AN ANALYSIS OF THE HEALTH SERVICE SUPPORT TO THE CENTENNIAL CAMPAIGN OF 1876

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JOHNNY W. SANDERS, MAJOR, US ARMY
B.A. Tennessee Technological University, Cookeville, Tennessee, 2003
M.B.A., TUI University, Cypress, California, 2009

Fort Leavenworth, Kansas
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The Centennial Campaign of 1876 is a valuable example of warfare between the US and Native Americans. Originally conceived as a punitive campaign, three columns of combined cavalry and infantry units under the overall command of General Phillip Sheridan converged on the Sioux and Cheyenne Indian hunting grounds with the goal of subduing recalcitrant groups. The campaign included two of the largest battles fought during the Plains Indian Wars and consequently the largest casualty rates before its close in September of 1876. Supporting each column was a skeleton of the health service support system that evolved during the Civil War.

This thesis evaluates the health service support provided to the Centennial Campaign units, primarily those engagements leading up to and immediately after the Battle of the Little Big Horn. It also addresses how leadership decisions and philosophies influenced medical planning. The major aspects of health service support are analyzed from the viewpoint of current medical planning doctrine and assessd based on the health service support structure and techniques developed during the Civil War. This analysis provides a focused and holistic view of health service that is absent in the major studies of the Centennial Campaign of 1876.

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THESIS APPROVAL PAGE

Name of Candidate: Major Johnny W. Sanders

Thesis Title: An Analysis of the Health Service Support to the Centennial Campaign of 1876

Approved by:

_____, Thesis Committee Chair
Tony R. Mullis, Ph.D.

_____, Member
Marlyn R. Pierce, Ph.D.

_____, Member
Major Wade D. Jackson, Sr., M.S.

Accepted this 12th day of June 2015 by:

_____, Director, Graduate Degree Programs
Robert F. Baumann, Ph.D.

The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

AN ANALYSIS OF THE HEALTH SERVICE SUPPORT TO THE CENTENNIAL CAMPAIGN OF 1876, by Major Johnny W. Sanders, 82 pages.

The Centennial Campaign of 1876 is a valuable example of warfare between the US and Native Americans. Originally conceived as a punitive campaign, three columns of combined cavalry and infantry units under the overall command of General Phillip Sheridan converged on the Sioux and Cheyenne Indian hunting grounds with the goal of subduing recalcitrant groups. The campaign included two of the largest battles fought during the Plains Indian Wars and consequently the largest casualty rates before its close in September of 1876. Supporting each column was a skeleton of the health service support system that evolved during the Civil War.

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My understanding of the health service support to the Centennial Campaign of 1876 reflects the efforts these consummate professionals made to support me. Any inaccuracies or omissions resulting from this research are mine alone and not from them.

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CHAPTER 1

INTRODUCTION

The Centennial Campaign of 1876 differed greatly from the campaigns fought during the Civil War. The Centennial Campaign saw infantry and cavalry forces engaged in battles against indigenous forces instead of a symmetrical and conventional enemy. The campaign itself encompassed operations far from logistic depots and the Army relied on expeditionary techniques to overcome this limitation. Although the expeditionary nature of the campaign differed from the Civil War army, the medical requirements were similar- sick and wounded soldiers still required medical treatment and evacuation. Because these medical requirements existed, the Army Medical Department resourced the 1876 campaign's capabilities to sustain the health and medical readiness just as it had sourced Civil War units. One example of the similarities included the government's hiring of contract surgeons to augment military surgeons in order to remedy the assigned health care provider deficiencies.

The thesis's goal is to examine the health service support provided to the Centennial Campaign units, primarily leading up to and immediately after the Battle of the Little Big Horn. The Battle of Little Big Horn produced the largest number of US Army casualties during the campaign. This study describes the conditions of the frontier posts and medical care provided there, how surgeons dealt with disease and non-battle injuries, how the army conducted casualty evacuation and the influence of leadership decisions and philosophies on medical planning. The major aspects of health service support will be analyzed from the viewpoint of current medical planning doctrine and

contrasted against health service support structure and techniques developed during the Civil War.

Primary Research Question

Was the health service support system(s) for the US Army forces under General Phillip Sheridan during the Centennial Campaign of 1876 leading up to and immediately after the Battle of the Little Big Horn sufficient to meet the requirements given the campaign's environmental and political conditions?

Secondary Questions

What factors influenced the number and type of medical personnel assigned to support the cavalry and infantry on the Centennial Campaign?

Why were the concepts, techniques, and structures created during the Civil War discontinued during the Centennial Campaign?

What medical capabilities were available on frontier posts that were not available to units when conducting field operations?

What types of preventive medicine did surgeon's practice in sustaining the health of the command and what types of disease/ non-battle injuries did they treat?

What were the tactics, techniques and procedures for evacuating and moving patients? What factors influenced where they were evacuated to?

What medical capabilities (supplies, instruments, evacuation assets, and medicines) did surgeons use to perform their duties during the Centennial Campaign?

Assumption

Medical planners can gain valuable insights from the medical operations associated with the Centennial Campaign Health Service Support System. This is especially true of needed capabilities following a major force drawdown. By 2017, the US Army will have gone through a significant force reduction after over a decade of war in two theaters of operation. Like the post-Civil War demobilization, the current health system reductions may have implications on future operations. Looking specifically at the number of assigned medical personnel, medical supplies and equipment availability, evacuation techniques employed, and medical treatment (to include preventive medicine) provided to the soldiers in the units conducting Centennial Campaign of 1876, there were gaps that existed in medical capabilities based on the standards that existed at the end of the Civil War. This thesis seeks to identify and explain why those gaps existed.

Definitions

According to current medical planning doctrine, the term "health service support includes all services performed, provided, or arranged by the Army Medical Department to promote, improve, conserve, or restore the mental or physical wellbeing of personnel in the Army and, as directed, in other Services, agencies, and organizations."[1] The term services, in a broader context, includes the movement of casualties or patients. The term Medical evacuation, as used in this study, refers to the movement of a casualty or patient with and without the aid of medically trained personnel.

Background

The Army Health System developed during the Civil War established the standards and processes for medical care that endured after the conflict. During the Civil War, the Surgeon for the Army of the Potomac, Major Jonathan Letterman, implemented several programs that contributed to a more effective treatment and evacuation system for wounded soldiers. The Union army employed these programs as early as 1862 and they served as the health service support standard until 1865. While many of the laws enacted to implement Letterman's techniques expired shortly after the war's end, the concepts and medical assets (ambulances) endured even if the army did not use them for their designed function. In the post-Civil War era, the US Army Medical Department experienced the same reductions in capabilities as other military departments did. These reductions affected the medical readiness of the cavalry and infantry forces fighting in the Centennial Campaign of 1876, which included the Battle of the Little Big Horn and the Battle of the Rosebud.

The Centennial Campaign of 1876 was a punitive campaign against the Sioux Indians for hostilities against civilians passing through their traditional home lands in what is today North and South Dakota.[2] Ironically, the United States government triggered the hostilities. President Grant's administration attempted to relieve the Army of the task of removing trespassers on the Great Sioux Reservation in accordance with the Fort Laramie Treaty of 1868. In doing so, it believed the Sioux Indians would retaliate to protect their sacred Black Hills and the gold the trespassers sought. To prevent further hostilities, the administration directed the Sioux report to reservations by the end of

January 1876. When this deadline passed, those Sioux who had not reported became, "hostiles." President Grant authorized and directed the Army to subdue them.

The US Army offensively fought the campaign. The defending Indians held an advantage over the army because of their superior knowledge of the terrain. Because the "hostiles" were a nomadic culture, engagements occurred without accurate intelligence of their location. The defenders knew the terrain that offered the best battlegrounds as well as where to retreat.[3] The army's initial plan called for the campaign to commence in late winter/early spring of 1875/1876. Due to an unusually long winter and harsh weather, however, the major expeditions did not begin until the April/May timeframe of 1876.

General Phillip Sheridan crafted a total war strategy against the Indians. The army had waged total war as early as 1868 when Lieutenant Colonel George A. Custer attacked Black Kettle's Cheyenne village at Washita, Indian Territory. The tactics associated with this "total war" approach consisted of "converging columns, relentless pursuit, dawn attacks on villages, destruction of personal possessions . . . absolute surrender, and the subsequent incarceration of prominent chiefs."[4] Originally two military departments–the Department of the Platte (led by General George Crook) and the Department of the Dakota (led by General Alfred Terry)–planned to maneuver, block, and strike in the area known to be Sioux hunting grounds in order to subdue the recalcitrant fugitives.

The Dakota Column, assigned to the Department of the Dakota, departed from Fort Abraham Lincoln, North Dakota in May 1876. Prior to its departure, General Terry realized the benefit of adding a third column, the Montana Column, commanded by Colonel John Gibbon (also part of the Department of the Dakota). This element would converge on the Sioux hunting grounds from the west. Of the two columns in the

Department of the Dakota, Gibbon's column was the least resourced and numerically the smallest consisting of approximately 436 soldiers. It departed from Fort Ellis, Montana in April with only one assigned surgeon.[5] Terry's concept for the two columns from the Department of the Dakota called for Colonel Gibbon to patrol along the Yellowstone River to block a northwest escape while the Dakota Column, (under Lieutenant Colonel George A. Custer's command) would prevent a northeastern escape.[6]

At the end of May, the Department of the Platte (also known as the Wyoming Column or Crook's Column) departed Fort Fetterman, Wyoming and headed north to the rendevous location.[7] Crook's Column was the most resourced of the three: it consisted of over 1,000 soldiers. Additionally, three surgeons supported the headquarters under the charge of Acting Surgeon Curtis E. Munn. Figure 1 depicts the overall scheme of maneuver and supposed location of the Sioux.[8]

The campaign would be one of the largest military operations conducted since the Black Hills Expedition of 1874, where Custer led the 7th Cavalry on an area reconnaissance. Its operations extended as far as 300 or more miles from the nearest logistics support area. In some cases, steam ships operating along the river network re-supplied the campsites. Dwarfed only by Civil War battles such as Gettysburg and Antietam in the number of combatants involved, the outcomes of the Battle of the Rosebud and the Battle of the Little Bighorn stunned the US government and the American public alike.

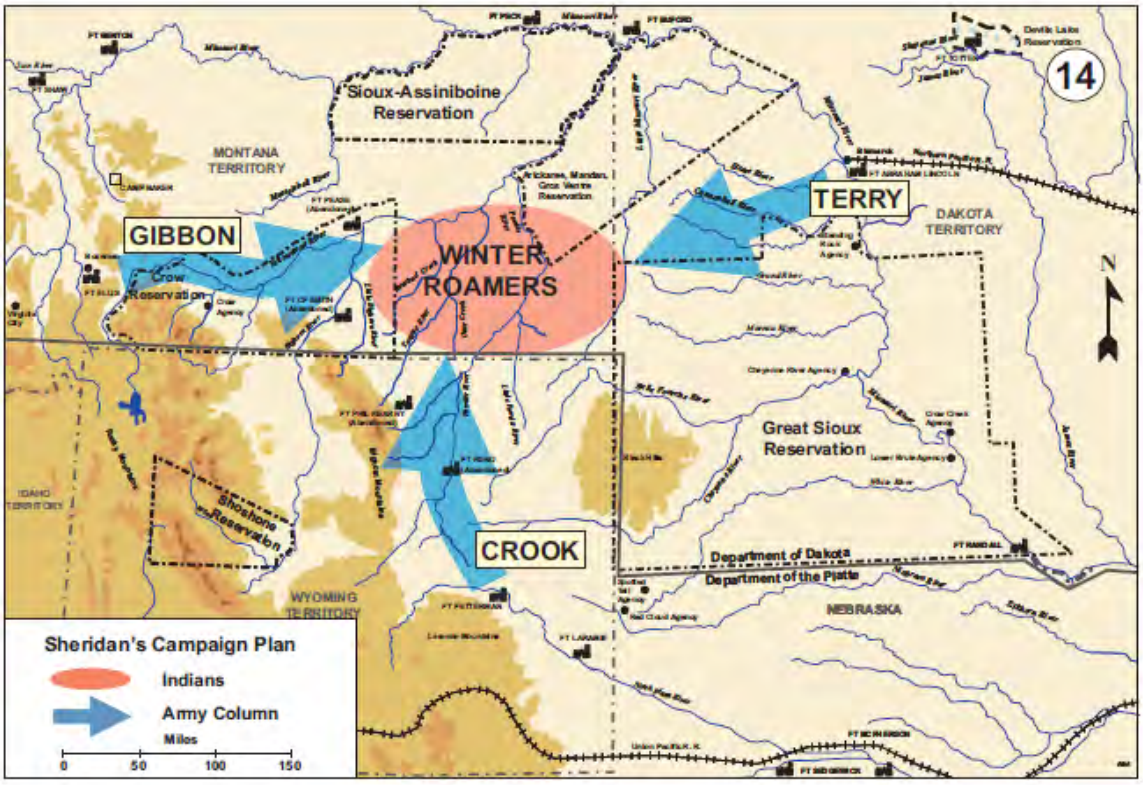

Figure 1. Centennial Campaign Plan

Source: Charles Collins, Jr., *Atlas of the Great Sioux Wars*, 2nd ed. (Ft Leavenworth, KS: Combat Studies Institute Press, October 2006), 43.

The Battles of the Rosebud and Little Big Horn occurred in June 1876, one month shy of the country's centennial. Together, the two battles produced the highest number of American casualties than any single similar engagement between the US Army and Plains Indians between 1865 and 1890. On June 17, 1876, General Crook and his Wyoming Column engaged approximately 750 Sioux warriors near the Rosebud River in gruesome fighting that left approximately 70 soldiers wounded. Crook's men and scouts fought for approximately six hours as the battlefield expanded after initial attack near the Rosebud River. Paul Hedren noted, "With perhaps two thousand combatants on the field,

the Battle of the Rosebud was the largest engagement of the Great Sioux War and had pivotal consequences."[9] Criticized by author John S. Gray for failing to pursue the Indians and assign a detail to evacuate his wounded securely, Crook ultimately returned to Fort Fetterman to await reinforcements before resuming the offensive. In Gray's opinion, Crook had the means to pursue.

