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The Civil War and the Transformation of American Medicine

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Abstract

The most common historiographical narrative used to explain the transformation of American medicine during the Civil War centralizes on the brilliance of a few notable physicians, whose radical ideas, daring, and exceptional work ethic built or set precedents for standards foundational to modern medicine. However, this approach is limited and does not consider the impact of the context of war and power structures in shaping the practice of medicine. Through examining personal accounts and official documentation including, government reports, news articles, war journals, private and military correspondence, physicians and nurse's notes, and post-war autobiographical recollections, a new understanding emerges. Civil War physicians were mobilized to make medical breakthroughs due to the context of war itself. The demands of battlefield medicine coupled with the unprecedented magnitude of the wounded exacerbated and made unavoidably explicit many dysfunctional norms and commonly held practices in treatment or inpatient care that too often characterized early American medicine. The context of war exposed the need for changes in medical practice, which was consequently made possible by the military's centralized authority, resources, and systems. These two factors prompted Civil War physicians to transform and professionalize medicine by establishing and enforcing standards for inpatient care procedures or training requirements for practitioners. Ultimately, without the circumstance of battle or the power structure of the military at war, the changes that improved medical practice would have happened much more incrementally and over a more extended period.

Before the Civil War, the practice of medicine in the United States was haphazard at best and dysfunctional at worst. The pervasive lack of systems and organization in medicine continued into the early months of the Civil War and is glimpsed in two brief snapshots that provide a deeper understanding of how the existing challenges in medical practices and the added chaos of battlefield medicine contributed to an evolution in approaches and treatments. Three months into the Civil War, no army hospitals existed in any eastern state, where most of the early fighting was concentrated. Early on, one army department refused to build hospitals because they believed men needed guns, not beds.[1] Another instance, which reveals the absence of professionalism or codes of conduct for physicians practicing during the mid-nineteenth century, is observed in the notes of a military nurse recounting her arrival near the front. She wrote, "We were told that the surgeons were known to stop and dispute as to which of them should perform the operation, and then, after the amputation, instead of attending to the sufferer, they would play with the dismembered hand, foot, or limb."[2] This is emblematic of a general lack of oversight or accountability in the practice of medicine. During this early period, surgeons could be wholly unqualified and ignorant of the effects or consequences of their treatments without fear of losing their license or ability to practice, as these standards and required certification for medical practitioners had not yet been conceived.

Not only did the practice of medicine lack standardization, but there was also no widely accepted consensus on what medicine was, on what caused illness, diseases, or infections, and even less agreement on the most effective treatments. During the eighteenth and early nineteenth

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[1] Pamela D. Toler, *Heroines of Mercy Street*, (Hachette UK, 2016), 33; Stephen Oates, *A Woman of Valor: Clara Barton and the Civil War*, (New York: Free Press, 1994), 4.
[2] From "Orlando H. Worcester, Company C, 7th Ohio Infantry" in "Registers of Army Hospitals and their Staffs." RG 112, entry 219, National Archives, Washington, D.C.

century, physicians were comprised of a large and diverse group of individuals from mixed educational backgrounds, varying from those with formal training in European medical schools to homeopaths and allopaths. Physicians from different backgrounds introduced competing, contradicting approaches and theories for medical practice. Homeopaths and allopaths were accepted at the same level of legitimacy as more academically trained and scientific medical practitioners.

The onslaught of the Civil War brought these issues to the forefront, and military medicine played a pivotal role in facilitating innovative practices and permanently revolutionizing the field of medicine. Increased rigor, systemization, professionalization, and newly established standards for practice came during and as a result of the war.

Theory: War as a Technology of Power—Medicine as a Mechanism for Extending Power

According to Bruno Latour's critique of ANT (Agent-network theory) in *Reassembling the Social*, the power structures and hierarchies existent in a society profoundly shape the interactions—both material and immaterial—between individuals and entities throughout society. Latour also notably reflected on the ways societal structures influence how individuals and organizations develop and utilize technologies.[3] Similarly, the development of medicine in nineteenth-century America as a result of the dynamics and incentives of warfare—rather than simply being a historical moment of passing significance—is emblematic and illuminating regarding the deeper, underlying motivations behind former power structures, social structures, political entities, and various interest groups in shaping codes for interactions, values, and traditions, and influencing their change over time.

[3] Bruno Latour, *Reassembling the Social: An Introduction to Actor-network-theory*, (Oxford University Press, 2005), 83, 86, 139, 138, 167-68, 172-74, 178, 179, 180-83, 188-90.

The context of war—particularly the structure, resources, and organization of the military as a mechanism of power for the federal government—promoted the development and professionalization of medicine in the United States.[4] In the same way, the radical transformation and systemization of medicine can be interpreted as an extension of power—the federal government's growing influence and role in the everyday lives, health, and physical bodies of its citizens.

As Foucault reiterated throughout *Discipline and Punish* – war is a technology of power and inspired, "…the birth of meticulous military and political tactics by which the control of bodies and individual forces was exercised within states".[5] As observed in the rapid military development of medical institutions, standards for practice, and more innovative and effective treatments during the Civil War, the federal government gained a mechanism of control over citizen bodies— a means of replacing private, autonomous, and assorted health care approaches and playing a more direct role in supervising the care, productivity, and preservation of human life or 'human capital' (especially its investment in the fighting bodies of its military), and as an economically beneficial tool of the state (e.g., helping increase access to medicine, and in turn, increased lifespans, overall population health, and productivity).

Historiography

The main scholarship this paper relies on falls into two main categories: medical history and military history. A significant portion of the scholarship on Civil War medical history is dedicated to notable physicians, nurses, or medical personnel who worked in some capacity to address the influx of those wounded in battle. Many of the books on Civil War medicine consist of microhistories and biographies that centralize on the bravery, fortitude, or exceptional

[4] Michel Foucault, *Discipline and Punish: The Birth of the Prison* (Duke University Press, 2007), 141.
[5] Ibid, 168.

personal qualities of a particular individual, while scarcely mentioning the larger scope of medicine, it's practice, and development at the time.

