

Nightingale in Scutari: Her Legacy Reexamined

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Nearly a century after the death of Florence Nightingale (1820–1910), historians continue to debate her legacy. We discuss her seminal work during the Crimean War (1854–1856), the nature of these interventions during the war, and her continued impact today. We argue that Florence Nightingale’s influence today extends beyond her undeniable impact on the field of modern nursing to the areas of infection control, hospital epidemiology, and hospice care.

Florence Nightingale (1820–1910) was a heroine to the British soldiers she cared for during the Crimean War (1854–1856) and a gadfly on the rumps of British parliamentarians who led Britain into that pointless conflict but left its troops poorly supported and needlessly vulnerable to disease. Medical men in her day and historians ever since have tended to dismiss the importance of Nightingale’s legacy [1–3]. Yet a careful study of Nightingale’s work during and after the Crimean War shows that she was rightly hailed as a legend during her lifetime; played a key role in the areas of public health policy, medical statistics, hospital design and management, and patient care; and deserves a lasting place in the pantheon of medical pioneers [4].

THE CRIMEAN WAR AND THE BRITISH ARMY HOSPITALS IN SCUTARI, TURKEY

To understand the significance of Florence Nightingale’s work, one needs to grasp the miserable conditions in the Crimean war zone and at the hospitals at the British Army’s base at Scutari (figure 1). Mortality rates in the armies that participated in the Crimean War were horrific: ~1 in 5 men sent to Crimea died there. Notably, infections killed far more soldiers than did bullets, saber

thrusts, or shells (table 1). In contrast, the US Army’s crude mortality rate in Vietnam was 2.6% [6].

Consider the following eyewitness description of the British base at Balaklava (figure 1):

If anybody should ever wish to erect a “Model Balaklava” in England, I will tell him the ingredients necessary. Take a village of ruined houses and hovels in the extremest state of all imaginable dirt; allow the rain to pour into and outside them, until the whole place is a swamp of filth ankle-deep [*sic*]; catch about, on an average, 1000 sick Turks with the plague, and cram them into the houses indiscriminately; kill about 100 a day and bury them so as to be scarcely covered with earth, leaving them to rot at leisure—taking care to keep up the supply. On to one part of the beach drive all the exhausted *bât* ponies, dying bullocks, and worn-out camels, and leave them to die of starvation. They will generally do so in about 3 days, when they will begin to rot, and smell accordingly. Collect together for the water of the harbour all the offal of the animals slaughtered for the use of the occupants of above 100 ships, to say nothing of the inhabitants of the town—which, together with the occasional floating human body, whole or in parts, and the driftwood of the wrecks, pretty well covers the water—and stew them all up together in a narrow harbour, and you will have a tolerable imitation of the real essence of Balaklava [7].

In fairness, the British field surgeons did a credible job of treating war wounds through amputation and debridement [8]. Their patients were typically young and healthy before their injuries, and if infection could be avoided through prompt trauma management, the soldier had a reasonable chance of survival. Unfortunately, the surgeons could do little to treat the myriad

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Figure 1. Map of the Crimean War theater, reprinted from the biography by Gill [4] (copyright held and reprinted with permission by Random House Publishing) [4].

causes of fever, human-made and otherwise, present in their environment. The Crimean War occurred 20 years before Pasteur and Koch promulgated the germ theory and a full century before the first antibiotics were created, and with the singular exception of quinine therapy for malaria, doctors had few remedies to manage infectious diseases. Thus, soldiers described as having medical illnesses were packed onto transport ships in shockingly squalid conditions and were ferried across the Black Sea to Scutari, a trip many did not survive. Records from the transport ship *Shooting Star* document that 47 of 130 patients died during one 13-day transit from Balaklava to Scutari [9]. In a real sense, the Scutari hospitals served more as so-called fever wards than true military hospitals and existed largely to segregate patients with fever from their healthy compatriots. Soldiers were not sent to Scutari to be healed so much as to die.