Eight days after the Battle of the Rosebud and approximately 35 miles away near the Little Big Horn River, Lieutenant Colonel Custer along with approximately 263 soldiers under his command met some of the same warriors from the Rosebud fight in a battle that ultimately cost them their lives.[10] General Terry delegated the command of the Dakota Column to Custer to pursue the Indians near the Little Big Horn River on June 22, 1876. Gibbon's Column advancing to the south would support Custer's maneuvers.[11] Based on Indian scout intelligence, Custer divided his command into three separate units. He attacked and "struck an unreconnoitered, massive Sioux village on the afternoon of June 25."[12] The Battle of Little Big Horn lasted two days along a four-mile battlefield. After Custer's forces had initiated the battle, Hedren noted, the Indians "seized tactical advantage and put these companies on the defensive until they were neutralized or destroyed."[13] Prior to the battle, Custer re-assigned his three surgeons taking with him the only regular army surgeon, First Lieutenant George E. Lord. Two of the surgeons (including Lord) died in battle and the surviving surgeon, a contract surgeon named Dr. Henry Porter, bore the brunt of treating the casualties. Porter alone cared for the casualties for almost three days without rest until Gibbon's Column provided relief.

The Centennial Campaign of 1876 is not as renowned as the two popular battles that occurred during its conduct. When viewed holistically and not just tactically, other

military blunders in addition to the Custer criticisms are revealed. Colonel Gibbon failed to act on accurate intelligence and General Crook waited too long for reinforcements to engage a fleeing enemy. But when the tactical and operational threads are assessed, issues with sustainment emerge that are relevant to medical planners in the Army of 2015. The campaign's leadership did not anticipate the actual number of casualties. At that time, no formula or science existed to obtain such an estimate. When the casualties occurred, the process to treat and evacuate the wounded was reactionary at best. Because of the campaign's scope, the operational area, and the fiscal challenges the army faced during that time, the health service support poorly served the campaign units in providing "good" medical care.

From a historiographical context, few works exist that examine the health service support of the campaign holistically. Author Joan N. Stevenson in *Deliverance from the Little Big Horn: Dr. Henry Porter and the Seventh Cavalry*, provides excellent insight into Porter's struggle to treat patients under combat conditions at the Battle of the Little Big Horn as well as the particulars of serving as a contract surgeon during that time. Author's John S. Gray in *Centennial Campaign: The Great Sioux War of 1876* and Paul L. Hedren in *Great Sioux War Orders of Battle* both address the casualty statistics associated with the campaign extensively but offer little in terms of describing the circumstances behind their treatment or prevention.

In 1877, Surgeon General Joseph K. Barnes directed Assistant Surgeon General George A. Otis to conduct a study into the methods used to transport casualties by pack animals. The goal of the study was to determine if the Army Medical Department could develop a standard method for evacuating wounded and field necessary equipment but

yielded no significant results. The *Report on Hygiene of the United States Army*, taken from Circular No. 8 of the Office of the Surgeon General, provides insight into the conditions of the frontier posts and the hospitals that serviced the soldiers prior to the campaign. This study, however, fails to mention any advancements or recommend remedies to diseases common at that time. Perhaps the most concise work on the health service support systems in place during the Plains Indian Wars is Mary C. Gillette's *The Army Medical Department 1865-1917.* This work dedicates an entire chapter to army medical department support to the army during the Plains Indian Wars, of which the Centennial Campaign is a small part.

This thesis examines the works listed above and focuses on the Centennial Campaign health service support systems. What sets this thesis apart from those works is the analysis and assessment, rather than just a statement of the facts on several aspects or sub-systems of health service support. This thesis uses these medical facts and applies current and past doctrinal standards to arrive at the conclusions discussed in Chapter Five. Of note to the reader, the author's access to primary source material such as personal papers of the campaign surgeons was limited. A majority of the conclusions reached in this study are drawn from evidence gleaned through secondary sources and guided by current army doctrine.

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[1] U.S. Department of the Army, Field Manual (FM) 8-55, *Planning for Health Service Support* (Washington, DC: Government Printing Office, 1994), A-1.

[2] John S. Gray, *Centennial Campaign: The Sioux War of 1876* (Fort Collins, CO: Old Army Press, 1976), 26.

[3] Paul Hedren, *Great Sioux Wars Order of Battle: How the United States Army Waged War on the Northern Plains, 1876-1877* (Norman: University of Oklahoma Press, 2012), 39-40.

[4] Ibid., 38.

[5] Ibid., 48.

[6] Gray, *Centennial Campaign*, 42.

[7] Hedren, *Great Sioux Wars Order of Battle*, 50.

[8] Charles Collins, Jr. *Atlas of the Great Sioux Wars*, 2nd ed. (Fort Leavenworth, KS: Combat Studies Institute, 2006), 43.

[9] Hedren, *Great Sioux Wars Order of Battle*, 52.

[10] The exact number of casualties varies depending on the source. The Surgeon General's Report of 1876 records 248 killed and 59 wounded for the Battle of Little Big Horn and nine killed and 23 wounded at the Battle of the Rosebud. John Gray noted in the *Centennial Campaign* there may have been some soldiers "slightly wounded" who did not require treatment or evacuation from the Battle of the Rosebud to bring the total casualty count to 70. Hedren noted that during this era it was common for those "slightly wounded" to not be reported as a casualty statistic, therefore he estimated conservatively 21 wounded at the Battle of the Rosebud in the *Great Sioux Wars Order of Battle*, 170, 212. Because of the extensive research on the topic and discrepancies with reports to the Surgeon General from the Medical Directors, Gray's casualty statistics from Chapter 24 of *Centennial Campaign* are depicted in the introduction.

[11] Hedren, *Great Sioux Wars Order of Battle*, 53.

[12] Ibid.

[13] Ibid., 176.

CHAPTER 2

CIVIL WAR HEALTH SERVICE SUPPORT: THE STANDARD

The US Army Health Service Support System that existed during the Civil War set the standard for the delivery of military healthcare that, essentially, is still utilized today. This holistic system which encompassed the assignment of medical personnel, field hygiene and sanitation (known today as a subset of preventive medicine) and hospitalization (to include re-supply lists) also included a robust medical evacuation process. The design and establishment of the system itself cannot be credited to any one individual. In 1862, Major Jonathan Letterman, the Surgeon for the Army of the Potomac implemented a series of improvements that revised some existing systems and created others. His efforts, under the supervision and support of Army Surgeon General Dr. William H. Hammond enabled US Army healthcare providers to treat patients across a continuum of care with the assistance of stewards, nurses and ambulance attendants. At the close of 1862, their efforts had established a system that included "150 General Hospitals staffed largely by contract surgeons, 400 stewards, 300 ward masters, 6,051 male and female nurses, 3,025 laundresses, and 2,017 cooks."[1] Working in concert with one another, this system of patient care provided treatment to numerous casualties delivered by a newly created ambulance corps, a subset of the entire health service support system. As the Civil War concluded, this system of systems continued to improve. It not only cleared the battlefields of large numbers of wounded soldiers but also improved the treatment of sick and injured. To achieve the best possible results in patient care, the Army Medical Department needed the most skilled healthcare providers and staff it could acquire.

Shortly after the Civil War began, the United States government recognized the need for additional Army medical personnel to staff hospitals and support fighting units as well. In July of 1861, Congress mandated the assignment of brigade surgeons to each newly formed brigade. Assigned surgeons had to pass an entrance exam.[2] Although this mandate served as an immediate response to build upon the Army's capacity to provide healthcare, it required more than just surgeons to meet the demands placed upon the medical department and fighting units. Eventually, the health care system expanded to include attendants, stewards, nurses and contract surgeons.

With the exception of surgeons (Army Medical Department surgeons as well as contract surgeons) nurses, stewards, and attendants primarily staffed hospitals. Army surgeons served in one of the many positions from brigade level to Corps Surgeon or they were assigned to hospitals. These surgeons had to pass an entrance exam and by 1862, they had to pass a medical examination board to ascertain their qualifications for service.[3] Often, these boards reached sobering conclusions on the competence of these "regular" medical providers. After the Battle of Fredericksburg, Major Jonathan Letterman ordered an examination board for seventeen officers. Three "were found competent and fourteen found incompetent to discharge the duties for which they had been commissioned."[4]

Contract surgeons primarily staffed Assistant Acting Surgeon positions and were exempt from the entrance exam. Contract surgeons, however, faced criticism in the early stages of the war because many lacked military and medical experience.[5] This criticism combined with a meager hiring offer of $100 a month made it difficult to recruit physicians to serve in the forward units and hospitals.[6] Contract surgeons received this fixed monthly pay, but the potential to earn more in private practice was unlimited.

Regardless, contract surgeons provided combat units with a critical capability and filled any gaps created by the vacancy of an acting army surgeon.

In addition to the question of provider competence, issues of organization and administration of surgeons in division level hospitals had plagued the Army Medical Department until 1862. On October 8th, Major Jonathan Letterman addressed these issues in a letter to the Commander of the Army of the Potomac, Major General George B. McClellan. This letter set the standard for the organization and administration of division hospitals and provided guidance for the assignment of regimental surgeons in field units. Major Letterman wanted to ensure the early intervention of qualified surgeons at the soonest possible moment in battle. In his letter he stated: "Previous to an engagement there will be established in each Corps an hospital for each division, the position of which will be selected by the Medical Director of the Corps."[7]

The establishment of the divisional hospitals provided structure to the hospital system. More importantly, it provided guidance to surgeons who provided care at the regimental level. Letterman's guidance stipulated their establishment at temporary depots from safe locations that enabled life saving measures at the soonest opportunity. He reminded Regimental Surgeons that "whilst no personal consideration should interfere with their duty to the wounded, the grave responsibilities resting upon them render any unnecessary exposure improper."[8] In addition to Letterman's guidance, the War Department provided refined guidance in September of 1862. General Order No. 126 specified "the organization of regiments and companies of the volunteer army of the United States: Regiment of Infantry-1 Surgeon, 2 Assistant Surgeons, 1 Hospital

Steward. Regiment of Cavalry-1 Surgeon, 1 Assistant Surgeon, 2 Hospital Stewards."[9] This standard remained unchanged throughout the war.

Although initially built upon a pre-existing skeleton of a system that grew in response to a congressional mandate, the Army Health Service Support lacked specific guidance on organization and administration. Letterman's modifications provided the additional direction required to staff and operate field hospitals as well as the expectations of Regimental Surgeons. Major Letterman made these modifications based on observations of the war's early battles and continued to make improvements in other areas such as field hygiene and sanitation (known today as a subset of preventive medicine), hospitalization (including re-supply) and the evacuation of casualties.

Environmental conditions affected the health of Union troops. The rigors and stresses of combat operations diminished a Soldier's ability to fight off infections and diseases. Because of the increasing operational tempo from the earlier to later stages of the war and the undesirable living conditions in many of the battlefields, large numbers of soldiers presented on the sick report due to non-battle injuries and illnesses. Even more troubling was the unknown number of soldiers who did not appear on sick reports because of non-battle illnesses. One culprit was scurvy. In his *Medical Recollections of the Army of the Potomac*, Letterman noted its significance: "This disease is not to be dreaded merely for the numbers it sends upon the Report of Sick; the evil goes much further, and the cause which give rise to it undermine the strength, depress the spirits, take away the courage and elasticity of those who do not report themselves sick, and who yet are not well."[10]

Whether presented on the sick report or not, non-battle injuries such as scurvy accounted for a decrease in fighting strength and negatively influenced field units. Major Letterman became concerned with these numbers and addressed the issue with subordinate Medical Directors stating that "more soldiers die by disease than by violence, and if a Medical Staff can secure their health, its officers contribute largely to the success of a campaign."[11] Letterman addressed the Adjutant General in 1862 concerning his observations on field hygiene and unit sanitary conditions.

The Adjutant published an extract of Letterman's concerns for Major General McClellan who then issued a directive to commanders for sound practices concerning field hygiene and sanitation. The original letter included several recommendations. For example, soldiers should not sleep on the ground if possible. Moreover, soldiers should rest during the body's natural sleep cycle, bathe once a week, bury or burn trash and bury any carcasses a minimum of four feet deep. [12] In this instance, subordinate commanders received medical direction through the chain of command under the expectation that it would be given greater attention. More often than not, subordinate commanders focused their attention on other matters of importance, such as reconnoitering the locations of enemy forces. Regardless of the lack of influence Medical Directors had on their commanders, Letterman reminded his subordinate Medical Directors that "prevention of disease is the highest object of medical science."[13]

Additionally, Letterman ensured the divisional hospital organization he established follow sound sanitation processes through periodic inspections. These inspections scrutinized both the field hospital's field hygiene practices and sanitary conditions for treating patients. Although regular army and contract surgeons at that time

did not practice aseptic techniques, elsewhere theories emerged based on the existence of microorganisms and their impact on surgical procedures. However, in nineteenth century Europe, surgeons experimented with aseptic techniques by sterilizing instruments, washing their hands before procedures, and exposing wounds to chemicals to prevent infection. Surgeons experimented with these practices based on the hypothesis that microorganisms that thrived in unsanitary conditions caused infections.[14]

In the US Army during the Civil War, the medical department placed more emphasis on ventilation and cleanliness than on sterilization. Regulation number 1280 from the 1861 Army Surgeon's Manual charged hospital surgeons to "promote health and prevent contagion, by ventilated and not crowded rooms, scrupulous cleanliness, frequent changes of bedding, linen, and etc."[15] In the field hospitals on American battlefields where amputation was the principle surgical technique, army surgeons demonstrated a lack of understanding of the theories developing in Europe at that time. Historian James McPherson stated, "The Civil War was fought at the end of the medical Middle Ages" and that the "medical revolution came too late to benefit them [army surgeons]."[16] Either way, Civil War surgeons did not practice sterile surgical procedures. Ironically, surgeons associated with the Centennial Campaign of 1876 did not practice these procedures either. However, conducting sanitary inspections and reporting the number of non-battle injuries on sick reports persisted into 1876.

Even after the army had adopted specific regulations in 1861, hospitalization, patient treatment, and medical supply continued to challenge surgeons from brigade level to Corps Medical Directors. In 1862, problems ranging from soldiers loitering at treatment facilities to frustrated medical re-supply techniques distracted surgeons from

performing the best possible patient treatment. These distractions often led to confusion on the battlefield. In addition to establishing the divisional hospitals, Major Letterman's efforts specified the duties and responsibilities of surgeons at each level based on his concerns that battlefield surgeons did not fully understand these responsibilities: "On the field of battle, where confusion in the Medical Department is most disastrous, it is most apt to occur, and unless some arrangement be adopted by which every medical officer has his station pointed out and his duties defined beforehand, and his accountability strictly enforced, the wounded must suffer."[17] As with the assignment of surgeons, Letterman's concerns eventually led to the establishment of divisional hospitals. Table 1, depicts the roles, duties, and responsibilities for the surgeons assigned to divisional hospitals on the battlefield for the Army of the Potomac (Surgeon-in-chief).