Historians who have studied the biographies, correspondence, journals, or other surviving records of civil war physicians Mary Edwards Walker and William A Hammond have stressed their personal practices and achievements during the war. For example, Theresa Kaminski's book *Dr. Mary Walker's Civil War: One Woman's Journey to the Medal of Honor and the Fight for Women's Rights* gives an added dimension to and helpful intersectional analysis of American women's participation in war and military medicine.[6] Kaminski's central argument is that Dr. Mary Edwards Walker was a highly remarkable woman whose determination, intelligence, strength, and tenacity in rising above the social and professional restrictions for women of her day shaped her achievements and impact during and after the Civil War. Frank R. Freemon, in "Lincoln Finds a Surgeon General: William A. Hammond and the Transformation of the Union Army Medical Bureau" and *Gangrene and Glory: Medical care during the American Civil War* argues that the exceptional management skills, innovative spirit, resourcefulness, willingness to sacrifice, and resilience shown by military physicians such as William A. Hammond, or the countless military medical personnel and medical volunteers throughout American history have shaped the practice of medicine.[7] John Greenwood's book *Hammond and Letterman: A Tale of Two Men Who Changed Army Medicine* asserts that two physicians, Dr. William Hammond and Dr. Jonathan Letterman, revolutionized the practice of medicine during the Civil War due to their ingenuity.[8]

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[6] Theresa Kaminski, *Dr. Mary Walker's Civil War: One Woman's Journey to the Medal of Honor and the Fight for Women's Rights*, (Lyons Press, 2020).
[7] Frank R. Freemon, "Lincoln Finds a Surgeon General: William A. Hammond and the Transformation of the Union Army Medical Bureau," *Civil War History*, vol. 33, no. 1 (1987), 5–21; Frank R. Freemon, *Gangrene and glory: Medical care during the American Civil War*, (University of Illinois Press, 2001).
[8] John T. Greenwood, *Hammond and Letterman: A Tale of Two Men Who Changed Army Medicine*, (Institute of Land Warfare, Association of the United States Army, 2003).

Besides general medical history, the specific role of medicine and exceptional individuals in the military is the central emphasis throughout Scott McGaugh's *Battlefield Angels: Saving lives under enemy fire from Valley Forge to Afghanistan*.[9] In *Battlefield Angels*, McGaugh uses oral history transcripts, first-hand witness accounts of events, official records, and newspapers in a comprehensive account of medicine in the military and navy from the Revolutionary War to more recent U.S. military involvement in the Middle East. His book investigates three themes: how warfare played a role in exacerbating already existing problems and inefficiencies in medicine, a devastating trend of more rapidly developing and more destructive weaponry compared to the slower growth of medical advancements which has at times hampered effective care of those wounded in combat, and how military medical personnel have risen to these challenges and helped improve military medicine. McGaugh's *Surgeon in Blue: Jonathan Letterman, the Civil War Doctor Who Pioneered Battlefield Car* is a more focused look at Dr. Jonathan Letterman, whose influence includes the crucial contribution of an ambulance system.

Jane E. Schultz's *Women at the Front: Hospital Workers in Civil War America* explores women's roles in the war effort as medical workers (hospital volunteers, nurses) or domestic workers (doing laundry, cooking, sewing).[10] Schultz emphasizes the social history of Civil War relief work. Similarly, Lisa Tendrich Frank's formidable, comprehensive two-volume work, *An Encyclopedia of American Women at War: From the Home Front to the Battlefield,* also documents hundreds of women who were involved in some aspect of military relief work or military medicine. [11]

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[9] Scott McGaugh, *Battlefield Angels: Saving Lives Under Enemy Fire from Valley Forge to Afghanistan* (Bloomsbury Publishing, 2011); Scott McGaugh, *Surgeon in Blue: Jonathan Letterman, the Civil War Doctor Who Pioneered Battlefield Care*, Skyhorse Publishing Inc., 2013.
[10] Jane E. Schultz, *Women at the Front: Hospital Workers in Civil War America*, (University of North Carolina Press, 2004).
[11] Lisa Tendrich Frank, *An Encyclopedia of American Women at War: From the Home Front to the Battlefields*. (Santa Barbara: ABC-CLIO, LLC, 2013).

My research builds on this scholarship to analyze the role of the military, the federal government, power structures, and the social dynamics of combat, rather than focusing on the role of individuals in catalyzing many crucial advancements in the practice of medicine. In contrast to Scott McGaugh's emphasis on heroic military medical personnel or Shultz or Greenwood's examination of specific subjects who participated in military medicine, I will be investigating the role of the war itself, the shifting balances of power, the hierarchy and systems of organization in the military, and the nature of conflict. I will be exploring the unique challenges brought about by warfare—in inspiring, incentivized, and facilitated military physicians to rethink medicine and introduce more efficient procedures and organizational standards. Further, I argue that the Civil War had a direct influence in creating a demand for the establishment of a more cohesive, standardized medical practice that directly resulted in the professionalization of medicine.

Antebellum Medical Practices

In the early nineteenth-century, American medicine was characterized by a wide range of approaches which often, confusingly seemed to be equally influenced by empirical observation and the practical reasoning of folklore, religious beliefs, and traditions.[12] During this period, there existed no systematized study or methodology of medicine, and no official or widely agreed-upon ways of practicing medicine.[13] There were no enforced standards, collectively recognized definitions and treatments, or regulations.[14] Essentially, medicine as a practice, as a field of study, and as a profession lacked organization and systemization due to a lack of

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[12]Charles Rosenberg, *The Care of Strangers: The Rise of America's Hospital System* (Baltimore: Johns Hopkins University Press, 1987), 494; Myrl Ebert, "The rise and development of the American medical periodical 1797-1850," *Bulletin of the Medical Library Association* 40, no. 3 (1952), 257.
[13] Paul Starr, *The Social Transformation of American medicine: The Rise of a Sovereign Profession and the Making of a Vast Industry* (Basic Books, 2008), 27.
[14] Walter Johnson, *Homoeopathy: Popular Exposition and Defense* (London: Simp- kin, Marshall, 1852), 39.

centralization. Without a centralizing authority or large governing system, American medicine in the early nineteenth century was characterized by an eclectic, often contrasting, and seemingly arbitrary collection of theories, treatments, and practices often inspired by a mixture of tradition, personal observation, and assumption, alongside new, innovative scientific discoveries, up-and-coming theories, or medical breakthroughs featured in European medicine.[15]

Access to medicine was limited by class, gender, and race. For example, Protestant Anglo-Saxon men were more likely to be able to find and receive necessary care or treatment than women, Native Americans, or Africans (even those who were born free or emancipated). Frequently, early American medical theories and practices tended to gravitate towards home remedies as well as herbal and homeopathic treatments.[16]

Inspired by a combination of the rise in European empiricism, the influence of African homeopathic treatments and herbal remedies, and Native American spiritual healing rituals and local herbal knowledge, American medicine during the early to mid-1800s began to transform. As historian John Duffy wrote, American medicine began to change from, "a religious procedure with empirical undertones to an empirical procedure with religious undertones" and evolved into numerous distinct approaches which each had unique “anatomical” or “biological” theories for bodily function, causes of illnesses, philosophies for alleviating ailments, effective treatments, and procedures.[17]

One feature shared by many American physicians was the heavy significance placed on body dynamics. Physicians believed sick patients were ill as a result of an imbalanced system.[18]

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[15] McGaugh, *Surgeon in Blue*, 35.
[16] Mary Ruggie, *Marginal to Mainstream: Alternative Medicine in America* (Cambridge University Press, 2004) 28.
[17] John Duffy, *From Humors to Medical Science: A History of American Medicine* (University of Illinois Press, 1993), 2.
[18] McGaugh, *Surgeon in Blue*, 35.

