



## **The American Village: Teaching Youth America's Legacy of Liberty**

### **Lesson Title: "Bite the Bullet" – Revolutionary War Medical Practices**

**Introduction:** This lesson plan can be used as a pre or post lesson plan for students attending the American Village Liberty program. The purpose of the lesson is to help students gain a deeper appreciation for the sacrifice and health challenges of being a soldier. Students will see and hear about medical procedures and instruments used to administer medical attention to the sick and wounded.

**Background Information:** The views held by 18<sup>th</sup> century physicians are very different from those held by medical practitioners of today. Physicians in the 18<sup>th</sup> century had no knowledge of bacteria, germs or viruses, or understanding that disease was spread by them. Therefore, they did not practice sterilization, or personal or hospital hygiene.

Aristotle's work in 350 B.C., along with the physician Galen, some 500 years later, believed that the body had four elements called humors. If the body was healthy, these elements were in balance. If the body seemed to have too much or too little of any element, the physician had to restore the patient's balance by bloodletting, purging or giving the patient a diuretic tea. Another type of treatment was to heat a glass cupping instrument to a very high temperature and placing it on the patient's back. When a blister formed the sores were opened to release the pus.

These practices were continued in the Colonial period based on the theories of Hermann Boerhaave who produced the medical theory that disease was an imbalance of natural activities; therefore the physician had to rid the body of impurities through bleeding and purging.

There were two medical schools in the colonies: the Medical Department of the College of Philadelphia, now the University of Pennsylvania started in 1765 and the King's College, later Columbia University in New York City, started in 1768. By 1776, only 51 medical degrees had been conferred by these schools, yet there were three to four thousand individual practitioners. Most anyone could call themselves a "doctor" as there were no regulations or Medical Boards to monitor training or skill. Physicians were free to enforce any form of medicine they chose, including "herbalism" and "Indian Medicine." During the Revolutionary War, anyone with medical knowledge was pressed into service to help tend the sick and wounded.

## Objectives:

In this lesson, students will:

- Gain an understanding of medical procedures used during the Revolutionary War.
- Identify some of the medical challenges and causes of death during the Revolutionary War.
- Understand General Washington's influence on the medical profession.
- Recognize key physicians and medical innovations that influenced the preservation of life.

## Materials and Resources:

- 1) International Wellness Directory: The History of Medicine
- 2) The Military Practice of Medicine During the Revolutionary War, L.G. Eichner, M.D.
- 3) Revolutionary War Medicine Was a Pain, Newstime.com; Heather Barr
- 4) Brandywine Battlefield Historic Site: Surgeons and Butchers
- 5) Beck, James B. *Medicine in the American Colonies*, 1966
- 6) Moorestown Memorial Hospital. *Medicine and Surgery During the American Revolution*
- 7) Wilbur, C. Keith, *Revolutionary Medicine: 1700-1800*. Globe Pequot Press, 1980

## Strategy:

1. Make the following statement and/or post on the bulletin board: "If you want to study medicine," Hippocrates said, "go to war." Ask the students what they think this means. Discuss the history and information provided in the background information.
2. Hand out pre-test. (attached)
3. Have students research and create a simulated medical field hospital during the Revolutionary War. Students can display pictures of the instruments and/or find facsimiles (check with your principal if any knives or saws will be brought into the classroom.) Ask students to demonstrate an amputation by outlining the procedure, showing the tools and giving a speech on the success rates or lack thereof regarding field medicine.
4. How did smallpox impact the military? Was it ever used as germ warfare? How and by whom? How did this impact General Washington's commands?
  - a) View the portion of the video, *John Adams*, when Abigail inoculated her children
  - b) On a flipchart, list the actions Washington took to prevent the spread of smallpox. {Letters coming from Boston were dipped in vinegar; appointed the first Surgeon General; providing a diet of more fruit and vegetables; ordered mandatory inoculation of all troops who did not have the disease; tried to separate healthy

soldiers from those who were contagious; attempted to require surgeons to take examinations.