Doctors of the day recognized several variations of fever, including typhoid, relapsing fever, and the intermittent quotidian, quartan, and tertian fevers of malaria. During the war, some fevers acquired the appellations "Crimean Fever" or "Varna fever," which was named after the Bulgarian coastal town where the British Army was first based. But such dis-

tinctions were rarely applied in Scutari. Most patients received a diagnosis of febris continua communis, also known as "low fever," a wastebasket diagnosis used primarily to distinguish this fever from the "high fever" associated with typhus [8]. The extreme crowding on the wards was ideal for spreading typhus, typhoid, dysentery, and respiratory infections; one account noted that beds were spaced 0.5 m apart (figure 2A) [8]. As Sarah Terrot, one of Nightingale's nurses, recounted, "one poor fellow neglected by the orderlies because he was dying...was very dirty, covered with wounds, and devoured by lice. I pointed this out to the orderlies, whose only excuse was, 'It's not worthwhile to clean him: he's not long for this world.' The men in bed on each side of him told me his state was such that lice swarmed from him to them" [10].

Intestinal infections were rampant and devastating. Whereas only 29% of patients at Scutari were admitted for treatment of bowel disease or fever, dysentery contributed to nearly 50% of deaths [8]. At least 3 outbreaks of cholera occurred during the war: between April and September 1855, a total of 2368 patients with cholera were admitted to one of the Scutari hospitals, of whom 1423 (60%) died [9]. For these patients, tincture of opium was the best treatment medical science had to offer. As

Table 1. Casualty rates for the 3 major armies in the Crimean War, 1854–1856.

Variable	No. of troops with the characteristic/total sample size (%), by army			
	British	French	Russian	Overall
Deployed	97,864/731,610 (13.4)	309,268/731,610 (42.3)	324,478/731,610 (44.4)	731,610
Died, by cause				
All	21,827/97,864 (22.3)	72,415/309,268 (23)	73,125/324,478 (23)	167,367/731,610 (22.9)
Wounds or killed in action	4602/21,827 (21)	12,604/72,415 (17)	35,671/73,125 (51)	52,877/167,367 (31.6)
Infectious diseases	17,225/21,827 (79)	59,815/72,415 (83)	37,454/73,125 (49)	114,494/167,367 (69.4)

NOTE. Data are from [5]. Acceptably accurate mortality statistics for the Turkish army are unavailable, although it is widely acknowledged that they suffered a very high number of casualties during the Crimean War.

described by one British surgeon, “I might sum up my account by saying that everything was tried and that nothing succeeded. At least I can say that I never cured a case, and I never saw a case cured” [11]. Remarkably, even those patients admitted with conditions described as rheumatic had mortality rates as high as 10% [8]. The changing seasons merely shifted the spectrum of diseases seen in Scutari: summer brought malaria and cholera; in the winter, more patients succumbed to gangrene after frostbite (also known as “gelatio”).

Horrible as this situation may have been, it was far from unique in the history of warfare. What was unusual was the degree to which news of the squalor in which the British troops died at Balaklava and at Scutari was documented by *London Times* correspondents (by telegraph!), making this the first war in which the army medical corps was flatly accused of negligence. These reports scandalized the nation and nearly toppled Lord Aberdeen’s government in Parliament—particularly when it became known that the French army was doing a far better job of supplying and caring for its troops than was the British army. It was in this environment and under considerable public and political pressure that Minister at War Sidney Herbert, on the basis of his appraisal of her managerial skills and experience, wrote an impassioned appeal to Florence Nightingale, asking her to lead a team of nurses to Crimea. Ironically, Nightingale had already written her parliamentary allies proposing precisely the same thing. And so it was that, early in November 1854, Nightingale found herself and her 38 nurses in Turkey, gazing at the massive walls of Barracks Hospital (Scutari). Famously, she is quoted as saying that “the strongest will be wanted at the wash tub.”

NIGHTINGALE IN SCUTARI

Florence Nightingale’s time in Scutari enabled her to prove a point. Her experiences working on English fever wards and while volunteering as a nurse at the Middlesex Hospital in London during the Cholera outbreak of 1854 had convinced her that the so-called heroic medicine of the day, which was based on infusions of arsenic, mercury, opiates, and bleeding, hastened the deaths of many more patients than it saved [12].

