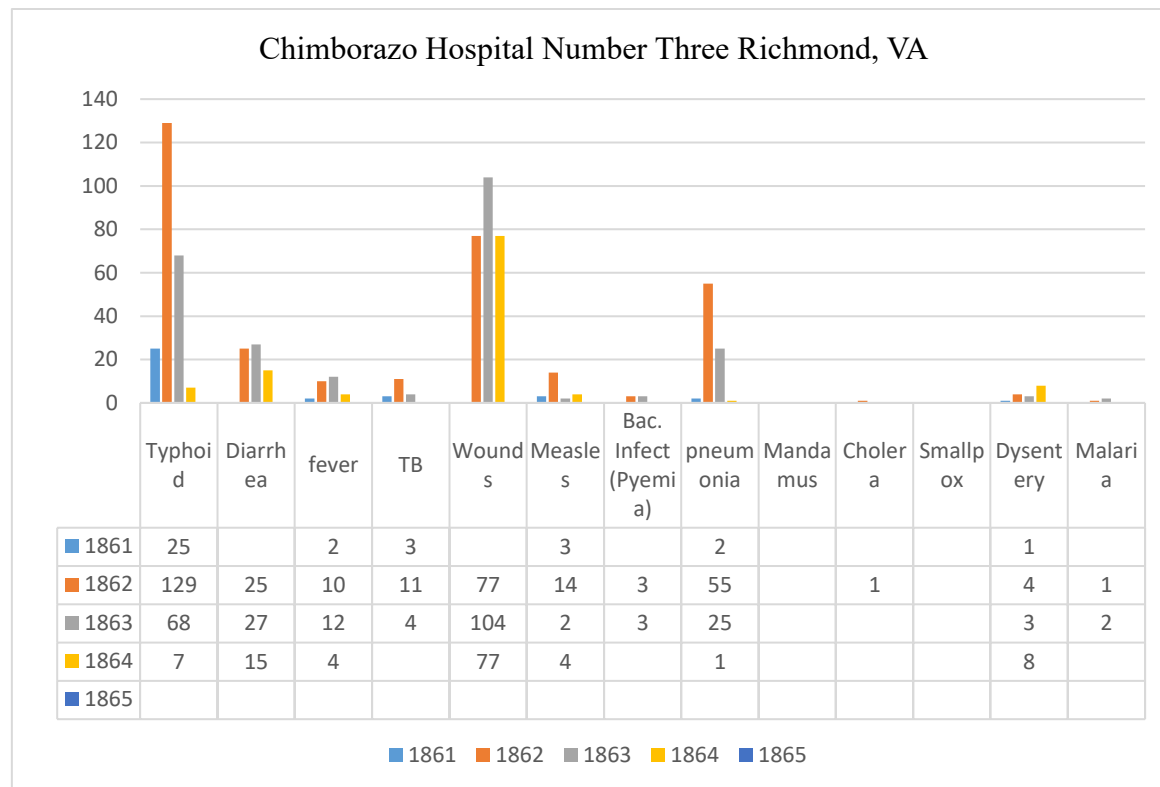


Notes: Records unorganized, missing information and organization was split into five hospitals that would have made up the complete Chimborazo Hospital. Called one hospital because of its location on Chimborazo Hill in Richmond, VA. Notable cases of typhoid- far more over the numbers of wounded. Diarrhea is the second highest cause of fatality, still before wounds. Third, pneumonia. No cases of smallpox or malaria.

Appendix D-9. Chimborazo Hospital Number Two- Richmond, VA (CSA)