5. Students will prepare a T-chart indicating medical procedures before and during the war and procedures that changed as a result of the war.
6. During Colonial times, bullets were located primarily by feeling with the hands; if it could not be easily located, the physician usually let the bullet remain. Assign students a class project on the medical treatment of significant Presidents of the United States:
  - a) The attempted assassination of President Ronald Reagan. (did you know they almost let the bullet remain? Find out why.)
  - b) The medical treatment prior to the death of George Washington. (did he really die from a sore throat?)
  - c) The medical treatment at the assassination of Abraham Lincoln. (can you find out what Lincoln's surgeon did to improve his breathing?)
  - d) The operation to remove the cancerous growth in President Grover Cleveland's jaw. (did you know the procedure was done on a boat?)
  - e) President Woodrow Wilson had a massive stroke while in office. (who was running the country? And what treatment was given in this circumstance?)
  - f) Four years after leaving office, an assassination attempt was made on former President Theodore Roosevelt. (find out how giving a long speech saved his life?)
  - g) President Garfield lived three months after an assassin's bullet hit him in the back. (did the bullet or his doctors kill him?)
  - h) President William Henry Harrison died within a month after giving his inaugural address. (do mother's really know best? – find out what she had told him before giving his speech.)
7. Outline the procedure for amputation. Place each of the following on strips of card stock and ask the students to arrange them in the order of the operation.
  - a) Officers received alcohol for an anesthetic, if available; enlisted men were given a stick to bite down so as not to swallow or bite their tongue in two
  - b) A leather tourniquet was placed four fingers above the line where the limb was to be removed
  - c) A curved knife was used to cut down to the bone of the damaged limb
  - d) Arteries were moved to the side by tacking them from the main area with crooked needles.
  - e) A leather retractor was placed on the bone and pulled back to allow the surgeon a clear field of operation
  - f) The bone saw (a small one for arms and a large upper femur saw for legs) was used to saw through the bone
  - g) Arteries were buried in tissue skin flapped over and sutured
  - h) Bandages with pure white linen cloth and a wool cap were placed on the stump.

- i) At this point, most patients had gone into shock and had a lower than normal body temperature were stabilized if possible.
  - j) ONLY 35% of persons who went through this procedure survived.
8. What is the difference in the physician's "short coat" and "long coat"? What was its origin and what does the "white coat" ceremony mean today.

## Military Medicine During the Revolutionary War: Pre- test

Mark a T or F to the left of each statement.

- \_\_\_ During the American Revolution, more soldiers died from illness than combat.
- \_\_\_ A person had to attend medical school before practicing medicine.
- \_\_\_ A physician, considered a scholar and gentleman, held almost as much status as the local minister.
- \_\_\_ Bloodletting was a normal and accepted medical practice during the Revolution; the practice was curtailed immediately after the war as it was considered primitive and dangerous to the patient.
- \_\_\_ The mortality rate during the Revolutionary War ran between 45-65% as a result of wounds, unsanitary conditions and infection.
- \_\_\_ Stringent orders regarding latrines and privies allowed one to “shoot men on sight” if caught relieving themselves in unauthorized parts of the encampment area.
- \_\_\_ It was not unusual for an entire ward of “invalids” to be fed soup or broth with one spoon.
- \_\_\_ Amputations in the field usually took 30-45 minutes to perform the operation.
- \_\_\_ It was not until 1782 that Congress established a screening board for military surgeons.
- \_\_\_ Women were trained, alongside men, at the first medical college opened in America, the Pennsylvania Hospital in 1765.

Define the following:

- Apothecary
- Victuals
- Medical Mafia
- “Leeching”
- Variolation
- Purging
- Flying Hospitals
- Laudanum
- Trepanning
- Heroic Medicine

### Answer the following questions:

1. Who was the first General Surgeon of the Army?
2. What did General von Steuben order to help improve sanitation in the encampment?
3. What were the top three causes of death among the soldiers?
  - a.
  - b.
  - c.
4. What did Dr. Benjamin Rush say in his book, *To the Officers in the Army of the United American States: Direction for Preserving the Health of Soldiers*?
  - a.
  - b.
  - c.
  - d.
  - e.