Nightingale believed that, by keeping patients well-fed, warm, comfortable, and above all clean, nursing could solve many problems that 19th century medicine could not. Treatment of soldiers in Scutari provided an opportunity to validate this theory on an unprecedented scale. To this task, Nightingale brought her skills as a nurse. But she also brought prodigious managerial skills, an obsession with meticulous record keeping, and a deep faith in the Sanitarian movement. Florence Nightingale was an early disciple of the Sanitarian Edwin Chadwick, the main proponent of the British Public Health Act of 1848 [13], and although she presumably had no concept of bacteria or viruses, she clearly understood contagion. She saw a clear relationship between the diseases killing her patients and the filth in which they lay, the air they breathed, the water they drank, and the food they ate. To Nightingale, the greatest tragedy of the Crimean War was the British Army’s failure, through bureaucratic inertia, to protect the soldiers’ health or to assist in their recovery. In her words, “The 3 things which all but destroyed the army in Crimea were ignorance, incapacity, and useless rules” [14].

Her interventions, considered at the time to be revolutionary, seem in hindsight to be acts of common sense. She and her nurses washed and bathed the soldiers, laundered their linens, gave them clean beds to lie in, and fed them, while working and lobbying to improve the overall hygiene of the wards. She helped establish a rational system for receiving and triaging the injured soldiers. As the wounded soldiers disembarked, they were stripped of their blood- and offal-soaked uniforms, and their wounds were bathed. To prevent cross-contamination between soldiers, Nightingale insisted that a fresh, clean cloth be used for each soldier, rather than the same cloth for multiple patients. She set up huge boilers to destroy lice and found honest washerwomen who would not steal the linens. She shamed hospital orderlies into removing buckets of human waste, to clean up the raw sewage that polluted the wards, and to unplug latrine pipes. At her behest, new windows capable of opening were installed to air out the wards. She established a separate kitchen in Barracks Hospital, which was supported by her own finances, to prepare soups, beef teas, jellies, cereals,