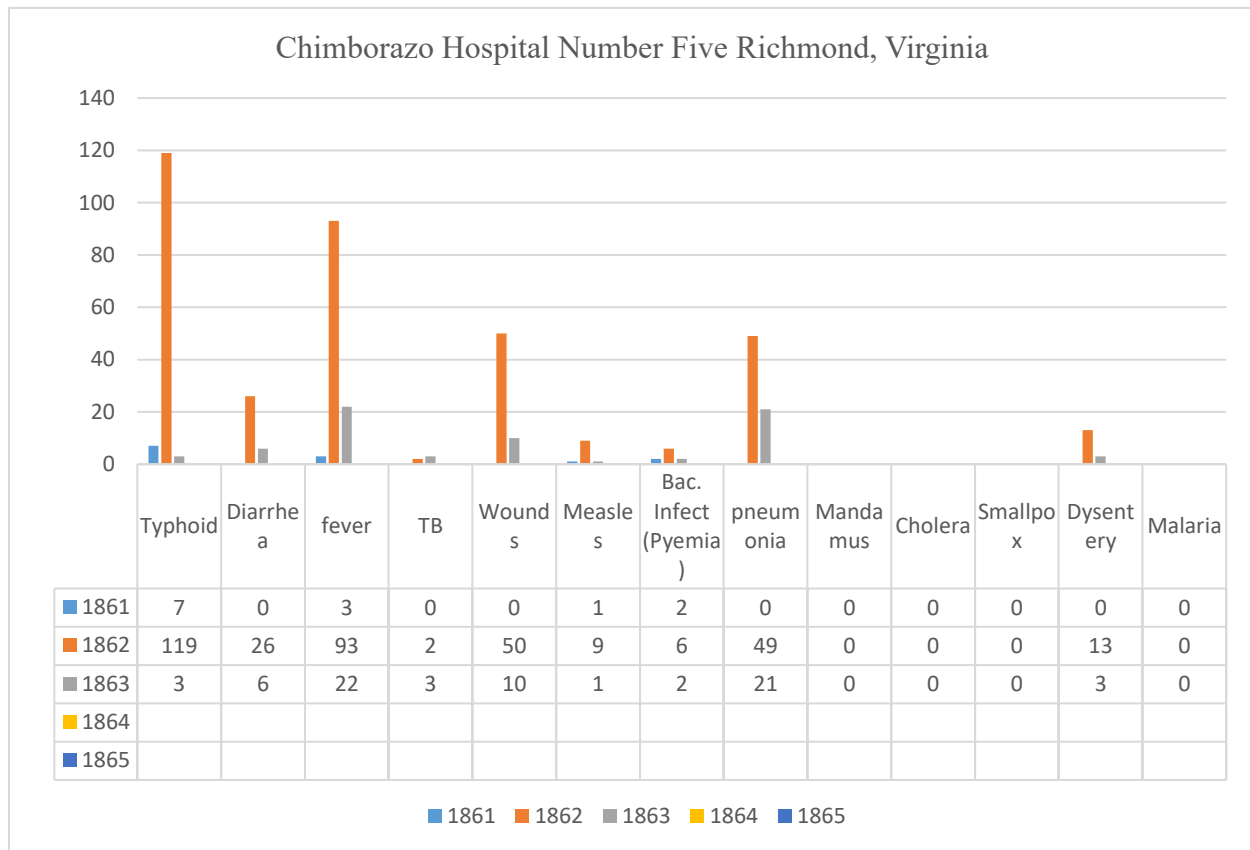


Appendix D-10. Chimborazo Hospital Number Three- Richmond, VA (CSA)



Notes: 1592894 vol. 19 64-65; majority of the book is empty with no indicators when/if the year changed from 64-65. Vol. 53 63-65. Pages record deaths but list no cause of death for any of the patients starting in Sept. 64. 65 is almost completely unusable as there are no listed causes of death, just listed as dead, 16 in 1865- book ends in Mar. 65. 1592894 vol. 21 1861-1862- starting in March, not many causes of death listed, several listed as died with no further information- picks up again in May with documented causes of death. 1592894 vol. 64- another 61-62 patient register- did not survey for fear of duplicate fatalities, inside cover says to look to vol. 105 for continuation of documentation for hos. no 3 in accordance with last book. 1592864 vol. 62 is copy of patients alphabetically, not surveyed as fatalities are duplicates. 1592894 vol. 101 said to be duplicate of information found in vol. 53 however, volume includes very little information. 1592894 vol. 69 patient register for rest of 62-summer 63. Several cases of typhoid pneumonia recorded as typhoid, two cases of malaria, several meningitides, not counted. 1592894 vol. 88 63-65 incomplete, front index states it is a copy of some records in alphabetical order- n/v. 1592894 vol. 105 continuation of 1863-63 register- one case of typhus recorded, counted as typhoid. Several pages in March 63 with no cause of death listed. 1592894 vol. 226 duplicate of information in vol. 53 and 69.

