

## Chapter 3.23

# Technology in Physician Education

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### ABSTRACT

How physicians are trained has been heavily influenced by the advent of the technology era. Technology has progressed faster than society has been able to integrate it. The same is true within schools of medicine and residency training programs. Many technological advances are available to medical educators, and the goal is to make educators aware of the possible educational tools. Traditionally, medicine has been a learn-by-doing discipline. This is becoming less and less acceptable in modern society, and new training methods are being sought, developed and implemented. Some of the modalities available to medical educators include intranet, hand-helds, virtual reality, computerized charting, computerized access to information and electronic monitoring student education. Technological advances in medical education have their uses, but there are also many drawbacks, including hardware

limitations, computer failure, security issues, patient confidentiality issues, property rights, maintenance and poor attitude of those required to implement new learning systems.

### INTRODUCTION

In the United States (U.S.), more than \$810.7 billion per year is spent on medical expenses (Agency for Health Care Research and Quality, 2005). This is about 8% of our entire gross national income. Technological improvements have allowed for significant advances in all aspects of medicine, which aid in saving many lives each year. However, this same technology is associated with the rising costs of medical care. How this \$810.7 billion is utilized within the health care system is largely determined by physicians. A physician in training is taught to use a specific, methodical thought process as part of his or her

training. First, all possibilities, even the improbable ones, are considered. The most likely causes of a problem are determined and the best diagnostic tests to verify or disprove clinical suspicions are done. Only then is treatment determined and a course of action implemented. The tremendous infusion of technology into the medical field has complicated physician training by making available a plethora of diagnostic and testing options. Medical educators are faced with the challenge of appropriately integrating technological considerations into a fledgling physician's clinical thought process. This challenge is further exacerbated by the need to educate physicians to utilize appropriate technology in training and in practice among patients from a multitude of educational, cultural and linguistic backgrounds. In a nation where hospitals and medical centers must serve the needs of an enormously diverse population, it is important to be aware of the interaction of medical technology and culture.

This chapter describes the structure of medical education and the way technology is being used in the education of physicians. It discusses some advantages and disadvantages of technology in medical education and how these technological advances may impact a culturally diverse population.

### **BACKGROUND**

It has been difficult for the medical education community to keep pace with the ever more sophisticated technologies developed on a seemingly weekly basis. There are more and more tests that can be ordered, increasingly innovative procedures that can be performed, and the emergence of new treatments that can be offered. Keeping in mind that all medical interventions have side effects, some of which are predictable and others not, where is the line to be drawn between what is medically warranted and what is too invasive, too unlikely or too expensive? As a physician,

these issues must constantly be addressed, and often, a concrete demarcation does not exist. Promoting skill in the use of decision-making technology while continuing the intense depth and scope of traditional physician training is a major challenge facing medical educators today. Technology is seen in all facets of medical education, and it affects medical students on at least two levels. First, in the continually evolving world of medicine, students must not only be aware of new advances but must also learn when to apply them. Second, technology may be used to assess the quality of training or to evaluate the learning and performance of a medical student. An intranet, personal digital assistants (PDAs), virtual reality and computerized charting, as well as other available technologies, have the potential to revolutionize not only the way medicine is practiced, but the way it is taught, as well.

Medical technology, however, is not without some controversy. Unfamiliarity of some patients with the imposing appearance of even common technologies does little to promote a healthful and healing experience. While technology is generally touted as a marvelous educational and diagnostic tool, it can also have the effect of interfering with the learning process of a physician in training. Physicians must be able to function effectively while utilizing the latest technological innovations; custom and language cannot be barriers. It is equally important, however, that physicians be able to function effectively without an abundance of technological gadgetry. Verbal communication is still the cornerstone of the patient-physician relationship, and all too frequently, this relationship is sacrificed on the altar of technological advances.

It is important to remember when training physicians that emergency situations often arise at places where the latest technology is not readily available. Although there are many benefits to using technology over more invasive, traditional methods of diagnostic assessment, treatment and diagnosis of patients is trending toward an

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