

Miscellaneous

Using digital media to keep anesthesia history alive

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Abstract

Multimedia applications have been developed to explain many aspects of anesthesiology, including anesthesia machines, cardiopulmonary bypass systems, airway management, anesthetic pharmacology, regional anesthesia, and more recently, the history of the specialty. This article describes how computer-assisted instruction and multimedia have made it possible for an anesthesia department in a teaching hospital to become involved in the preservation, publication, and distribution of historically related anesthesia materials. The production of a digital video disc (DVD) based on the career of Leroy D. Vandam is discussed to illustrate the value of digital media in preserving, rejuvenating, and distributing anesthesia-related historical materials.

Key words Vandam · Multimedia · Anesthesia machine

The Department of Anesthesiology at Boston University Medical Center has used computers as instructional tools for over 20 years. Initially, computer programs consisted of basic text tutorials and assessments for medical students and anesthesiology residents. Gradually, as microprocessors became more powerful and capable of handling various media, the approaches were refined, leading to complex presentations.

Multimedia-capable computers and the Internet have become so ubiquitous that today, few marvel at the awesome power of this technology. A decade ago, only a handful of anesthesia departments were capable of recording data on a compact disc or obtaining images using digital photography. Today, digital video disc (DVD) recording and nonlinear digital video editing are commonplace. However, in spite of the widespread

use of computers and multimedia for educational purposes in medicine, their usefulness as teaching tools remains debatable. Results from studies comparing various media and teaching approaches are difficult to interpret, and more rigorous research is required [1].

Independent of the true effectiveness and efficiency of multimedia as an educational method, the present academic and fiscal climate demands pragmatic alternatives to convey information and train students. Clinical instructors simply do not have the time to frequently repeat the same lesson, and many clinical images and movies would be lost without modern digital media capabilities. Thus, with the advent of high-storage-capacity devices, fast Internet connections, and a variety of technological innovations, digital media, as means of instruction and as clinical tools, are widely used. Multimedia applications have been developed to explain many aspects of anesthesiology, including anesthesia machines, cardiopulmonary bypass systems, airway management, anesthetic pharmacology, regional anesthesia, and more recently, the history of the specialty [2,3].

The purpose of this article is to describe how computer-assisted instruction and multimedia have made it possible for an anesthesia department in a teaching hospital to become involved in the preservation, publication, and distribution of historically related anesthesia materials.

The Wood Library Museum of Anesthesiology is an institution whose objective is the preservation of anesthesiology-related literature and equipment (<http://www.asahq.org/wlm/>). It is considered one of the best historical collections of anesthesiology in the world, and is located at the American Society of Anesthesiologists Headquarters in Park Ridge, Illinois. The Museum has a vast collection of rare books, audiovisual materials, current literature, artifacts and equipment. One of the most important activities of the Museum is its fellowship program, which provides individuals with

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financial support and the opportunity for library studies and historical research at the Museum. The fellowship program is open not only to anesthesiologists and anesthesiology residents but also to physicians in other specialties with an interest in the history of medicine.

In 1998, we were awarded such a fellowship, with the goal of documenting the historical evolution of the anesthesia machine, using computerized multimedia. The end result was a CD-ROM program which was presented at the 1998 American Society of Anesthesiologists annual meeting, where it earned the first prize for a scientific and educational exhibit. This program titled, *The Evolution of the Anesthesia Machine*, presents the Wood Library Museum's collection of anesthesia apparatus and equipment in a colorful and interactive manner, using a timeline model [4]. Additionally, it includes a large number of high-resolution digital photographs and videos of important historic anesthesia landmarks in Boston, such as the Ether Dome at the Massachusetts General Hospital, Morton's Tomb in Mount Auburn Cemetery, and the Monument to Ether in the Boston Public Gardens.

Many senior members of the anesthesia community who had used some of the historical equipment in the museum's collection were interviewed for the project: Nicholas Green, Lucien Morris, Raymond Fink and Edmond Eger among others. Several of these distinguished anesthesiologists have since passed away, including the late Leroy Vandam (1914–2004). The original intent in speaking with Dr. Vandam, like many of the other interviewees, was to obtain his opinion and comments on the use of vintage anesthesia equipment; however, Dr. Vandam, with great eloquence, gave us more than just a few anecdotes. Due to space limitations in the original CD-ROM project, only brief sections of this recording were used.

After Dr. Vandam's death we reviewed the original interview videotape. In an effort to share with our colleagues his important teachings and wealth of knowledge, we produced the DVD program titled *Leroy D. Vandam, MD: An Anesthesia Journey* [5].

Dr. Vandam was a remarkable individual—an intricate amalgamation of artist, scientist and physician. He was truly a Renaissance man. His artwork is displayed in countless places, and his paintings form part of the Wood Library Museum Heritage Series. Several of his watercolors appeared on the covers of the *Journal of the American Medical Association* [6].

Dr. Vandam was first a surgeon. Fortunately for our specialty, he abandoned surgery and pursued a career in anesthesiology, under the leadership of Robert Dripps at the University of Pennsylvania, and joined its staff in 1949 [7]. Five years later, he arrived at the Peter Bent Brigham Hospital in Boston (known today as the Brigham and Women's Hospital) as director of anesthe-

sia and as an associate clinical professor at Harvard Medical School, thus embarking on one of the most illustrious careers in American anesthesiology.