Table 1. Division Field Hospital Organization

Role	Duties and Responsibilities
Surgeon-in-Chief	Overall Responsibility
Acting Surgeon in Charge	Medical Officer in Charge, general superintendence, responsible to the Surgeon-in-Chief of the division for the proper administration of the hospital
Assistant Surgeon	Report to and be under the immediate orders of Surgeon in Charge, pitch hospital tents, provide straw, fuel, water, blankets, prepare houses (when utilized as hospitals) for reception of wounded, organize a kitchen utilizing hospital mess chests, kettles, tins, etc. taken from ambulances, prepare food from beefstock, bread, arrowroot, tea, etc. taken from ambulances and hospital wagons
Stewards	Placed under orders as necessary for the purposes of establishing the hospital under the direction of the Assistant Surgeon to Surgeon in Chief
Nurses	
Cooks	
Assistant Surgeon	Recordkeeping
Medical Officer 1	Perform Operations
Assistant to Medical Officer 1	
Medical Officer 2	
Assistant to Medical Officer 2	
Medical Officer 3	
Assistant to Medical Officer 3	
Additional Medical Officers	As Needed

Source: Jonathan Letterman, *Medical Recollections of the Army of the Potomoac* (New York: D. Appleton and Co., 1866), 58-63. Table created by author; represents a consolidation of the several points addressed by Dr. Letterman in his recollections leading to the establishment of divisional field hospitals.

Letterman's guidance provided additional direction for organizing field hospitals at the divisional but not the regimental level. In the regiments, surgeons organized themselves out of necessity rather than according to an established plan. In some cases, regimental surgeons who became overwhelmed with casualties combined their capabilities with other regiments to form an enhanced version of a regimental hospital. The Medical Director supervised the operation of these enhanced facilities, as Mary Gillett noted, "were in actuality something of a hybrid between the regimental and general hospital, more permanent than the former but less so than the latter."[18]

As haphazard as the regimental medical hospitalization was organized, re-supply methods often produced significant waste. Regulations had existed since 1861 that governed the management of medical supplies; however, Letterman promulgated additional instructions to the Medical Directors in the Army of the Potomac to reduce waste. Prior to Letterman's instructions, brigades received supplies sufficient for three months of normal operations. This left units with excessive supplies in areas that did not warrant much use.[19] Equally important to the guidance provided to brigade surgeons, an 1862 circular provided allocations to regimental surgeons and described the receipt procedures. Based on the allocations, each regiment in a brigade received "one medicine chest filled and one hospital knapsack for each regimental Medical Officer, filled."[20] Based on Letterman's calculations, these supplies sufficed for each regiment within a brigade for one month.[21]

The improvements to the health service support systems in 1862 enhanced the care of sick and injured. In the area of hospitalization, the concept of division level hospitals had been implemented while regimental hospitals adopted techniques and

procedures for treating large numbers of wounded. Letterman had provided guidance to reduce excess medical supplies and specified procedures for their issue. The complete picture of the health service support systems at the regimental level for cavalry can be summarized as follows: One Surgeon, two Assistant Surgeons, one Steward treating patients in tents without aseptic techniques (but relying on cleanliness and ventilation to prevent contagion) using a one month supply of equipment and medicines. This system of hospitalization, patient treatment, and disease prevention remained relatively unchanged by the end of the Civil War. The one subset that did change and had significant impacts was the medical evacuation system's establishment of the Ambulance Corps.

The Army Ambulance Corps did not exist in the early stages of the Civil War, however, regulations existed that governed the number of ambulances allocated per unit.[22] The medical department regulations illustrate one of the major issues concerning the management of ambulances. Both the Quartermaster and Medical Departments of the Army shared some type of ownership. From 1861-1862, a hodgepodge system of evacuating wounded existed that utilized every type of assistance on the battlefield from regimental musicians to cooks and even civilians. These non-combatants performed the duties of either litter-bearer or ambulance driver but could not be counted on to perform their duties in times of intense fighting.

To accomplish the task, soldiers left the fight to evacuate their wounded comrades to hospitals reducing the overall strength of combat units.[23] In the Army of the Potomac, Letterman observed these issues and developed solutions. General McClellan published Letterman's solutions to the evacuation system in his General Order No. 147 on August 2, 1862.[24] These solutions included provisions for attendants assigned specifically to the

ambulance system for evacuating wounded under the direction of line officers (not doctors or surgeons). This system enabled assigned personnel to circulate on and off the battlefield. The attendants also provided first aid to the wounded as necessary and evacuated them to the rear. To transport the wounded, the attendants used horse-drawn ambulances to move patients from the field to hospitals, rather than relying purely on litters or stretchers.[25]

The placement of the ambulances under the single control of the Medical Directors and the Army Medical Department was another significant improvement. Medical Directors emphasized the employment of ambulances for the purpose of evacuating wounded and not for the luxury or discretional use by line officers. Letterman recalled the initial success of this policy. "At the battle of Fredericksburg, on the 13th of December, 1862, this system was, for the first time, put into operation and severely tested, and, as will be seen hereafter, it satisfactorily met the demands made upon it."[26] Letterman's system was so successful that Congress eventually enacted General Order No. 106 in 1864 that established a formal Ambulance Corps. Table 2 depicts a summary of the ambulance allocations and responsibilities of the officers and attendants from the general order.

Table 2. Army Ambulance Corps, 1864

U.S. Army Ambulance Corps Structure 1864			
Unit/Level	Officer in Charge/ NCOIC	Allocations (# of Ambulances per)	Responsibilities
Army Corps	Captain	*(number of ambulances based on number of assigned Divisions)*	Commandant of Ambulance Corps for Army Corps assigned to, oversee drill, supervise maintenance of amblances and army wagons, ensure ambulances not utilized for other purposes; supervise evacuation from the field, report to Medical Director
Army Corps Headquarters		2 per Headquarters	
Division	1st Lieutenant	2 Army Wagons *(number of ambulances based on number of assigned Brigades)*	Acting Assistant Quartermaster, receipt for all Division ambulance and medicine wagons, serviceability of ambulance trains
	Medical Officer	2 per Division on the march	
	Steward		
Brigade	2nd Lieutenant	*(number of ambulances based on number of assigned Regiments)*	Acting Assistant Quartermaster, receipt for all Brigade ambulance and medicine wagons, serviceability of ambulance trains
Regiment	Sergeant	3 per Infantry Regiment, 2 per Cavalry Regiment,	Conduct drills and inspections, enforce orders
Battery		2 per Artillery Battery	
	Privates (2 Attendants, 1 Driver)	per every two-horse ambulance	

Source: William Grace, *The Army Surgeon's Manual* (New York: Balliere Brothers, 1864), 90-93. Table created by author and is a summary taken from *The Army Surgeon's Manual.*

At the regimental level, the creation of the Ambulance Corps enhanced a surgeon's ability to provide healthcare to the wounded. The ambulance attendants who provided first aid to casualties relieved surgeons from the burden of such duties and helped them to focus on the surgical aspects. Although the act did not specify the evacuation capabilities of an ambulance, Letterman's initial guidance included an allocation of two litters per ambulance.[27] Thus, it is assumed that each ambulance accommodated two litter patients. Placing the Ambulance Corps under the direction of a Medical Officer (who was not a surgeon) also freed surgeons from the burdens of battlefield distractions. So significant was the creation of the Ambulance Corps system,

James McPherson argued “these units became models for most armies of the world down to World War I.”[28]

By the end of the Civil War, the Army Medical Department had developed into a vigorous system. While no single person can take the credit for the improvements, Dr. Jonathan Letterman’s contributions affected not only the Army of the Potomac but also the US Army. The consolidated Army Medical Department effort to improve patient treatment, hospitalization, field hygiene and sanitation, and evacuation set standards for the time that were innovative and adequate for that time. With the exception of aseptic techniques, the capabilities developed in the above-mentioned areas of the health service support met the Army’s requirements. While many of the regulations and legislative policies legitimizing these systems expired after the war, the veteran surgeons who continued to serve during the frontier conflicts retained the tacit knowledge of the Civil War medical techniques and systems. For these reasons alone, similar techniques and systems would likely be applied to army regiments in future conflicts. By the end of 1864, the army regiment was organized medically to treat and evacuate wounded, prevent or treat disease, and sustain itself. Letterman concluded, “Little more remained to be done, beyond the ordinary routine duties.”[29] It is against this background that the health service support to units under General Phillip Sheridan during the Centennial Campaign of 1876 against the Sioux Indians should be assessed.

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[1] Mary C. Gillett, *The Army Medical Department 1818-1865* (Washington, DC: Center for Military History, U.S. Army, 1987), 182.

[2] Ibid., 154.

[3] Jonathan Letterman, *Medical Recollections of the Army of the Potomac* (New York: D. Appleton and Co., 1866), 92.

[4] Ibid.

[5] Gillett, *The Army Medical Department 1818-1865*, 155.

[6] Ibid., 173.

[7] Letterman, *Medical Recollections of the Army of the Potomac*, 58.

[8] Ibid., 61-62.

[9] William Grace, *The Army Surgeon's Manual* (New York: Balliere Brothers, 1864), 56, accessed November 14, 2014, http://books.google.com/books?id=1v81AQAAMAAJ&pg=PA84&dq=The+Army+Surgeon's+Manual&hl=en&sa=X&ei=0jdmVIzuDIa2yASo_oDQDw&ved=0CB8Q6AEwAA#v=onepage&q=The%20Army%20Surgeon's%20Manual&f=false.

[10] Letterman, *Medical Recollections of the Army of the Potomac*, 7.

[11] Ibid., 112.

[12] Ibid., 13-14.

[13] Ibid., 96-98.

[14] Joan Stevenson, *Deliverance from the Little Big Horn: Dr. Henry Porter and the Seventh Cavalry* (Norman: University of Oklahoma Press, 2012), 64.

[15] Grace, *The Army Surgeon's Manual*, 16.

[16] James. M. McPherson, *Battle Cry of Freedom: The Civil War Era* (New York: Ballentine Books, 1989), 486.

[17] Letterman, *Medical Recollections of the Army of the Potomac*, 58.

[18] Gillett, *The Army Medical Department 1818-1865*, 157.

[19] Letterman, *Medical Recollections of the Army of the Potomac*, 51.

[20] Ibid., 53.

[21] Ibid.

[22] Grace, *The Army Surgeon Manual*, 22.

[23] James M. McPherson, *Ordeal by Fire: The Civil War and Reconstruction*, 3rd ed. (New York: McGraw-Hill, 2001), 418.

[24] Letterman, *Medical Recollections of the Army of the Potomac*, 24.

[25] McPherson, *Ordeal by Fire: The Civil War and Reconstruction*, 419.

[26] Letterman, *Medical Recollections of the Army of the Potomac*, 31.

[27] Ibid., 162.

[28] McPherson, *Ordeal by Fire: The Civil War and Reconstruction*, 419.

[29] Letterman, *Medical Recollections of the Army of the Potomac*, 185.

CHAPTER 3

THE CENTENNIAL CAMPAIGN: ORGANIZATION, HOSPITALIZATION AND TREATMENT

The Army Medical Department suffered reductions in personnel and equipment from 1865 and 1875. Many of the laws Congress enacted during the Civil War that established or created new systems (i.e. the Ambulance Corps) expired shortly after the war's termination. Like many other army departments, the Medical Department struggled to meet the army's demands and continued to do so into 1876. Although many of the Civil War era systems such as the Ambulance Corps had disappeared, the equipment still existed. Moreover, employment concepts remained in the minds of the medical directors and surgeons for patient evacuation and treatment. The Army Medical Department displayed those systems and remaining equipment at the 1876 Centennial International Exhibition in Philadelphia. The displays, referred to by Army Surgeon General Joseph K. Barnes as "classes of objects," included an actual field hospital set up, medical and hospital supplies, examples of the means of transporting sick and wounded soldiers and "methods for the systematic study of the diseases and injuries of soldiers with a view to their more efficient treatment."[1]

As significant as the International Exhibition was to the nation and to the Army, arguably, those areas displayed represented the contemporary standards for army healthcare from the Surgeon General's perspective. Those areas also embodied the foundation for the healthcare systems provided to the cavalry regiments during the Centennial Campaign. Although few administrative differences may have distinguished

the regimental structure from the Army Medical Department structure as a whole, the two systems were fundamentally similar.

The most significant difference was the impact and influence of regimental leadership on the health service support at that level. Leadership philosophies, biases, and assumptions at times affected the organization of mobile forces and undoubtedly challenged medical support plans. These challenges ranged from the separation distance between surgeons and their medical supplies, the assignment of surgeons to units, and under resourced medical evacuation capabilities for the sick and injured.

Moreover, Army regimental commanders exhibited a sense of hubris related to the Plains Indians that they fought. In their view, Plains Indians would not offer significant opposition when attacked.[2] This assumption arguably affected the surgeons' preparedness for the campaign. Regardless of the assumptions, army surgeons (regular and contract) were responsible for implementing regimental health service support. To do so, army surgeons matched capabilities with the anticipated hospitalization requirements, treatment of sick or injured, prevention and treatment of diseases and non-battle injuries, and provisions for supplies and equipment. These campaign requirements were strikingly similar to the "classes of objects" the Surgeon General so eagerly displayed at the Centennial International Exhibition.

With some exceptions, surgeons were organized for the Centennial Campaign much the same way they had been organized in the Civil War. The Army Medical Department assigned surgeons to regiments and attendants accompanied them. The divisional hospital structure that existed during the Civil War was not relevant to the Centennial Campaign. The surgeons' experiences during the Civil War were unique. Unit

size and the combat methods employed were dramatically different given the nature of each conflict.[3]

Generals Terry and Crook as well as Colonel Gibbon concerned themselves with staffing the regiments with qualified surgeons. They relied on department Medical Directors to accomplish this task. Medical Directors, in concert with the Army Surgeon General, were responsible for filling positions at frontier army posts and for units campaigning in the field. This endeavor challenged both Medical Directors and the Surgeon General because of regimental leadership decisions on the health service system. The Surgeon General expressed concern over the number of expeditions requiring medical support as well as the number of medical requirements at the posts themselves.[4] Frontier post staffing requirements taxed the Army Medical Department. In some instances, regimental leadership either appointed personnel to serve in the physician role or hired contract surgeons. In the case of Dr. Holmes O. Paulding, he served as the single surgeon on the Montana Column responsible for the health and welfare of approximately 436 men. Instead of hiring a contract surgeon to assist him, Colonel Gibbon instead "appointed a line officer" rumored to have had previous medical experience to fill the role.[5]

To illustrate the challenge of medical staffing on the frontier in 1876, there were 200 permanent and temporary posts that needed medical personnel. That same year and, ironically, on the second day of the Battle of Little Big Horn, Congress passed an act reducing the number of Assistant Surgeon authorizations from 150 to 125.[6] When the campaign began, the Army Medical Department was unable to source 25 percent of its

requirements across the frontier. When the act passed, the resources dwindled even further. This reduction hampered the Centennial Campaign as well.

