Civil War Medicine: The Minnie Ball and the Surgeon

Teacher: Nathan McAlister

Lesson Title: Civil War Medicine: The Minnie Ball and the Surgeon

Grade Level: 8th Grade

Lesson Time Length: 1 (40-60 minute) Class Period

Big Idea:

1. What was the role of the Civil War surgeon during the Civil War?
2. What was the effect of the surgeon on the Civil War soldier?

Lesson Abstract:

Civil War surgery is a much maligned and misunderstood portion of American Civil War history. We see the stereotypical Civil War surgeon in movies sawing on a young man without anesthesia, brutal and heartless. In fact, these surgeons, for the most part, were not stereotypical they were men who struggled to save as many men as they could while working under near medieval conditions.

Lesson Background and Context:

As I began teaching the Civil War I found students gravitating to the wounded and their wounds. I began thinking about this area of the Civil War that is rarely taught or discussed in any form other than a lecture is medicine and the treatment of soldier’s wounds. My solution was to simulate the process and involve the students in the lesson. The goal is empathy and understanding, see objectives. Within this lesson students will examine, (through primary sources readings and photographs, academic readings, live demonstration, and artifacts; both reproduced and authentic), the personal side of this under studied area of Civil War history. This lesson works well as an introduction for further lessons on the Civil War and primary source analysis.
Standards Alignment:

Kansas, United States, and World History Eighth Grade History Standard: The student uses a working knowledge and understanding of significant individuals, groups, ideas, events, eras, and developments in the history of Kansas, the United States, and the world, utilizing essential analytical and research skills.

Benchmark 4: The student engages in historical thinking skills. Eighth Grade Knowledge and/or Application Indicators Eighth Grade Instructional Suggestions

The student:
1. (A) examines a topic in United States history to analyze changes over time and makes logical inferences concerning cause and effect.
2. (A) examines a variety of different types of primary sources in United States history and analyzes them in terms of credibility, purpose, and point of view (e.g., census records, diaries, photographs, letters, government documents).
3. (A) uses at least three primary sources to interpret a person or event from United States history to develop a historical narrative.
4. ▲ (A) compares contrasting descriptions of the same event in United States history to understand how people differ in their interpretations of historical events.

Objectives:

Students understand the incredible sacrifice and the enormous contribution of Civil War surgeons made to the United States during the Civil War. This includes the amount of men saved by these surgeons. In Addition, students should understand the incredible impact of Civil War weaponry on the individual soldier.

Teaching Materials:

List of Materials:
1. Surgical gloves (I know they do not fit with the time period, but they are needed in today’s world.)
2. One white apron and one white shirt. (Though both are not essential to the lesson they will aid in the authenticity of said lesson)
3. One bone saw. (Although a Civil War replica may be obtained it is unnecessary for the lesson. A run-of-the-mill modern bone saw, hack saw, drywall saw, etc., will suffice)

4. Civil War period Minnie Balls. (Authentic Civil War Minnie Balls can be purchased through many sources. Precautions must be taken however. Do not let students handle the Lead Minnie Balls. Instead put them in or on some sort of container that will allow the students to examine the Minnie Balls. Conversely, replica Minnie Balls may be purchased as an alternative.)

5. Processed cow legs, one per class period. (Most local meat lockers will readily give these legs (minus the hoof) free of charge. Simply call them up let them know what they are for and how many you will need. Storage may be an issue. Make sure you have enough freezer space to store the legs until the day of the lesson. A good friend is always helpful.)


7. One piece of plywood or other wood dimensions 2 feet wide by 3 feet long.

8. One sturdy 8-foot table, a typical school table works very well.

9. Many willing volunteers per class period. Many of these volunteers will be readers of the narration or eyewitness accounts. One will act as the photo manager.

10. Transparencies of all attached lesson related photos.

11. Narrative and Eyewitness dialogue sheets one per volunteer and one complete for the photo manager.

12. One overhead projector and screen to display transparencies

Vocabulary:

**Minnie Ball**—During the Civil War the North and South used a great variety of small arms ammunition, but the type most used was the minié ball. Prior to the development of the minié ball, rifles were not used in combat due to the difficulty in loading. The ammunition used by rifles was the same diameter as the barrel in order for the bullet to engage the grooves of the rifled barrel. As a result the ball had to be forced into the barrel. The minié ball, originally designed by Captain Claude-Etienne Minié of France and improved on by manufacturers in the United States, changed warfare. Since the minié ball was smaller than the diameter of the barrel, it could be loaded quickly by dropping the bullet down the barrel. This conical lead bullet had two or three grooves and a conical cavity in its base. The
gases, formed by the burning of powder once the firearm was fired, expanded the base of the bullet so that it engaged the rifling in the barrel. Thus, rifles could be loaded quickly and yet fired accurately.