During his tenure at the Brigham, Vandam created and developed the residency training program, producing a long list of outstanding anesthesiologists. Vandam administered the anesthetic for the first human kidney transplant. He published over 250 original articles, chapters, abstracts, and other reports on a variety of subjects, including history, art and pharmacology [8–10]. His classic article on the complications of neuroaxial blocks is a seminal work in anesthesiology [11]. He served as editor-in-chief of the journal *Anesthesiology*, greatly strengthening the publication's scholarship. A thorough account of his numerous accomplishments is beyond the scope of this article. He was internationally well known and respected and earned the highest honor awarded to an anesthesiologist by the American Society of Anesthesiologists: the Distinguished Service Award.

When I spoke with Dr. Vandam to request an interview, he kindly agreed but clarified that, without preparation, he would not be able to elaborate on some of the machines and equipment. I met him in his office on April 15, 1998, and as his narration unfolded, I was captivated. Realizing that I was capturing an important moment, I did not interrupt him. Dr. Vandam was familiar with interviews before a camera and reminded me that he had narrated the popular film *Yankee Dodge: Anesthesia* and that he had conducted several filmed interviews with great anesthesiologists such as Hershey, Greene, and Adriani [12–14]. It was truly remarkable how Dr. Vandam could remember distant events and technical details with the organization and clarity he displayed during the interview.

I videotaped him in a small room and the setting was informal. It was rather dark and although the door was closed, many extraneous sounds interfered with the recording. The resulting colors on the master tape were poor and had deteriorated over time. Thus, we transformed the footage to monochromatic and digitally remastered the soundtrack.

Dr. Vandam's narration is illustrated by selected video segments and many relevant pictures of equipment, people and places. Several of the video segments used in the project were obtained from the Wood Library Museum's collection of classic instructional movies produced in England in the mid 1940s by the Realist Film Unit [15]. The Museum's copies of these movies were not of the best quality and we used the opportunity to enhance the footage using sound and digital video software. Converting old films and videotapes to a digital format represents another example of how this type of historic material can be preserved and even rejuvenated using modern technology.

In the interview, Dr. Vandam describes accidents and complications resulting from unawareness or poorly designed equipment. He describes fatal accidents, complications and explosions no longer seen in our specialty. He is particularly poignant when he describes the inhalation of liquid ether by a patient who later died of an intense chemical pneumonitis.

In spite of the great progress and safety the specialty has achieved, in his concluding remarks he speaks of the impact modern technology has had on the clinical skills of today's anesthesiologist. He warns about the dulling of our senses, emphasizing the value of being a clinician and "looking at the surgical field".

Leroy D. Vandam MD: An Anesthesia Journey was premiered at Boston's Museum of Science, October 20, 2004, and was made possible by the Department of Anesthesiology at Boston University, in conjunction with Anesthesia Associates of Massachusetts. The DVD honors Dr. Vandam's legacy and aims to preserve the history of our specialty. It is distributed free of charge.

In summary, digital media and multimedia can and should be used not only for instructional purposes but also to help document the history of our specialty. Such media enable us to capture moments in video or still images with ease and at minimal expense. These media allow the fast distribution of materials, and permit individuals to publish independently, creating works that otherwise would have been lost.

A complimentary DVD copy of *Leroy D. Vandam, MD: An Anesthesia Journey* can be obtained by writing via e-mail to: maureen.omalley@bmc.org

References

1. Cook DA (2005) The research we still are not doing: an agenda for the study of computer-based learning. *Acad Med* 80:541–548
2. Ortega RA (2005) Leroy D. Vandam, MD: an anesthesia journey. *J Clin Anesth* 17:399–402
3. Rehfeldt KH (2004) Review of Educational material; TEE: an interactive board review on CD-ROM, David S. Morse, Charles Collard. *Anesthesiology* 100:202
4. Ortega RA, Arkoff H (2000) *The Evolution of the Anesthesia Machine [CD-ROM]*. Boston
5. Ortega R (2004) Leroy D. Vandam, MD: *An Anesthesia Journey [DVD]*. Boston
6. Vandam LD (1987) Morton House. *JAMA* 258: Cover
7. Vandam LD (2004) Concerning neurologic sequelae of spinal anesthesia. *Anesthesiology* 100:176–177
8. Vandam LD, Fox JA (1998) Adolf Fick (1829–1901), physiologist: a heritage for anesthesiology and critical care medicine. *Anesthesiology* 88:514–518.
9. Vandam LD (1997) Some personal reflections on anatomic illustration with particular regard to regional anesthesia. *Anesth Analg* 85:691–696
10. Vandam LD (1980) Drug therapy: butorphanol. *N Engl J Med* 302:381–384
11. Dripps RD, Vandam LD (1954) Long-term follow-up of patients who received 10098 spinal anesthetics: failure to discover major neurological sequelae. *JAMA* 156:1486–1491
12. Vandam LD (1987) S.G. Hershey as Interviewed by Leroy D. Vandam, MD. The John W. Pender Collection of the Living History of Anesthesiology [VHS]. Wood Library Museum of Anesthesiology, Chicago
13. Vandam LD (1985) Nicholas M. Greene as Interviewed by Leroy D. Vandam, MD. The John W. Pender Collection of the Living History of Anesthesiology [VHS]. Wood Library Museum of Anesthesiology, Chicago
14. Vandam LD (1977) John Adriani as Interviewed by Leroy D. Vandam, MD. The John W. Pender Collection of the Living History of Anesthesiology [VHS]. Wood Library Museum of Anesthesiology, Chicago
15. Thomson M (1945) *The Techniques of Anesthesia Series [VHS]*. Realist Film Unit, London