Appendix D-11. Chimborazo Hospital Number Five- Richmond, VA (CSA)



Notes: 1593132 vol. 23 register of patients Chimborazo hos. Number 5 vol. 17- 63-64. vol.75 64-65, vol. 70, 20.

Appendix E. Garrison Records and Gravesite Photo- Presumed to be Syllas M. Garrison Jr.

537

Garrison S. M.
Co. C, 9 Alabama Infantry.
(Confederate.)

Private Private

CARD NUMBERS.

1	4457853	30
2	5108799	
3		31
4		32
5		33
6		34
7		35
8		36
9		37
10		38
11		39
12		40
13		41
14		42
15		43
16		44
17		45
18		46
19		47
20		48

Number of medical cards herein 2

Number of personal papers herein

BOOK NAME:

See also

(CONFEDERATE.)

6 | 9 | 1867

Disease *Syphilis skin*

Admitted *Mar 2* 186*7*.

Returned to duty 186 ..

Deserted 186 ..

Discharged 186 ..

Furloughed 186 ..

Died *Apr 24* 186*7*.

Remarks:

Confed. Arch., Chap. 6, File No. 21, page 36.

Bouché

(625) 4215 Copyist.

(CONFEDERATE.)

5 9 100

J. M. Harrison

Private 9 Reg Ala

Appears on a

Report of Sick and Wounded

in Chimborazo Hospital No. 3,
at Richmond, Va.,
for the month of april, 1862.

Discharges on Surgeon's Certificate and Deaths:

Disease Pneumonia

Date of discharge 1, 1862
from service,

Date of death april 24, 1862

Remarks:

Book mark:

H. Barton copyist.

(648) 2612

(CONFEDERATE.)

G *9* *Ala*

Silas M. Garrison
Co. 9 Regt

Name appears on a _____

Register

of Claims of deceased Officers and Soldiers from
Alabama which were filed for settlement in the
Office of the Confederate States Auditor for the
War Department.

By whom presented *A. M. Garrison*

When filed *July 6*, 186*3*

Where born _____

Where died *Knoxville, Tenn*

Comptroller: _____

When reported to _____, 186*3*

When returned _____, 186*3*

Number of settlements: _____

Certificates _____

Report _____

Amount found due _____

By whom paid _____

No. of Paymasters' Settlements _____

Abstract and No. of Voucher _____

Confed. Arch., Chap. 10, File No. 30, page *71*.

O. T. Taylor

(4-3) 3012 Copyist.



Appendix E-1. Garrison Records Presumed to be Syllas M. Garrison

Garrison, Syllas M
Co. G, 51 Alabama (Partisan Rangers).
Confederate.
Private Private
See also

GENERAL INDEX CARD.
This card must not be taken from the files.
(282) 647

(CONFEDERATE.)
G. 51 Ala. Ala.
Syllas Garrison
Co. G, 51 Regt. Ala. Cav.
Name appears on a
Register*
of Officers and Soldiers of the Army of the Confederate States who were killed in battle, or who died of wounds or disease.
Where born
When deceased *Mar. 16*, 1863.
Where and from what cause
St. Mary's Hosp. Ga.
Amount of money left *95.10*
Effects *Sundries*
In whose charge *Council of Admin.*
When received , 186 .
Number of certificate
Remarks:

*This register appears to have been compiled in the Adjutant and Inspector General's Office from returns furnished by Hospitals and by Regimental and Company Officers.
Confed. Arch., Chap. 10, File No. 2, page 75.
W. B. Brinkman
(886) 3614 Copyist.

(CONFEDERATE.)
G. 51 Cav. Ala.
Syllas M. Garrison
Co. G, 51 Regt. Ala. Cav.
Appears on a Register of
St. Mary's Hospital,
Dalton, Georgia.
Complain *Rebecca Marshall Garrison*
Admitted *March 13*, 1863.
Returned to duty , 186 .
Deserted , 186 .
Discharged from service , 186 .
Sent to General Hospital , 186 .
Sent to other hospitals , 186 .
On furlough , 186 .
Died *March 16*, 1863.
Remarks: *Lt. 1 Regt. 2 boats*
Shells 1 pr. 20 ch. 8
Book # 95.10

See on Register
Confed. Arch., Chap. 6, File No. 4, page 10.
Q. T. Taylor
(635) 3097 Copyist.

