

Washington Greets the Troops

After his appointment as Commander-in-Chief in Philadelphia, Washington traveled to Cambridge, Massachusetts, to take command of the newly formed Continental Army. He found many problems awaiting him, including smallpox. Print by Currier and Ives, 1876.

Smallpox at the Siege of Boston: “Vigilance against this most dangerous Enemy”

ANN M. BECKER



Abstract: *In 1775 smallpox created severe problems for the newly created Continental Army assembled outside Boston and significantly affected General George Washington’s military strategy during the Siege of Boston. The existence of this deadly disease in epidemic proportions precluded an American attack. This factor, along with suspected biological warfare by the British, forced Washington to maintain a nine-month siege. Washington took extreme care to protect his army from smallpox as evidenced by his cautious moves, designed to limit the exposure of his troops to the disease. These efforts highlight his concern over its destructive effect on his troops. Washington’s policies of containment and inoculation developed as a response to the impact that smallpox epidemics had on his ability to wage war. Much of his early military strategizing and administrative effort was put toward solving the problems smallpox caused for his troops and ensuring a healthy, reliable military force capable of fighting effectively. The author concludes that Washington’s vigilance in segregating those infected*

with the disease and his use of selective inoculation were critical factors in preventing a disastrous epidemic among the troops and militia outside Boston during the siege. Dr. Ann M. Becker's fascinating article draws from her in-depth dissertation, "Smallpox in Washington's Army: the Strategic Implications of the Disease during the American Revolutionary War."

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Historians of the American Revolution often fail to consider the impact of smallpox on the war, though military leaders on both sides of the conflict were preoccupied with preventing a smallpox outbreak, and their tactics and strategies were influenced by the disease. In June 1775, George Washington (1732–1799) was appointed commander in chief of the Continental Army by the Second Continental Congress at Philadelphia. When he arrived in Boston on July 2, 1775, he found many problems awaiting him as he assumed command, not least among them smallpox.¹ He was extremely anxious to prevent the variola virus, which causes smallpox, from spreading among his soldiers, not only for the obvious reason that an epidemic among the troops would wreak havoc with his ability to fight the British and might threaten the very existence of his army, but because fear of smallpox might retard enlistment in the new army. Washington thus made the health of his troops one of his top priorities as he instituted new policies and enforced his own methods of discipline on the disjointed, unorganized soldiers he found before Boston. He ordered strict enforcement of numerous directives regarding proper housing, food, and cleanliness, as evidenced by his orders and correspondence, to contain and control the smallpox contagion.² It was the largest threat to the health of the army massed outside Boston, and Washington himself recognized it as an enemy of the greatest magnitude.

Washington took steps to contain and control the infection from his earliest days near Boston.³ The presence of smallpox influenced his decision to maintain the siege rather than take more aggressive action. In fact, the British ensured American inaction by intentionally introducing the variola virus into military camps outside Boston. This early use of biological warfare precipitated a smallpox epidemic in Massachusetts in 1776. The failure of various traditional methods of smallpox containment led directly to the use of inoculation, or variolation, and, for the first time, citizens and soldiers were authorized to use the procedure during a two-week period in July.⁴ Smallpox proved a formidable foe for the combatants during the first years of the war. This article details efforts to monitor and contain the spread of

smallpox, with particular emphasis on the diligent attempts by both armies to control its impact on military events during the long siege.

SMALLPOX IN THE COLONIES

The American colonies had suffered periodic epidemics of smallpox since their founding. In the seventeenth century, Boston suffered six epidemics, the worst of which occurred in 1721, when methods traditionally used to prevent the spread of diseases, such as quarantine and isolation, failed to contain it. Out of a population of 11,000, over 6,000 cases were reported. Though inoculation was commonly practiced in other parts of the world by the early eighteenth century, it was only beginning to be discussed in the colonies. The practice of inoculation was based on the simple observation that those who survived smallpox, whether they had a moderate or severe case, were significantly less likely to contract the disease again.

Variolation was described in 1716, in the British Royal Society's *Philosophical Transactions*, in an article entitled "An account, or History, of Procuring the SMALL POX by Incision or Inoculation; as It Has for Some Time Been Practised at Constantinople," by the Greek-born physician Emanuel Timon. In 1721, Cotton Mather, who had learned about the practice from his West African slave Onesimus and sought further verification of its efficacy from other Africans in Boston, campaigned for the systematic use of inoculation, prompting fierce public debate.⁵ Mather concluded that the practice was safe.⁶ He explained his confidence in it, writing about the ancient practice in Africa, "where the Poor Creatures dy of the Small-Pox like Rotten Sheep, a Merciful GOD has taught then an *Infallible Praeservative*. Tis a common Practive, and is attended with a *Constant Success*."⁷

In the procedure, contagious matter taken from an active smallpox lesion was placed into a small incision made in the body of a healthy person. A mild, though contagious, case of the disease generally resulted, with much higher rates of recovery than was normal for naturally acquired smallpox, i.e., from ordinary exposure to the infection.⁸ Unless carefully managed and strictly controlled, however, inoculation threatened many with smallpox while offering protective immunity for only a few fortunate individuals.⁹ Inoculation was first effectively used in 1721 by Dr. Zabdiel Boylston and would save many lives during the 1752 Boston epidemic, but "it failed to realize its potential ability to reduce the community's death rate."¹⁰

In Boston, strict quarantine regulations combined with notification laws had managed to confine outbreaks of smallpox, resulting in periodic epidemics that mostly affected poorer residents. Wealthy Bostonians were

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“An Historical Account of the Small-Pox Inoculated in
New England,” by Cotton Mather

In 1721, Cotton Mather, who had learned about the practice from his West African slave Onesimus campaigned for the systematic use of inoculation, prompting fierce public debate. Inoculation was a controversial procedure that involved inserting live smallpox virus into an incision, in the hopes that the patient would obtain a mild case of the disease, thus making him or her immune. Mather concluded that the practice was safe.

able to avoid the disease by leaving town when smallpox appeared, or by taking advantage of lax inoculation laws in other colonies. Civil authorities were anxious to avoid the use of inoculation, except as a last resort in the face of a certain epidemic, and had been relatively successful in controlling smallpox using methods of containment developed decades earlier. By the 1760s, the success of variolation as a preventive medical procedure had been established. However, most New England towns and villages had been able to avoid the contagion altogether for long periods of time due to their relative isolation, and the introduction of smallpox into a community deliberately through use of inoculation was still not popular.¹¹

For the British, however, the situation was different. The disease was endemic in many parts of England and usually affected children in urban areas. British soldiers were routinely carriers of the infection, spreading the variola virus wherever they were stationed.¹² Nevertheless, the disease caused problems among soldiers fighting in the colonies. During the French and Indian War (1754–1763), when seven out of nine infantrymen contracted the disease, and one in four died from it, British Doctor Richard Brocklesby noted, “I find that 2 out of 9 soldiers have not had smallpox.”¹³ This left many of them liable to contract smallpox if not inoculated. In addition, family members who accompanied the troops often included young children or wives who had not yet been exposed to the contagion. As a result, by the 1770s, the British Army would, unlike colonial forces, routinely inoculate its troops against smallpox.

American opposition to inoculation remained strong through the 1760s and 1770s, even as incidences of smallpox were becoming more frequent in Boston.¹⁴ Inoculation hospitals, relatively common in other colonies, were only permitted in New England under special circumstances and on a temporary basis. Colonists, while aware that smallpox from inoculation was less dangerous than the disease contracted naturally, still hoped to avoid the virus altogether. They preferred to reduce their chances of catching smallpox by relying solely on notification and quarantine regulations and prohibiting inoculation, which many correctly believed would spread the illness. Future president and revolutionary leader John Adams (1736–1826), however, was a proponent of inoculation and underwent the procedure in Boston in 1764. He wrote of the successful procedure: “I believe None of the Race of Adams, ever passed the small Pox, with fewer Pains, Aches, Qualms, or with less smart than I have done.”¹⁵

RISING COLONIAL TENSION

Increasing discord and rebellious acts on the part of the thirteen original colonies had taxed Britain’s ability to control her colonial possessions;

Massachusetts, in particular, was a hotbed of anti-British activity. British troops sent to enforce customs laws arrived in Boston in October and November, 1768, and again in April, 1769. Smallpox was present almost constantly in Boston while British troops were stationed there from 1768 to 1770. Soldiers were quartered in private homes, encamped on the Boston Common, and ensconced in the State House and Faneuil Hall.¹⁶

Managing smallpox was one of the duties of Major General Thomas Gage (1719–1787), who had become commander in chief of the British Army in North America in November, 1763, replacing Jeffrey Amherst. Town selectmen and military authorities worked closely with him to control the spreading menace. By carefully screening the crew of newly arrived vessels for any sign of smallpox, and isolating its victims, local officials hoped to contain the disease. Public health initiatives, however, proved ineffective. By July 1769, smallpox had reached epidemic proportions. On July 25, John Boyle, a Boston printer and publisher, noted, “a number of Families in Town have lately been visited with the Small-Pox, but ‘tis hoped a stop will be speedily put to the progress of the Distemper.”¹⁷

Bostonians had suffered the presence of the British troops quartered among them with grudging acceptance for several years. Public sentiment against the presence of troops was high, and the soldiers experienced much harassment. Tensions erupted periodically, and the situation reached a crisis point in 1770 with the Boston Massacre. As a result of the British firing into a mob and killing five citizens, a local committee petitioned acting Governor Thomas Hutchinson (1711–1780), for “the Immediate Removal of all the Troops from the Town of Boston, as nothing else could restore the peace of the Town and prevent Blood and Carnage.” Gage reluctantly sent the Twenty-Ninth and Fourteenth regiments to Castle Island outside town, and the Twenty-Ninth was eventually sent to New Jersey.¹⁸ With the troops gone, incidents of smallpox subsided temporarily.