**Chloroform**—The two primary anesthetics available during the Civil War were chloroform and ether. Of the two, chloroform evolved as the preferred choice. Both ether and chloroform had been in use for a few years prior to the outbreak of the war. Chloroform came to be the preferred anesthetic because of its faster action, non-flammability and smaller bulk. A major drawback of chloroform was its characteristic of being fatal if the patient was allowed to overdose. The administering of chloroform was accomplished by dripping it onto a sponge or cotton cloth that was held so as to allow the patient to inhale the vapors. Once anesthetized, the sponge or cloth was removed to allow for the "free admixture of atmospheric air." Such "admixture" undoubtedly reduced the death rate of this anesthetic. Chloroform, at times, was extremely scarce in the Confederate hospitals. This scarcity was the mother of invention; an inverted funnel lined with cotton became an inhaler that concentrated the vapors, whereby less chloroform was used for each patient. Following surgery the patient was moved to a recovery area. Here the patient was fanned in the face to force more fresh air in his lungs. Some were wiped with rags of cold water, and when available, ammonia was passed under their noses to bring them back to consciousness. Another point concerning chloroform is that there was less risk of the attending surgeon and staff being overcome by its vapors while performing surgery! Confederate Medical Director Hunter Holmes McGuire asserted that although chloroform was administered over 28,000 times in his corps "no death was ever ascribed to its use."

* Dr. Samuel Guthrie of Sackets, New York. was the first to distill chloride of lime with alcohol in a copper still in 1831. He called it Chloric Either. soon to be named "Chloroform."

**Lesson Implementation and Procedures:**

Step 1:
Before you begin the lesson have the table set up, the desks arranged so that all may see, the overhead projector set up in a convenient viewing area, and all materials on hand.
Step 2:
Begin the lesson by showing the students the Minnie ball, cow leg, sledgehammer, and the bone saw. Inform the students that the cow leg will represent a human leg or if you wish to be truly evil, tell the students it is a human leg. Inform the students that the sledgehammer will simulate the impact of the bullet on the human body. Finally, tell the students that the bone saw represents an actual bone saw used by the surgeon from the Civil War period.

Step 3:
Hand out the dialogue sheets to the student reader volunteers. Inform student volunteers to read when the corresponding photo on their dialogue sheet appears on the overhead. Give an entire set of the dialogue sheets to the photo manager. The photo manager will switch from one photo to the next on the overhead projector. This is the cue to the readers when to read.

Step 4:
Select you wounded soldier for the simulation. Inform him/her that they will simply lie on the table and hang one leg off the edge of the table from the knee down.

Step 5:
Begin the simulation by displaying the first photo while the first reader volunteer reads their dialogue aloud to the class. Have the photo manager continue switching photos and the readers reading, (Make sure they do not read too incredibly fast or slow), until they get to photo and dialogue #6. Upon reaching dialogue #6 place your plywood on the floor, to protect the floor. Place one cow leg on the plywood and strike the cow leg using the sledgehammer. This may take a considerable blow or several tries if you’re a bad shot. Make sure students are sitting at a safe distance so that nothing splatters on them. When you have obtained proper breakage show the students the broken leg and explain the similarity to the damage created by the Civil War Minnie Ball. Pass around your replica or authentic Minnie Ball bullets or display the photo provided.

Step 6:
Proceed to photo and dialogue #7. Have the volunteer read his/her dialogue sheet while you prepare the wounded volunteer and the cow leg. Make sure that his/her leg is hanging off the table at the knee and put the cow leg in place of the
volunteer’s own leg. As you begin the amputation have the volunteers display the photos and read the dialogues #8, #9, and #10.

Step #7:
When you have finished the amputation show the students the completed amputation and then read your dialogue sheet. Next, have your last student volunteer read the last dialogue sheet.

Step 8:
Debrief the simulation. Have students share their feelings and questions about the experience via a brief discussion.

Technology Integration:
The use of the overhead could be replaced with more advanced technology.

Evaluation and Assessment:
Students will have the following options:
1. Letter to a surgeon from a soldier
2. You are creating a memorial to the surgeons of the Civil War. What will this memorial say about these men?