### Key Physicians During the Colonial Period

1. Dr. Benjamin Rush:
  - Graduated from Princeton at the age of 15; studied medicine in Philadelphia
  - Believed there was one treatment for all diseases – bloodletting.
  - Used calomel (form of mercury), jalep and low diet for medication
  - Received his M.D. in Edinburgh, Scotland in 1768
  - Became the Army's First Surgeon General
  - Wrote extensively about the importance of sanitation in the Army
2. Dr. Benjamin Church
  - Studied at Harvard; finished his medical studies in London
  - Treated many of the wounded at the Boston Massacre
  - Appointed by Washington as Director General and Chief Physician of the Hospital of the Army when the Continental Congress authorized the establishment of a Medical Department of the Army
  - Court martialled in 1775, suspected of being a traitor; sent out of the country on a slow boat to China; never arrived and assumed lost at sea. His family received a pension from the British government after his death. Most believe this to be a confirmation of his loyalties.
3. Dr. John Morgan
  - Replaced Dr. Church as Director General

- In an attempt to address the inconsistent abilities of the regimental surgeons, Dr. Morgan issued the following regulations:
  - ✓ Dress the wound three to five thousand yards to the rear of the battle field.
  - ✓ Give emergency care only – stop bleeding with lint and compresses; remove foreign bodies from the wound; reduce or set fractured bones to realign them’ apply dressings to wound; before each battle, check with the officers for men to carry off the wounded – make sure there is a supply of wheelbarrows, or whatever transport is available to carry off the wounded. Regimental soldiers were to report their returns of casualties and supplies to the Director General.
    - Unfortunately, Dr. Morgan’s efforts were likened to the British system which Americans would not tolerate. Congress reacted to the criticism and discharged him.
- 4. Dr. Willam Shippen
  - Director General from April 11, 1777 – January 3, 1781 – two of the darkest years of the Revolution.
  - Very ambitious; brought to trial in March of 1780 on charges of “scandalous and infamous practices such are unbecoming the Character of an Officer & Gentleman” – including speculation in the sale of Hospital store. Although acquitted by a single vote, Shippen resigned is commission.
- 5. Dr. John Cochran
  - Fourth Director General; the Hospital (the Continental Army Medical Corp) was now on an efficient course.

## Medical Practices Before and After the Revolutionary War

Anesthesia consisted of a quantity of alcohol or a tobacco juice concoction

“Cupping” – a glass cylinder was heated and placed on the patient’s affected area to sweat out or release the disease.

Tincture of myrrh and turpentine were used as cleaning agents for wounds. Wounds were often cleaned with plain water which was drained into a pail and reused for others on the ward.

“Leeching” – leeches were used for blood sucking or to remove bad blood; they were advertised by an apothecary in Philadelphia until the 1940’s.

“Bleeding or Blood Letting” – a person’s wrist was cut in order to let the person bleed out his disease or illness.

“Bite the Bullet” and restraint by assistants was the primary anesthetic.

Dental issues – grab tooth with a metal clamp, twist and pull it out!

A branding iron was used to “cauterize” or stop the bleeding.

“Blistering” – a hot iron was placed on the affected area to form a blister, then opened to release the disease.

Soldiers used twigs to scrape their teeth.

Beginning principles of sanitation and hygiene were recognized.

Steps in disease control were initiated.

Smallpox vaccination was established.

A policy for battlefield treatment of the wounded, and their evacuation was recognized.

Initial efforts to structure a military medical department were made.

Shaving; stubble is to be removed at least 3 times a week. The soldier had to pay the barber for this task.

Linen hunting shirts should be changed frequently.

Bedding – Straw should be frequently changed, blankets should be aired in the sun, and bedding should be raised off the ground.

Anesthesia discovered in 1846. Iodine was discovered in 1811.

Privies were to be placed in front or to the rear of the camp. NO elimination about the camp.

Victuals – fresh fruit and vegetables were recommended; drinking water must be purified.

Wash hands and face once daily; entire body 2-3 times weekly.



# **Revolutionary Medical Procedures and Equipment**

## **Student Worksheet**

Describe the procedure for the following medical procedures, and then identify each of the tools for the medical chest in the sketches on the following pages:

1. Trepanning
2. Amputation
3. Fractures
4. Gunshot Wounds
5. Bloodletting