In September 1774, Gage withdrew his garrisons from New York, New Jersey, Philadelphia, Halifax, and Newfoundland and brought them to Boston.¹⁹ Upon the return of British troops, and after the British Parliament passed the Coercive (or Intolerable) Acts, repeated outbreaks of smallpox again affected British soldiers and Bostonians alike.²⁰ The inoculation policies of the British were not sufficient to completely protect their soldiers. In September, Gage informed George Legge, 3rd Earl of Dartmouth (1755–1810), that while the British had initially hoped to contain the outbreak in Boston, “it is now so universal there is no knowing where to apply a remedy.”²¹ In November, children in a home billeting British soldiers contracted smallpox, and soon rumors circulated that soldiers were inoculating their families, prompting

concern among Bostonians.²² British Army medical procedures were subject to the civil restrictions town selectmen had instituted, which prohibited use of the procedure except when an epidemic threatened. The local selectmen rigorously enforced their preferred methods—quarantining victims—and restricted the use of inoculation with Gage's support.

But these restrictions on inoculation allowed smallpox to spread among the British soldiers stationed in Boston. The two final months of 1774 saw additional cases of smallpox among British troops; the governor isolated victims of the disease on a transport vehicle in the harbor.²³ As the New Year dawned, the disease continued to spread among British soldiers and Americans residing in and around Boston. Soon local and military authorities lost the battle to control the disease. Boyle reported on January 26, 1775, that “the Small-pox is now in several parts of the Town—and many persons have been removed to the Hospital—but no endeavors will be wanting to prevent its spreading.”²⁴

Dr. Robert Honyman traveled to Boston in the spring of 1775, and commented that usually Bostonians were “very careful to keep it out of the town” but now there were about twenty residents ill with the disease.²⁵ By March 28, with forty-three residents ill, Boyle reported, “A Town-Meeting was called to know the Minds of the Inhabitants respecting permission being granted for Innoculation.” But the still controversial measure was not approved: “it was voted that the Select-Men be desired to continue their Vigilance to prevent a spread of the Distemper,” and forgo inoculation for the time being.²⁶ To prevent illicit inoculations, Bostonians requested that “the Law relative to the concealing & spreading of Infectious Distempers, be put into Execution against any Persons, who shall make Attempts of that Nature, by Innoculation, or in any other way.” Pertinent sections of the law and proceedings of the meeting were subsequently made public, to prevent anyone from pleading ignorance of the law.²⁷

WAR AND TACTICS OR GERM WARFARE?

While Boston in 1774 was a city under British occupation, American colonists had long experienced the presence of the British Army in their midst. During the French and Indian War, American provincial militias had fought alongside the “redcoats” in many campaigns. Numerous revolutionary military leaders served with the British Army from 1756 to 1763, with varying levels of distinction. British Major General Jeffrey Amherst (1717–1797), commander in chief at the British siege of Louisbourg in Canada (1758), later became the military commander of British forces in North

America. Amherst trained American military officers Israel Putnam, Ethan Allen, Richard Montgomery, Charles Lee, Philip Schuyler, John Stark, and Benedict Arnold.²⁸ Washington had served as a militia adjutant general in Virginia under the British during the French and Indian War and held the rank of major.²⁹ Significantly, many of the military officers who served under Amherst participated in American efforts to fight smallpox during the Revolutionary War.

Rumors of British attempts to purposely spread the disease emerged as the war began. The *London Evening Post* published a 1775 letter from a Boston correspondent who claimed that British “soldiers try all they can to spread the smallpox, but I hope they will be disappointed. One of their officers inoculated his whole family without letting any person know it.” Although the officer’s actions might be explained as simply protecting himself and his family, the correspondent’s suggestions that they “try all they can” to spread smallpox, and inoculate in secret, suggests sinister motives, i.e., biological warfare. In fact, British soldiers were routinely inoculated if the variola virus was present, notwithstanding strict New England laws and military sanctions against the practice. Whether this officer had a nefarious motive cannot be determined, yet the belief that the British were capable of such perfidy was widely held by American colonists.³⁰

British use of smallpox as a tool for biological warfare has been traced directly to British actions during Pontiac’s rebellion (1763), which followed the Seven Years’ War (1755–1763). Amherst, on being told smallpox had erupted among British troops at Fort Pitt, wrote to Colonel Henry Bouquet, the ranking officer on the Pennsylvania frontier: “Could it not be Contrived to Send the *Small Pox* among those Disaffected Tribes of Indians?” Amherst later told Bouquet, “You will Do well to try to Inoculate the Indians... as well as to try Every other Method that can serve to Extirpate this Execrable Race.”³¹ In May 1763, militia commander William Trent noted that he gave a visiting Indian delegation “two Blankets and a Handkerchief out of the Small Pox Hospital. I hope it will have the desired effect,” which obviously was to introduce smallpox among Native Americans.³² The disease did break out during the summer of 1763, killing many of the Indians outside Fort Pitt.

Other military commanders followed this policy as well. Soon after replacing Amherst, Gage approved a 1763 bill for “Sundries got to Replace in kind those, which were taken from people in the Hospital to Convey the Smallpox to the Indians.”³³ Clearly, British officers justified these actions by

the need to subdue their enemies, who were deemed uncivilized. Amherst wrote in 1763:

I cannot but wish, that Whenever we have any of the Savages in our Power, who have in so Treacherous a way Committed any Barbarities on our People, a Quick Retaliation may be made, without the least Exception or hesitation.³⁴

Any and all means, then, were acceptable to the British when seeking to destroy the Native Americans. Consequently, Americans were keenly aware of the possible use of germ warfare. As early as May 1775, colonists feared the British might resort to the tactics used earlier against Native Americans.

Seth Pomeroy, British military commander in chief at Boston in 1775 (who knew Gage during the Seven Years' War), wrote: "If it is In General Gage[']s power I expect he will Send ye Small pox Into ye Army."³⁵ In 1777, Robert Donkin, a British officer, published a book in which he suggested a strategy to defeat the Americans: "Dip arrows in matter of smallpox, and twang them at the American rebels. . . . This would . . . disband these stubborn, ignorant, enthusiastic savages. . . . Such is their dread and fear of that disorder."³⁶ His use of the term "savages" supports the idea that germ warfare would have been justified against the Americans according to military parameters of the time. Prior use of smallpox against Native American enemies, contemporary accounts of the advantages of germ warfare, and eighteenth-century military culture support the contention that the smallpox virus was intentionally introduced by the British during the occupation of Boston. British soldiers felt superior to their American counterparts, and many believed the rebellion to be a criminal act, deserving of harsh punishment.³⁷ Though difficult to prove, the use of germ warfare cannot be dismissed.

Furthermore, General Washington himself believed it likely that the British were intentionally introducing the disease among the continental forces. Rumors to this effect were rife in and around Boston; it was held to be an effort to weaken the army and destroy its effectiveness. In a report to the provincial Council of Massachusetts on December 3, 1775, aide-de-camp Robert H. Harrison reported:

Four [British] deserters have just arrived at headquarters giving an account that several persons are to be sent out of Boston . . . that have lately been inoculated with the smallpox, with the