When units conducted expeditions in the field, frontier post surgeons sometimes left their post to accompany units that had no other medical support. This left a void. To remedy these situations, the Surgeon General often relied on frontier surgeons who practiced near the posts to provide care for those personnel on a pay-by-the-visit basis.[7] This practice allowed sufficient medical support for the posts, but units conducting operations in the field did not always have this type of augmentation or reach back capability. The absence of qualified assisting surgeons or contract surgeons often resulted in acting surgeons constrained to the immediate vicinity of unit headquarters.
Dr. Paulding, in a letter to his mother from camp at Fort Pease on April 24, 1876, stated, "Gibbon doesn't want me to go after deer or buffalo . . . if I should get shot they wouldn't have a doctor and might want one."[8] The appointment of a non-qualified line officer as surgeon or the refusal of his commander to hire a contract surgeon did not improve Paulding's predicament.

Contract surgeons participated in the campaign but not without their own unique risks. The practice of hiring surgeons worked well during the Civil War, but the years preceding 1876 saw proportional reductions in correlation to Army Medical Department cuts. Author Joan Stevenson noted: "Numbers of these hired surgeons continued to drop sharply, from 2,000 in 1865 to 262 in 1866, 187 in 1870 and finally to a quota of only 75 in 1874."[9] The reductions existed primarily due to funding constraints and not because of contract surgeon incompetence. As occurred in the Civil War, contract surgeons in 1876 were exempt from entrance exams and competence assessment boards. The boards still

existed, however, but the Army hired contract surgeons to compensate for the low pass rate of regular army surgeons. Out of 156 applicants in 1875, the Army Medical Exam board deemed only forty-one competent to serve.[10] The contract surgeons primarily accompanied units conducting expeditions and they were also assigned attendants. A combination of regular army and contract surgeons assisted by attendants detailed to them from within the commands medically supported the campaign, with the exception of the Montana Column.[11] Figure 2, illustrates the medical capability (surgeons-less attendants or stewards) matched with the campaign requirements (units/personnel).[12]

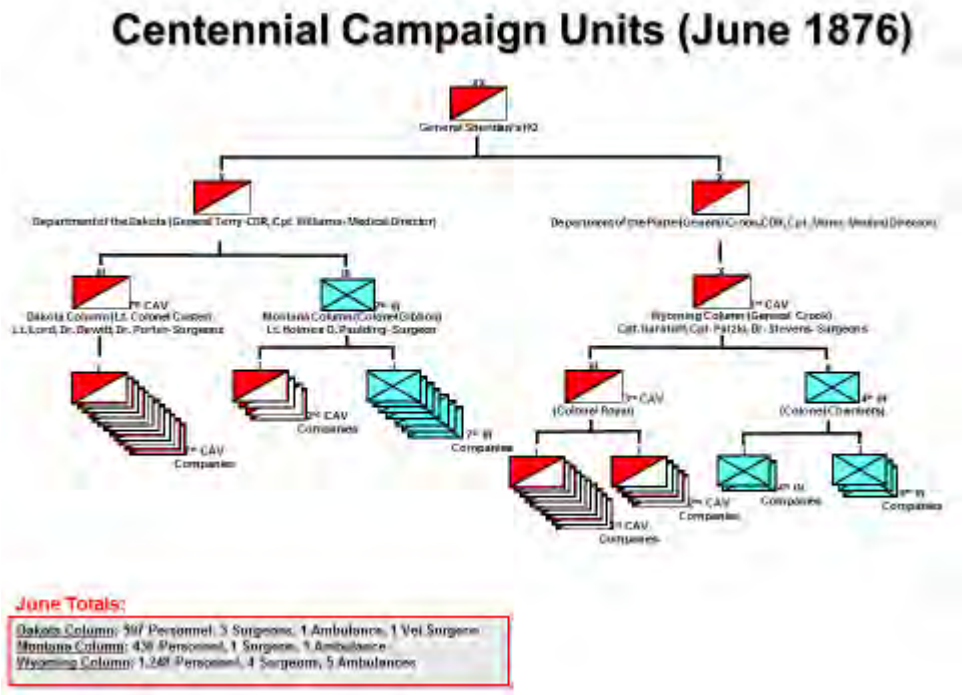

Figure 2. Centennial Campaign Units and Medical Capabilities

Source: Created by author; consolidation of information from Paul Hedren, *The Great Sioux War Orders of Battle: How the United States Army Waged War on the Northern Plains, 1876-1877* (Norman: University of Oklahoma Press, 2012); Mary C. Gillett, *The Army Medical Department 1865-1917* (Washington, DC: Center for Military History, U.S. Army, 1995); John S. Gray, *Centennial Campaign: The Sioux War of 1876* (Fort Collins, CO: Old Army Press, 1976).

As previously stated, Medical Directors, regimental leadership and the Surgeon General managed the assignment of surgeons to regiments. At the lowest level, regimental level determined if the capability of assigned medical personnel met campaign requirements as Dr. Paulding's case illustrated. Ideally, the Acting Surgeon responsible for providing care to the entire population at risk made this decision. In simple terms, leaders and providers managed the capability (assignment of competent healthcare provider) to meet the requirement (population at risk- total number of personnel requiring healthcare in a unit) but not necessarily based on a total number of units. During the Civil War, the Army Medical Department attempted to staff units with surgeons on an undeterminable ratio. As Mary C. Gillett concluded, this concept was ineffective. "No ratio of surgeons to men that would be adequate under all circumstances," Gillette observed, "could be efficiently established for a given unit."[13]

Guidance for the assignment of providers to units came from the War Department through General Orders. The number of surgeons assigned per regiment of cavalry or infantry fluctuated throughout the Civil War. General Order Number 126 in September of 1862, for example, required every regiment of infantry to have "one surgeon, two assistant surgeons and one steward." It mandated "one surgeon, one assistant and two stewards" for a cavalry regiment.[14] The additional capability of Ambulance Corps attendants who provided first aid made the Civil War assignment of surgeons to regiments a more acceptable ratio because of the forward (although basic) care they provided. For example, the ability to provide medical care in a 500–man infantry unit with four assigned medical personnel was 1:125 without the Ambulance Corps personnel.

With the additional personnel, the ratio of medical personnel to soldiers decreased to 1:50 (see figure 2).

The Centennial Campaign ratios of surgeons to regiments reflected the Civil War assignment ratios without the value added by far forward care provided by Ambulance Corps personnel. During periods when there were limited amounts of casualties, the ratio of surgeons to regiments without forward first aid was not a significant factor. During a battle that generated a large number of casualties, surgeons who had lost the added benefit of forward first aid experienced what medical planners today term "mass casualty" situations.[15] During the Centennial Campaign, none of three columns had the patient treatment capability to sustain the requirements associated with large numbers of battle casualties. Gibbon's Montana Column was significantly undermanned medically with a ratio of one surgeon for 436 (1:436) soldiers. Custer's forces in the Dakota Column had a ratio of one surgeon to 199 soldiers (1:199) based on their original assignment instructions (one surgeon, two assistant surgeons). Custer's 7th Cavalry ratio changed, however, to one closer to that of Gibbon's during the Battle of the Little Big Horn. During the hilltop siege, it was one surgeon for 353 soldiers (1:353).[16]
Dr. Paulding's ability to provide good medical care highlighted the significance of Gibbon's column shortfall of medical personnel. Good medical care in this instance constituted the surgeon's ability to "provide a medical presence with the soldiers to resuscitate casualties and maintain stabilization pending evacuation."[17]

Gibbon's column did not suffer the same volume of casualties that Custer's forces did. However, of the three surgeons assigned to Custer's forces, only one survived through the hilltop siege. The lone surviving doctor, Dr. Henry Porter, struggled to treat

the wounded from a field expedient hospital during the battle.[18] Although the number of casualties Custer's command sustained were not anticipated, when they occurred Porter barely satisfied the definition of good medical care. He merely survived a mass casualty situation. Thus, using Custer's forces as a model, the definition of good medical care and the effects of insufficient forward medical presence when casualties were sustained, the Montana Column surgical capability (personnel) did not satisfy the requirements (healthcare of 436 personnel) either.

In utilizing the same comparison above, Crook's column arguably went to battle under manned as well with a ratio of one surgeon to 310 soldiers (1: 310). The wounding of approximately 70 soldiers in his column during the fight on the Rosebud challenged the definition of good medical care provided by his surgeons to treat wounds ranging from moderate to severe.[19] Even if the assignment of a single surgeon followed the previous practice established by general orders during the Civil War (as did the assignments in Custer's regiment), this ratio benefited units only during periods outside of battle without the need to provide forward first aid. The overall assessment for the number of assigned medical providers to soldiers on the campaign was therefore insufficient to meet the requirements presented. Among all entities involved with the assignment of medical personnel, the influence of the leadership philosophy of invincibility combined with the fiscal uncertainty faced by the post-Civil War army contributed to this medical insufficiency.

The population at risk presented non-combat related challenges in the form of disease and non-battle injuries. Poor field hygiene and sanitation practices plagued frontier army units in the late 1800s. Despite the improvements promoting sanitary

practices during the Civil War, surgeons on the campaign faced difficulties in combating infection, treating non-battle injuries (falls, kicks from horses, frostbite, etc.) and disease. The surgeons often contributed to these difficulties by the manner in which they treated wounds. Similar to the philosophy of invincibility displayed by regimental leadership, campaign surgeons often expressed a philosophy of avoidance or apprehension to operate in conditions where foul smells existed.

Like Civil War surgeons, campaign surgeons did very little to prevent the causes of infection. Although the supplies needed to prevent infection existed on the medical supply tables of 1864 and 1876, exclusion of their use demonstrated the paradigm had not shifted from miasmas to the microorganisms that caused the foul smell. To treat diseases, surgeons prescribed medicines that may not have been the best remedy but they were the remedy of choice to treat certain symptoms. Medical supplies and stores on the campaign did not include the primary remedy for some diseases such as scurvy–the cure being a healthy diet of Vitamin C. Despite the challenges to treat diseases and injuries, surgeons did what they could within their available resources and medical training to treat diseases and injuries. They dutifully reported the numbers associated with disease and non-battle injuries to both the chain of command and the Surgeon General.

During the Civil War, surgeons began reporting the number of soldiers treated at their locations for either disease or battle related wounds and injuries. Post surgeons reported their numbers annually to the Surgeon General, who then compiled a single report for the War Department. One frontier post surgeon reported in 1874 that the more prevalent disease at his location was a disease related to “air passages” he attributed to dust and dryness in the atmosphere.[20] Frontier conditions did not improve when units

deployed for operations. In 1874, post surgeons reported issues from poor ventilated barracks and shoddily constructed hospitals to contaminated drinking supplies and stagnant conditions that favored mosquito reproduction. Fort Shaw, Fort Ellis, Fort Abraham Lincoln, and Fort Fetterman–the posts that garrisoned the men who fought on the campaign in 1876–were specifically named.[21]

The types of diseases the men faced while in the garrison environment were equally important. Despite the more hospitable post conditions, diseases carried by settlers in the surrounding areas of the frontier post affected the health of the garrisoned commands. The types of diseases that posed a risk while in garrison in 1874 included but were not limited to epidemic catarrhs during fall and winter, acute diarrhea, acute rheumatism, typho-malarial fever, smallpox and other types of febricula.[22] These conditions doubtfully improved greatly in the year preceding the Centennial Campaign.

This data provided a basis for comparing the health of the command in respect not only to disease but to battle wounds as well. Based on the Surgeon General reports, the number of soldiers sick from disease and those who died from disease were similar for the years of 1875 and 1876. In 1875, the number of soldiers sick from disease and/or who died from disease exceeded those who were sick because of wounds and those who died because of wounds. In the Surgeon General's report for that year, an average of 35 soldiers per every 1,000 were sick from disease and an average of eight soldiers per every 1,000 died from disease. Comparatively, in 1875, the Surgeon General reported an average of nine soldiers per every 1,000 sick from wounds and an average of three per every 1,000 who died from wounds. As evidenced in the report, 1875 marked a year of poor hygiene and sanitation practices in the Army.[23]

The following year, the Surgeon General reported numbers for sick and died from disease strikingly similar to 1875. However, the number reported for soldiers died from wounds significantly increased from an average of three per 1,000 in 1875 to 14 per 1,000.[24] Although the increase in average number of deaths per 1,000 soldiers increased in 1876, this number corresponded to the casualties suffered during the campaign. Of the total 267 deaths reported in 1876, 210 occurred at the Battle of Little Bighorn.[25] Regardless, the reported number of deaths related to disease remained unchanged between 1875 and 1876. Thus, 1876 marked a bloody year for the Army in terms of engagements but illustrated very little improvement in field hygiene and sanitation practices. Like their Civil War predecessors, as evidenced in the data provided above, campaign surgeons also practiced unsound preventive medicine.

Centennial Campaign disease and non-battle injury statistics mirrored the Army's at large due to several factors. The most significant was the philosophy of avoidance. Surgeons on the campaign displayed a common belief that bad odors emitted by rotting plants and animals caused infections. This common theme persisted not only among campaign surgeons but among others as well. Joan Stevenson argued that the wounded from the Battle of Little Big Horn "likely experienced some apprehension" about receiving treatment in a hospital as such places "were known for harboring harmful miasmas."[26] Like their Civil War counterparts, campaign surgeons operated without utilizing aseptic techniques for procedures such as amputations.[27] Yet, despite the apprehension to foul smells and the lack of aseptic techniques, evidence suggests surgeons had little influence on changing the conditions in which soldiers camped. In a letter to his mother from Fort Pease on April 21, 1876, Dr. Paulding observed: "Our camp

is just outside the stockade on a sage brush alkali plain full of carcasses, old skins, and other filth from the previous occupants of the place, and it will be a wonder if they don't get typhoid fever when the rains begin."[28] Paulding stated his concerns, but he did not take any actions or make recommendations to the chain of command to remedy the situation.