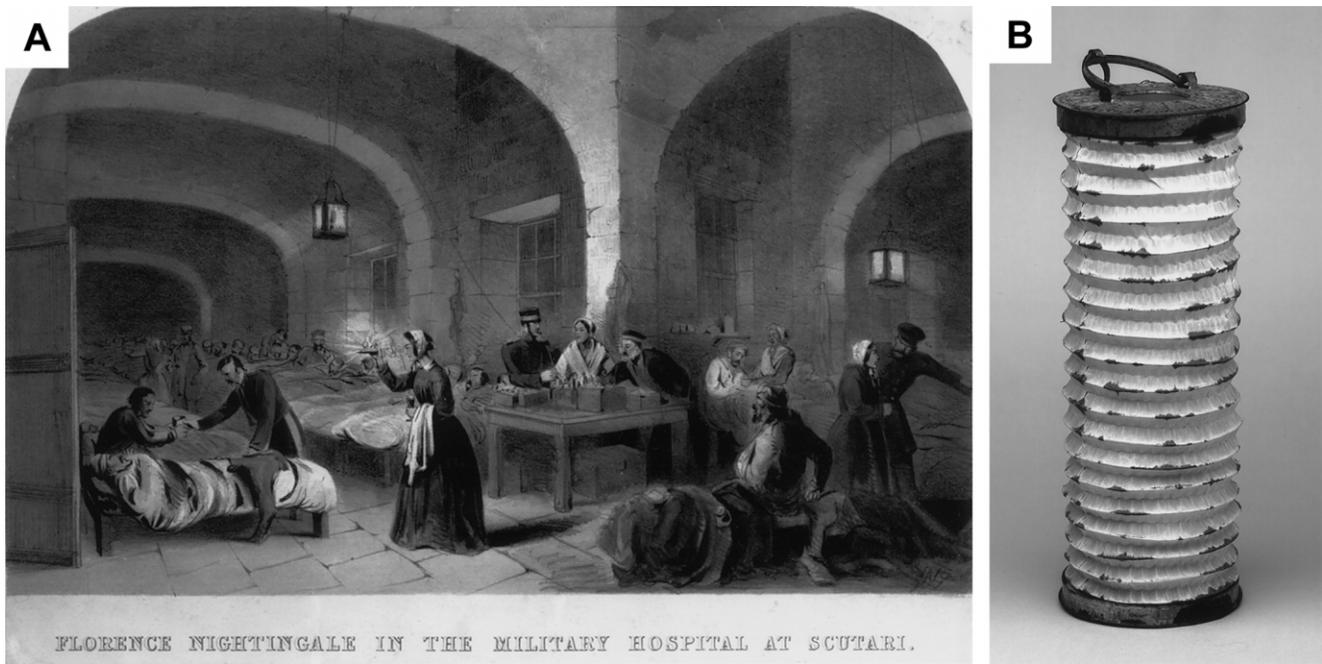


Figure 2. A, Popularized illustration, first printed in the *Illustrated London News* in 1855, of Florence Nightingale touring the wards of Barracks Hospital (copyright held and used with permission by the Florence Nightingale Museum [London, United Kingdom]). B, Photograph of the actual paper concertina lantern made for and used by Nightingale in 1855 (used with the courtesy of the Director of the National Army Museum [London]). The popular depictions of Nightingale with an open flame lantern reflect the near absence of accurate portraits and the complete absence of photographs of her during the period of the Crimean War.

and other easily digestible foods to supplement the army's meager rations. In response to rampant petty corruption that was siphoning off medical supplies, she established a parallel supply system for critical materials and food, and she proved that the official supplies were being stolen by sending her representatives into the Turkish markets to buy back the purloined goods. When faced with the imminent arrival of hundreds of additional patients, at her expense, Nightingale organized a team of 200 Turkish workers to replace the floor in Barracks Hospital, which, having been destroyed by a fire, was an ideal habitat for fleas, flies, and lice. And, significantly, she kept meticulous records of everything she saw or did.

For these actions, she earned the deep enmity of army bureaucrats. In the aftermath of recriminations following the Crimean War, the army released a massive 1637-page report about the medical challenges in Scutari that makes not a single mention of Nightingale or her nurses [9]. The army surgeons resented the power she wielded and the implication that they were somehow culpable in the deaths of their patients. Dr. Duncan Menzies, the Chief Medical Officer at Barracks Hospital in 1854, did his best to thwart Miss Nightingale, owing to the fact that her documentation of the supply shortages in Scutari flatly contradicted his own reports that the army "had everything—Nothing was wanted" [15]. Despite all that—or perhaps because of it—she earned the deep adoration of the

rank-and-file soldiers. Soldiers still died in Scutari. The difference was that they now knew that someone was looking out for them.

NIGHTINGALE'S LEGACY REEXAMINED

The effects of Nightingale's reforms were striking. One of the early "fever casualties" brought to Scutari described these reforms as follows: "Everything changed for the better. The sick were not kept waiting in the passages but went at once to bed, were washed, and had clean linen and were attended as well as in England" [16]. Critics of Florence Nightingale rightly point out that the profound decreases in the mortality rate during the latter months of 1855 could not have resulted solely from improvements in nursing (table 2). But this merely underscores the fact that the improved survival rate had less to do with the outstanding individual care she and her nurses provided and far more to do with the structural changes in the procurement of supplies and the improved sanitation that occurred under her influence. In hindsight, these interventions likely served to critically alter the conditions that favored the spread through the wards of typhus, tuberculosis, dysentery, cholera, typhoid, and other infectious diseases that were decimating the soldiers.

Several contemporary historians have attempted to portray

Table 2. Data on admissions and deaths for British soldiers at Barracks, General, and Koulali hospitals (Scutari, Turkey) from January through March 1855.

Interval during 1855	No. of soldiers admitted to the hospital	No. (%) of soldiers who died
January through March	10,283	3354 (33)
April through June	5544	342 (6)
July through September	7649	167 (2)

NOTE. Nightingale arrived in Scutari in November 1854. Data are from Shepherd [8].

Nightingale as little more than a manager with no taste or talent for patient care [1, 2], but such characterizations are both untrue and unkind. Her own letters to friends, family, and government officials, as well as the private and published testimony of other nurses and British Army surgeons who served during the war, clearly establish that she was one of the handful of women permitted by army doctors to do wound care, that she was fully involved in what we now call first aid and triage, and

that she preferentially took on the care of patients with infectious diseases who were determined by doctors, correctly, to be beyond medical help and who were therefore avoided [4]. As her aunt Mai Smith wrote home from Scutari in January 1856, the happiest hours Nightingale spent were those she spent with the patients [15].