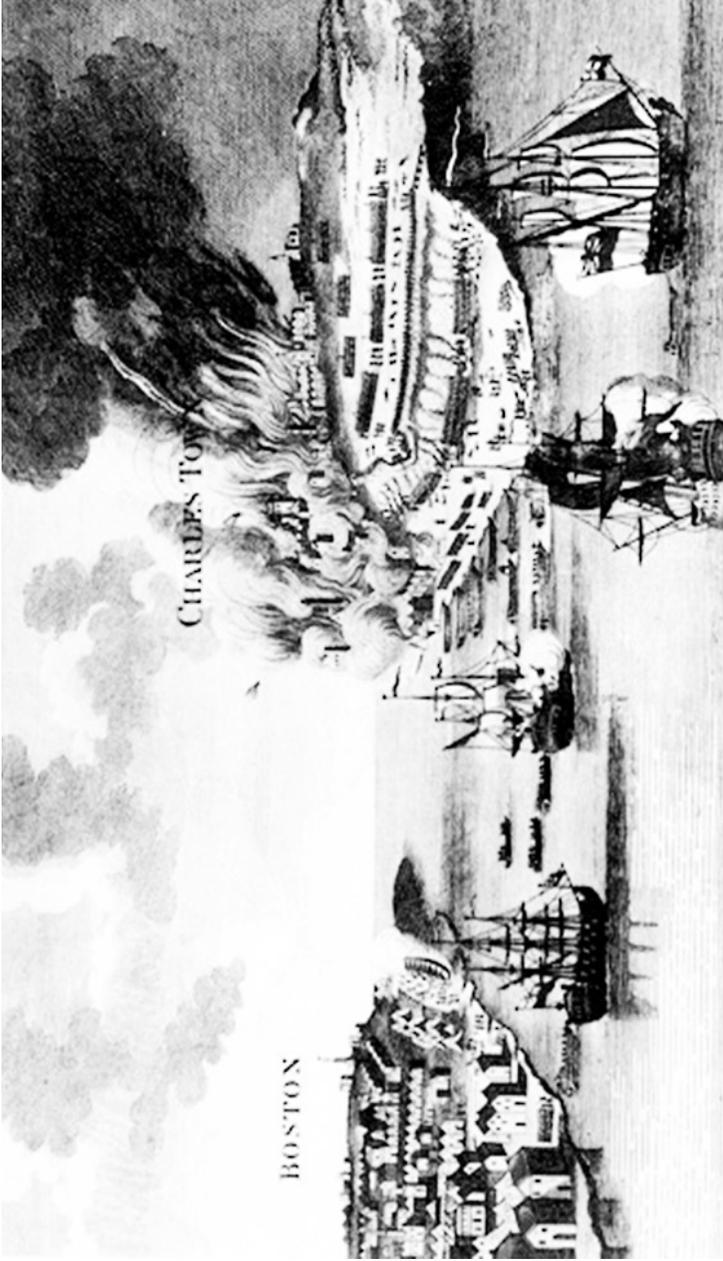
design, probably, to spread infection to distress us as much as possible.³⁸

THE SIEGE CONTINUES

As smallpox erupted in Boston, the move toward open hostilities continued. With tensions increased between the colonies and British authorities, the Provincial Congress in Massachusetts took control of the local militia and established organizations of minutemen, ready to act at a moment's notice. Ammunition and other military stores were secured and stockpiled at a depot in Concord, Massachusetts, twenty miles northwest of Boston. In response, Gage attempted to destroy this stockpile, leading to the opening shots of the American Revolution at Lexington and Concord on April 19, 1775. Couriers carried news of the battle throughout the colonies, and New England militia companies converged outside Boston within days. On April 23, the Massachusetts Provincial Congress resolved to raise a volunteer army. It convinced the New England colonies to follow suit and to establish and administer their own military forces to replace the unorganized militia forces.

After the revolution was ignited, Gage “cut off all Communication between the Town and Country, by shutting up the Avenues both by Land and Water.” With “upwards of 20,000” American militia massed at Roxbury and Cambridge by the end of the month, the city was effectively “shut up.”³⁹ While many prosperous Bostonians were able to affect a move, poorer residents were forced to remain in the smallpox-ridden town. General orders of April 22, 1775 directed American Captain Brown of Watertown, approximately ten miles from Boston, “to appoint a proper guardhouse for stragglers and persons to guard them who have had the small-pox, that the distemper may thereby be prevented from spreading among the inhabitants” of that town. Presumably, military authorities feared that British prisoners taken during the retreat from Lexington and Concord might be a source of infection, as smallpox was present in Boston.⁴⁰

By June 1775, a loose coalition of New England troops, led by four individual commanders managed by General Artemas Ward, was functioning outside Boston.⁴¹ The army acted under the direction of the Massachusetts Committee of Safety and Council of War, chaired by William Henshaw. The war council authorized the occupation of Bunker Hill on June 15, 1775. As a result of a request by the Massachusetts Provincial Council made on May 11, 1775, the Second Continental Congress officially adopted these forces as the Continental Army, days after the Battle of Bunker Hill on June 17. The



The Siege of Boston

The first major fight between British and American troops occurred at Boston in the Battle of Bunker Hill two weeks before George Washington took command at Cambridge. On the third attack the British succeeded in taking the hill, but at a loss of half their force, over a thousand casualties. The colonists lost an estimated four hundred men.

Philadelphia Congress assumed control and direction of the forces outside Boston and appointed Washington commander in chief on June 15, 1775.⁴²

On July 20, the new commander informed John Hancock, President of the Continental Congress, of his “particular” attentiveness to the “least symptoms of smallpox” and reported success in containing the disease “as to prevent any Communication” as well as “any Apprehension or Alarm it might give in the camp.” Washington promised, “We shall continue the utmost vigilance against this most dangerous Enemy.”⁴³ His characterization of smallpox as an “enemy” of the American cause shows his concern that it had the capacity to destroy the Continental Army. An “enemy” is an opponent to be overcome; for Washington, smallpox ranked alongside the British, his military adversary, as threats to his army, and therefore the colonies and the revolution. By acknowledging both the British and the virus as such, he articulated the significant danger he faced from both enemies.

The outbreak of war marked the beginning of a new wave of smallpox epidemics. The containment of smallpox became a vital military issue that continued to grow in importance. Immediately, the new army had to prevent a smallpox epidemic in addition to organizing, feeding, and caring for the medical needs of its soldiers.⁴⁴ A task that grew more difficult as the war went on as:

The movement of massive numbers of troops over large areas of the country, the evacuation of civilians in the face of proximate battles, and the influx of recruits and veterans in and out of towns and villages precluded use of formerly effective public health strategies.

In June 1775, a smallpox victim who appeared near the Patriot camps at Cambridge was taken “to the house of Ebenezer Smith, in Little Cambridge, wherein the Small-Pox has lately been.”⁴⁵ At the same time, the Provincial Congress of Massachusetts Bay established hospitals for the care of the sick and wounded soldiers of the new colonial army. Authorities took care to isolate contagious cases, and all suspected smallpox victims were removed from military camps. The Congress specifically ordered Dr. Isaac Foster to “take such precautions respecting the smallpox hospitals, as may be necessary for the prevention and spread of that epidemic disorder in the camp and elsewhere.”⁴⁶

By June 20, a smallpox hospital had been established in Cambridge, where “Sergeant Green and John Roch” were given “command of the guard” and directed to “keep a sentry at the gate, who is to permit no person to go in

or out” This “very strict guard” was to “be constantly kept at said hospital; to prevent smallpox from spreading among the citizens of Cambridge, and the soldiers stationed there.” On June 27, 1775, the Provincial Congress directed the hospital committee to “provide another hospital, to be appropriated solely for such of the army as may be taken with the smallpox, and to consider what measures may be taken to prevent the spreading of that distemper.”⁴⁷ The Congress added two additional doctors to the committee, “appointed to consider some measures to prevent the spreading of the small pox.” The committee was directed to meet again on June 30, to consider additional preventive measures.⁴⁸

SMALLPOX IN BOSTON

Through the spring and summer of 1775, civil and military authorities worked to check the spread of smallpox in the beleaguered city of Boston by carefully checking refugees and isolating any cases found among British troops.⁴⁹ The Massachusetts House of Representatives authorized the formation of a committee “to repair to Chelsea, to take some measures for providing for such inhabitants, and guarding against the small-pox.”⁵⁰ British soldiers continued to succumb to the disease. “It is said that they are very sickly; the putrid fever, small-pox and dysentery prevail amongst them,” wrote a Boston lady in August.⁵¹

On June 29, 1775, the Massachusetts Committee of Safety discussed “*the danger of the Small-Pox spreading in the American Army,*” [italics in original] and feared the “very fatal consequences to this Colony and Continent” if smallpox were allowed to proliferate among the troops outside Boston. The committee resolved to ask Congress “to take such speedy and effectual measures to prevent a communication of that very dangerous and distressing distemper from the Small-Pox Hospital to the Army, or to the inhabitants of this Colony.”⁵² Most remaining patriots in Boston were “of the humbler sort, trades-people and artisans,” since wealthier residents had fled the city. A count of residents in July showed a total of 6,573 inhabitants, exclusive of British troops, their wives, children, and various camp followers.⁵³

Upon arriving at Boston on July 2, Washington immediately issued general orders that demonstrated his concern that rampant smallpox posed for his army. He wrote: “some suitable person in each company . . . inspect said company daily” for “any symptoms of the smallpox” among the troops. If infected, soldiers were to be “immediately removed.”⁵⁴ Washington’s personal experience played an important role in his attitude and understanding of variola. While traveling in Barbados in November 1751 with his brother

Laurence, Washington himself was stricken with smallpox. Only nineteen years old then, he was confined with the illness for twenty-six days. He suffered greatly, was permanently pockmarked, and developed lifelong immunity. He may also have been rendered incapable of fathering children, as modern scientists have documented infertility as a complication of smallpox.⁵⁵

As he maintained his siege against the British in Boston, the American commander in chief exercised every precaution to prevent his troops from being exposed to smallpox. Newly recruited soldiers, recently arrived from outlying rural areas, had not yet succumbed to various camp afflictions that became so debilitating later in the war. Washington wrote in July 1775: "I have the satisfaction to find the Troops . . . very healthy."⁵⁶ Even though they were comfortably dressed, well-fed, and healthy, these men were still susceptible to the disease. Dr. Benjamin Rush later noted that epidemics arose with the "sudden assembling of a great number of persons together of different habits and manners, such as the soldiers of the American army were in the years of 1776 and 1777."⁵⁷