In Crook's column, however, Surgeon (Captain) Curtis Munn influenced his commanders by his actions when he "won everyone's gratitude by his tireless attention to anyone threatened with frostbite."[29] Paulding may have recommended a more sanitary location to his leadership, but the tactical situation may not have permitted deviations to the plan. In the later stages of the campaign (mid-August), torrential rains and changing weather conditions contributed to sanitation and hygiene issues. The combination of steady rains and saturated ground created the conditions for the spread of fecal contamination from humans and animals. As troops drank stream water or attempted their own personal hygiene, they often times ingested the very bacteria responsible for the most widespread illness and greatest challenge for surgeons to treat. Dysentery and diarrhea, in one instance, accounted for 14 men sick out of 34 requiring treatment and hospitalization in General Terry's Column. Dysentery became so problematic that eventually orders had to be issued not to consume water near camp.[30]

Another circumstance beyond the influence of surgeons concerned the relation of disease to large numbers of personnel and unhealthy diets. After the Battle of the Little Big Horn and with the swelling of General Terry's ranks, the number of scurvy cases increased as well. Stevenson noted that by the end of July 1876, what fruit and vegetable supplies Terry's men did have were depleted and as many as "35 to 40 men were

debilitated at a time."[31] Because of the poor diet that could only be remedied by a commodity in the supply channels, the men evacuated for disease and non-battle injuries decreased the fighting ability and medical readiness of the campaign. When the campaign ended, the number of troops who required treatment and withdrawal due to preventable diseases exceeded the actual number of the wounded who were evacuated from the Little Big Horn. Approximately 65 men required some form of treatment and evacuation due to disease and non-battle related injuries.

Because several factors influencing the preventive medicine requirements were beyond the control of a surgeon's capabilities, the assistance they provided to troops outside of battle-related injuries was insufficient. Many of the methods the surgeons used relied more on a superstition than empirical evidence. For example, Porter based his decision to re-locate the field expedient hospital because of his apprehension to the smell of rotting carcasses. The realization that campaign surgeons lacked the specialization (understanding and equipment) to minimize disease and infection is surprising, considering the accomplishments of Joseph Lister and Louis Pasteur in Europe during the 1860s.[32] Ironically, Professor Lister had demonstrated his technique at the International Exhibition of 1876 in Philadelphia. One observer noted, "It is to be regretted that the exorbitant prices charged in this country for the Edinburgh atomizers used in this method seem likely to impede the popularization of a system based on the most careful inductive inquiry, and probably the most important advance in surgery since the introduction of anesthetic agents."[33]

With or without the necessary resources, surgeons did not employ known advancements in sterile procedures. Instead, when campaign surgeons did have the power

to influence or act, they did so in accordance with their training and with the equipment at their disposal. The medical equipment used and the locations in which surgeons maintained the equipment influenced the care they provided. From the number of ambulances (or lack thereof), knapsacks, medical chests, and tentage to the attendants charged with maintaining them for the surgeons, leadership decisions made in relation to them often hindered the surgeons' ability to provide good medical care.

The campaign surgeons' preparations began at their assigned post hospital. Their level of responsibility varied from post to post, as did the variety and types of equipment at their disposal. Campaign surgeons worked within two different chains of supervision and relied primarily upon the department Medical Directors to provide their needs. As with the constraints on the number of surgeons to staff posts, administration and legislation also limited the numbers of other hospital staff, variety of supplies maintained, improvements to construction of post hospitals and affected the capacity for patient care at each location.

The Department of the Platte and Department of the Dakota provided troops for the Centennial Campaign and the assigned Medical Directors managed the health service support. Within the two departments, the main posts that provided hospitalization to the troops were Fort Shaw, Fort Ellis, Fort Fetterman, and Fort Abraham Lincoln. Although not directly responsible for the patient care at those posts, Medical Directors provided oversight and support to the assigned post surgeons. Additionally, Medical Directors approved requisitions for medical supplies and served as the conduit of communication between post surgeons and the Surgeon General. Medical Directors also managed the assignment of post hospital stewards and nurses, which routinely came from the ranks of

the units assigned to each post. In 1876, one hospital steward staffed each post hospital and each post hospital allocated one nurse to every ten patients.[34] The stewards and nurses assisted post surgeons in every aspect of patient care and in the preparation of reports. The stewards at each post hospital managed the discipline of the hospital, served as an apothecary and supervised the preparation of patient meals.[35] In some instances, stewards maintained a permanent presence in the hospital occupying a room as personal living quarters.

In 1871, the Army Medical Department determined the standards for the construction design of post hospitals. The Secretary of War approved hospital plans that outlined specifications for three classes of hospitals consisting of either 12 or 24 hospital beds.[36] Hospital beds, in this instance, referred to operating beds staffed with healthcare provider support. Many of the hospitals near operations on the Centennial Campaign were built before the War Department implemented these standards, but maintained a relatively adequate support staff for the number of beds the hospitals maintained (see table 3).[37]

Table 3. Frontier Post Allocations in Vicinity of Campaign Operations

Frontier Post Allocations in Vicinity of Campaign Operations				
Department	Post	GPS Location	Number of Hospital Beds	Allocations (Surgeons/ Stewards/Nurses)
Dakota	Fort Abraham Lincoln	46.764167, -100.849722	**24** (built in 1872)	2/1/2
	Fort Shaw	47.504444, -111.811389	**6** (built in 1867)	1/1/1
	Fort Ellis	45.654444, -110.943056	**12** (built in 1867)	1/1/1
	Fort Buford	47.9876720, -104.0006190	**24** (built in 1866)	2/1/2
Platte	Fort Fetterman	42.840278, -105.479722	**10** (built in 1867)	1/1/1
		Total Beds:	**76**	

Source: Created by author; summary of information taken from the *Report of the Board on behalf of the United States Executive Departments at the International Exhibition of 1876* (Washington: Government Printing Office, 1884); John S. Billings, *Report on Barracks and Hospitals 1838-1913, with Descriptions of Military Posts* (New York: U.S. Surgeon General's Office, 1974).

As reflected in table 3, only two of the five hospitals proximate to the Centennial Campaign field operations possessed the 24 bed capacity standards. Medical Directors occasionally complicated the healthcare provided at the frontier posts by sending the only post surgeon to accompany units in the field. Such was the case for Dr. Paulding who left Fort Ellis to campaign with Gibbon's column. When accompanying units in the field, the post surgeon supplied himself from the dispensary and storerooms of his assigned post hospital and placed the items along with his tentage under the charge of his assigned attendant. While in no way comparable to the post hospital set up in terms of hospitability, the tents and supplies taken to the field served the purpose of establishing "field hospitals." Field hospitals, in this instance, referred to a rather field expedient version rather than those used during the Civil War which referred to a divisional hospital (see chapter 2). The difference was clear. Paulding's description of Porter's field

following the Battle of the Little Big Horn captured the magnitude of the difference. "Mules were put in a circle with the hospital in the middle."[38]

Paulding did not define the term hospital, but based on the situation and conditions under which Porter operated combined with Paulding's description, hospital in this context most likely referred to a single surgeon operating out of tent with no beds for patients. Unlike a frontier post hospital, there were no established standards that governed the design of a field hospital. Porter's field hospital consisted of a borrowed officer's tent surrounded by supplies and animals for cover.[39] The circumstances surrounding Dr. Porter's plight arguably resulted from a combination of problems. These included the supplies he brought on the campaign and the location of those supplies leading up to the battle. The 7th Cavalry chain of command permitted Porter's attendant to ride along with his assigned company instead of with him. This affected Porter's ability to provide good medical care. When battle ensued, Porter faced the dilemma of finding his attendant and his equipment before he could provide care to casualties. A majority of his medical supplies, however, were strapped to mules located with the pack train about an hour behind the maneuver force.[40] Because the leadership believed the Indians would scatter when attacked, neither Custer nor his surgeon anticipated casualties and were therefore unprepared. Dr. Porter's dilemma, however, served as a wake-up call to the other campaign surgeons and illustrated the importance of having the right capabilities at the right place and time to meet campaign requirements.

The medical supply system in place in the army in 1876 differed very little from that of the Civil War. A standard medical supply table existed during both the Civil War and the Centennial Campaign. Like their Civil War predecessors, campaign surgeons

requested medical supplies from this standard supply list. Medical Purveyors procured medical supplies then distributed the supplies to post hospitals. Although the medical supply system faced reductions, the Army Medical Department approved and implemented new designs for horse drawn medicine carts during the 1870s. Its absence on the Centennial Campaign, however, overshadowed the advancement. In 1876, Congress passed an act removing the position of medical storekeeper as part of the post-Civil War personnel reduction. This reduction did not significantly affect the system for the campaign surgeons, however, because those storekeepers on active duty at that time remained until the end of their service commitment.[41]

Campaign surgeons requested supplies from the common medical supply table and received supplies necessary to last three months of normal operations. Normal in this instance implied routine procedures beyond large numbers of battle casualties. Campaign surgeons submitted their supply requests to either the Department of the Platte or the Department of Dakota Medical Director. The Department Medical Directors then forwarded the requests to Medical Purveyors and/or storekeepers, similar to the systems that existed during the Civil War.[42]

Surgeons submitted supply requests to fill one of many different types of chests or knapsacks. Surgeons commonly used knapsacks in the field. As early as 1861, army regulations stipulated that medical officers conducting marches or engaged in combat be "attended by an orderly carrying a knapsack."[43] The knapsack's design included wooden compartments and drawers capable of carrying surgical instruments, field dressings, and medicine to sustain a surgeon for up to a month. Based on the medical supply table, the army resupplied campaign surgeons for three months for every field unit consisting of

500 men.[44] Campaign surgeons either tied the bulk of medical supplies and medicine chests to mules in the pack train or placed them inside wagons. Either way, the majority of medical supplies were not co-located with surgeons when they needed them and in some cases they had none at all.

Additionally, Porter and Paulding treated casualties without carbolic acid to prevent infection suggesting that they succumbed to the paradigm that foul smells caused infection (as opposed to actual germs). They did not bring any carbolic acid with them even though the supply table listed it.[45] Neither Gibbon's column nor Custer's regiment brought army regulation horse litters. The Army had furnished these to frontier posts since 1861 and they were "required for service on ground not admitting the employment of two-wheeled carriages."[46]

Dr. Paulding along with others from Gibbon's column assisted in the evacuation of the Little Big Horn casualties. Paulding noted on 8 July 1876, that on the second day of the evacuation, the soldiers "went to work and made litters from some of the wounded horses we found in the camp and among the timber."[47] The 1876 model medical transport cart was another example of an available asset but one left behind. Army regulations had permitted the use of two-wheeled transport carts since the Civil War but one did not make its debut until January 1876. Designed specifically to remedy the problems of negotiating rough terrain that challenged frontier units, the model 1876 cart also relieved the burden of transporting hospital stores and medical supplies in the large Civil War era medicine wagons.[48]

Of the systems within the health service support system that existed in 1876, campaign surgeons fell short of meeting the associated requirements. Missing attendants,

supplies tied to mules positioned in pack trains as opposed to on hand during battle, and available equipment not taken on the march limited good medical care. Although the medical supply system itself remained relatively unchanged since the Civil War, decisions regarding where to position the supplies and what supplies to bring impacted casualty treatment the most. As evidenced by the overwhelming ratio of soldiers to trained medical personnel, the campaign ratios disadvantaged surgeons during battles that produced significant numbers of casualties. In addition to not having the appropriate supplies on hand to treat casualties and the absence of forward first aid, the lack of appropriate capabilities to evacuate casualties challenged the campaign surgeons as well.

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[1] U.S. Department of War, *Annual Report of the Surgeon General, U.S. Army, October 1st, 1876* (Washington, DC), 18, accessed September 30, 2014, http://books.google.com/books?id=jSgAAAAMAAJ&pg=PR66&dq=Annual+Report+of+the+Surgeon+General+1875&hl=en&sa=X&ei=uyRhVKbiJ4WhNsGwhNgB&ved=0CEsQ6AEwCA#v=onepage&q=Annual%20Report%20of%20the%20Surgeon%20General%201875&f=false.

[2] Joan N. Stevenson, *Deliverance from the Little Big Horn: Dr. Henry Porter and the Seventh Cavalry* (Norman, OK: University of Oklahoma Press, 2012), 41-44.

[3] Mary C. Gillett, *The Army Medical Department 1865-1917* (Washington, DC: Center for Military History, U.S. Army, 1976), 63.

[4] War Department, *Annual Report of the Surgeon General 1876*, 20.

[5] John S. Gray, *Centennial Campaign: The Sioux War of 1876* (Fort Collins, CO: Old Army Press, 1976), 275.

[6] War Department, *Annual Report of the Surgeon General 1876*, 20-21.

[7] Stevenson, *Deliverance from the Little Big Horn*, 147.

[8] Letter from Holmes O. Paulding as recorded by Paul L. Hedren in, *The Great Sioux War, 1876-1877: The Best from Montana the Magazine of Western History* (Helena, MT: Montana Historical Society Press, 1991), 18.

[9] Stevenson, *Deliverance from the Little Big Horn*, 18.

[10] U.S. Department of War, *Annual Report of the Surgeon General, U.S. Army, October 1st, 1875* (Washington, DC), 16, accessed September 30, 2014, http://books.google.com/books?id=jSgAAAAMAAJ&pg=PR66&dq=Annual+Report+of+the+Surgeon+General+1875&hl=en&sa=X&ei=uyRhVKbiJ4WhNsGwhNgB&ved=0CEsQ6AEwCA#v=onepage&q=Annual%20Report%20of%20the%20Surgeon%20General%201875&f=false.

[11] Gray, *Centennial Campaign*, 271.

[12] The Centennial Campaign Units chart is a consolidation of information from three different sources authored by Hedren, Gray and Gillett. The chart depicts the unit organization as outlined in Hedren's *Great Sioux War Orders of Battle*. The blue boxes with an "X" in the middle indicate an infantry unit and the red and white boxes with a "slash" in the middle indicate a cavalry unit. The number of personnel (also considered the population at risk) excludes Indian Scouts and are derived from Gray's *Centennial Campaign: The Sioux War of 1876.* The names of the medical providers/surgeons were cross referenced with Gillett's *Army Medical Department 1865-1917.*

[13] Mary C. Gillett, *The Army Medical Department 1818-1865* (Washington, DC: Center for Military History, U.S. Army, 1987), 288.