For her work in Scutari and her subsequent teachings [17, 18], Florence Nightingale will forever be linked with modern nursing—and rightly so. However, we believe that 3 areas of contemporary medicine were also deeply influenced by her.

The first area of influence is hospital infection control. Although the Crimean War settled nothing in terms of geopolitics, it served as the backdrop for a second struggle between the Sanitarian movement and the medical dogma of the day, which the Sanitarians at least won decisively. Nightingale cannot claim credit for originating the Sanitarian theories, but the impact of her reforms in Scutari were so obvious and well publicized that the treatment of hospitalized and infected patients was forever changed. In her words, “In the present (so-called) enlightened time, sound principles of Hygiene [*sic*] are by no means widely

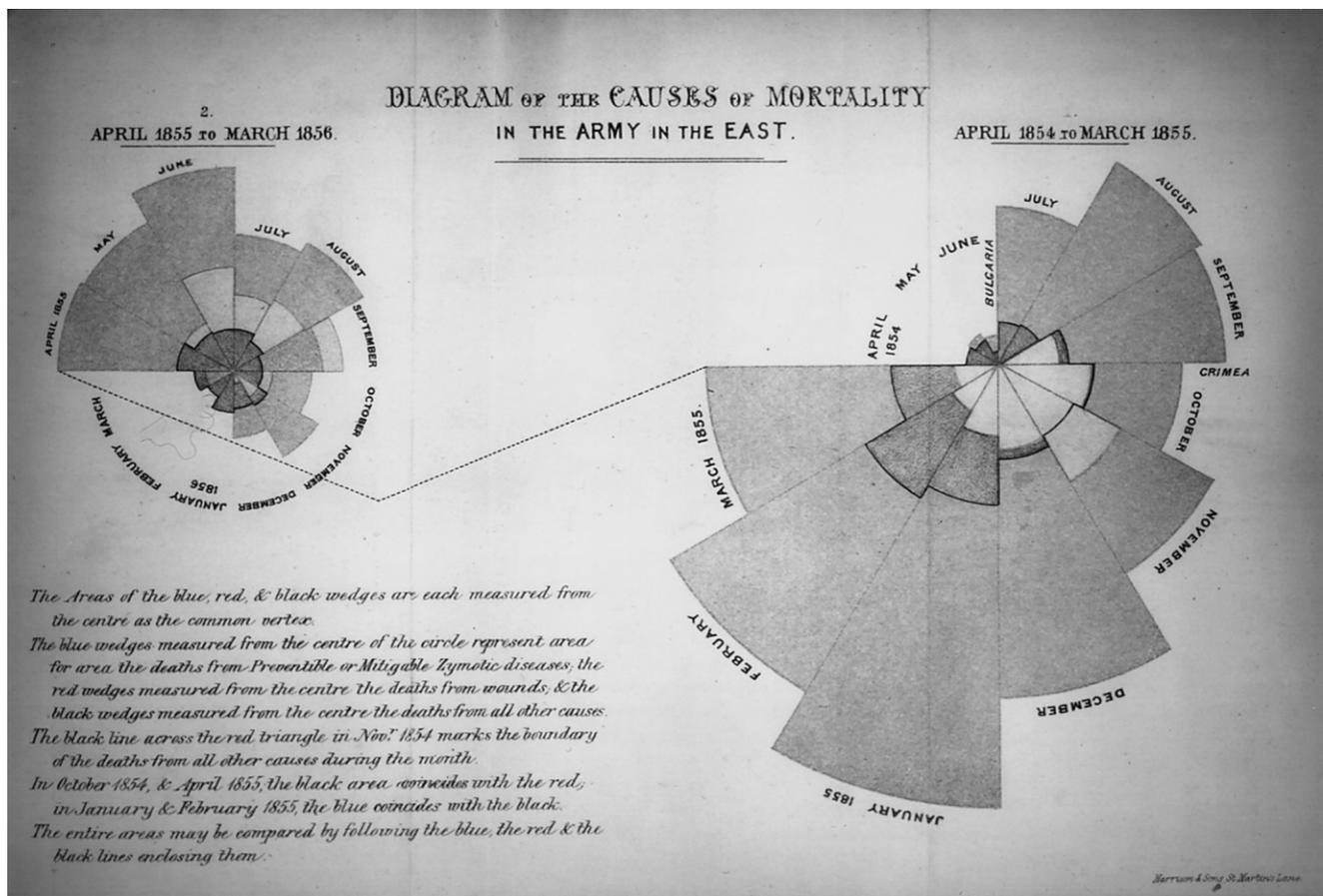


Figure 3. Reproduction of Florence Nightingale’s Coxcomb diagram from her 1857 report to Parliament about the Crimean War and the Scutari hospitals (copyright held and used with permission of the Florence Nightingale Museum [London, United Kingdom]). This report prompted a radical reform of the British army’s medical treatment of soldiers.

spread even among the civil medical profession. To this circumstance it appears mainly to be owing that the belief in contagion as an unavoidable cause of death from epidemic disease is still so prevalent” [14]. Many of our current health care practices, such as isolation of patients with antibiotic-resistant pathogens, avoidance of cross-contamination, routine cleansing of all patient areas, aseptic preparation of foods, ventilation of wards, and disposal of human and medical wastes, trace their origins to practices enacted by Nightingale at Scutari.

The second field influenced by Florence Nightingale is hospital epidemiology. Nightingale was a skilled statistician who was greatly influenced by the work of Adolphe Quetelet (1796–1874), the leading statistician of her day [19]. She considered his book *Essaie de Physique Sociale* to be a revelation of the will of God. In annotations to her copy of Quetelet’s book, she wrote that “all Sciences of Observations depend upon Statistical methods—without these, are blind empiricism. Make your facts comparable before deducing causes. In complete, pell-mell observations arranged so as to support theory; insufficient number of observations; this is what one sees” [20]. The mortality diagrams that she invented for her report about the Crimean War remain models of elegance today (figure 3). However, her intellectual contributions to the field were arguably less significant than her ability to demonstrate the power of applied descriptive statistics in practice. One of her most famous achievements was to prove that the majority of soldiers in the Crimean War died not of war wounds but of fever, cholera, diarrhea, dysentery, and scurvy, all of which are preventable conditions [14].