Throughout the nearly eleven-month siege, Washington restricted camp access, checked refugees, and isolated his troops from the contagion to avoid spread of the disease. Dr. Hall Jackson, assigned with General John Sullivan at Winter Hill, described the medical situation in July 1775: "Once in a while a person breaks out with a small Pox and are removed. . . . Not a surgeon in Sullivan's brigade has had the Disease." With even medical professionals unprotected, the army exercised extreme caution toward variola.⁵⁸ Abigail Adams remarked about the disease, "the desolation of War is not so distressing as the Havock made by the pestilence."⁵⁹ In October 1775, American Samuel Bixby reported that a British deserter, "came in last night, and reported that it is sickly in Boston."⁶⁰

Besides smallpox, there were other significant factors that affected Washington's military strategy during the Siege of Boston, among them supplies of artillery and manpower. Indicating that his primary strategic goal was to contain the British and protect his army, he wrote: "To prevent them from penetrating into the country with fire, and to harass them if they do, is all that is expected of me."⁶¹ Early in the siege, however, he argued with his council of war for a more active stance against the British, but he did not succeed. He held three military councils to discuss the need for aggressive action in September and October, but failed to convince his subordinates because of the lack of men, powder, and artillery. He hoped to "make a successful attack upon the Troops in Boston, by means of Boats" in September.⁶² As the siege continued, however, the presence of smallpox

became increasingly important in determining Washington's military actions. With an epidemic raging in Boston, he was forced to reconsider his initial desire to attack the British and maintain a more cautious approach. Thus he chose to wait out the British rather than risk exposing his troops to smallpox through an offensive maneuver.⁶³

The British were unaware of Washington's dilemma, however, and anticipated an American assault at any time. In September 1775, British authorities believed, based on reports from American deserters, that "it is still the Determination of the Rebels to attack us." On September 26, several additional deserters maintained that there would soon be an attack, and on October 22, the British were told, "General Washington threatens to take his Winter Quarters in Boston." Thus, British soldiers continued to expect an American assault on their defensive position in the town.⁶⁴

IMPACT ON BRITISH TROOPS

British troops experienced health-related problems throughout the summer of 1775, including smallpox. This affected military strategy, as did a lack of soldiers. The most significant problem was troop numbers, which were reduced due to illness and casualties. At Bunker Hill, 1,054 soldiers died, nearly half the British forces engaged in battle. In the aftermath, Lord Percy commented, "Our army is so small that we cannot even afford a victory."⁶⁵ Only 440 Americans lost their lives in that battle, which left each side in essentially the same position they held before. This hard-fought engagement had a sobering effect on British attitudes about the rebellion and their own military capabilities. A similar assault on American forces in fortified positions would not be attempted again without careful consideration of the benefits and possible consequences.⁶⁶

In fact, British troops suffered high rates of sickness before and during the Siege of Boston. Anecdotal evidence shows that soldiers suffered greatly and died "in considerable numbers" from dysentery, smallpox, and other diseases and that "officers and soldiers in Boston were much dispirited."⁶⁷ In August 1775, Ezekiel Price, Boston selectman and Clerk of the Court of Common Pleas and Sessions for Suffolk County, noted that there were approximately 6000 regulars in Boston, with 1500 ill.⁶⁸ According to historian Philip Cash, the sick and wounded among British soldiers on July 12, 1775 was 14%; on October 1 was 20%; on November 21 was 23%; and on January 12, 1776 was 18%. (Not until British troops evacuated Boston would the percentage decline significantly, to only 8% on March 17.)⁶⁹ Civilians suffered too, with many evacuees indicating that Bostonians were ill and in need of provisions.⁷⁰

Smallpox was also an ongoing problem among the large number of women and children who were following the royal army. American General Richard Montgomery (1738–1775) commented in October 1775: “Their number of women . . . is astonishing.”⁷¹ The inability of the British to quarter camp women and children adequately in Boston led to increased spread of smallpox. As early as June 1775, Gage had warned, “Notwithstanding the care that has been taken to Provide the [camp] women with proper places to stay in, some . . . broke into houses and buildings that were infected with the Small Pox, by which there is Danger of it spreading through the Town.”⁷² The need for shelter for these wives and children had, in this case, allowed the smallpox contagion to spread unchecked among troops and camp followers alike.

To protect against smallpox, the British Army instituted a voluntary inoculation program in Boston. In November 1775, Howe ordered: “The smallpox being likely to spread, it is Recommended . . . the Commanding Officers . . . have such of their Men Enoculated as have not had it as soon as possible.”⁷³ On December 1, 1775, British general orders stipulated: “The Small Pox spreading universally about the Town, makes it necessary for the safety of the Troops, that such men as are willing, and have not had that distemper shou’d be inoculated immediately.”⁷⁴

Soldiers who refused inoculation were quarantined, which necessitated restricting their interaction with inoculated regulars, and resulted in enforced isolation for large numbers of troops for weeks at a time. Thus the prevalence of the disease, the inoculation regimen, and the burden of caring for sick troops and camp followers reduced the number of effective troops, affecting the army’s ability to function and reducing Howe’s military options.⁷⁵ Once smallpox reached epidemic proportions among troops in Boston and the inoculation program began, aggressive military action by the British became increasingly less likely. Although Lord Dartmouth authorized Howe to use his forces against the Americans by “attacking and doing their utmost to destroy any towns in which the people should assemble in arms,” the situation was not conducive to such action.⁷⁶

This British inactivity during the siege confounded General Washington. Historians have given many reasons for the British general’s inaction, including overconfidence, procrastination, or failure to see the importance of the position.⁷⁷ It appeared that, although Howe preferred that the rebels “quit those strong Entrenchments to which alone they may attribute their present security,” he did not believe his forces to be in immediate danger of assault in the winter of 1775, nor was he anxious to attack the Americans.⁷⁸ Through the autumn, Howe did not have sufficient troops in good health

available to actively engage the enemy, as many of his soldiers were ill with smallpox, dysentery, and other illnesses. Knowing that an American attack was unlikely due to the prevalence of smallpox in Boston, Howe chose to remain in the city and was not in a position to engage in more aggressive military action due to the lack of an effective fighting force.

Furthermore, without the ability to replace fallen soldiers easily, any military action that risked losses required careful evaluation in light of preparations for the upcoming spring campaign. British losses at Chambly, St. John's, and Montreal in November 1775 must have disturbed Howe.⁷⁹ Yet, by November 22, all but three corps of British troops in Boston had "broke up camp and gone into Winter Quarters." On November 23, Washington reported that when the Americans took possession of Cobble Hill, the maneuver was "effected without the least opposition from the Enemy . . . their inactivity on the Occasion is what I cannot account for; It is probable they are mediating a Blow some where."⁸⁰ Howe clearly felt his army was safe from attack, and he planned to wait for reinforcements expected in the spring before moving his base of operations from Boston.⁸¹ He claimed, "without the most unforeseen accident," Boston "would be in no danger from the enemy during the winter." Thus the question: Why was he so certain of a stalemate?⁸²

It was because Howe used every means to prevent an American assault, which ultimately included facilitating the spread of smallpox. Initially, the British hoped the mere presence of smallpox in Boston would prevent an American attack. By inoculating his non-immune troops, the British commander believed he could protect his army while forestalling aggressive military action on the part of the Americans: he assumed that Washington would be loathe to expose his troops to smallpox by assaulting a city suffering a variola epidemic. However, I propose that a more devious plan to maintain the status quo can be discerned from Howe's actions. In October 1775, the Massachusetts General Court passed a resolution restricting travel out of Boston, noting "the Smallpox prevails in the Town . . . whereby great danger is apprehended of spreading that Distemper through the Country by the ferry at Chelsea being open for the Transportation of the poor and other Inhabitants."⁸³ Howe himself prohibited "any of the Inhabitants leaving the Town, without his special Permission on Pain of Death." But Howe suddenly reversed his policy in late November, sending "three hundred of the Inhabitants of Boston," out by sea, most of them "destitute of any thing to help themselves in this inclement Season." It soon became clear that the ships full of evacuees headed out of Boston toward other Massachusetts communities carried the variola virus.⁸⁴

Perhaps part of Howe's rationale was to reduce the drain on the limited resources available to the besieged British forces, but the timing suggests that Howe had other motives, namely, to forestall attack by intentionally introducing smallpox among the American forces outside Boston, effectively preventing a confrontation Howe was not confident of winning. The general's decision to inoculate his troops and send out contagious refugees—along with reports detailing the American belief that the British were attempting to infect the colonials with smallpox—support the idea that smallpox was being used as a military weapon to protect against aggressive American maneuvers.⁸⁵

AMERICAN STRATEGY

American military leaders immediately questioned the motive for the release of refugees by the British and clearly believed it was designed to spread smallpox. This belief, along with an explosion of smallpox cases in December, played a role in Washington's developing military strategy: he ultimately determined to maintain the siege rather than undertake aggressive action. He informed Hancock early that month that the British were sending Bostonian civilians out of the city, and that, "a Sailor says that a Number of these coming out have been inoculated with the design of Spreading the Small pox through this Country and Camp."⁸⁶

Soon after Howe authorized refugees to leave the city, resident Thomas Crafts alerted the Massachusetts Council and Washington that, "The small-pox has broken out in two families that came out of Boston on the first vessels."⁸⁷ Although reluctant to believe such perfidy possible of the British, Washington wrote to the Continental Congress a few days later that he was forced to give credence to the idea of germ warfare.