To regain balance and thus cure the illness, the human body had to be emptied of this excess or unwholesome blood. Physicians were encouraged to release a pint or more of blood at a time.[19] In addition to bleeding patients, physicians might bleed themselves, their wives, and their children.[20] This focus on 'body dynamics' and 'balancing systems' was an inherited perspective dating back to colonial medicine. Commonly, nineteenth-century American physicians defined all ailments as an imbalance of the four humors and encouraged treatments such as excessive bloodletting (both for cure or prevention of illnesses), or "natural remedies" —including mixtures of chemicals (such as mercury and lead) at the time widely believed to be effective treatments due to anecdotal observations of their apparent success in immediately alleviating certain symptoms.[21]

In addition to continuing ancient practices and a limited understanding of the workings of the human body, most American physicians at the time had a minimal to nonexistent grasp on the impact of hygiene in patientcare or what factors helped facilitate patient recovery. More often than not—as surviving physicians' notebooks from the early to mid-nineteenth century indicate—treatment seemed to be guess-work.

Many practices were not only questionable, but were lethal—including such practices as leeching, bleeding, or rushing to amputate.[22] It wasn't uncommon for treatments to be based more on tradition than on established information, verifiable empirical observation, or control testing. For example, a book of medical recipes by two physicians who practiced from the turn of

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[19] Thomson, Samuel. *A Narrative of the Life and Medical Discoveries of Samuel Thomson* (Boston, Massachusetts. (1822), 27.
[20] Rosenberg, *The Care of Strangers*, 494.
[21]Vivian Nutton, "Humoralism," Companion Encyclopedia of the History of Medicine, vol. 1," (1993): 281-291; Richard Harrison Shryock, "Eighteenth Century Medicine in America," (American Antiquarian Society, 1950); Thomson, *A Narrative of the Life and Medical Discoveries of Samuel Thomson*, (Boston, Massachusetts, 1822), 27.
[22]James C. Whorton, *Nature Cures: The History of Alternative Medicine in America* (Oxford University Press on Demand, 2004), 6.

the century to the mid-1800s suggested using wine and vinegar as a treatment, copper or mercury to address inflammation, mercury and lead to cure a type of ulcer, lead used externally "as a powerful astringent's", or opium as the best, and most efficient sedative.[23]

Generally, physicians believed in, practiced, and taught that mercury in high doses could treat bodily systems and ailments such as pneumonia, dysentery, typhus, tuberculosis, and yellow fever. Some medical practitioners believed that these sicknesses were caused by poisons. Though bloodletting to drain "impure" blood to restore a patient's balance was declining in popularity, it was still practiced. Combined with the inherent risks of these practices, physicians were also nearly powerless against infection. In the late 1840s, surgeries on open wounds frequently led to infections that oozed pus and sometimes resulted in a patient's death. However, physicians during this time naively viewed pus as an indication that the wound was healing. Furthermore, in surgery, probes and surgical instruments were seldom if ever cleaned between patients and surgeons would put their bare hands directly into patients' wounds.[24]

Antebellum Medical Training

The abundance of conflicting medical theories, philosophies, and treatments, and pervasive disease and infection were likely not simply due to unsanitary practices but heavily influenced by the widespread lack of standardization or formal organization, which did nothing to challenge the unsystematic approach to medicine that generally emphasized tradition over methodical, empirical scientific practices. This was likely perpetuated by an acute absence of any accessible physician training systems, much less standards for prerequisite experience or education requirements for aspiring physicians. This deficiency in physician training included

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[23] *Seth Hastings and Seth Hastings, Jr., Commonplace books, medical records, and papers, 1760-1830, MS,* Harvard University Database, https://id.lib.harvard.edu/ead/med00212/catalog.

[24] Philip W. Smith, Kristin Watkins, and Angela Hewlett, "Infection control through the ages," *American journal of infection control* 40, no. 1 (2012): 35-42.

the lack of an official standard for medical school curriculum. Thus, the handful of medical schools in the United States at the time carried a wide variety of clashing, paradoxical information, approaches, and procedures for the practice of medicine.[25]

European medical thinking was the most influential of all pressure shaping American medical practices and education through the early nineteenth century.[26] In order to become a physician in the United States during this time, typically, an aspiring physician would be able to choose between multiple opportunities: attend a two-year apprenticeship, go to one of 28 medical schools in the United States at the time (as of 1840), or travel to Europe to study at their medical schools.[27] Upper-class aspiring practitioners were often the only ones who could afford to travel to European medical schools and seek experience in more advanced, established hospitals.[28] Generally, American medical schools stressed lectures over both textbook study and clinical experience.[29] They varied in how rigorous or radical they were in their teaching styles, education, philosophies, or hands-on practicum requirements. Often, medical schools simply acted as "diploma factories" for anyone with sufficient financial resources. Those without the necessary finances could have still become a physician by becoming an apprentice. For the most part, federal and state governments did not affect medical research or fund studies or students. Neither did they regulate the practice of medicine through any direct laws or policies.[30]

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[25] Shauna Devine, *Learning from the Wounded: The Civil War and the Rise of American Medical Science* (Chapel Hill: University of North Carolina Press, 2014), 6.
[26] McGaugh, *Surgeon in Blue*, 35.
[27] Ibid., 33.
[28] Starr, 27.
[29] McGaugh, *Surgeon in Blue*, 32. Case in point, one of the most prominent medical school professors at at Jefferson Medical College in Philadelphia, George McClellan, was known for lecturing without using notes and encouraging his students to participate and engage in his classes. McClellan at the time also had a clinical approach that would be considered completely unethical and unthinkable today. He promoted using poor patients as case studies or subjects of human experimentation by the student physicians.
[30] Rosenberg, *The Care of Strangers*, 258; McGaugh, *Surgeon in Blue*, 43.

