The Evolution of Anesthesia in World War II

Alyssa Austin

October 12, 2018

History 151-07

Professor David Geraghty

 When people think of World War II, they think of soldiers fighting Nazis, the Holocaust, and the nuclear bombs. But what about those injured during battles or attacks on cities? They were of course treated with critical care, but also with anesthesia. Anesthesia was used to ease a patient’s pain during surgery or other care. During World War II, the field of anesthesia progressed by bettering the administration of anesthesia, increasing its use in the military, and gaining a larger workforce.

Anesthesiology is the practice of using medicine on a patient during or after surgery to relieve pain. Today, it takes several years to learn this profession either in nursing or as a doctor. Anesthesia is used in many situations, ranging from epidurals for childbirth to putting patients to sleep while performing a general surgery to remove the appendix. The practice of anesthesia is very different than it was in World War II. Professionals today are more like technicians or administrators while during the war they treated injuries as well. In World War II, professionals improved how they administered anesthesia and what they used. For emergency care in a battlefield, doctors typically used a technique where a patient is strapped down to a table to prevent movement, with oxygen and an anesthetic to keep them asleep while performing surgery. The surgery also depended on mechanisms to help the patient such as the mechanism to maintain the patient’s respiratory system. [[1]](#footnote-1) To undergo this, there were underground rooms for surgery until evacuation.[[2]](#footnote-2) In the field, there are recollections of how the administration of anesthetics saved the patient’s life long enough to finish surgery or go through recovery at a hospital. For example, a soldier had been injured by a landmine and doctors used anesthesia to put him to sleep and opened his airways with oxygen long enough to get him to a hospital. The doctor who worked on him said, “He was treated for shock in the operating room all through the night and was in fair condition the next morning, at which time I allowed him to be transported to the ward. He was in good condition for evacuation.” [[3]](#footnote-3)

However, there were negatives to the use of anesthesia. Some anesthetics such as pentothal and ether, while it can be used safely, it can also be life-threatening. For example, pentothal was one of the few used during wartime anesthesia. It was simple and easy to use, but the anesthetic caused depressant, irreversible effects on the respiratory system when many administrators did not take in weight of the patient, and the increased respiration due to the drug. After Pearl Harbor, anesthesia was blamed for several deaths.[[4]](#footnote-4) This was because medics used anesthesia when treating wounded men and it was being utilized by inexperienced individuals, thus many died as a result. In recent years, it was discovered that the true cause of the fatalities is of inadequate amounts of anesthesia.[[5]](#footnote-5) An article, “Anesthesia for Men Wounded in Battle,” by Henry Beecher explains that the men who treated the wounded did not take into consideration the percentage of the anesthetics, the weight, and its potential effects on the patient’s body. Through several surveys, he compared those factors along with death rates to prove what had occurred at Pearl Harbor.[[6]](#footnote-6) On the other hand, it became one of the most useful products during wartime because of improved knowledge of administration such as compensating with nitrous oxide and oxygen, and adequate professionals. This resulted in deaths significantly decreasing.[[7]](#footnote-7) The lessons learned were put to great use in surgery, specifically in the thoracic surgery by helping the patient’s respiratory system and preventing shock.[[8]](#footnote-8)

Ether is another major element for the developing field of anesthesia. Although, ether was discovered in the 1840s, it was still heavily in use in battle and in hospitals. During the war, they sometimes used Squibb Ether. It was provided in medic packs where you could use it as a drip, through inhalation, or by a machine. The use of this anesthetic continued until the 1970s when it was replaced by better products and techniques. [[9]](#footnote-9) There were other developed uses of ether enhanced later and used in World War II, such as cyprome ether made from unsaturated ether, and cyclopropane.[[10]](#footnote-10)

The use of anesthetics and the people who administered them increased significantly in the military and during the war. Programs appeared to train nurses and doctors in the anesthesia field. By the National Research Council and the American Association of Anesthetists, a subcommittee was developed to create an accelerated program to train people in anesthesia. One program involved was a twelve-week course in which volunteers or members of the Medical Corps learned the trade in a hospital. Three groups developed through thirty-seven hospitals. Some of these hospitals included the Wisconsin General Hospital, New York University Hospital, the Mayo Clinic, the Lahey Clinic, and Stanford University hospital. The people who went through the training were taught by the best practitioners of the trade, who were part of the committee, to evaluate their learning and anesthetics they were going to use. Their names were Ralph Woods, M.D., Henry Beecher, M.D., Emery Rovenstein, M.D., John Lundy, M.D., Ralph Tovell, M.D., and Paul Wood, M.D. [[11]](#footnote-11) Before the war, civilians in the field would not have the numbers to help these programs. The education of these people helped others become more interested in pursuing anesthesiology as a career or a similar one. Women were the majority of the providers in the field and since they were not part of the draft, they were able to become more involved with this education and the war effort through the military.

There were four cohorts that were prominent for the war effort. Using the committee in the first cohort, Tovell led operations in Europe in countries like Britain and surveyed their education programs for anesthesia. He observed that the operations there were greater than the ones in the United States. He reported back to the US that medical officers needed additional training. [[12]](#footnote-12)

Another cohort was the twelve-week program that was mentioned. This program specifically focused on inhalation, regional, and intravenous anesthesia. Students gained clinical experience as well as classroom time to learn the theories behind it. At the end of the course, they had to develop theses, and some sources they used became important in the war effort. Some textbooks they used that focused on ether, poisonous gas, and airway management were by Henry K. Beecher and John Lundy, members of the committee. The third cohort was not as successful because it was nearing D-day. The program, in 1944, involved a six-day course with the first week in Manchester, Lancashire, and a thirty-day orientation at hospitals. The fourth cohort contained apprenticeships. A trained professional would teach until the students were adequate and took his/her place until they were fully trained. The cycle would repeat. This was to address the issue of inadequate medical officers. [[13]](#footnote-13)

 The labor force for this field enlarged greatly for civilian life in hospitals, organizations, and other care. In the years after World War II, numbers increased greatly for anesthesiologists, and nurse anesthetists. According to statistics from the *Journal of the American Society of Anesthesiologists*, memberships for organizations like the American Society of Anesthesiologists, and American Association of Nurse Anesthetists increased by 600% and the practice of anesthesia became more widespread. People in the field went from 213 in 1940 to 1431 in 1960.[[14]](#footnote-14) In the university, anesthesia was not introduced until 1941. It was ignored mainly because there was really no recognition of the field and had a very small labor force. Henry K. Beecher was the first professor of anesthesiology at Harvard Medical School. He was a well-recognized anesthesiologist that participated in the wartime effort to educate in the field and made advances and writings in the profession such as, *The Physiology of Anesthesia*. This work was instrumental in learning anesthesia. Other works that helped the future practitioners of anesthesia were *Clinical Anesthesia* by John Lundy and *Inhalation Anesthesia* by Guedel. However, the source for Beecher could be bias because it was written by a man he taught.[[15]](#footnote-15) During World War II, there were also women who wanted to volunteer, but were encouraged to serve the “civilian army,” as nurse anesthetists or army nurses. People who went into the profession during the war were not seen as anesthesiologists or nurse anesthetists, but as medics, doctors, or nurses.[[16]](#footnote-16)

 Anesthesia has been instrumental in World War II by saving millions of lives. Without it, several would have died from their wounds and shock. As a result, it created a larger workforce because of its success through wartime education and its evolved techniques. This is still a developing field, but it has made leaps and bounds since it was first introduced in the Civil War.

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