The information I received that the Enemy intended spreading the smallpox amongst us, I could not suppose them capable of; I now must give some credit to it, as it has made its appearance on several of those who last came out of Boston.⁸⁸

Washington reported to Hancock a few days later that, "The small-pox rages all over the town. Some of the military [British] as had it not before, are now under inoculation. This, I apprehend, is a weapon of defense they are using against us."⁸⁹ Ezekiel Price reported that "the people who came out last from Boston and landed at Point Shirley, have the smallpox among them; that a person at Brookline was taken with it." Price's informant reported that Dr.

Rand (of Boston) had confessed to “effectually given that distemper among those people,” likely through inoculation.⁹⁰ British germ warfare had indeed succeeded: smallpox spread throughout the Massachusetts countryside.

Months later, newspaper reports validated Washington’s belief that the British had intentionally attempted to spread the disease. In February 1776, the *Boston Gazette* reported that Thomas Francis, a young indentured servant, had been inoculated with smallpox and forced by his master to board a British refugee ship sailing to Port Shirley. As a result of this calculated (indeed, forced) exposure, several other passengers contracted the disease.⁹¹

Washington implored James Otis, president of the Massachusetts Council, to “have such necessary steps taken as will prevent the infection from being further communicated.”⁹² Despite strict orders to the contrary, some destitute Boston refugees gained access to the military camp at Cambridge. Washington declared himself to be, “under dreadful apprehensions of their communicating the small Pox as it is Rief in Boston. I have forbid any of them coming to this place.” Robert H. Harrison, the general’s aide-de-camp, informed Colonel Loammi Baldwin at Chelsea of Washington’s desire to “prevent a measure that may prove of fatal consequences to the army” and Washington’s intent to imprison any refugee found in camp without special permission from Washington himself.⁹³ Thus, the deliberate use of smallpox as a weapon by the British strengthened Washington’s resolve to protect his army and convinced him to take cautionary maneuvers in the face of this deadly infection. The Americans used every means at their disposal to thwart efforts to spread the variola virus. General Gates, in a letter to Artemas Ward, reported that Washington had “taken every possible precaution in his power . . . to prevent the Enemy from communicating this infection of the Small pox to this Army.”⁹⁴

Washington, and his civil counterparts, were constantly reevaluating the dangers of smallpox. Beside the immediate impact it would have on his army were an epidemic to take hold, Washington was concerned that the presence of smallpox would reduce new enlistment. Immediately after complaining that “by a fortnight[']s recruiting amongst men with Arms in their Hands, how little has been the success,” Washington noted in late November that, “the small Pox is now in Boston.”⁹⁵ Fear of the disease clearly dampened revolutionary ardor among prospective soldiers. The American army supplemented the many directives regarding smallpox already put in place by civil authorities. Noting the expulsion of infected refugees, Dr. John Morgan, recently appointed director general of the army, detailed his plans to avoid an epidemic among the troops in December.

And whereas the small-pox hath made its appearance several times in the army . . . it is highly expedient to fix on a proper place for conveying such persons . . . and to have a surgeon and mate of experience kept there continually . . . to prevent its spreading.⁹⁶

Morgan later recalled that only extreme caution on the part of medical and military officials prevented the American forces from “ever receiving an injury” from smallpox.⁹⁷ Care was taken throughout the siege to monitor and control smallpox cases, and policies of containment seemed to have forestalled an epidemic. By January 1776, Morgan indicated that only five patients were confined to the army’s smallpox hospital. Caution and the use of isolation had prevented a massive outbreak of smallpox among the Americans. Between January and March, the number of convalescent soldiers cared for in the Cambridge hospital never exceeded twelve, and weekly admissions were under six.⁹⁸

Smallpox was under control in the army and outside of it too, as resident Ezekiel Price said: “the small-pox had almost got through the town, and had been very favorable.”⁹⁹ Another council of war in January, however, decided that the Continental Army still had insufficient numbers and resources to countenance an attack on Boston, and authorized Washington to call on the New England colonies of Massachusetts, New Hampshire, and Connecticut for reinforcements.¹⁰⁰

Washington hoped for authorization from his war council to attack early in February. The American army had superior strength: 8,797 available men, with available reserves of 1,405, whereas the British had only 5,000 men fit for duty (many were still ill with smallpox, by either inoculation or natural transmission). In addition, the frozen bay and rivers would allow troops to cross into the city with ease. Washington believed that “a stroke well aim’d at this critical juncture might put a final end to the War and restore Peace.” But his war council again disagreed, preferring to wait until additional militia and powder arrived.¹⁰¹ By February 16, resources were gathered, and “the prevailing opinion among the officers [was] that our army will soon attack Boston.”¹⁰² Early in March, Washington finally took offensive action and moved to fortify the strategically important Dorchester Heights, which would enable American artillery to “command a great part of the Town and almost the whole Harbour.” Washington believed the attempt to build entrenchments at Dorchester might even “induce [the British] to hazard an engagement.”¹⁰³ Dorchester Hill was so well secured by March 4 that Washington wrote to Jonathan Trumbull, the governor of Connecticut: “I

flatter myself it will not be in the power of the enemy to dispossess us.”¹⁰⁴

The British reacted by planning an attack the following night, on the anniversary of the Boston Massacre. Howe hoped to destroy the new fortifications on Dorchester, but strong winds and a heavy downpour prevented the British from crossing to the heights. American forces strengthened their position as the storm continued, rendering a successful British attack impossible.¹⁰⁵ Howe had decided months earlier to leave Boston because its position as a strategic base was untenable. He had originally planned to wait at Boston for the arrival of transports to move his army northward, but American action, combined with unhealthy conditions in Boston, forced a premature and ignominious departure.¹⁰⁶ On March 17, British forces left Boston with one thousand loyalists and sailed for Halifax, Nova Scotia.¹⁰⁷

BRITISH EVACUATION

Given the continued danger smallpox held for the army, Washington exercised extreme caution once he moved to occupy Boston after the British evacuation. He believed that the British continued their deliberate efforts to spread the disease among the Americans even as they evacuated the city, and soon received confirmation of such a plot. An informant told him, “our Enemies in that place had laid several schemes for communicating the infection of the small-pox, to the Continental Army, when they get out of town.”¹⁰⁸ On the afternoon of the day the British sailed away, Boston selectmen came out to the American lines to alert Washington that “small-pox was in many places in the Town, and it would not be prudent for Persons who had not had the Distemper to venture in.” Hence, “when the enemy evacuates the Town,” Washington ordered, “neither officer, nor Soldier, presume to go into Boston, without leave... as the enemy with malicious assiduity . . . spread . . . smallpox through all parts of the town.”¹⁰⁹

On March 19, Washington ordered General Israel Putnam to take possession of the heights outside the city, but specified that the one thousand men who accompanied him must have already had smallpox.¹¹⁰ This use of immune troops marked a calculated attempt to control the spread of the disease and illustrated Washington’s knowledge and understanding of the disastrous effects the disease could have on his troops. General orders dated March 20 indicated that, “every possible precaution will be taken to destroy the infection of the smallpox.” Military physician Dr. James Thacher received orders “to inoculate for the small-pox, all the soldiers and inhabitants in town, as a general infection of this terrible disease is apprehended.”¹¹¹

Despite extraordinary precautions by both military and civilian



Abigail Adams

Citing the spread of infection through widespread circulation of paper currency, as well as private inoculations among the colonial soldiers, John Adams's wife Abigail sought inoculation for her family.

authorities, the disease spread uncontrollably in and around Boston in mid-1776. The Council of Massachusetts expressed concern to the Boston selectmen that "there is a great uneasiness in the minds of the people . . . that no greater care has been taken to prevent the spreading of the small-pox." By the beginning of July, all attempts to control it had failed. With "many Persons being visited with the Small Pox" a "Stop to its further Progress" without using inoculation was "tho't impracticable."¹² The Massachusetts legislature lifted its ban on inoculation for twelve days in July, but authorized its use only within the confines of Boston. During this short period, nearly five thousand civilians and military

personnel were inoculated.¹¹³ Surrounding communities were also exposed to the variola virus, and citizens of these areas eagerly sought the protection afforded by inoculation, traveling to Boston to undergo the procedure. Ezekiel Price reported, "It is supposed that persons not belonging to Boston, and now under inoculation there, make up more than half the whole." John Adams's wife Abigail sought inoculation for her family, explaining, "Soldiers inoculated privately, so did many of the inhabitants, and the paper currency spread [smallpox] everywhere."¹¹⁴ Efforts to eliminate the spread of smallpox were ultimately successful in Boston, largely due to the use of inoculation.

