A THREE-PART ANALYSIS OF CONTINUING MEDICAL EDUCATION

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Physicians, medical educators, and health care systems all share responsibility for the effectiveness of continuing medical education (CME) activities. Because CME has been criticized as being incapable of supporting physician competency to provide good health care, the researcher uses Gramsci's theory of "cultural hegemony" to explain why some medical educators and some critics of CME may not understand how cultural hegemony can obscure stakeholders' responsibilities for effective CME. The researcher also sought to determine what evidence exists to support a claim of causality such that physicians' participation in a CME activity on antiretroviral therapy (ART) will improve physicians' practice when prescribing ART and will subsequently improve patients' health outcomes. After conducting a scoping review of the literature, the researcher found no published peer-reviewed evidence that supports a claim of causality that physician participation in a CME activity on ART will improve the practice of physicians who prescribe ART and will subsequently improve health outcomes for the HIV-infected patients they treat. Lastly, the researcher sought to determine the origin of criteria for a credential offered by the American Academy of HIV Medicine (AAHIVM), determine the kinds of physician competencies the AAHIVM's 16-module Core Curriculum supports, and the extent to which the AAHIVM's Core Curriculum aligns with CME criteria for the credential.

Keywords: AAHIVM Specialist™, AAHIVS, antiretroviral therapy, ART, audit culture, CME, continuing medical education, Gramsci, hegemony, HIV, HIV specialist, physician competency, stakeholders

BIOGRAPHICAL SKETCH

Thomas Della Porta completed his associate in applied science degree in fire protection technology and his associate in science degree in liberal arts at Monroe Community College, his bachelor of science degree in biology at St. John Fisher College, his master of science degree in adult education at the State University of New York College at Buffalo, and his doctorate degree in education at Cornell University.

Thomas became interested in continuing adult education during his service as a volunteer firefighter, and that interest intensified during his college years when he was asked to tutor fellow students in algebra, chemistry, and biology. His work experience as an adult educator includes training service technicians for a large national company, training first responders at a regional public safety training center, and training health care professionals throughout New York State. Early in his work as an educator, and especially later when he trained firefighters and emergency medical services personnel, he recognized that the choices he makes as an educator and his performance as an educator directly affect other people's lives. Consequently, he continually reflects on his practice and actively seeks ways to improve it so that the health care professionals he trains can provide the best possible outcomes for their patients.

In his spare time, Thomas enjoys reading, photography, and learning about the design and operation of tractor-drawn aerial fire apparatus, commercial and military aircraft, diesel-electric locomotives, and railroad signaling systems and equipment.

DEDICATION

This document is dedicated to my wife, Judy Palmer, my cousin, Kathy Della Porta, and my uncle, Nicholas J. Della Porta, M.D.

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I am grateful to my wife, Judy, who consistently demonstrated extraordinary patience and support during my time as a graduate student.

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PREFACE

This researcher's first experience as an adult educator occurred in 1975 when he organized a safety training program for his colleagues at a volunteer fire company. Since then, his teaching experience has included tutoring fellow college students in algebra, biology, and chemistry; working as a technical trainer for a large company with operations throughout North America; supporting emergency medical services (EMS) training for police officers, fire fighters, and EMS personnel at a county-based public safety training facility; and organizing continuing medical education (CME) activities and teaching health professionals throughout a multi-county region while employed at an academic medical center. All of these work experiences served to reinforce this researcher's belief that adult educators are obligated to continuously reflect on and, when necessary, improve their practice so that they can help their students achieve the best possible outcomes. In order to deliver the best possible outcomes to patients, health care professionals need to acquire and utilize the latest information available in their field of medicine, and engaging in CME activities is the chief means by which those professionals acquire that information. Consequently, this researcher believes patients also depend on the effectiveness of CME activities he organizes.