[14] William Grace, *The Army Surgeon's Manual* (New York, NY: Balliere Brothers, 1864), 56, accessed November 14, 2014, http://books.google.com/books?id=1v81AQAAMAAJ&pg=PA84&dq=The+Army+Surgeon's+Manual&hl=en&sa=X&ei=0jdmVIzuDIa2yASo_oDQDw&ved=0CB8Q6AEwAA#v=onepage&q=The%20Army%20Surgeon's%20Manual&f=false.

[15] In a mass casualty situation, the ability to provide medical care is overwhelmed and as a result insufficient to meet the requirements.

[16] Gray, *Centennial Campaign*, 295.

[17] U.S. Department of the Army, FM 8-55, 1-3.

[18] Paulding letter in Hedren, *The Great Sioux War*, 142.

[19] Gray, *Centennial Campaign*, 123.

[20] John S. Billings and George A. Otis, *Report on Barracks and Hospitals, with Descriptions of Military Posts* and *Report on Transport of Sick and Wounded, 1838-1913 and 1830-1881* (New York: U.S. Surgeon General's Office, 1974), 346.

[21] Ibid., 346-352.

[22] Ibid., 431.

[23] War Department, *Annual Report of the Surgeon General 1875*, 4-5. The numbers displayed above are depicted after calculations were performed to arrive at the totals presented. The Surgeon General reported the numbers separately for white soldiers from African-American soldiers.

[24] War Department, *Annual Report of the Surgeon General 1876*, 6. Again, the numbers presented have been recalculated based on a total and not separated by race.

[25] Ibid., 7.

[26] Stevenson, *Deliverance from the Little Big Horn*, 109.

[27] Ibid., 64.

[28] Paulding letter in Hedren, *The Great Sioux War 1876*, 125.

[29] Gray, *Centennial Campaign*, 54.

[30] Stevenson, *Deliverance from the Little Big Horn*, 140.

[31] Ibid., 131.

[32] James McPherson, *Ordeal by Fire: The Civil War and Reconstruction,* 3rd ed. (New York: McGraw Hill, 2001), 417.

[33] *Report of the Board on behalf of the United States Executive Departments at the International Exhibition of 1876* (Washington: Government Printing Office, 1884), 279, accessed November 23, 2014, http://books.google.com/books ?id=PvnNAAAAMAAJ&pg=PA7&dq=report+of+the+board+on+behalf+of+the+United +States+Executive+departments+at+international+exhibition+of+1876&hl=en&sa=X&ei =qVhyVIj9HYaYyQTrq4LAAQ&ved=0CB0Q6AEwAA#v=snippet&q=Lister&f=false.

[34] Ibid., 129.

[35] Ibid.

[36] Ibid., 132.

[37] The chart displayed by table 3 is a combination of data analyzed in both the *Report of the Board on behalf of the United States Executive Departments* and the *Report on Barracks and Hospitals*. The number of beds available are derived from the 1874 report to the Surgeon General in addition to the number of surgeons exceeding the allocation of one. By exception, the allocation of stewards and nurses do not reflect the actual on-hand personnel, but what the allocation would have been instead. These numbers do not reflect the on-hand numbers of personnel during the Centennial Campaign, but what would have been allocated. The GPS locations are a current conversion from the latitude/longitude locations listed in the 1874 report. Both the GPS

locations and bed capacity contribute to the medical evacuation analysis in figure 6 in chapter 4.

[38] Paulding letter in Hedren, *The Great Sioux War*, 142.

[39] Stevenson, *Deliverance from the Little Big Horn*, 58.

[40] Ibid., 44.

[41] *Report of the Board on the International Exhibition of 1876*, 128.

[42] Ibid.

[43] Grace, *The Army Surgeon's Manual*, 23.

[44] *Report of the Board on the International Exhibition of 1876*, 207.

[45] Ibid.

[46] Grace, *The Army Surgeon's Manual*, 22.

[47] Paulding letter in Hedren, *The Great Sioux War*, 143.

[48] *Report of the Board on the International Exhibition of 1876*, 246-247.

CHAPTER 4

CENTENNIAL CAMPAIGN: MEDICAL EVACUATION

In 1876, a formal Ambulance Corps did not exist. Post-Civil War reductions eliminated the structure created for evacuating patients through the Ambulance Corps as well as the assignment of personnel for that function. What began in the Civil War as a technique to clear battlefields of casualties and move them through a series of treatment locations (based on the nature of wounds, availability of surgeons, and space in facilities) arguably established the doctrinal foundation for how the US Army conducts medical evacuation today. The absence of this system during the Centennial Campaign forced surgeons to rely on field expedient methods for evacuating patients. The loss of associated Ambulance Corps personnel reduced their capability to provide initial first aid as far forward as possible. The two wars, however, were quite different. One was a total war and the other a limited commitment from the US government's perspective. Strategy and tactics varied in both conflicts as did the volume of casualties and diversity of wounds.

The Centennial Campaign (primarily the Battle of Little Big Horn) tragically demonstrated to the nation the vulnerabilities of the US Army, the ability of the Plains Indians to inflict large numbers of casualties, and the difficulties in evacuating those casualties without dedicated assets and personnel. Despite the fact that the Ambulance Corps was a distant memory in 1875, Army Quartermasters procured ambulances for issue. The employment and management decisions associated with those ambulances rested with medical officers, quartermasters and line officers. This overlapping responsibility generated conflicts regarding control similar to those of the Civil War pre-

Ambulance Corps. Ultimately, the operational commanders controlled any unit ambulances in their possession in 1876 and viewed them no differently than other logistical wagons in the outfit. The lack of complete control over this critical medical asset slighted campaign surgeon efforts in patient evacuation. If the commanding officer stressed the regiment's invincibility and believed his unit was capable of defeating any Plains Indian formation, why would it need ambulances? The Rosebud and Little Big Horn battles proved the Army was not invincible. Moreover, an Ambulance Corps could have enabled better medical care. Without them, the campaign surgeons relied on the ambulances on hand but their use was at the commander's discretion.

Surviving documentation from diarists as well as reports from all three columns of the campaign described the presence of an ambulance or ambulances at different times. Dr. Paulding recounted how a patient from the Montana Column, Major Brisbin, rode in an ambulance for the better part of the movement from Fort Ellis to the vicinity of the junction of the Rosebud, Tongue and Yellowstone rivers.[1] When Crook's Wyoming Column set out in March of 1876, it included five horse-drawn ambulances with a driver for each. Later, Crook returned to Fort Fetterman after an engagement with Indians to "refit out of concern for the wounded" before starting back out in May.[2] General Terry from the Dakota Column rode in an ambulance after suffering heat related injuries.[3]

The surviving documentation does not give descriptions or details to the type of ambulances used during the campaign. It was likely, however, the ambulances represented either the Wheeling Ambulance, Rucker Ambulance, or McFerran Ambulance designs. The Amy Medical Department displayed one of each of these models at the International Exhibition in Philadelphia that year. The evacuation

capabilities of each ambulance ranged from at a minimum 12 ambulatory or two litter (Wheeling) and at a maximum 12 ambulatory or four litter patients (Rucker). Because of its popularity during the Civil War, the two-horse drawn four-wheeled Wheeling Ambulance model most likely accompanied the columns.[4] Figure 3 depicts the illustration of the popular Wheeling Ambulance.[5]

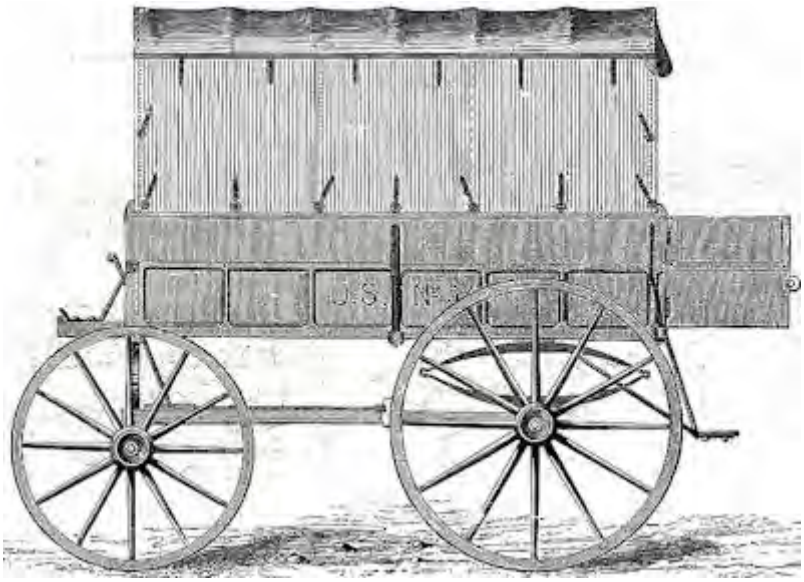


Figure 3. Wheeling Ambulance

Source: Joseph K. Barnes, *Medical and Surgical History of the War of the Rebellion, Part III, Volume II* (Washington, DC: Government Printing Office, 1883), 948.

What should not be assumed, however, is that General Crook brought the original five ambulances back out to the field in May and used them to evacuate casualties from the Battle of the Rosebud. As author John S. Gray pointed out, Crook did not pursue the enemy after the Battle of the Rosebud in June 1876 partly because of the dilemma of pursuit with wounded on travois.[6] It appeared as though Crook had a knack for leaving

his ambulances behind, as demonstrated in March of that year when his column first set out. When Crook divided his force in March and sent the ambulances to a separate location, his only surgeon transported his supplies, instruments, medicines and dressings on pack mules.[7]

General Terry, on the other hand, reportedly recovered from heat injuries in the shade of an ambulance–ambulances that did not accompany Custer's forces to what eventually became the Little Big Horn battlefield. When large engagements that produced the highest volume of casualties suffering from life, limb, or eyesight threatening wounds occurred, not a single ambulance was present.[8] Both Custer and Crook believed that in order to fight the Indians, their units needed to be as agile and mobile as the Indians were. They believed the extra burden of wagons and tents slowed them down (operational necessity outweighed medical care concerns).

To evacuate the casualties that occurred at both the Battle of Little Big Horn and Battle of the Rosebud, surgeons oversaw health service support and assisted with a combination of methods. Those employed after the Battle of the Rosebud consisted primarily of horse travois and hand litters. The evacuation methods utilized at the Battle of Little Big Horn consisted of two and four-man litter teams prior to the building of horse-drawn travois and mule-carried litters. The litter teams used such techniques as carrying the wounded on their shoulders and then rotating in and out of litter team duty as necessary. In this way, they could evacuate the wounded without too much strain on the litter bearers. This also prevented the wounded from hitting the ground, which became problematic as the litter bearers tired.[9] As laborious as the process sounds, it proved

equally exhaustive in terms of the limited distance covered over a large amount of time. Dr. Paulding noted covering only six miles in a span of about ten hours.[10]

The horse-drawn litters and mule-litter carriers relieved the burden of the litter teams and provided a little more comfort to the casualties but at a tactical expense. Every single horse travois required one soldier to guide it. Additionally, every mule-litter carrier required a minimum of four men: one in front and rear to guide, one on each side respectively to steady the casualty. Using a combination of these methods to evacuate casualties from the Little Big Horn, soldiers of the 7th Cavalry eventually transferred their comrades to the steamer *Far West* for movement back to Fort Abraham Lincoln.[11] Figure 4 depicts a single horse-drawn litter and Figure 5 depicts the two-mule litter.[12]

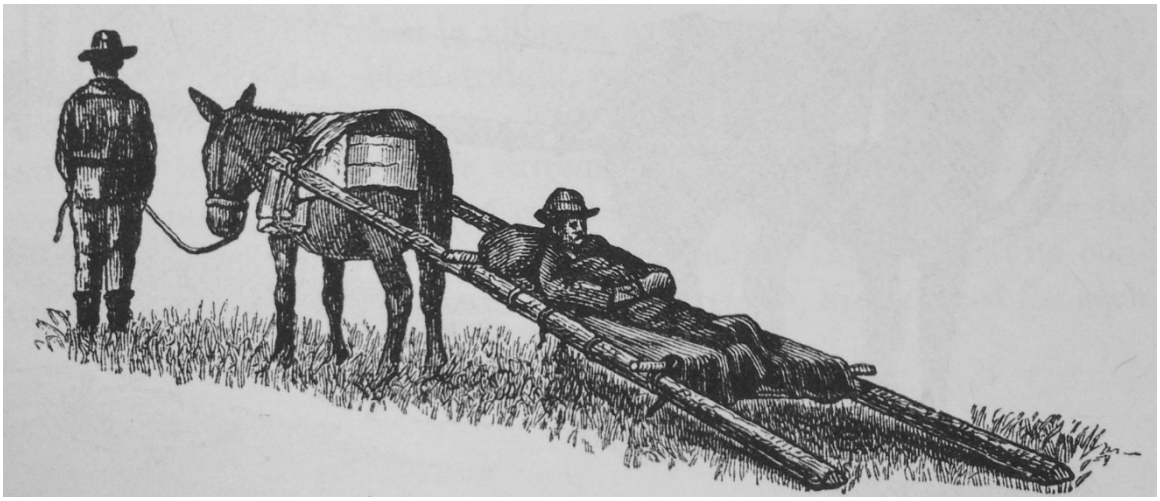


Figure 4. Horse (mule) Drawn Travois

Source: George A. Otis, *Transport of Wounded by Pack Animals* (Washington, DC: Government Printing Office, 1877), 19.