Extension and Enrichment:

Take the lesson further, Book in an Hour: Grab a copy of Gary Paulsen’s book Soldier’s Heart. Break up your students into ten groups and assign each group a chapter from the book. They will be responsible for reading their chapter and fill in the second page of the Book in an Hour graphic organizer. If your class is too small for this you may assign groups two smaller chapters.

*Please make sure that groups do not discuss their chapter, with another group, before presenting their chapter.
When students have finished their chapter and graphic organizer have each group present their chapter, beginning with chapter one. As each group is presenting the other groups should take summary notes. At the end of the class period the entire book will be revealed.

*Make sure two differing groups have chapter nine and ten. This will add to the drama of the lesson.

**Resources:**

**Websites of Interest:**

1. [www.civilwarhome.com](http://www.civilwarhome.com)
2. [www.civilwar.net](http://www.civilwar.net)
3. [www.sonsofthesouth.net](http://www.sonsofthesouth.net)
4. [www.antiquescientifica.com](http://www.antiquescientifica.com)
5. [www.civilwarphotos.net](http://www.civilwarphotos.net)
6. [http://www.civilwar.si.edu/weapons_minieball.html](http://www.civilwar.si.edu/weapons_minieball.html)

**Eyewitness Source:**

-Bancroft and Dunning, eds., *The Reminiscences of Carl Shurz*

Student Narrator Dialogues

#1 The Civil War was fought, claimed the Union army surgeon general, "at the end of the medical Middle Ages." Little was known about what caused disease, how to stop it from spreading, or how to cure it. Surgical techniques ranged from the barbaric to the barely competent.
#12 These fallen men were cared for by a woefully underqualified, understaffed, and undersupplied medical corps. Working against incredible odds, however, the medical corps increased in size, improved its techniques, and gained a greater understanding of medicine and disease every year the war was fought. Poet Walt Whitman, who served as a volunteer in Union army hospitals, had great respect for the hardworking physicians, claiming that “All but a few are excellent men...”
#4 Although Civil War surgeons were commonly referred to as "butchers" by their patients and the press, they managed to treat more than 10 million cases of injury and illness in just 48 months and most did it with as much compassion and competency as possible.
#11 (Teacher Reads This) Approximately 620,000 men-360,000 Northerners and 260,000 Southerners-died in the four-year conflict, a figure that tops the total fatalities of all other wars in which America has fought. Of these numbers, approximately 110,000 Union and 94,000 Confederate men died of wounds received in battle. Every effort was made to treat wounded men within 48 hours; most primary care was administered at field hospitals located far behind the front lines.
#6 The most common Civil War small arms ammunition was the dreadful minnie ball, which tore an enormous wound on impact: it was so heavy that an abdominal or head wound was almost always fatal, and a hit to an extremity usually shattered any bone encountered. In addition, bullets carried dirt and germs into the wound that often caused infection.

--*Use the sledgehammer on the cow leg to show the damage inflicted by a Civil War Minnie Ball*--

--*Hand around the Civil War Bullets for examination or use this photo:*--
#8 Contrary to popular myth, most amputees did not experience the surgery without anesthetic. Ample doses of chloroform were administered beforehand; the screams heard were usually from soldiers just informed that they would lose a limb or who were witnesses to the plight of other soldiers under the knife.

Go to #9 as the amputation is winding down
Those who survived their wounds and surgeries still had another hurdle, however: the high risk of infection. While most surgeons were aware of a relationship between cleanliness and low infection rates, they did not know how to sterilize their equipment. Due to a frequent shortage of water, surgeons often went days without washing their hands or instruments, thereby passing germs from one patient to another as he treated them. The resulting vicious infections, commonly known as "surgical fevers," are believed to have been caused largely by Staphylococcus aureus and Streptococcus pyogenes, bacterial cells, which generate pus, destroy tissue, and release deadly toxins into the bloodstream. Gangrene, the rotting away of flesh caused by the obstruction of blood flow, was also common after surgery. Despite these fearful odds, nearly 75 percent of the amputees survived.
Student Eyewitness Dialogues

#2 To look after the wounded of my command, I visited the places where the surgeons were at work. At Bull Run, I had seen only on a very small scale what I was now to behold. At Gettysburg the wounded—many thousands of them—were carried to the farmsteads behind our lines.
#3 The houses, the barns, the sheds, and the open barnyards were crowded with the moaning and waiting human beings, and still an unceasing procession of stretchers and ambulances was coming in from all sides to augment the number of the sufferers.
There stood the surgeons, their sleeves rolled up to the elbows, their bare arms as well as their linen aprons smeared with blood, their knives not seldom held between their teeth, while they were helping a patient on or off the table, or had their hands otherwise occupied; around them pools of blood and amputated arms or legs in heaps, sometimes more than man-high.
#7 As a wounded man was lifted on the table, often shrieking with pain as the attendants handled him, the surgeon quickly examined the wound and resolved upon cutting off the injured limb. Some ether was administered and the body put in position in a moment. The surgeon snatched his knife from between his teeth, where it had been while his hands were busy, wiped it rapidly once or twice across his blood-stained apron, and the cutting began.

