Chapter 12
Technology Use and Research Approaches for Community Education and Professional Development: Diffusion of Innovation from Medical Schools to Phlebotomy Certificate Programs

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ABSTRACT

This chapter describes the use of technology in the education of health care providers. Advances in technology have led to consistent use of on-line course content such as posting of syllabi, course materials, videos, and other training materials, and deployment of on-line quizzes, tests, and certification exams that take advantage of the high availability of Internet access in most educational institutions. The diffusion of other more advanced technology, such as virtual patients, and virtual worlds, such as Second Life, is much less available across training programs for health care providers. This chapter explores differences across training programs for health care providers ranging from medical education of surgeons through the education of lower-level technicians such as phlebotomists. Consistent with the theory of diffusion of innovations, early adopters of advanced technology for student training are those with the resources who recognize the relative advantages in the technology, such as medical schools. Community education also plays a role in the diffusion of innovation in the training of lower-level technicians and clinicians as community education recognizes that processes of empowerment and social justice are important components of community capacity building. The community education philosophy is consistent with the institutions, such as community colleges, that have the largest role in training health care providers and technicians. Despite advances in the use of technology for the delivery of didactic materials, there are still challenges in the acquisition of clinical skills.

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INTRODUCTION

Health care delivery involves a multidisciplinary approach to the strategic management of health care organizations for the delivery of health care. Ultimately, the purpose of health care is to take a patient who is experiencing compromised health and, through a process of service delivery, turn the sick patient into a well person. Key to this process is diagnosis: accurately identifying the organ system or systems involved in the disease process and taking corrective action based on the diagnosis. In most cases, making an accurate diagnosis will depend on obtaining specimens of blood, urine, other fluids and/or tissue from the patient. Traditionally, this process of obtaining specimens has been performed by several types of health care workers including nurses, phlebotomy technicians, as well as physicians. Specimens are then turned over to clinical laboratory personnel for the performance of diagnostic testing.

Training in the duties of a phlebotomy technician is usually obtained through a certificate program offered at a community college or other university setting. Requirements for certification as a phlebotomy technician vary from state to state, but usually include time spent in the classroom learning material in a didactic format, as well as “clinical” time spent under supervised conditions to obtain experience drawing blood from live human beings. An intermediate step in the process may involve the use of mannequins that are equipped with veins and upon which actual draws may be performed through an artificial device that allows for the flow of water dyed red to simulate the flow of blood through veins and arteries. Depending upon the certificate programs’ requirements, and state certification regulations, candidates for the certificate in phlebotomy technician may also be required to have college credit hours in human biology, anatomy, and physiology.

Phlebotomy Technician (PBT) is an entry level position. At the lowest levels, possessing a “limited phlebotomy” certificate allows the individuals to perform skin punctures only. This generally involves the use of a lancet or other sharp device on a fingertip to obtain one to two drops of blood for rapid testing. Phlebotomy technician I requires at least 40 hours of didactic training in addition to 50-100 blood draws using venipuncture techniques under supervision. It is the first rung on a career ladder that leads from phlebotomy technician I, to phlebotomy technician II, individuals who are trained to perform skin punctures, venous blood collection, and arterial draws; to Medical Laboratory Technologist (MLT), and Clinical Laboratory Scientist (CLS). A CLS credential can eventually lead to supervisory and higher level positions in health care and laboratory settings.

Certification and licensing of phlebotomists occurs at the state level, and PBT education has changed recently due to several factors. In California in 1999, a phlebotomist admitted to reusing needles on many patients due to concerns about costs. This led to a reevaluation of public health laws governing the training and certification of phlebotomists in California. The original law dated from 1973 and allowed individuals to perform phlebotomy with only 10 hours of training by any physician who was willing to sign a certificate, accompanied by three venipunctures and three skin punctures. These minimal requirements led to complaints that programs of poor quality conducted as “weekend” programs were proliferating, complaints from patients about inept phlebotomists, and complaints from phlebotomists themselves that these minimal programs did not lead to employment in most health care settings. California changed its regulations governing phlebotomy training and certification in response to the media coverage and criticism of the California Department of Public Health after the 1999 incident. Assembly Bill (AB) 1557 required more education and training for certification as a phlebotomist, as well as passing an examination and making continuing education a requirement for recertification.
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