The research that follows emerged out of this researcher's daily reflection on his practice, his desire to improve his practice, and his desire to pass on what he has learned so that others may benefit. Toward those ends and to fill a gap in the literature, he presents in Chapter 1 some of the promises and constraints he sees in CME today. In Chapter 2, he identifies, after a thorough search of the literature, that there is a significant gap in the literature on CME for HIV care because there is no peer-reviewed published information that describes how physicians can best learn to prescribe antiretroviral therapy for HIV-infected patients. In Chapter 3, the

researcher examines an educational resource and a credential for physicians who want to provide care to HIV-infected patients. As of this writing, both the resource and the credential lack official accreditation from any nationally recognized medical education organization. Thus, the researcher sought to evaluate the resource and the credential so that other medical educators might gain some insight into their usefulness in the field of HIV medicine.

INTRODUCTION TO DISSERTATION

Chapter 1

The Promises and Constraints of Continuing Medical Education

The development of new knowledge in a profession drives the need for continuing education in that profession. Because medical knowledge advances quickly, there is a need for physicians to engage in continuing medical education (CME) activities if they are to remain competent in terms of providing the latest care to patients and improving patients' health outcomes.

In this critique of CME, the researcher asserts that physicians, medical educators, and health care systems all share responsibility for the effectiveness of CME activities. Because CME has been criticized as being incapable of supporting physician competency to provide good health care, the researcher uses Gramsci's theory of "cultural hegemony" to explain why some medical educators and some critics of CME may not understand how cultural hegemony can obscure stakeholders' responsibilities for effective CME. As a result, some educators may believe they are acting in the best interests of physicians, health care systems, and patients, when, in reality, they may be acting as agents for the state and health care systems and ignoring critical aspects of the CME activities they organize, such as the impact those activities have on physicians' competency or health outcomes for patients. Moreover, the researcher asserts that physicians' high social standing as professionals allows them, in some cases, to avoid responsibility for poor CME outcomes when CME is criticized as being ineffective. The researcher also asserts that an outcome of the hegemony found in medical education and health care today is a mindset called "audit culture," which motivates medical educators to organize CME activities that meet criteria and agendas set by the state and by health system

bureaucracies, rather than remediate physicians' deficits in knowledge and skill. Also discussed is the claim that CME, as a self-guided learning activity, is based on the false belief that, in general, humans are proficient at accurately assessing their knowledge and skill in a complex field where new information is constantly being produced. (Research indicates that humans are not proficient at accurately assessing their knowledge and skill.) As a result, it is unreasonable to expect that physicians will accurately identify their learning needs and then complete the CME activities that will remediate those needs. Lastly, the author suggests that a first step in improving the effectiveness of CME is for medical educators to understand the cultural hegemony that can influence their practice. Consequently, Chapter 1 is the researcher's attempt to (1) address a deficiency in the literature regarding the application of Gramsci's theory of cultural hegemony to CME and (2) identify a theory that medical educators can use to critically examine their practice, with the ultimate aim of improving it.

Keywords: audit culture, CME, continuing medical education, Gramsci, health care, health systems, hegemony, medical educators, physician education, physicians, stakeholders

Chapter 2

Continuing Medical Education Activities on Antiretroviral Therapy: The Evidence for Activity Success

The purpose of this research is to determine what evidence exists to support a claim of causality such that physicians' participation in a CME activity on antiretroviral therapy (ART) will improve physicians' practice when prescribing ART and will subsequently improve the health outcomes of the HIV-infected adult patients they treat. The researcher's motivation for investigating this subject was to inform his practice as an educator at an academic medical

center. After conducting a scoping review of eleven peer-reviewed medical publications, four peer-reviewed medical education publications, and eight online databases, the researcher found no published peer-reviewed evidence that supports a claim of causality that physician participation in a CME activity on ART will improve the practice of physicians who prescribe ART and will subsequently improve health outcomes for the HIV-infected patients they treat. Consequently, peer-reviewed research on this subject is needed, and until educators or researchers produce it, the organizers of CME activities for physicians on ART can only speculate about possible relationships between activity participation, improved physician practice, and improved health outcomes for HIV patients.