Finally, we would argue that hospice medicine owes Nightingale a particular debt. Long before Kubler-Ross’ theories about death with dignity [21], Florence Nightingale practiced it. As a nurse engaged in direct treatment of patients, Nightingale saved perhaps dozens of soldier’s lives, but by her own accounts, she closed the eyes of hundreds. One of the duties she assigned herself was to write letters to the families of patients who were dead or dying and, particularly, patients who were illiterate. In these letters, she explained the circumstances of illness and death, and she often included small packets of the dead soldiers’ personnel effects. Her nightly tours of the 6.4 km of wards at Barracks Hospital started as a routine, became a ritual, and ended as a covenant between her and the men—and they understood its meaning precisely. As one soldier wrote, “What a comfort it was to see her pass even. She would speak to one, and nod and smile to many more; but she could not do it all you know. We lay there by hundreds; but we could kiss her shadow as it fell and lay our heads on the pillow again content” [22]. It is no surprise that the image of Florence Nightingale that continues to inspire today is that of her touring the wards alone at night by the light of a Turkish

lamp (figure 2). In the lyrics of a soldier’s ballad, penned while the war was still being waged:

On a dark lonely night on Crimea’s dread shores
There’d been bloodshed and strife on the morning before;
The dead and the dying lay bleeding around,
Some crying for help—there was none to be found
Now God in His mercy He pitied their cries,
And the soldiers so cheerful in the morning do rise.

So, forward my lads, may your hearts never fail
You are cheered by the presence of a sweet Nightingale.
Her heart it means good for no bounty she’ll take,
She’d lay down her life for the poor soldier’s sake;
She prays for the dying, she gives peace to the brave,
She feels that a soldier has a soul to be saved.

The wounded they lover [*sic*] her as it has been seen,
She’s the soldier’s preserver, they call her their Queen.
May heaven give her strength and her heart never fail.
One of Heaven’s best gifts is Miss Nightingale.

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