CONCLUSION

General Washington took extreme care to protect his army from smallpox during the lengthy Boston campaign. His cautious moves, designed to limit the exposure of his troops upon occupying the city, spoke volumes about his concern regarding the potential effects of smallpox on his troops. Washington's policies of containment and inoculation developed as a response to the impact that smallpox epidemics had had on his ability to wage war. Much of his early military strategizing and administrative effort was put toward solving the problems smallpox caused for his troops and ensuring a healthy, reliable military force capable of fighting effectively. Only Washington's vigilance in segregating those infected with the disease and his use of selective inoculation prevented a disastrous epidemic of smallpox among the troops and militia outside Boston during the siege. Illustrating the extreme susceptibility of Continentals to the disease, British writer John Haygarth wrote in 1793 that, "When General Washington inoculated his New England Army, there were scarcely men enough free from the disease, or not liable to take it, to keep guard at the different hospitals."¹¹⁵

Washington was forced to maintain a nine-month siege as a result of British attempts to introduce smallpox among American troops, and the smallpox epidemic in the city, precluded an attack. Washington was cautious when confronted with the possibility of biological warfare, altered his military strategy to accommodate the threat, and succeeded in protecting his army outside Boston from the devastating consequences of an epidemic during the first year of the war. Efforts to contain smallpox led eventually to the selective use of inoculation during this campaign. Although an effective preventive medical procedure, inoculation was not without danger to the army and civilian population. However,

low mortality statistics (only one in five hundred soldiers died from the procedure in Boston in 1776) encouraged General Washington to require inoculation for the entire Continental Army.¹¹⁶

HJM

Notes

1. Louis C. Duncan, *Medical Men in the American Revolution, 1775–1783* (Carlisle, PA: Medical Field Service School, 1931), 52–55; Mary C. Gillett, *The Army Medical Department, 1775–1818* (Washington, DC: Office of Medical History, 1981), 56. For a far lengthier treatment of this topic see the 400-plus-page dissertation by the author: Ann M. Becker, “Smallpox in Washington’s Army: the Strategic Implications of the Disease during the American Revolutionary War,” (PhD dissertation, State University of New York at Stony Brook, 2005).
2. “General Orders, July 4, 1774,” in *The Writings of George Washington from the Original Manuscript Sources, 1745–1799*, John Clement Fitzpatrick, ed. (Washington, DC: GPO, 1931), vol. 3, 310–311.
3. John B. Blake, *Public Health in the Town of Boston, 1630–1822* (Cambridge, MA: Harvard University Press, 1959), 97–98; William O. Owen, *The Medical Department of the United States Army during the Period of the Revolution* (New York: Paul B. Hoeber, 1920), 21.
4. Ezekiel Price, “Diary of Ezekiel Price, 1775–1776,” in *Proceedings of the Massachusetts Historical Society* 7 (November 1863): 229; Gillett, *Army Medical Department*, 56. Statistics were taken from National Archives Record Group 93 M246, roll 135, folder 3–1, items 20–27, Returns of January 13, and March 30, 1776.
5. “The Fight Over Inoculation During the 1721 Boston Smallpox Epidemic,” Special Edition on Infectious Disease, *Science in the News* (Boston: Harvard Graduate School of Arts and Sciences, n.d.).
6. Emanuel Timonius and John Woodward, “An Account, or History, of the Procuring the Small Pox by Incision, or Inoculation; as It Has for Some Time Been Practised at Constantinople,” *Proceedings of the Royal Society of London, Philosophical Transactions* (1683–1775), 29: 72–82; Stephen Coss, *The Fever of 1721: The Epidemic That Revolutionized Medicine and American Politics* (New York: Simon & Schuster, 2016), 74–75.
7. Quoted in Coss, *The Fever of 1721*, 79.
8. Frederique Apffel Marglin, “Smallpox in Two Systems of Knowledge,” in *Dominating Knowledge: Development, Culture and Resistance*, ed. Frederique Apffel Marglin and Stephen A. Marglin (Oxford: Clarendon Press, 1990), 105–106; Donald R. Hopkins, “Benjamin Waterhouse, the ‘Jenner of America,’” *American Journal of*

Tropical Medical Hygiene 5, Pt. 2 Supplement (September 1977): 1060; Elizabeth A. Fenn, *Pox Americana: The Great Smallpox Epidemic of 1775–1782* (New York: Hill and Wang, 2001), 32–33; J. Worth Estes, “The Practice of Medicine in 18th Century Massachusetts: A Bicentennial Perspective,” *New England Journal of Medicine* 305, no.18 (October 1981): 1043.

9. Blake, *Public Health*, 112–113.

10. John B. Blake, “Smallpox Inoculation in Colonial Boston,” *Journal of the History of Medicine and Allied Sciences* 8 (July 1953): 285.

11. Fenn, *Pox Americana*, 27–28; Blake, *Public Health*, 112.

12. Patricia A. Watson, *The Angelical Conjunction: Preacher-Physicians of Colonial New England* (Knoxville: University of Tennessee Press, 1991), 15. She writes: “In England, smallpox had been endemic, a common yet dreaded affliction to which most of the population was exposed as children. In New England, the disease was sporadic, and the isolation of the individual towns often prevented it from being transported from one area to another. With each successive generation, the population grew steadily, rapidly producing new groups of non-immune children. The effect was a regular increase in the frequency of epidemics.” For a detailed discussion of smallpox in Britain, see S.R. Duncan, Susan Scott, and C. J. Duncan, “Smallpox Epidemics in Cities in Britain,” *Journal of Interdisciplinary History* 25, no. 2 (Autumn 1994): 255–271.

13. Quoted in L.C. Duncan, *Medical Men*, 372. Nearly 78% of British soldiers were immune to smallpox.

14. Blake, *Public Health*, 113.

15. L. H. Butterfield, Marc Friedlaender, and Mary–Jo Kline, eds., *The Book of Abigail and John: Selected Letters of the Adams Family, 1762–1784* (Cambridge and London: Harvard University Press, 1975), 22, 39.

16. John Boyle, “Journal of the Occurrences in Boston,” *New England Historical and Genealogical Register* 85, no. 2 (April 1931): 256–259; Richard R. Coakley and Stetson Conn, *The War of the American Revolution: Narrative, Chronology, and Bibliography* (Washington, DC: United States Army, 1975), 86.

17. Boyle, “Occurrences in Boston,” no. 2: 259; Blake, *Public Health*, 97.

18. Coakley and Conn, *War of the American Revolution*, 86; John Richard Alden, *General Gage in America: Being Principally His Role in the American Revolution* (Baton Rouge: Louisiana State University Press, 1948), 61–65, 166–168, 176–177. Gage served as British commander in chief in 1763 while Jeffrey Amherst was in England and was formally commissioned on November 16, 1764; Boyle, “Occurrences in Boston,” no. 2: 264–265.

19. Andrew Wheatcroft, *The World Atlas of Revolutions* (New York: Simon & Schuster, 1983), 17.

20. Blake, *Public Health*, 97–98, 126; Samuel Bixby, “Diary of Samuel Bixby,” *Proceedings of the Massachusetts Historical Society* 14 (Boston: n.p., 1876), 292.
21. “Thomas Gage to Earl of Dartmouth,” September 25, 1774, Peter Force, ed., *American Archives: A Documentary History of the United States*, vol. 4, no. 1, 804–805.
22. Blake, *Public Health*, 97–98; Philip Cash, *Medical Men at the Siege of Boston, April 1775–April 1776* (Philadelphia: American Philosophical Society, 1973), 37.
23. Blake, *Public Health*, 97–98.
24. Boyle, “Occurrences in Boston,” no. 2: 6; this was his first reference to smallpox since 1770, when British troops left Boston.
25. Philip Padelford, ed., *Colonial Panorama: Dr. Robert Honyman’s Journal for March and April* (San Marino, CA: The Huntington Library, 1929), 51. Honyman attributed the beauty of New England ladies to their lack of exposure to smallpox and its attendant scarification.
26. Boyle, “Occurrences in Boston,” no. 2: 8; Blake, *Public Health*, 98.
27. Quoted in Blake, *Public Health*, 97–98, 126; Cash, *Medical Men*, 37; *Massachusetts Gazette and Boston Post Boy*, January 16–April 13, 1775; *Massachusetts Spy*, January 19–April 6, 1775.
28. J. C. Long, *Lord Jeffrey Amherst: A Soldier of the King* (New York: MacMillan Co., 1933), 44, 105. Washington was credited with triggering the Seven Years’ War (as the British called the French and Indian War) when he unfortunately confronted a French diplomatic mission on the Ohio River in 1753.
29. Thomas Flexner, *George Washington: The Forge of Experience, 1732–1775* (Boston: Little Brown and Co., 1965), 52–53. Washington’s elder brother, Lawrence, whom he viewed as a surrogate father, was an officer in the American regiment enrolled in the British regular army. Washington himself aspired to a career in the British Army, and hoped his service in Ohio would lead to a commission. However, rather than being incorporated, his Virginia Regiment was disbanded, and he resigned from provincial military service in 1758; Thomas Flexner, *Washington: The Indispensable Man* (Boston: Little, Brown, and Co., 1974), 5, 8–18.
30. From the *London Evening Post*, March 25–28, 1775 as quoted in Margaret Wheeler Willard, ed., *Letters on the American Revolution, 1774–1776* (Boston: Houghton Mifflin Company, 1925; reprint Port Washington, NY, 1968), 57–58.
31. Jonathan B. Tucker, *Scourge: The Once and Future Threat of Smallpox* (Boston: Atlantic Monthly Press, 2001), 19–21.
32. *Ibid.*, 20.
33. Elizabeth A. Fenn, “Biological Warfare in Eighteenth-Century North America: Beyond Jeffery Amherst,” *Journal of American History* 86, no. 4: 133–4. See also Bernhard Knollenberg, “General Amherst and Germ Warfare,” *The Mississippi Valley Historical Review* 41, no. 3 (December 1954): 489–494, 762–763.
34. Knollenberg, “General Amherst and Germ Warfare,” 490.