Keywords: antiretroviral therapy, ART, clinical training, CME, continuing education, continuing medical education, continuing professional development, graduate medical education, HAART, highly active antiretroviral therapy, HIV, HIV infection, human immunodeficiency virus, physician education

Chapter 3

The American Academy of HIV Medicine: An Analysis of AAHIVM Core Curriculum & HIV Specialist Criteria

During the early stages of the HIV pandemic, before the virus that causes AIDS was identified and its pathology charted, there was no treatment available for HIV infection itself. From the beginning of the pandemic, both primary care physicians and medical specialists provided what little care was available for the treatment of the symptoms of AIDS. Later, after HIV was identified as the cause of AIDS and effective treatments began to emerge, public health officials, the medical community, and health insurance companies all recognized that care for HIV-infected patients was becoming more complicated and that physicians with more

knowledge and clinical experience providing care to HIV patients achieved the best health outcomes. As a result, treatment for HIV infection was increasingly viewed as an area of specialized medicine. In order to allow primary care physicians who are not Board Certified in infectious diseases the opportunity to continue to provide care for HIV patients, the American Academy of HIV Medicine (AAHIVM) established HIV specialist criteria that health care providers could meet in order to become credentialed as an AAHIVM Specialist™ (AAHIVS).

The aim of this qualitative study was to answer three questions: (1) What is the origin of criteria for the AAHIVS credential? (2) What kinds of competencies are reflected in the AAHIVM Core Curriculum that are related to the care of HIV/AIDS patients? (3) To what extent does the 16-module AAHIVM Core Curriculum align with CME criteria for the AAHIVS credential? The researcher's motivation for asking these questions and seeking answers was to assess the relevancy of the AAHIVS credential to health care for HIV-infected patients and to determine the usefulness of the Core Curriculum in CME activities for physicians who provide care to HIV-infected patients, particularly because both the AAHIVS credential and the Core Curriculum are not currently accredited by a medical education organization.

The AAHIVM's AAHIVS criteria were "created with input from frontline HIV care providers and HIV patients," ("Gold Standard," 2001, p. 4) and modules 4–16 of AAHIVM's Core Curriculum support all five American Board of Internal Medicine physician competencies. Furthermore, the CME content of the Core Curriculum aligns perfectly with the CME requirement for the AAHIVS credential, but there is only partial alignment between the number activity hours the curriculum offers and the number of activity hours physicians must complete to earn the AAHIVS credential.

Keywords: AAHIVM, AAHIVM Specialist™, AAHIVS, ABIM, American Academy of HIV Medicine, American Board of Internal Medicine, CME, continuing medical education, core curriculum, exam competencies, HIV specialist criteria, physician competency

CHAPTER 1

THE PROMISES AND CONSTRAINTS OF CONTINUING MEDICAL EDUCATION

Introduction

Most health professionals would probably agree that: (1) physicians' competency in terms of medical knowledge and skill is essential for the delivery of good health outcomes for patients, (2) the amount of medical knowledge physicians are required to have is enormous and always increasing, and (3) continuing medical education (CME), in all its various forms, is *the* means by which most physicians maintain their competence. Continuing medical education activities for physicians typically involve multiple stakeholders who may have divergent agendas about the purpose of those activities. Numerous authors (Cervero, 1988; Flexner, 1910, Hager, Russell, & Fletcher, 2008; Houle, 1988, 1980; Institute of Medicine, 2010; Lloyd & Abrahamson, 1979; Moore, 2008) have criticized CME as being ineffective at helping physicians maintain their competency. However, this researcher believes that CME activities do not take place in an inert, neutral environment; they take place in a context that engenders "certain beliefs and that values certain behaviors over others" (Merriam & Brockett, 2007, p. 50) and the context in which CME takes place can have a profound effect on its efficacy. Furthermore, CME stakeholders, including physicians, medical educators, and health systems, each play roles in determining the effectiveness of CME activities. Moreover, differences in the level of power each CME stakeholder has, in addition to cultural factors, can influence CME's purpose, content, delivery, reception, effectiveness, and outcomes. This researcher believes that an understanding of the cultural context of and shared responsibilities for an educational activity can lead medical educators to develop a "more informed and reflective practice" (Merriam & Brockett, 2007, p. 50), which is important for educators because, as Wilson argues, "people's lives are affected by