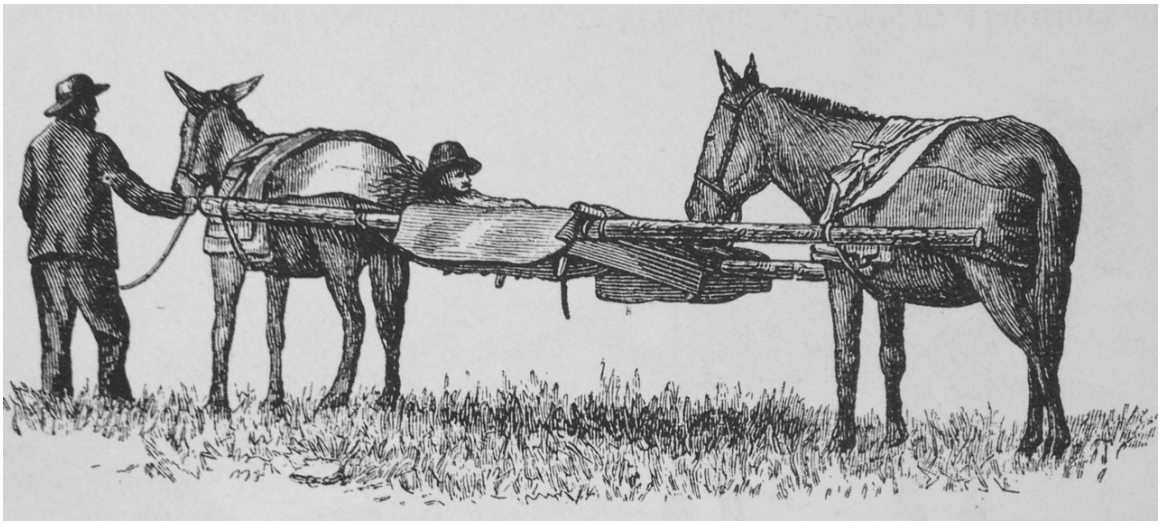


Figure 5. Two-Mule Litter Carrier

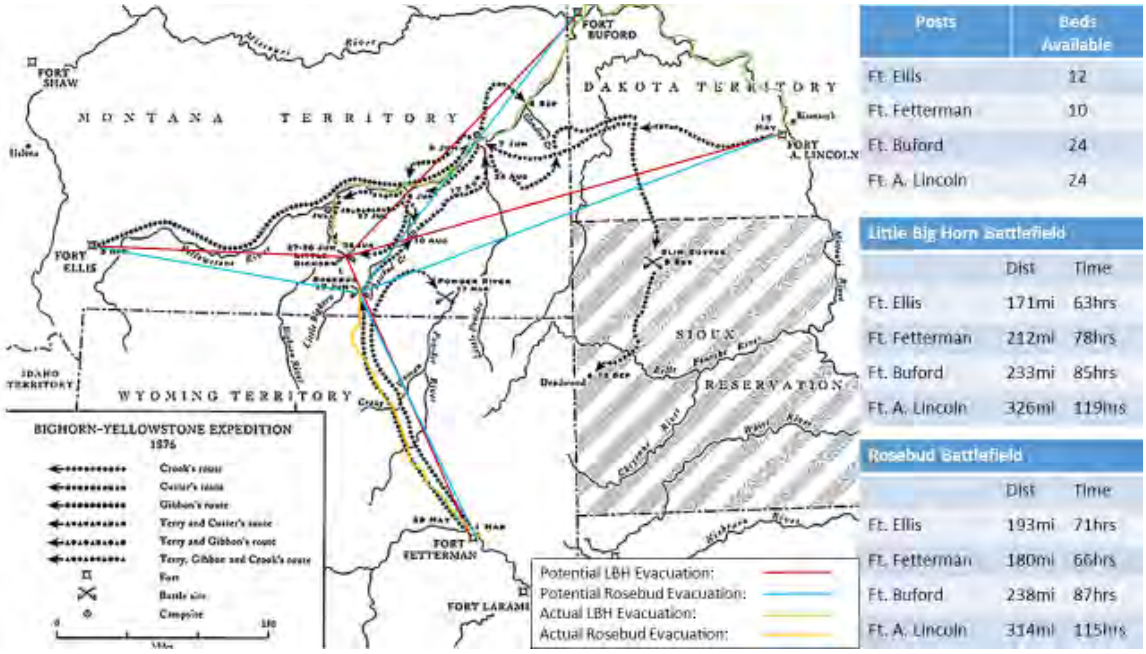
Source: George Otis, *Transport of Wounded by Pack Animals* (Washington, DC: Government Printing Office, 1877), 19.

The construction of these horse and mule litters, however, was more of an afterthought than a pre-planned contingency and posed its own tactical challenges by consuming other resources. Exactly how the surgeons initially planned to deal with evacuating any wounded from the battlefield and what logic governed where to evacuate them concerned the surgeons. Had the ambulances been brought forward for evacuation, would it really have made much difference? To answer these questions, one must first consider the terrain, location of the battlefields in relation to post hospitals**,** lines of communication (ground and water), the nature of the injuries and type of patients, and the original deployment posts.

The terrain the columns traversed on their way to what the army believed to be the hostile Indians' location varied. The elevation was uneven and open land was interspersed with groups of trees and small brush. The trees usually grew close to water.

Rivers cut through the campaign area of operations and served as both a hindrance and a blessing. While rivers proved formidable for wagon and wheeled cart crossing, they served as supply lines for riverboats. Some areas would have been impassable for ambulances, but these areas did not constitute a significant reason to leave them behind completely. Gray asserted the blocking position General Terry intended to occupy in his original plans "could be reached by an easy, level route up the west bank of the Big Horn."[13] Therefore, General Crook and Lieutenant Colonel Custer decided not to bring ambulances along during certain operations out of tactical design, and rather for the sake of speed and agility instead of neglect.

Frontier post hospitals surrounded the area of operations near the present day Little Big Horn and Rosebud battlefields. As stated in chapter three, the campaign leadership did not anticipate large numbers of casualties and as a result did not likely consider the location of their operations in relation to the nearest medical facility. Although the units did not operate too far from supply lines without detailed planning, the supplies and capabilities critical to continued or extended care of casualties existed primarily at frontier hospitals. Water lines of communication alone were the only way to get these resources. In order to provide this capability in the aftermath of both battles, the resulting casualties necessitated evacuation to a frontier post hospital. From a medical standpoint, time is the most important consideration when moving casualties from the battlefield to a treatment facility, even if it means deviating from established logistics routes.[14] Figure 6 depicts the locations of frontier post hospitals, their capabilities (number of beds) and the time/distance analysis from the battlefields.[15]



Posts	Beds Available
Ft. Ellis	12
Ft. Fetterman	10
Ft. Buford	24
Ft. A. Lincoln	24

Little Big Horn Battlefield	Dist	Time
Ft. Ellis	171mi	63hrs
Ft. Fetterman	212mi	78hrs
Ft. Buford	233mi	85hrs
Ft. A. Lincoln	326mi	119hrs

Rosebud Battlefield	Dist	Time
Ft. Ellis	193mi	71hrs
Ft. Fetterman	180mi	66hrs
Ft. Buford	238mi	87hrs
Ft. A. Lincoln	314mi	115hrs

Figure 6. Time/Distance and Hospital Capability Analysis

Source: Created by author. Map taken from Mary C. Gillett, *The Army Medical Department 1865-1917* (Washington, DC: Center of Military History, 1995), 68.

In 1876, the railroad network did not go past Bismarck, North Dakota. Soldiers and units operating west and north of this location relied primarily on two lines of communication–water and ground. Travel distances and the amount of cargo needed determined which of the two options was most advantageous. Water routes proved the most advantageous over long distances in transporting heavier supplies and troops in the absence of time constraints. Campaign units established extended campsites near river intersections while awaiting re-supply. To support the movement of troops, General Terry chartered two steam boats (the *Far West* and *Josephine*) for resupply purposes along the water lines of communication.[16] Figure 6 depicts the movement of ground forces along river systems and the locations of campsites used for waterborne re-supply.

The type of patients (litter bound or ambulatory) requiring evacuation on the campaign and nature of injuries influenced the manner in which the medical staff evacuated them. Army Field Manual 8-55 *Planning for Health Service Support* refers to litter and ambulatory as "transportability types," not a term used to refer to the medical condition of the patient.[17] As the modern Field Manual suggests, the method of moving a casualty who was incapable of walking or sitting required resources beyond the saddle. Even if capable of riding a horse, the saddle could cause further injury or increase a casualty's pain level.

The popular Wheeling ambulance model of the time provided the capability to transport up to 12 ambulatory patients or two litter patients. The exact mix of the ambulatory and litter patients for both the Battle of the Little Big Horn and the Battle of the Rosebud is unknown. In the case of the Little Big Horn evacuation, the assumption is that litter patients comprised the majority of the total of evacuated casualties based on the number transferred to the *Far West*. Based on those numbers, arguably the army could have evacuated all of the ambulatory patients (approximately seven) in one single Wheeling ambulance. This would have reduced the need for resources and guides to support the operation of the travois and mule litters. Reducing the required resources to support the travois and mule litters meant more soldiers for security functions.

In regards to medical evacuation, it was logical to evacuate a wounded soldier back to his originating installation. Medically, the army should have evacuated the casualties to the nearest frontier hospital. The bulk of soldiers in units taking part on the Centennial Campaign came primarily from Fort Abraham Lincoln and Fort Fetterman. Of the two medical evacuations during the campaign, the evacuation from the Rosebud back

to Fort Fetterman was logically and medically sensible in relation to the nearest medical treatment facility (see figure 6). The medical evacuation decisions and methods from the Little Big Horn made less sense medically because they bypassed medical treatment facilities in order to return the casualties to their originating post.

To assess whether or not the medical evacuation part of health service support adequately served the Centennial Campaign units, the Little Big Horn evacuation requires serious analysis. Approximately three days after the 7th Cavalry sustained 50 casualties, soldiers from Gibbon's Column began evacuating them by land using a combination of reactionary methods and material.[18] It took two days to move approximately 15 miles (without ambulances) to an exchange point where 43 casualties boarded the steamboat the *Far West*. The *Far West* departed on July 3, 1876, on what became 700-mile journey in 54 hours. Along this journey, the boat sailed passed a 24-bed hospital to get to Fort Abraham Lincoln (also a 24 bed facility) on or about July 5, 1876. The total time from combat to treatment was ten days.[19]

According to Gray, General Terry dispatched couriers with orders directing the *Far West* to prepare to receive the casualties.[20] Whether or not General Terry made this decision due to the 7th Cavalry casualties' home station, perceived speed of the water lines of communication or without medical perspective is unknown. Campaign surgeons onboard the *Far West* provided medical care so the concept was not a foreign one. However, when General Terry dispatched a courier with official reports of the battle to Fort Ellis, he lacked any sort of medical input to move all the patients via the *Far West.*[21] In doing so, it was clear he recognized the need to relay information of the battle

expeditiously to the closest frontier post. Unfortunately, he did not consider expediting the evacuation of the wounded to the same installation for medical care.

Considering the locations of nearer, comparable treatment facilities and the shorter distances (straight line) than Fort Abraham Lincoln, it is evident one week could have been saved to get the casualties advanced medical care. Had the Centennial Campaign units been authorized the Civil War compliment of the Ambulance Corps (see table 2 in chapter 2), a combined six ambulances could have reduced the resource requirements of the horse and mule litters by carrying twelve of the remaining 43 litter patients. This would have reduced the additional soldiers to guide mules and horses and therefore decreased the tactical risk involved with defending against a potential Indian attack. The benefit of the Ambulance Corps ambulances would not have eliminated the need for additional methods, but would have provided additional manpower to support the campaign.

The medical evacuation system that existed during the Centennial Campaign most certainly could have benefited from the Ambulance Corps. Instead, “an” ambulance managed like a typical logistics asset provided little benefit to the campaign units. Surgeons did not control it as a medical asset as surgeons had during the Civil War. Therefore, the ambulance itself was ultimately underutilized. With the responsibility of treating casualties, surgeons such as Dr. Porter did not have the flexibility to supervise the medical evacuation. If an Ambulance Corps had existed for the Centennial Campaign units, the medical personnel could have managed the tasks more effectively. Ultimately, the evacuations were successful, but arguably, they were unnecessarily laborious and perhaps ill-advised.

[1] Letter from Holmes O. Paulding as recorded by Paul L. Hedren in *The Great Sioux War, 1876-1877: The Best from Montana the Magazine of Western History* (Helena, MT: Montana Historical Society Press, 1991), 129.

[2] Joan N. Stevenson, *Deliverance from the Little Big Horn: Dr. Henry Porter and the Seventh Cavalry* (Norman, OK: University of Oklahoma Press, 2012), 33.

[3] John S. Gray, *Centennial Campaign: The Sioux War of 1876* (Fort Collins, CO: Old Army Press, 1976), 106.

[4] *Report of the Board on behalf of the United States Executive Departments at the International Exhibition of 1876* (Washington: Government Printing Office, 1884), 170, accessed November 23, 2014, http://books.google.com/books?id=PvnNAAAAMAAJ&pg=PA7&dq=report+of+the+board+on+behalf+of+the+United+States+Executive+departments+at+international+exhibition+of+1876&hl=en&sa=X&ei=qVhyVIj9HYaYyQTrq4LAAQ&ved=0CB0Q6AEwAA#v=snippet&q=Lister&f=false.

[5] Joseph K. Barnes, *The Medical and Surgical History of the War of the Rebellion, Part III, Volume II* (Washington: Government Printing Office, 1883), 948, accessed January 25, 2015, https://archive.org/details/medicalsurgical32barnrich.

[6] Gray, *Centennial Campaign,* 123.

[7] Mary C. Gillett, *The Army Medical Department 1865-1917* (Washington, DC: Center for Military History, U.S. Army, 1976), 74.

[8] The conclusion that not a single ambulance was present during the large engagement is somewhat an assumption made by the author. Primary sources from Dr. Paulding as well as secondary sources from Dr. Porter do not give details of utilizing an ambulance during the evacuation of the Little Big Horn casualties. The author did not have access to primary sources from Crook's column describing the evacuation techniques following the Battle of the Rosebud, other than the secondary source from endnote 53, to confirm the absence of ambulances.

[9] Stevenson, *Deliverance at the Little Big Horn,* 89.

[10] Hedren, *The Great Sioux War,* 143. The total time of 10 hours is the author's estimation based on Dr. Paulding's description of marching from "late afternoon and nearly all through the night."

[11] Hedren, *The Great Sioux War,* 143; Stevenson, *Deliverance at the Little Big Horn*, 95.

[12] George A. Otis, *Transport of Sick and Wounded by Pack Animals* (Washington: Government Printing Office, 1877), 19.

[13] Gray, *Centennial Campaign*, 184.

[14] U.S. Department of the Army, FM 8-55, 4-3.

[15] The time/distance/capability analysis represented in Figure 6 is a consolidation of material taken from several references: *Centennial Campaign*, *Report to the Surgeon General Barracks and Hospitals,* and the map is taken from the Office of Medical History website. The distances are straight line distances were determined based on the Latitude/Longitude descriptions of the posts in 1874 and converted to current GPS coordinates. The National Park website provided the GPS locations of both the Little Big Horn and Rosebud battlefields. The time calculation is the result of the average rate of march of Custer's pack train described in the *Centennial Campaign*.