Begin you amputation of the cow leg as students look on in amazement.

Go to #8 during the amputation somewhere in the middle. Keep cutting
And so it went on, hour after hour, while the number of expectant patients seemed hardly to diminish. Now and then one of the wounded men, would call attention to the fact that his neighbor lying on the ground had given up the ghost while waiting for his turn, and the dead body was then quietly removed. Or a surgeon, having been long at work, would put down his knife, exclaiming that his hand had grown unsteady, and that this was too much for human endurance—not seldom hysterical tears streaming down his face.
Photo Descriptions Page

Note: Descriptions are also a part of the file name for each photo.

ARC Identifier: 524469
Local Identifier: 111-B-50
Title: Removing wounded, ca. 1860 - ca. 1865
Images of the American Civil War

Medical and Hospitals

The following photos were taken from [www.civilwarphotos.net](http://www.civilwarphotos.net)

35. Wounded Soldiers Being Tended in the Field After the Battle of Chancellorsville - Near Fredericksburg, VA, May 2, 1863

36. Amputation Being Performed in a Hospital Tent - Gettysburg, PA, July 1863

37. Ambulance Drill of the 57th New York Infantry - 1864

38. Ward in the Carver General Hospital - Washington, D.C.

43. U.S. Sanitary Commission Building and Flag - Richmond, VA, 1865

263. Ambulance Wagons and Drivers at Harewood Hospital (View 1) - Washington, D.C., July 1863

291. Three Surgeons of 1st Division, 9th Corps - Petersburg, VA, October 1864

314. Smith's Barn, Used as a Hospital After the Battle of Antietam – Near Keedysville, MD, September 1862

319. Confederate Wounded at Smith's Barn with Dr Anson Hurd 14th Indiana Volunteers in Attendance after the Battle of Antietam – Near Keedysville, MD, September 1862

322. Zouave Ambulance Crew Demonstrating Removal of Wounded Soldiers From the Field – Location Unknown

379. Dr. Jonathan Letterman, Medical Director of the Army of the Potomac and Staff - Warrenton, VA, November 1862
403. Hospital for Federal Officers (Literary Department, University of Nashville - Later Lindsley Hall, Peabody Normal College) - Nashville, TN, 1864

407. Wagons of the Sanitary Commission and a Crowd at the Landing - Belle Plain, VA, 1864

417. A Confederate Field Hospital - Cedar Mountain, VA, August 1862

433. Group of Surgeons of the Army of the James - Fort Harrison, VA, April 1865


482. Hospital Stewards of 2nd Division, 9th Corps - Petersburg, VA, October 1864

583. Chesapeake Hospital and Grounds - Hampton, VA

597. Patients in Ward K of Armory Square Hospital - Washington, D.C., August 1865

598. Field Hospital after the Battle of June 27 - Savage Station, VA, June 30, 1862

599. Patients in Ward of Harewood Hospital with Mosquito Nets Over Beds - Washington, D.C.

600. Group of Sanitary Commission Workers at the Entrance of the Home Lodge - Washington, D.C., June 1863

601. Field Hospital of the 1st Division, 2nd Corps - Brandy Station, VA, February 1864

602. Convalescent Soldiers and Others Outside Quarters of the Sanitary Commission Home Lodge - Washington, D.C., April 1865

683. Thomas Nelson House (right), Used as a Hospital (In 1781 used as Headquarters by Lord Cornwallis) - Yorktown, VA
686. Nurses and Officers of the U.S. Sanitary Commission - Fredericksburg, VA, May 1864

755. Embalming Surgeon at Work on Soldier's Body – Location Unknown

195. Joseph, Sister M.M. of the Sisters of Mercy. She and Others of Her Order Served in a Military Hospital at Beaufort, NC

820. Workmen in Front of the Ambulance Shop - Washington, D.C., 1865 April

821. Hospital Tents in the Rear of Douglas Hospital - Washington, D.C., 1864 May