At the turn of the eighteenth century, and during the early decades of the nineteenth century, many physicians relied on informal knowledge from their clinical experience to understand patients and their needs. When their experience was insufficient, they relied on treatments passed down for centuries. A young New York City physician in 1795 made note that though he may not have seen immediate results, his belief was enough to motivate him to continue the treatment.[31] Commenting on this self-confident empiricism, or tendency to have faith in conventional medical practices, historian Charles E. Rosenburg writes, "Even when physicians felt some anxiety in particular cases, they would take assurance from the knowledge that they were following a mode of practice endorsed by rational understanding and centuries of clinical experience…without belief, the system could hardly have functioned."[32]

Amateur healers or homeopaths could practice with the same amount of credibility and profit as unlicensed physicians who had attended a European medical school or spent time as a physician apprentice. Broadly speaking, medical cures or treatments were largely herbal and were unregulated by any society, organization, or by either local or federal governments.[33]

When it came to diagnosing patients, most physicians did not have access to any type of tool or epidemiological technology beyond their five kinesthetic senses. Physician approaches from this time become more understandable with this knowledge in mind. They had to rely on a method of practice based solely on external observation, a "framework of explanation which emphasized the importance of…surface eruptions which might accompany fevers or other internal ills".[34]

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[31] "From Thomas Jefferson to William G. Munford, 18 June 1799," *Founders Online*, National Archives, https://founders.archives.gov/documents/Jefferson/01-31-02-0112.
[32] Rosenburg, *Explaining Epidemics* (Cambridge University Press, 1992), 494.
[33] McGaugh, *Surgeon in Blue*, 37.
[34] Rosenberg, *Explaining Epidemics*, 14.

These challenges, combined with the lack of systemization may have been due to the absence of centralization. There was no concentrated body of medical practitioners to establish, monitor, or enforce efficient standards for practice, no consolidated and verified medical understanding, much less any comprehensive, official training, or coordinated, methodical patientcare. Altogether, the highly disorganized medical approach of the early nineteenth century may have contributed to the fact that nearly a quarter of all patients did not survive care and died before they got better.[35] The archaic and often ineffective practices were exacerbated by the lack of formal guidelines and the non-existence of any legitimate, authoritative certification or licensing process to ensure incoming physicians' qualifications or aptitude prior to practice—as well as an absence in established requirements or regulations for procedures and treatments for practicing physicians. In other words, there was no "code of ethics" or "banned procedures" and no limitations on the curiosity, eccentricities, or inhumanity of a professed physician's choice in treatments.

Two loosely associated schools of thought began to grow in influence among the conflux of countless medical theories and practices incorporated in nineteenth-century American medicine. On one hand, a growing body of physicians and medical schools began to roughly organize into professional societies which adhered more closely to empiricisms and scientific standards. This scientific approach to medicine contrasted with the popular, unorthodox, naturalist approach or Thompsonian approach of allopathic treatments.[36]

Early Military Medicine

[35] Philip W. Smith, Kristin Watkins, and Angela Hewlett, "Infection control through the ages," *American Journal of Infection Control* 40, no. 1 (2012): 35-42.
[36] Thomson, 27.

American military medicine in the early nineteenth century (in the War of 1812 and the Mexican-American War) reflected the state of American medicine as a whole—largely disorganized, under-staffed, and dangerously underequipped. Approximately seven times more soldiers died from disease or infection than those who were killed in battle in the Mexican-American War due to a lack of efficient, systemized care, personnel, or medical resources. The extreme want of medical personnel is portrayed in a startling statistic, also from the Mexican American War—initially, out of 7,000 troops, only 72 were medical officers. Later in the war, the army expanded to over 100,000 soldiers; yet the number of medical personnel (including volunteers) was only 250.[37] According to historian Scott McGaugh, one out of six soldiers in the Mexican- American War died in combat or from disease.[38]

As portrayed in the previous section, medicine in the mid-nineteenth century was characterized by disorganization and a lack of standardization both for medical practices as well as for the very process of education and certification as a physician.[39] There was little governmental control or regulation of medical care.[40] This is evidenced most clearly in the lack of government funding for public hospitals or public health, in addition to an extremely neglected military medicine.

At the beginning of the Civil War, the military was wholly unprepared to respond to casualties or practice wartime medicine.[41] Recent conflicts such as the Mexican American War had revealed the full extent of the United States federal army's desperate need for organization

[37] Surgical Memoirs of the War of the Rebellion v.2, *United States Sanitary Commission* (1871): 63.
[38] McGaugh, *Battlefield Angels*,14.
[39] Starr, 27.
[40] Devine, 7.
[41] Gillett, *The Army Medical Department 1818–1865*, 95.

and development in medicine. During the Mexican-American War (1846 – 1848), enemy fire killed 1,500 while more than 10,000 died from disease. Statistically, it became America's most deadly war with one in ten men dying of disease. In 1839, on average a soldier would fall ill every five months due to the conditions. The establishment of a surgeon general had only recently happened in 1818, and medical physicians were in extremely short supply. Historian Scott McGaugh writes that the army met the increasing demand by offering to promote medical school graduates to a higher military office, giving them instant responsibility over hundreds of men. In 1849, the U.S. Army accepted 26 fresh medical school graduates to immediately begin work at the battlefront.[42]

Along with the lack of proper treatment or sufficient medical personnel, prior to and during the very first year of the war, medical facilities and large, organized hospitals were incredibly rare. The pervasive lack of adequate facilities to treat the wounded and sick is highlighted in a note by stateman and military officer, Lewis Cass:

> Many of the military posts are entirely destitute of suitable accommodations for the sick. A large portion of the buildings appropriated to that purpose has been erected a long time and were built with perishable materials in a hasty manner to meet the exigencies of the occasion, while at most of the works recently completed, no provision is made for the sick, who are necessarily placed in damp casements, or in temporary buildings entirely unfit to protect them from the inclemencies of the weather, or to preserve the property under the charge of the medical officers.[43]

Military leaders at the time were aware that their medical personnel were under-resourced, disorganized, and understaffed.