[16] Gray, *Centennial Campaign*, 87.

[17] U.S. Department of the Army, FM 8-55, C-412

[18] Gray, *Centennial Campaign*, 193.

[19] Hedren, *The Great Sioux War*, 215.

[20] Gray, *Centennial Campaign*, 193

[21] Ibid., 194.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

This thesis examined the health service support provided to the Centennial Campaign focusing primarily on medical requirements leading up to and immediately following the Battle of the Little Big Horn. It described the conditions of the frontier posts and the associated medical care provided. It assessed how army and contract surgeons dealt with disease and non-battle injuries, how the army conducted casualty evacuation and the influence of leadership decisions and philosophies on medical planning. This thesis answered the question of whether or not the health service support system(s) for the US Army forces under General Phillip Sheridan during the Centennial Campaign of 1876 met the campaign's medical support needs. The available evidence suggests that the campaign's medical needs were not fully satisfied. Because of the campaign's scope, its large operational area, and the fiscal challenges the army faced during that time, the army health service support did not enable "good" medical care. An analysis of the existing capabilities and concepts demonstrated that the medical support could have been better. Moreover, this chapter recommends further study into why the Army Medical Department had not adopted aseptic techniques in 1876 and an analysis of veterinary care during the campaign.

Medical planners can gain valuable insights from the Centennial Campaign. The first lesson is the importance of health service support planning. Line officers and commanders must understand health service support and medical risks to tactical and operational missions. Medical planners and surgeons must aggressively communicate medical risks and ensure line officers understand them. As previously stated, the

campaign's leadership did not effectively anticipate casualties, let alone predict the volume that occurred. However, health service support is more than casualty anticipation. When the casualties occurred, the units' reactions brought tactical and operational missions to a halt. The commander's propensity to react to, as opposed to their preparation for casualties, led to their inability to understand medical risks and health service support.

Before and during the campaign, commanders displayed undue confidence in their abilities to defeat the enemy. On one occasion, Gibbon communicated to Terry that his 436 man unit was "strong enough to defy the whole Sioux nation."[1] General Terry echoed Gibbon's confidence in communication to General Sheridan stating, "I have no doubt of the ability of my column to whip all the Sioux whom we can find."[2] Sheridan expressed his confidence. "Each column," Sheridan concluded, "will be able to take care of itself and of chastising the Indians should it have the opportunity."[3] From the Campaign's beginning, the army's leadership did not anticipate casualties and they did not realize how their hubris shaped the medical and tactical plans of the operation. Overconfidence in their abilities caused them to rationalize success while operating beyond logistical reach with minimal supplies. The commanders were aware of the shortfalls but chose to sacrifice sustainment for operational speed and mobility.

Casualty estimation in current army doctrine is a Human Resource function and is managed outside of medical channels. Human Resource personnel prepare casualty estimates to synchronize casualty management and calculate replacement ratios in support of the tactical or operational mission. Human Resource personnel provide medical planners with the casualty estimates to allow medical planners to calculate

"patient estimates" and determine workload in medical treatment facilities.[4] Medical planners use the casualty estimate to plan and prepare equipment and personnel to treat based on the casualty estimate data. Line leaders weigh this information as medical risk. This system did not exist during the Civil War or during the Centennial Campaign. However, the lack of a codified system during the Centennial Campaign does not excuse the lack of consideration, or the commander's gross negligence regarding casualties. Ill-prepared surgeons should not be forgiven either.

The failure to anticipate casualties and the commanders' hubris after a decade of war with the Plains Indians seems confusing to medical planners and historians today. Up to that point, Plains Indians had consistently demonstrated their ability to inflict casualties on US soldiers. The Grattan Affair in 1854 saw 30 soldiers killed. The Fetterman Fight in 1866 tragically ended in 80 dead soldiers.[5] Based on this history, the campaign leadership should have anticipated at least "some" casualties and provided their surgeons latitude to adequately prepare for them. Unfortunately, they did not. Likewise, casualty estimation is not the only concept involved in health service support, but because of its absence the campaign endured negative second and third order effects.

Based on the conclusions provided in chapters 3 and 4, campaign surgeons had little influence on line officers. General Terry directed a medical evacuation route by water that bypassed a hospital equal to the capability of their final destination. General Crook routinely positioned his ambulance(s) in locations that prevented their proper use. He also argued with his surgeon over medical supply particulars. Due to these line and staff conflicts, surgeons left critical lifesaving instruments and supplies behind. Colonel

Gibbon's appointment of a line officer to serve as a medical provider was perhaps the single most surprising illustration of the lack of medical planning.

The second lesson centers on the importance of medical evacuation factors. The loss of the Ambulance Corps assets and personnel caused surgeons to become overwhelmed with patient treatment and they were unable manage medical evacuation. The selection of extended evacuation routes bypassing post hospitals and the soldiers who died from wounds on the campaign confirms the current concept of echeloning medical assets and evacuating through those echelons. Three 7th Cavalry soldiers died between 2 July and 5 July, just shortly after the *Far West* received them and it sailed toward Fort Abraham Lincoln. Based on the time and distance calculations in figure 6, those three deaths were preventable. Had the commanders decided to evacuate the casualties sooner, and to a closer location, they could have lived. These casualties serve as evidence of the negative effects of bypassing closer treatment facilities with enhanced medical capabilities. General Terry directed the evacuation to the *Far West* in June. Before the campaign came to a close in September, the Terry and Crook columns continued to repeat the same process of evacuation elsewhere in their operations. The campaign units continued to rely on water routes to evacuate the soldiers suffering from disease and non-battle injuries to hospitals farther away than closer, comparable facilities.

The final lesson is the effect of post-war reductions of medical capabilities on health service support at the operational and tactical levels. The Centennial Campaign illustrated the difference the Ambulance Corps could have made on the battlefield. The Army Medical Department in 1876 had little influence within the War Department to prevent the elimination of the Ambulance Corps. Other than directing a study on frontier

evacuation techniques, it did little to mitigate the risks at the regimental level associated with the reduction.

As the army experiences post-war reductions in 2015, the Centennial Campaign serves as a teaching point for medical planners to develop creative solutions in preparing health service support plans. Recent wars in Iraq and Afghanistan where air ambulance units provided aeromedical evacuation from points of injury to enhanced medical facilities enabled lower died of wounds rates and set "golden hour" standards.[6] This golden hour standard was only possible due to sufficient (and often excess) number of air ambulances operating within the theater of operations. The operational risks of not having appropriate medical evacuation coverage did not exist in all areas of Iraq. However, because the number of aircraft in the country it was possible to connect the individual coverage areas and therefore ensure medical evacuation aircraft provided evacuation from virtually any operational area and back to a military treatment facility.

As the army shrinks, the air ambulance units in many ways are suffering the same fate as the Ambulance Corps before 1876. Instead of relying purely on ground medical evacuation during operations extending over great distances, medical planners in 2015 might incorporate aircraft not engineered for medical evacuation as part of the medical evacuation plan from the beginning. The air ambulance is not the only asset available today to evacuate battlefield casualties, much as the travois, mule litter and steamboat were not the only assets in 1876. However, it is the most efficient and effective under the right circumstances.

There are, however, other areas that this study did not address. One area requiring further study was the Army Medical Department's failure to adopt aseptic techniques in

use at the time. Chapter 3 mentioned how the knowledge was available. The 1876 army medical supply table listed the primary substance required, carbolic acid, available for issue. Historian James McPherson stated, "Within a generation [of the Civil War] the new science of bacteriology had revolutionized medicine."[7] If useful advancements and all the resources were available prior to 1876, why did the delay in practice exist? It was not until the mid-1890s, as Mary Gillett stated, that "to avoid infection" surgeons would soak bandages "for forty-eight hours in ether and for another twenty-four hours in bichloride of mercury in ether, then stored in a solution of carbolic acid and alcohol."[8] Evidence suggests that campaign surgeons and other army physicians understood the correlation between foul smells and infection, but not the infection causing bacteria that flourished in areas emitting the foul smell.

The principle source used in this thesis to assess the frontier operational environmental conditions offered no recommendations to remedy the challenges of infectious diseases. Instead, based on frontier surgeon reports consolidated in the *Report on Barracks*, John Billings provided evidence to support the claim that surgeons understood the correlation but not the cause of infection. In some locations, ventilation was a concern in hospital construction and operation. Although ventilation did aid in reducing the number of communicable disease and infection, it appears that frontier surgeons did not understand the science behind this Civil War practice. Because frontier surgeons demonstrated an understanding of the correlation but not the cause of infection simultaneously as the resources, techniques, and knowledge of preventing infection surfaced, the Army Medical Department's failure to adopt aseptic and antiseptic processes during the Centennial Campaign is confusing and requires additional study.

The last area requiring further study is management of veterinary care during the Centennial Campaign. This thesis did not include an assessment of the veterinary care provided during the campaign for many reasons. First, the Army Medical Department had not established an official Veterinary Corps to care for animals until 1916, forty years after the campaign ended. Therefore, veterinary care was not officially associated with health service support. Second, little information exists on the techniques, practices and procedures of veterinary medicine. Sources describing veterinary care during the Civil War do not clarify (or quantify) veterinary medicine as one might think of it today. Instead, non-veterinary personnel treated animals and used what might be considered today as home remedies at best.

A lack of veterinarian sources limits a historian's ability to accurately understand a standard (Civil War) and then assess adequacy or inadequacy in meeting the campaign's requirements for veterinary care. It requires further study, however, for two reasons. First, the 7th Cavalry did have a veterinarian assigned to it as shown in figure 2. Dr. Carl A. Stein studied veterinary medicine in Germany. Few sources provide information on Stein's actions during the campaign and even fewer on his career. Stevenson noted that Stein's location during much of the campaign and the Battle of Little Big Horn was on board the *Far West*.[9]

The second reason was the evacuation of a horse named Comanche (reputed to have been the "sole survivor" of the battalion immediately under Custer's command). The details of the horse's evacuation are sketchy, as is the treatment Comanche received from Dr. Stein once on board the *Far West*. Stevenson stated that Private Dennis Lynch (a farrier, not a veterinarian) provided initial treatment of Comanche's wounds.[10]

Strikingly enough, Comanche was not evacuated to Fort Abraham Lincoln, but instead turned over to a local livery in Bismarck.[11] Because so little information was available, this study omitted the topic of veterinary care. However, because of the significance of Comanche's story, along with the campaign units' reliance on animals for transportation, veterinary medicine in support of the campaign deserves additional study.

In sum, the army health service support did not provide "good" medical care during Centennial Campaign. In the end, the campaign's scope, the operational area, and the fiscal challenges the army faced in 1876, proved too great for the surgeons that participated in the operation. Armed with insight from this historical example, medical planners in 2015 and beyond can be assertive in ensuring operational commanders grasp the importance of an integrated health service support plan. Reflecting on medical evacuation challenges to campaign units, medical planners can develop creative solutions that are proactive instead of reactive. Reductions in force structure will remain a constant in the army for years to come, but the answers to the problems associated with reductions may be in the not so distant past. The medical aspect of the Centennial Campaign of 1876 offers a valuable case study for current and future campaign planners.

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[1] John S. Gray, *Centennial Campaign: The Sioux War of 1876* (Fort Collins, CO: Old Army Press, 1976), 76.

[2] Ibid., 90.

[3] Ibid., 95.

[4] U.S. Department of the Army, Field Manual (FM) 1-0, *Human Resource* (Washington, DC: Government Printing Office, 2010), C-5.

[5] Charles D. Collins, Jr. *Atlas of the Sioux Wars*, 2nd ed. (Fort Leavenworth, KS: Combat Studies Institute, 2006), 14-33.

[6] Golden hour refers to evacuating a patient to a facility with enhanced lifesaving capabilities within one hour from the time the wound or injury is sustained. This is not a doctrinal standard, but over time became accepted as a standard and expected.

[7] James. M. McPherson, *Battle Cry of Freedom: The Civil War Era* (New York: Ballentine Books, 1989), 486.

[8] Mary C. Gillett, *The Army Medical Department 1865-1917* (Washington, DC: Center for Military History, U.S. Army, 1995), 107.

[9] Joan N. Stevenson, *Deliverance at the Little Big Horn: Dr. Henry Porter and the Seventh Cavalry* (Norman, OK: University of Oklahoma Press, 2012), 87.

[10] Ibid.

[11] Ibid., 110.

APPENDIX A

CENTENNIAL CAMPAIGN 1876 ABBREVIATED CHRONOLOGY

January 31: President U.S. Grant's deadline for "hostile" Sioux Indians to report to reservations

February 8: General Phillip Sheridan directs General Alfred Terry and General George Crook to begin campaign against "hostile" Sioux Indians

February 27: Crook departs Fort Fetterman, Wyoming on first operation of campaign

March 17: Crook's forces sustain casualties near Powder River, Montana; leaves casualties behind to pursue Indians

March 26: Crook's forces return to Fort Fetterman

April 13: Montana Column commanded by Colonel John Gibbon departs Fort Ellis, Montana

May 17: Terry's Dakota Column departs Fort Abraham Lincoln

May 29: Crook's Wyoming Column departs for second operation of campaign

June 17: Crook's Column engages approximately 750 Sioux and Cheyenne Indians in the Battle of the Rosebud near Rosebud Creek, Montana; sustains between 30 and 70 casualties; retreats to Goose Creek (Wyoming)

June 21: Crook departs Goose Creek with wounded back to Fort Fetterman

June 22: General Terry orders Lieutenant Colonel George A. Custer and his 7th Cavalry to conduct an operation toward Rosebud Creek from the Yellowstone River to confirm location of "hostile" Sioux

June 25-26: Custer and the 7th Cavalry engage approximately 1000 Sioux and Cheyenne Indians in the Battle of the Little Big Horn on the Little Big Horn River, Montana; sustains over 300 casualties

June 28: General Terry, his headquarters staff and Gibbon's Montana Column along with 7th Cavalry survivors begin evacuating casualties from the Little Big Horn to the *Far West* steam boat located at the intersection of the mouth of the Big Horn River and the Yellowstone River in Montana

July 3: *Far West* departs for Fort Abraham Lincoln, North Dakota with over 40 Little Big Horn casualties on board

July 5: *Far West* arrives at Fort Abraham Lincoln

September 26: Campaign unofficially ends for Montana, Wyoming, and Dakota Columns

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