35. "Seth Pomeroy to Asahel Pomeroy," May 13, 1775, and "Thomas Allen to Seth Pomeroy," May 4, 1775, in *The Journals and Papers of Seth Pomeroy: Sometime General in the Colonial Service*, ed., Louis Effingham de Forest (New York: Society of Colonial Wars, 1926), 166–167; Fenn, "Biological Warfare," 134.
36. Robert Donkin, *Military Collections and Remarks* (New York: H. Gaine, 1777) 189–90n. Fenn, "Biological Warfare," 136. The quote appears only in three known copies of the book, illustrating the controversy that biological warfare likely engendered. Direct written proof of its use has been rarely found, but circumstantial evidence indicates it was considered and probably used.
37. Stephen Conway, "To Subdue America: British Army Officers and the Conduct of the Revolutionary War," *The William and Mary Quarterly* (series 3) 43, no. 3 (July 1986): 378.
38. R. B. Stark, "Immunization Saves Washington's Army," *Surgery, Gynecology and Obstetrics* 144 (March 1977), 429. "Robert H. Harrison to the president of the Council of Massachusetts Bay," December 3, 1775, Force, *American Archives*, vol. 4, no. 4, 168.
39. Boyle, "Occurrences in Boston," no. 2: 11–12.
40. William Henshaw, *The Orderly Book of Colonel William Henshaw of the American Army, April 20– September 26, 1775*, with a Memoir by Emory Washburn and Notes by Charles C. Smith (Boston: John Wilson and Son, 1877), 15; Hopkins, "Benjamin Waterhouse," 258; Cash, *Medical Men*, 38.
41. Artemas Ward survived smallpox in 1776. See "John Adams to James Warren," July 2, 1776, in *Warren-Adams Letters, Being Chiefly a Correspondence among John Adams, Samuel Adams, and James Warren, 1743–1777* (Boston: The Massachusetts Historical Society, 1917), vol. 1, 264.
42. Coakley and Conn, *War of the American Revolution*, 26–27, 30, 89–91 and L.C. Duncan, *Medical Men*, 46, 55. The Second Continental Congress met in Philadelphia beginning May 10, 1775, and military maneuvers were soon well underway; see Duncan, 41, 57–58 for a description of the combined colonial forces outside Boston. Separate armies from four New England colonies composed the Grand American Army. It included General Artemas Ward of Massachusetts, who led 11,688 Massachusetts men, General Poor with 1,664 men in two New Hampshire regiments, General Israel Putnam with 2,333 men in three Connecticut regiments, and General Nathanael Greene with 1,085 men in one regiment and assorted units from Rhode Island. Virginian and Pennsylvanian riflemen arrived sometime later with Daniel Morgan of Virginia.
43. "To John Hancock," July 20, 1775, *Writings of Washington*, vol. 3, 351.
44. Cash, *Medical Men*, 26.
45. Quoted in Allen French, *The First Year of the American Revolution* (New York: Octagon Books, 1968), 494.

46. "The Journals of the Provincial Congress of Massachusetts Bay, June 19, 1775," quoted in Owen, *Medical Department*, 26.
47. Owen, *ibid.*, 13–16. Quoted from Brown's *Medical Department of the US*, 11–12, in Joseph M. Toner, *Medical Men of the Revolution* (Philadelphia: Collins, 1876), 38; Henshaw, *The Orderly Book*, 35; L.C. Duncan, *Medical Men*, 52–53 and 57. In June, Dr. Foster was assigned as a surgeon at the smallpox hospital in Cambridge, Dr. Rand was sent to the general hospital at Roxbury, and Dr. John Warren put in charge of the hospital at Watertown.
48. From the *Journals of the Provincial Congress of Massachusetts Bay*; Owen, *Medical Department*, 17.
49. Blake, *Public Health*, 126–127.
50. "Massachusetts House of Representatives Resolves," July 1775, Force, *American Archives*, vol. 4, no. 3, 292.
51. "Extract of a Letter from a Lady in Boston to her friend in Chester, England," August 10, 1775, Force, *American Archives*, vol. 4, no. 3, 83.
52. "Resolves of the Massachusetts Committee of Safety," June 1775, Force, *American Archives*, vol. 4, no. 2, 1362.
53. H. E. Scudder, "The Siege of Boston," *The Atlantic Monthly* 37 (April 1876), 468–469.
54. Henshaw, *Orderly Book*, 39.
55. Joseph M. Miller, "Vignette of Medical History: George Washington and Smallpox," *Maryland Medical Journal* 43: 5 (May 1994): 457; Stark, "Immunization," 429; A. M. Behbehani, *The Smallpox Story: in Words and Pictures* (Kansas City: University of Kansas Medical Center, 1988), 33; J. Worth Estes, "George Washington and the Doctors: Treating America's First Superhero," *Medical Heritage* 1, no. 1 (January 1985): 47; A.M. Phadke et al., "Smallpox as an Etiologic Factor in Male Infertility," *Fertility and Sterility* 24, no. 10 (October 1973); Hopkins, "Benjamin Waterhouse," 221. According to Hopkins, variola major (smallpox) can cause male infertility. Washington contracted the disease in 1751 and it is commonly accepted that he was sterile; thus another way in which smallpox affected his life and the course of American history.
56. Gillett, *Army Medical Department*, 52; "George Washington to the president of the Massachusetts Congress," July 10, 1775, Force, *American Archives*, vol. 4, no. 2, 1623.
57. Toby Gelfand, "Military Victory, Medical Stalemate: The Battle of Princeton," in *Bicentennial Programs*, 1976 (Evansville, IN: Graduate Medical Center, 1976), 45.
58. J. Worth Estes, "'A Disagreeable and Dangerous Employment': Medical Letters from the Siege of Boston," *Journal of the History of Medicine* 31, no. 3 (July 1976): 275.

59. "Letter from Abigail Adams to John Adams," September 25, 1775, Adams Family Papers: An Electronic Archive, Massachusetts Historical Society, <http://www.masshist.org/digitaladams/>.
60. Bixby, "Diary," 295.
61. Dave Richard Palmer, *The Way of the Fox: American Strategy in the War for America, 1775–1783* (Westport: Praeger, 1975) xvi, xvii; Allan R. Millet and Peter Maslowki, *For the Common Defense: A Military History of the United States* (New York: Free Press, 1984), 66; Flexner, Washington, 71.
62. "Circular to the General Officers, 8 September 1775," *The Papers of George Washington, Revolutionary War Series*, vol. 1, 16 June 1775–15 September 1775, ed. Philander D. Chase (Charlottesville: University Press of Virginia, 1985), 432–434. His Council of War, which included Major Generals Artemas Ward, Charles Lee, and Israel Putnam, Brigadier Generals John Thomas, Joseph Spencer, William Heath, John Sullivan, Nathanael Greene, and Horatio Gates, decided against an attack on September 11.
63. Gillett, *Army Medical Department*, 56, Hopkins, "Benjamin Waterhouse," 258; H. Thursfield, "Smallpox in the American War of Independence," *Annals of Medical History*, series 3, vol. 2 (1940): 314. For a description of Washington's early strategic planning, see Willard M. Wallace, *Appeal to Arms: A Military History of the American Revolution* (New York: Harper & Brothers, 1951), 61; Coakley and Conn, *War of the American Revolution*, 33.
64. John Barker, *The British in Boston, being the diary of Lieutenant John Barker of the King's own regiment from November 15, 1774 to May 31, 1776*; with notes by Elizabeth Ellery Dana (Cambridge, MA: Harvard University Press, 1924), 64, 66.
65. Quoted in Troyer Steele Anderson, *The Command of the Howe Brothers During the American Revolution* (New York: Oxford University Press, 1936), 90; "From Percy to General Harvey, July 28, 1775," *The Percy Letters* (Baton Rouge: Louisiana State University Press, 1944); Richard M. Ketchum, *The Winter Soldiers: The Battles for Trenton and Princeton* (New York: Henry Holt and Company, 1973), 49.
66. Frothingham, *Siege of Boston*, 152; Coakley and Conn, *War of the American Revolution*, 27–29; Roger Kaplan, "The Hidden War: British Intelligence Operations During the American Revolution," *The William and Mary Quarterly*, series 3, vol. 47, no.1 (January 1990): 115.
67. Price, "Diary," 198, 202; Cash, *Medical Men*, 156; French, *American Revolution*, 321n and 530n. For detailed sources on British casualty and illness rates see R. L. Blanco, "Medicine in the Continental Army, 1775–1781," *Bulletin of the New York Academy of Medicine*, 57, no. 8 (Oct. 1981): 703, note 53.
68. Price, "Diary," 200; Fitzpatrick, *Writings of Washington*, vol. 3, 483n, 483–485, 485n and 488.
69. Cash, *Medical Men*, 156; French, *American Revolution*, 321n and 530n.