(CONFEDERATE.)
G. 51 Cav. Ala.
Syllas M. Garrison
Co. G, 51 Regt. Ala. Cav.
Appears on a
List
of effects left by deceased soldiers
in St. Mary's Hospital,
at Dalton, Ga.
List dated *Dalton, Ga.*
May 1, 1863.
Admitted *Mar. 13*, 1863.
Died *Mar. 16*, 1863.
Money \$ *95.10*
Remarks:

Book mark:
A. S. Sanders
(652) 1097 Copyist.

Appendix E-2. 1860 Garrison Census Records

Page No. 53²⁶ 289

SCHEDULE 1.—Free Inhabitants in 5th *Malden District* in the County of *Banks* State of *Georgia* enumerated by me, on the 20th day of *July* 1860. *Lewis Crocker* Ass't Marshal

Post Office *Webbs Creek*

1	2	3	DESCRIPTION.			7	VALUE OF ESTATE OWNED.		10	11	12	13	14
			Age	Sex	Color		Value of Real Estate	Value of Personal Estate					
1		<i>Novel, W. Garrison</i>	6	M					<i>Georgia</i>				
2		<i>William H. Garrison</i>	4	M									
3		<i>Louisa L. Garrison</i>	2	F									
4		<i>Kenneth C. Garrison</i>	12	M									
5	420	<i>Henry A. Baker</i>	51	M		<i>House keeper</i>		12	<i>Georgia</i>				
6		<i>William A. Baker</i>	11	M								(1)	
7		<i>Larkin L. Baker</i>	9	F								(1)	
8		<i>Mary M. Baker</i>	8	F								(1)	
9		<i>Martha A. Baker</i>	7	F								(1)	
10		<i>Mary E. Baker</i>	6	F								(1)	
11	421	<i>Nicholas M. Garrison</i>	38	M		<i>Farmer</i>	200	355	<i>Georgia</i>				
12		<i>Mary H. Garrison</i>	38	F		<i>House keeper</i>							
13		<i>Louisa L. Garrison</i>	12	M								(1)	
14		<i>Mary A. Garrison</i>	10	F								(1)	
15		<i>Catharine H. Garrison</i>	8	F								(1)	
16		<i>John H. Garrison</i>	6	M								(1)	
17		<i>Mary C. Garrison</i>	4	F									
18		<i>John C. Garrison</i>	2	M									
19	422	<i>Dillon M. Cotton</i>	58	M		<i>Miller</i>		100	<i>Kentucky</i>				
20		<i>Clary Cotton</i>	49	F		<i>House keeper</i>			<i>Georgia</i>			1	
21		<i>Giles Cotton</i>	21	M		<i>Farmer</i>							

Appendix F. Prescription Book Transcription for Chimborazo Hospitals Numbers One Through Five

<u>Rx Book- Chimborazo Hosp. 1-5 Cases and Treatments (Pharmacist Tally)</u>	<u>Oct. 1864</u>	<u>Nov. 1864</u>	<u>Dec. 1864</u>	<u>Jan. 1865</u>	<u>Feb. 1865</u>	<u>Mar. 1865</u>	<u>Total Cases</u>
Typhoid	1	0	0	1	2	3	7
Diarrhea	23	5	19	6	16	264	333
Fever	22	12	6	6	15	19	80
TB	0	0	1	0	3	12	16
Wounds	57	20	20	10	40	76	223
Measles	1	0	1	1	3	1	7
Bac. Infec.	0	0	0	0	0	0	0
pneumonia	2	3	4	1	11	32	53
Mal nourishment (mandamus)	0	0	0	0	0	0	0
Cholera	0	0	0	0	0	0	0
Small Pox	0	0	0	0	0	0	0
Dysentery	35	5	6	0	1	0	47

Notes: Found in Ch. VI, Vol 322- National Archives, Washington, D.C.