As mentioned previously, leading up to the Civil War, there had been no educational or certification requirements for military physicians. A wide variety of practitioners and self-claimed physicians comprised initial military medical personnel. Understandably, many of these

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[42] McGaugh, *Surgeon in Blue*, 38-42.
[43] Charles Ayars, "Some Notes on the Medical Service of the Army, 1812–1839," *The Military Surgeon*, May 1922, 504-506.

physicians were under-trained and had insufficient experience with treating patients, much less in treating the types of injuries incurred by war and battle. Many doctors had never seen the inside of a living patient's abdomen.[44]

Initially, in 1861, the military medical corps were severely disorganized, understaffed, and inefficient in their care of the wounded.[45] However, though the personnel in most army hospitals consisted of medical students, unlike in the Mexican-American War, battlefield physicians began to exclude less experienced physicians in favor of those with some training or experience.[46] Yet, despite having some medical training, these physicians were not prepared or trained to treat the types and scale of injuries common on the battlefield.[47] Physicians practicing in battlefield hospitals often allowed latrines to be built directly adjacent to hospitals or used unsterilized equipment on patient after patient.[48]

The demands of battlefield medicine along with the massive surge in casualties catalyzed the beginnings of a widespread realization among medical practitioners that medicine needed to become more organized, standardized, and coordinated. Military physician, Dr. Jonathan Letterman recounted, "On the field of battle, where confusion in the Medical Department is most disastrous… unless some arrangement be adopted by which every Medical officer has his station pointed out and his duties defined beforehand."[49]

The military's centralized structure of command (hierarchical and highly organized), authority (being backed by the federal government), and resources, coupled with the context and demands of warfare, helped inspire numerous resourceful initiatives and innovative efforts by

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[44]McGaugh, *Battlefield Angels*, 15.
[45] Letter by surgeon Frank H. Hamilton, *American Medical Times*, July 27, 1861.
[46] Straubing, 11.
[47] McGaugh, *Battlefield Angels*, 15.
[48]Sharon M. Harris, *Dr. Mary Walker: An American Radical, 1832-1919*. Rutgers University Press, 2009, 38.
[49] Jonathan Letterman, *Medical Recollections of the Army of the Potomac*, (New York: Appleton & Company, 1866), 57, 58.

military physicians such as Dr. Jonathan Letterman, Dr. William A. Hammond, and Dr. Mary Edwards Walker. As a result of the war, medical practices became increasingly effective, more rigorous standards and systems of medical organization were developed, including more centralized facilities replacing disorganized and smaller-scale care centers.

The Transformation of Medical Practices

The disorganization and inefficient practice in the early moments of Civil War medicine did not last very long. According to historians Herman Hattaway and Archer Jones, an important key to Northern success was found in their creation or improvement of structural organization, systems of hierarchy, delegation, and management—a "departmental system of regional responsibility". The transformation of medical practices paralleled and resulted in the government and military's intentional large-scale "development of superior managerial systems among both soldiers and civilians".[50]

The practice of medicine throughout the Civil War mainly transformed in the approach of hygiene and disinfection, anesthesiology, amputation, and scientific professionalization. This included standards for dealing with emergency situations, transporting wounded patients more efficiently, and promoting patient rehabilitation. First, germ theory, which was only just being popularized, became more widely understood as medical workers began to see a correlation between unclean treatment or treatment facilities and the increased presence of disease, infection, or patient mortality. For example, a nurse named Sarah Gregg wrote of the terrible hospital conditions and the prevalence of disease which came as a result of them in Camp Stebbins,

[50] Herman Hattaway, and Archer Jones, *How the North Won: A Military History of the Civil War* (University of Illinois Press, 1991), 10, 102-05, 107, 280.

Illinois: "I ascertain the disease prevalent among the patients are smallpox, measles, pneumonia, erysipelas [*sic*], flu, diarrhea [*sic*], and consumption.[51]

In response to the rising mortality of patients as a result of contracting diseases or getting infections during their stay in military medical care centers, Dr. Jonathan Letterman and Dr. William A. Hammond both used their military positions to help establish protocols and basic general standards for care. Dr. Letterman, observing the lack of organization in caring for the wounded, helped to create a more consolidated and coordinated approach through protocols and training requirements for medical physicians which helped both in creating more efficiency and in eliminating the festering mess that characterized many early Civil War hospitals and care centers.[52]

Dr. William Hammond instituted regular mandatory medical inspections which aimed to help improve the standards of medical practice and patient care in hospitals. Dr. Hammond emphasized improving hospital ventilation through setting requirements for hospitals and for highlighting the importance of examining airflow and ventilation in medical inspections. In addition, Dr. Hammond attempted to introduce a sanitation project, though it was short-lived due to political issues and lack of support.[53]

Another military physician who promoted hygiene, is Dr. Mary Edwards Walker—though her impact was limited and she is less renowned due to her gender. Throughout her tenure in Union hospitals as a practicing physician, Dr. Walker is recorded to have been a persistent advocate for hygienical medical treatment, promoting sanitation and disinfection in surgery. She "prioritized cleanliness and hygiene [and] opposed amputation for its surgical risks

[51] Tisler, "War Time Diary of Mrs. Sarah Gregg," January 27, 1863, ISHL.
[52] Jonathan Letterman, *Medical Recollections of the Army of the Potomac* (New York: Appleton & Company, 1866).
[53] Schultz, 111-12.

and decreased postoperative quality of life. She believed that many wounds, when appropriately attended to, would heal without amputation..."[54]

The profound organizational, methodological, and professional developments to medicine—in which military physicians were pivotal—were funded and made possible by the governing body, and medicine—it's transformation and establishment as a profession—was an extension of power. If the soldier was a tool of the state, to preserve life was in the interest of the governing body and a more effective, functioning, organized, systematized practice of medicine would be beneficial economically and politically for the state to maintain and expand its power. In the same way, military structure, personnel, and resources helped facilitate military medical personnel in making new, life-saving discovers and changes to their practices.

Antiseptics and Disinfectants

Besides laying the foundation for modern sanitation standards in patient care, during the Civil War, antiseptics and disinfectants became increasingly used by doctors in military hospitals. According to surviving medical records, physicians in both the North and the South increasingly used antiseptics such as potassium iodide, liquid iodine, nitric acid, powdered charcoal, turpentine, sulphuric acid, hydrochloric acid, corrosive sublimate (bichloride of mercury), creosote, and alcohol, as well as disinfectants such as sulfate of lime, quicklime, chloride, and bromine to clean wounds (though they ironically still did not sterilize surgical equipment).[55] Notably, many Civil War surgeons in both the Union and Confederate armies pioneered using carbolic acid as an antiseptic or disinfectant ahead of the important, pivotal 1865

[54]S Y Tan, and H Sung, "Mary Edwards Walker (1832-1919): Surgeon, Feminist and War Heroine." *Singapore medical journal*, vol. 49, no. 3 (March 2008): 186; Kevin M. Klifto, Amy Quan, and A. Lee Dellon "Mary Edwards Walker (1832–1919): Approach to limb salvage therapy," *Wound Repair and Regeneration,* vol. 27, no. 3 (2019): 285-87.