70. Price, "Diary," 212.

71. Walter Hart Blumenthal, *Women Camp Followers of the American Revolution* (New York: Arno Press, 1974), 15–16, 53. When the British Army evacuated Boston in March 1776, it included some 667 women and 553 children attached to fewer than half the departing regiments.

72. Thomas Gage, "MS Orderly Book in the Boston Public Library," 102, quoted in Blumenthal, *Women Camp Followers*, 39. The women referred to here were likely among the camp followers who performed duties such as cleaning, laundry, and nursing for the soldiers. Sometimes wives and children accompanied the soldiers, but the camp women (whatever their matrimonial status) were an integral part of camp life, and subsidized by both the British and American armies.

73. Quoted in French, *American Revolution*, 495; he indicates that "smallpox was sporadic, but caused no great harm among the British troops in Boston," 546. Sylvia Frey, *The British Soldier in America: A Social History of Military Life in the Revolutionary Period* (Austin: University of Texas Press, 1981), 43–44; Thursfield, "Smallpox in the American War of Independence," 313; Behbehani, *The Smallpox Story*, 33. See also Samuel White Patterson, *Horatio Gates: Defender of American Liberties* (New York: Columbia University Press, 1941), 60; Howard H. Peckham, *The War for Independence: A Military History* (Chicago: University of Chicago Press, 1958), 22.

74. Benjamin Franklin Stevens, ed., *General William Howe's Orderly Book at Charlestown, Boston and Halifax, June 17 1775 to May 26 1776* (Port Washington: n.p., 1970), 156; Anderson, *Command of the Howe Brothers*, 90.

75. For another perspective on the British army's experiences with smallpox see Estes, "A Disagreeable and Dangerous Employment," 289. He asserts that the British sustained higher casualties from the disease than the Americans. The British suffered due to the close quarters and lack of reinforcements, but they prevented many casualties by using inoculation.

76. Quoted in Frothingham, *Siege of Boston*, 250.

77. Wallace, *Appeal to Arms*, 62, Martyn, *The Life of Artemas Ward*, 193.

78. French, *American Revolution*, 629, 653; Force, *American Archives*, vol. 4, no. 3, 1672.

79. Frothingham, *Siege of Boston*, 251. American forces under Richard Montgomery captured Chambly on October 19, St. John's on November 3, and Montreal on November 12, 1775.

80. "To the president of Congress," November 28, 1775, Fitzpatrick, *Writings of Washington*, vol. 4, 121; Frothingham, *Siege of Boston*, 268–9. Cobble Hill is northwest of Boston, and west of Breeds Hill near Cambridge.

81. French, *American Revolution*, 653.

82. Barker, *The British in Boston*, 68.

83. "Massachusetts House of Representatives Resolves," July 1775, Force, *American Archives*, vol. 4, no. 3, 292.
84. Boyle, "Occurrences in Boston," no. 2: 26–27; Frothingham, *Siege of Boston*, 282; Bixby, "Diary": 296; French, *American Revolution*, 428–430, 493.
85. Thursfield, "Smallpox in the American War of Independence," 314; Donald R. Hopkins, *Princes and Peasants: Smallpox in History* (Chicago: University of Chicago Press, 1983), 258; Cash, *Medical Men*, 37, 111. See Frothingham for the oft-quoted statement, "The British commanders considered this disease alone as a sufficient protection against an assault from their antagonists." He seems to base his opinion on a London news report, which credited the British with "being determined to act with the provincials on the defensive only," 280.
86. "To the president of Congress," December 4, 1775, Fitzpatrick, *Writings of Washington*, vol. 4, 145.
87. "Thomas Crafts to William Cooper," December 10, 1775, Force, *American Archives*, vol. 4, no. 4, 1229.
88. Fitzpatrick, *Writings of George Washington* 4:157, Washington to Congress, 11 December 1775.
89. "George Washington to John Hancock," December 14, 1775, Force, *American Archives*, vol. 4, no. 4, 262.
90. Price, *Diary of Ezekiel Price*, 220.
91. Quoted in Cash, *Medical Men*, 111; from the *Boston Gazette*, February 12, 1776.
92. "From George Washington to James Otis, Sr., 10 December 1775," *The Papers of George Washington, Revolutionary War Series*, vol. 2, 16 September 1775–31 December 1775, ed. Philander D. Chase (Charlottesville: University Press of Virginia, 1987), 526.
93. "To Joseph Reed," November 27, 1775, Fitzpatrick, *Writings of Washington*, vol. 4, 118; "Robert H. Harrison to Loammi Baldwin," December 13, 1775, Force, *American Archives*, vol. 4, no. 4, 255.
94. Horatio Gates, "Letter to Artemas Ward, 3 December 1775," Miscellaneous Bound Manuscripts, Massachusetts Historical Society, Boston, Massachusetts. For a discussion of disinfecting during and after smallpox, see Cyril W. Dixon, *Smallpox* (Boston: Churchill, 1962), 301–302, 311, 394; Frank Fenner et al., *Smallpox and Its Eradication* (Geneva: World Health Organization, 1988), 498, 501–502. Gates further instructed Ward to limit exposure by allowing only immune soldiers to approach British lines, and to sterilize letters in vinegar before reading them.
95. "George Washington to the President of Congress, 28 November 1775," Fitzpatrick, *Writings of Washington*, vol. 4, 122.
96. "John Morgan to George Washington," December 12, 1775, Force, *American Archives*, vol. 4, no. 4, 263.

97. John Morgan, *The Memorial and Representation of Doctor John Morgan, Respecting His Care of the Sick, and Manner of Conducting the Department of the General Hospital Committed to His Care* (Fishkills: n.p., 1777), 2; L.C. Duncan, *Medical Men*, 66.
98. Price, "Diary," 229; Gillett, *Army Medical Department*, 56. Statistics were taken from National Archives record group 93 M246, roll 135, folder 3-1, items 20-27, returns of January 13 and March 30, 1776.
99. Price, "Diary," 228, 231;
100. Coakley and Conn, *The War of the American Revolution*, 97; Henry Knox returned to Cambridge on January 25 with 55 guns captured from Fort Ticonderoga.
101. "To John Hancock," February 18, 1776, Fitzpatrick, *Writings of Washington*, vol. 4, 335-336 and 336n, and "To Jonathan Trumbull," February 19, 1776, 4, 338-339.
102. Price, "Diary," 237.
103. Coakley and Conn, *War of the American Revolution*, 35; "To John Hancock," February 26, 1776, Fitzpatrick, *Writings of Washington*, vol. 4, 349; "Letters Illustrating the Siege," Horatio Gates to John Adams, March 8, 1776, Frothingham, *Siege of Boston*, 281.
104. "George Washington to Jonathan Trumbull," March 9, 1776, Force, *American Archives*, vol. 4, no. 5, 165; Charles Coffin, *The Life and Services of Major General John Thomas* (New York: Egbert, Hovey and King: 1844), 17-18. Major General Thomas, who was later sent to command the Northern Army, led the men who fortified the Heights. Thomas died of smallpox in June 1776.
105. Scudder, "The Siege of Boston," 480.
106. Price, "Diary," 244; Coakley and Conn, *War of the American Revolution*, 35, 98; French, *American Revolution*, 653; "Council of General Officers," March 15, 1776, Force, *American Archives*, vol. 4, no. 5. The siege had lasted almost a year, from April 19, 1775 through March 17, 1776.
107. Coakley and Conn, *War of the American Revolution*, 98.
108. "General Orders," March 14, 1776, Fitzpatrick, *Writings of Washington*, vol. 4, 394-5. Various letters confirm the existence of smallpox among the refugees from Boston; see Force, *American Archives*, vol. 4, no. 4, 1229, 1321, 1325, 1332.
109. "General Orders," March 13, 1776, Fitzpatrick, *Writings of Washington*, vol. 4, 389; Boyle, "Occurrences in Boston," no. 2: 85, 119.
110. "General Orders," March 19 and March 25, 1776, Fitzpatrick, *Writings of Washington*, vol. 4, 404, 430; William S. Powell, "A Connecticut Soldier Under Washington: Elisha Bostwick's Memoirs of the First Years of the Revolution," *William and Mary Quarterly*, Third Series, vol. 6, no. 1 (January 1949): 99.
111. James Thacher, *The American Revolution from the Commencement to the Disbanding of the American Army; Given in the form of a Daily Journal, with the exact dates of all the important events; also a biographical sketch of all the most prominent generals* (Hartford, CT: Hurlbut, Kellog and Company., 1861), 44-45. Abigail

Adams and her four children, along with countless others, were inoculated in Boston in 1776; see Mary Beth Norton, *Liberty's Daughters* (Ithaca: Cornell University Press, 1996), 201–202; Blake, “Smallpox Inoculation,” 298.

112. Council of Massachusetts to Selectmen of Boston, July 20, 1776, Boyle, “Occurrences in Boston,” vol. 2, 123.

113. Blake, *Public Health*, 112.

114. Price, “Diary,” 260; Butterfield, et al., *Book of Abigail and John*, 144–145.

115. John Haygarth, *Sketch of a Plan to Exterminate the Casual Small-Pox and Introduce General Inoculation* (London: Printed for J. Johnson, 1793), 330.

116. Gillett, *Army Medical Department*, 57; Miller, “Vignette of Medical History,” 458.