Appendix G. Petition from Charlottesville General Hospital to President Jefferson Davis

7216
copy of Petition
attention of
7216-1861

Charlottesville, Sep. 3rd 1861

To His Excellency
Jefferson Davis,
Pres. Confed. States, America:—
Dear Sir

We would humbly pray
you to come to our help. Disease is wasting away
the glorious army of the Potomac. We have lost
10 times as many men by sickness as by warfare.
We come to you because we regard you as our great
chief, who is able and willing and anxious to reform
all abuses. What more enormous abuse than this
— one fifth of the army sick and no additional
means used to prevent the spread of the fearful
pestilence! We humbly protest that three fourths
of the surgeons of the army are wholly unfit for
their positions — especially those who have been trans-
ferred into the Confederate service from that of the
State of Virginia and who were all appointed for
political reasons and not with a view to their quali-
fications. The lives of hundreds of brave men
will lie at the door of the men in authority who
let such base motives influence them in a matter
so vital to all our interests. — These surgeons have
not ordered nor enforced the most ordinary sani-
tary requirements. — But the comfort of the

army and their health is entrusted to other hands also. The Quartermaster's & Commissaries are (many of them) inefficient, dis-obliging & seem to seek their own comfort rather than to do their duty to the army. These abuses may be hard to reform & we do not attempt to suggest any method, leaving it to your better judgment and information. One special abuse we would mention, whether lying at the door of the Quartermaster's Department or not we know not. Boxes of food, clothing &c are often forwarded to the suffering soldiers in camp by their friends, and not one in ten ever reach their destination. Hundreds and thousands are stolen from off the very platform of the depot at Manassas. If not the duty of the Quartermaster's Department, we would humbly and earnestly entreat you to appoint or authorize some one, as agent, to take care of these things and forward them to their proper recipients. The pay of such an agent might depend upon the amount of business he would do (which would be immense) raised by a reasonable & small tax upon each package delivered. Such a movement would be the most popular ever known and would conduce immeasurably to the comfort and content of the soldiers and to their health. The comfort & content of the soldiers is no small matter to you, for we solemnly

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assure you that with the present suffering and discontent not one third of the army will be disposed to volunteer again at the expiration of their term of service. Hence their present service is thus made an unwilling one & therefore less effective than it might be.

We would, besides, humbly call your attention to another matter and a most important matter. We believe ours is the only army of modern times that attempts to cook its own wheat bread. Whether so or not, this is a grand mistake. The horrid mixtures which pass in our army for bread are enough to destroy the health of any army that uses them. There is not one man in the whole army that would not infinitely prefer his rations in hard bread, prepared in Richmond by good professional bakers. Such a change would be received with shout by multitudes of suffering men and grateful thanks would be rendered to the man who shall effect it. This bread forwarded from Richmond would even at the distance of a week or more from baking surpass the present food as ambrosia surpasses the vilest food of the beggars. We earnestly pray God that the army may have reason to hail your name as their great friend & deliverer in this respect. — Many of those signing this petition trace their suffering (some from diarrhoea some from dysentery & many from typhoid fever) to this horrid bread. Typhoid fever is fast becoming the scourge and dread of the army and this awful fare is the main and true source of this disease.

Letters Received

War Dept.

We humbly pray your favorable attention to our petition. Most respectfully

J. R. Wheeler

J. C. Watson

A. V. Chandler

Wm. Edwards

R. J. Jones

Chas. Lee

H. A. Munford

J. A. Ward

Wm. Riop

A. C. Coombs

J. T. Kavin

P. S. Carter

Wm. Vincent

Wm. Carter

J. L. Madison

M. V. Williams

C. Carter

Miss Jones

Louis Linford

J. S. Etheridge

J. C. Caswell

William Daniel

Charles W. Morn

Edward D. Carington

H. V. Taylor

Peter Minter

Jos. Jackson

Harry Miles

A. T. Baldwin

Byron W. Smith

Alb. W. Manning

J. E. Carothers

Jos. Lacy

Philip Steans

Appendix H. Letter from P.B. Scott addressed to the surgeon in charge at Shelby Springs
hospital, Shelby Springs, Alabama