[55] Glenna R. Schroeder-Lein, *The encyclopedia of Civil War medicine* (Routledge, 2015), 26-27.

study on the effectiveness of carbolic acid to sterilize wounds by Dr. Joseph Listen who is now known as the founder of antiseptic medicine.[56]

Women physicians and nurses played a key part in expanding this growing emphasis on hygiene.[57] As is evidenced in the account of one Union nurse, Harriet A. Dada, army medical workers, especially nurses, began to observe and make note of how unhygienic practices in battlefield medicine had harmful consequences on the recovery of patients. Dada observed that there was a correlation between common practices and fatalities writing that the nurses had been, “bathing all their wounds in one basin of water”, and later observing, “a large number of the wounded died…bad symptoms soon appeared". This points to increasing awareness on the issue of hygiene and the growing apparency of the link between lack of sanitation and the deterioration of a patient's condition. From the detailed accounts of nurses such as this one, it seems that this issue of hygiene was made more explicit by the sheer magnitude of patients in the thousands of soldiers being wounded daily in battle. There was growing recognition of the importance of hygiene in a patient's optimal recovery.[58]

Amputations and Anesthesia

Dr. Mary Edwards Walker, who was the first female surgeon to practice in the U.S. military, was not only a strong advocate for hygiene and cleanliness in surgery, but an outspoken skeptic of the prevalent practice of amputation.[59] According to an observer, "She advocated for patients who she believed did not require amputations and counseled them on their

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[56] Alfred Jay Bollet, *Civil War Medicine: Challenges and Triumphs* (Tucson, AZ: Galen), 2002.
[57] Carolyn Skinner, "The Purity of Truth": Nineteenth-Century American Women Physicians Write about Delicate Topics" *Rhetoric Review* 26, no. 2 (2007): 103-19, http://www.jstor.org/stable/20176769.
[58] “Registers of Army Hospitals and their Staffs,” RG 112, entry 219, National Archives, Washington D.C.; Harriet A. Dada, and Edmund J. Raus. *Ministering Angel: The Reminiscences of Harriet A. Dada, a Union Army Nurse in the Civil War* (Gettysburg, Pa: Thomas Publications, 2004); Rosenberg, 489.
[59] S. Y. Tan, and H. Sung, 186.

rights to refuse surgical care."[60] Like Dr. Walker, many Civil War military physicians were able to meet the demands of battlefield medicine with resourcefulness and innovative new approaches through the power and access to systems, resources, and personnel provided by their position in the military to develop more efficient methods for treating the wounded. Through the military and due to the context and demands of warfare, physicians were incentivized and facilitated in creating a more systemized practice of medicine with more efficient methods for treating the wounded. Dr. Walker believed "many wounds, when appropriately attended to, would heal without amputation" and used her position as a physician in the military to advise against the widespread use of amputation to the assisting medical personnel and volunteers where she was stationed.[61]

Dr. Walker's criticisms of amputations were not unfounded. According to Civil War historian, Glenna R. Schroeder-Lein, for much of the Civil War amputations were common and generally consisted of not one, but two amputations which typically included a secondary amputation due to infection caused by the first.[62] As the war drew to a close, increasing awareness of the ineffectiveness of amputation as a treatment method gave rise to other forms of treatment such as splints, which promoted healing and de-necessitated amputations.[63]

In correlation with the widespread practice of amputations, anesthesia became a popular tool among military physicians and was used especially in more intensive surgeries. Two main anesthetics used during this period were ether and chloroform, though chloroform was more common. Anesthesia was mixed and administered haphazardly, but, well-ventilated facilities and

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[60] Klifto, 285-87.
[61]Atiq Rehman, Naba G. Rahman, Sharon M. Harris, and Faisal H. Cheema, "Mary Edwards Walker: The soul ahead of her time," *Jama Surgery* 150, no. 2 (2015): 173-74; Sharon M. Harris, *Dr. Mary Walker: An American Radical, 1832-1919* (Rutgers University Press, 2009), 61.
[62] Schroeder-Lein, 16-17.
[63]Joseph K. Barnes, ed., *The Medical and Surgical History of the War of the Rebellion (1861–65,*. Washington, DC: Government Printing Office, 1870–1888; reprint, Wilmington, NC: Broadfoot, 1990.

the general use of low doses helped curtail the risk of fatalities from chloroform overdose.[64] These treatments were not only crucial in helping to save lives but became foundational approaches in a new era of American medicine.

The Role of the Civil War in the Systemization and Standardization of Medicine

The power structures of the military and government were pivotal in creating, incentivizing, and enforcing stricter guidelines and requirements for a physician to be allowed to practice. Though the initiatives only applied to medical military medical personnel or military physicians, the unprecedented organizational efforts and efficient results of the military policies inspired considerable development in medicine. The professionalization and systemization of medicine was a direct result of the context of war—war as a technology of power.[65]

Due to the pressures and demands of war, the U.S. government expanded its authority in size and scope and used its wartime power to enforce new laws, policies, and standards on a more widespread scale. War demands rapid progression of technology and high-functioning, organized systems. Thus, war is an essential technology of government power, a tool for the government to expand and reinforce its authority by increasing its involvement and influence in civilian sectors. The Civil War facilitated the federal government in improving systems, building infrastructure, and funding the invention of new technologies—thereby ensuring the efficient operation of government while also providing a wartime advantage. These developments were primarily enacted by the military.[66] In this way, Civil War military medicine was a crucial catalyst transforming American medicine from a disorganized, highly private practice to a public practice with increasing standardization and professionalization.

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[64] Schroeder-Lein, 22.
[65] Foucault, 168.
[66] Brian Balogh, *A Government Out of Sight: The Mystery of National Authority in Nineteenth-Century America* (Cambridge University Press, 2009).

The authority, organization, personnel, and resources of the military facilitated the efforts of army medical personnel—such as Dr. William A. Hammond (Secretary General), Dr. Jonathan Letterman (Military doctor), and Dr. Mary E. Walker (Volunteer surgeon), who each promoted a more scientific and methodical approach to medicine in their own practices and scopes of influence. With the influence and efficiency of the military power structure and the backing of the federal government, physicians such as these successfully advocated for radical, innovative approaches in the practice of medicine such as shared knowledge and increased cohesiveness among physicians, objective reasoning and established protocols in dealing with the critically injured, reliance on scientific discoveries in recent Western scholarship, and more standardized systems for patient treatment and care.[67]

However, this new idea of homogenizing and institutionalizing the practice of medicine naturally stood in stark contrast to the common approach of subjective, intuitive, unfixed, and highly individualistic practice that characterized medicine for decades preceding the war, and there was often serious criticism and backlash from other medicine practitioners. For example, one of the central reasons for Dr. William A. Hammond's dismissal from the position of Surgeon General in 1864 was due to blowback caused by his insistence on strict rules of requirement for the admittance of military physicians.[68] He refused allopathic graduates and homeopaths from working in military hospitals and supported James W. Grimes, a senator from Iowa, who proposed a bill in the Senate for disallowing homeopaths from practicing in military hospitals.[69]

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[67] Shultz, 112; Charles M. Snyder, *Dr. Mary Walker: The Little Lady in Pants* (New York: Vantage Press, 1962); Georgina Ferry, "Mary Edwards Walker: Military Surgeon Who Wore the Trousers," *The Lancet* (British edition) 395, no. 10220 (January 25, 2020): 263; John T. Greenwood, *Hammond and Letterman: A Tale of Two Men Who Changed Army Medicine* (Institute of Land Warfare, Association of the United States Army, 2003).
[68] William A. Hammond, *A Statement of the Causes Which Led to the Dismissal of Surgeon-General William A. Hammond* (1864), 72.; Frank R. Freemon, "Lincoln Finds a Surgeon General: William A. Hammond and the Transformation of the Union Army Medical Bureau," *Civil War History* 33 (March 1987): 5–21.
[69] Glenna R. Schroeder-Lein, *The Encyclopedia of Civil War Medicine*, Routledge, 2015, 10.

These propositions for stringent standards of medical education, which excluded long-accepted allopaths and homeopaths, were highly controversial. Dr. Hammond's dismissal was largely a result of alienation following his refusal to accept less rigorous requirements for medical practitioners.[70]

Dr. William Hammond also helped the standardization of medicine by encouraging a more systemized, consistent, and thorough record-taking by physicians of their patients and their symptoms, treatment, and recovery. The six-volume *The Medical and Surgical History of the War of the Rebellion* (1870–1888) published after the war was a direct result of Hammonds pressure for surgeons and physicians, including himself, to take and collect detailed records to help the practice of medicine as a whole.[71]

Dr. William Hammonds other contributions to American medicine include helping institute mandatory training for battlefield physicians, improving the organization and ventilation of hospitals, and creating more established protocols for medical situations. He made training mandatory, especially in public health, hygiene, and surgery, for all Union Army physicians.[72] He also established a system for regular medical inspection which helped ensure that physicians were practicing medicine in a way that would promote the healing of the patient, and that hospitals were being adequately ventilated and kept clean.[73] In 1863 Hammond published *A Treatis on Hygiene: With Special Reference to the Military Service*. [74] Both he and Dr. Letterman helped promote and codify staff organization, training requirements, equipment, and arms

[70] Schultz, 110.
[71] George Worthington Adams, *Doctors in Blue: The Medical History of the Union Army in the Civil War,* New York: Schuman, 1952.
[72] Frank R. Freemon, "Lincoln Finds a Surgeon General: William A. Hammond and the Transformation of the Union Army Medical Bureau." *Civil War History* 33 (March 1987): 5–21.
[73] Shutlz 112.
[74] Ibid., 111.

provisions.[75] In collaboration, these two physicians also helped create a more efficient system for field mobilization and battlefield medicine.

Ambulances

The standardization of the army ambulance corps, though initially opposed by several Union army officials, was supported by General Ulysses S. Grant, who ordered for their implementation on March 30, 1863, at the Army of the Tennessee.[76] Dr. Jonathan Letterman and Dr. William Hammond, who had both, according to correspondence and surviving primary documents, witnessed the fragmented approach of the ambulance system and had set out to find a more effective solution by creating a system where the authority of the ambulances was more consolidated in the implementation of a clear chain of command. With more organized use of ambulances, they became exponentially more effective and useful. Prior to this, ambulances had been used as transportation by any officer (including non-wounded) and were under the charge of medical officers as well as other non-medical officers.[77] It's not surprising, then, that Dr. Letterman helped devise this system and Dr. Hammond encouraged its implementation due to this chaos that had been present in battlefield transportation of the wounded. Dr. Letterman introduced requirements for this ambulance system writing, "the system should be such as to enable them [medical workers] to procure them [ambulances] with facility when wanted for the purposes they were designed."[78] He created a "coordinated and centralized approach that would redefine the realities of battlefield care under fire".[79]

Hospitals

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[75] McGaugh, *Battlefield angels*, 254.
[76] Schroeder-Lein, 12.
[77] Letterman, 24-30.
[78] Ibid., 18.
[79] McGaugh, *Surgeon in Blue*, 101.

Initially, care centers were extremely disorganized and overcrowded. One military doctor wrote in a June 29, 1862 letter to his wife that the wounded, "came pouring into the hospitals by wagon loads. Nearly all were covered with mud, as they had fought in a swamp most of the time and layout all night after being wounded…Those in the hospitals had received severe flesh wounds or had bones broken, or some vital part penetrated."[80] According to a military hospital report from the time, thousands of soldiers who were admitted with mild wounds died from infection or illnesses during their stay.[81] The United States Sanitary Commission records state, "almost every case of secondary amputation performed in Stanton Hospital during May and June 1864 proved fatal."[82] Rather than leading cause of death being battlefield wounds, patient mortality was most frequently the result of injuries incurred during care by the acting physician or medical personnel at a care facility.[83] As the war progressed, physicians were confronted with the ineffectiveness of practices that had been considered normal and definitive for decades, if not centuries.

Besides creating momentum for a transformation to more systemized approaches and effective treatments for inpatient care, the Civil War played a significant function in the establishment of large medical care centers. Before the war, hospitals were scarce and mainly consisted of poorly functioning urban welfare institutions.[84] The context of warfare and the resulting contingencies of combat medicine, which included the necessity of more efficient, quick, and organized practice, combined with the daily influx of wounded soldiers helped create the demand for a profound transformation not only on *how* medicine was practiced, but *where*

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[80] Spencer Glasgow Welch, *A Confederate Surgeon's Letters to His Wife* (Neale Publishing Company, 1911).
[81] Smith, Watkins, and Hewlett, 35-42.
[82]Harold Elk Straubing, 78.
[83]Abdel R. Omran, "A century of epidemiologic transition in the United States." *Preventive medicine* 6, no. 1 (1977): 30-51.
[84] Rosenberg, 3.

medicine was practiced.[85] Before the war, medicine was predominantly practiced in private settings. However, the conditions of the Civil War caused a shift to more public practice and incentivized the widespread construction of regional hospitals and local care centers. The power of the military, state and federal governments helped make hospitals into larger, more organized, pervasive, and authoritative systems of care.[86] This was an immediate contribution to the systemization and professionalization of medicine. By the end of the war, a few hundred hospitals had been built around the nation.[87] These fixed headquarters for care offered stability and regularity which aided in generating more collaboration among physicians and fostered standards for patient treatment. This growing cohesiveness among practitioners began to replace the individualism and subjectivity which had defined early American medicine. Essentially, the institutionalization of hospitals helped produce a conducive environment for further standardization of the practice of medicine. These important changes would become foundational influences on the formation of modern medicine. Public health and more readily accessible health services and the first-ever state health departments were conceived less than a decade after the Civil War.[88]

By accelerating and financing the development and systemization of medicine, the military and military medicine served as mechanisms and technologies of power that centralizing and reinforcing the authority and dominance of the federal government.[89]* By transferring the responsibility of the body's (the citizen's) wellbeing from private, autonomous, and assorted

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[85] McGaugh, *Surgeon in Blue*, 70.
[86] Starr, 27.
[87] Ibid., 25.
[88] Omran, 47.
[89] Latour, 194.
*As this is a social-hypothesis and there is insufficient consistent, isolated data available to analyze and compare to determine if the development of medicine by the military and government during the Civil War made these impacts, these theories are included purely as a thought-experiment and a consideration of power-theory, the changing dynamics and interests behind power structures and governing entities.

approaches to an organized complex, the role and magnitude of the federal government's power was expanded as well as its influence on everyday citizen's lives. [90]

In addition to magnifying the control of the dominant entity, this development may have had other beneficial impacts or advantages for the governing power structures. Perhaps, socially, and in public perception, these developments in medicine could promote good faith in the government as these developments helped save countless lives and encouraged an image of an altruistic governing entity concerned about the value of human life (an important image during war).

Yet another reason for investing in medical development may have been inspired by economics—the idea that successful steps towards improving and systematizing medicine would help diminish the significant loss of fighting bodies as the war progressed. Better medicine would have likely increased productivity to some degree or, at the very least, diminished the mortality of wounded—helping the government see return on its large-scale investment in 'human capital', or the resources and funds invested in the feeding, equipping, and training of its soldiers.[91] At the minimum, more organized and effective medical practice would help in maintaining man-power which could bolster the probability of success in the war-effort (and further reinforcing the governments power). Minimizing losses might have also had other benefits, such as limiting recruitment expenses or the expenses for transportation and arrangements for the bodies of deceased troops.

These potential motivations for the dominant, governing power structure are highly probable according to Michel Foucault, French philosopher and historian. Foucault writes of the

[90] Foucault, 28, 80-2, 102.

highly "political investment of the body" which is "bound up, in accordance with complex reciprocal relations, with its economic use; it is largely as a force of production that the body is invested with relations of power and domination…a political instrument meticulously prepared, calculated, and used); the body becomes a useful force."[92] Furthermore, the development of American medicine contributed to (and would continue to—in public medicine, newly formed public hospitals) unprecedented developments in the medical practice and in medical infrastructure which would, in theory, have brought significant economic returns both in increased productivity (with lengthened lifespans and greater health or greater access to health) and increased expenditure by introducing a new professionalized market sector, opening up numerous opportunities for employment, especially for minority groups including women and people of color. The government-sponsored and military-systemized professionalization of American medicine as an extended mechanism of power is also witnessed in the way Civil War medicine helped open a new area for strengthening the U.S. military both nationally and internationally by fostering interest in scientific research, innovation, and the development of scientific weaponry (e.g., chemical warfare, the atomic bomb).

Though the loss of private, independent medicine and decreased body autonomy caused by the military-sponsored professionalization and systemization of medicine may be seen as a disadvantage, shifting the responsibility of healthcare had a number of key, long-term benefits. For example, a more efficient patient transportation method in Hammond and Letterman's innovative ambulance system helped create more efficient and timely access for patient care. In addition, this shift in power dynamics repositioned the weight of preserving human life and maintaining the health of the nation from the individual, who was quite limited in it's care

[92] Foucault, 25, 26.

capacities, to the more adequately equipped wartime government (Due to the war, the government held increased authority and scope of its power, greater access to resources and qualified personnel). Moreover, an increase in readily, available medical care, more efficient systems of care, and greater effectiveness in treatment and recovery due to these conflict-fueled developments had broad, less apparent impacts including greater public healthcare education and public health awareness.

Conclusion

Due to the incentive, opportunity, resources, organization, and power of the military, army physicians like Dr. Mary Edwards Walker and Surgeon General Dr. William A. Hammond helped reshape medicine both for the military and for broader American medicine by influencing the development of more effective practices and standards for medicine.

The courage of these radical physicians in challenging the established norms for the methods and organization of patient care, in isolation, would be phenomenal yet improbable. Though their contribution to medicine was incredible and significant, their impact and breakthroughs were facilitated by the dire conditions of war, the pressures of battlefield medicine, and the magnitude of those injured in combat. Each of these factors exacerbated deep-rooted barriers to progress, inefficiencies, and dysfunction, which had characterized treatment for generations. The sudden escalation of these issues made them unavoidable. Increased government investment and military authority helped pave the way for crucial changes in the way medicine was practiced and organized. Rather than resulting from a handful of heroic physicians, the conditions of the Civil War generated and facilitated the urgent demand for the standardization, professionalization, and systemization of medicine. The efficient organization of the military and the federal government’s centralization of power helped transform the practice

of medicine—inspiring the creation of hospitals, introducing new life-saving treatments, and creating stricter requirements for those who wished to become physicians. Without the circumstances of battle, this multitude of changes would have happened more incrementally and over a much longer period. In other words, the rapid advancement of American medicine was more contingent on the context of conflict and the investment of the military brought about by the Civil War than it was dependent on individual endeavors for change by radical physicians.