the choices we make as educators" (A. L. Wilson, personal communication, January 24, 2008). This researcher also believes it is important for medical educators to critically examine their practice in order to identify hegemonic influences that may shape their views and their work environment and that may also influence the effectiveness of the CME activities they organize.

The first aim of this critique of CME is to point out that physicians, medical educators, and health systems each have a responsibility to contribute to the success of CME activities and that critics of CME are sometimes blind to those responsibilities because of the cultural hegemony that is present in education and health care today. The second aim is to provide a lens through which medical educators can identify hegemonic beliefs that may serve to disguise the responsibilities CME stakeholders have in terms of ensuring that CME activities are effective.

This critique begins with a brief discussion of the history of education and its importance to the advancement of civilization. Next will be an examination of the origins of the professions as a way of explaining why physicians hold a higher social standing than most workers and how that standing may obscure physicians' responsibility to contribute to effective CME. The critique then explains why, from a historical perspective, physicians are responsible for maintaining their competence to deliver good health outcomes to patients. Then, several definitions of CME are provided. After that, this critique explores some criticisms of CME, including how CME is predicated on the false belief that humans are adept at assessing their own knowledge and skill. Ironically, CME is primarily a self-guided learning activity, and physicians cannot generally make effective use of it unless they are skilled at self-assessment. After those discussions, this critique provides a brief historical review of Antonio Gramsci and his major focus, "cultural hegemony." Out of that review comes a description of "audit culture," which is hegemonic in nature and may cause some medical educators to unknowingly act as agents of the

state and of the various health systems for which they work. The critique concludes with a discussion of what these concepts and discussion points mean for medical educators and for CME and what medical educators can do to thwart the effects of hegemony and an "audit culture" in the world of CME.

Purpose

The purpose of this critique is to critically examine, through the lens of a medical educator, the shared responsibilities physicians, educators, and health systems have in contributing to CME activities that support physician competency. By critiquing the responsibilities of physicians, educators, and health systems, the researcher aims to identify beliefs that are rooted in hegemony and that may obscure those responsibilities from medical educators, foster unrealistic expectations in the health care community about CME outcomes, and perhaps diminish the effectiveness of the CME activities they organize.

Importance of Education

Humans have succeeded as a species because they developed knowledge they could use to accomplish many tasks that provided benefits to themselves and to civilization. More importantly, throughout history, humans have used various forms of education to successfully pass the knowledge they acquired from one generation to the next, which allowed future generations to benefit. Merriam and Bierema (2014) write, "Human beings would not have survived without learning and even today there is the recognition that learning is a basic human endeavor, one that is truly lifelong" (p. 24). Thus, learning and education are as old as humankind, and education, in all its various forms, is indispensable to the advancement of civilization. Furthermore, CME, be it self-directed and informal or mandated and formal, is indispensable to physicians who seek to maintain or improve their competency and deliver good

health outcomes for their patients. Physicians simply cannot utilize new pharmaceutical agents, new diagnostic and surgical procedures, and new medical treatments safely without first completing some form of CME.

Adult Education

Continuing medical education is a form of adult education (AE), and, as previously stated, AE does not take place in an inert, neutral environment. According to Merriam and Brockett (2007), AE takes place in a context that is tainted by the culture in which it occurs and, as a result, "various other purposes and orientations are also carried along" (p. 79) with it. For educators, understanding what those various other purposes and orientations are can lead to a more informed and reflective practice. Cervero and Gaines (2015) contend that "there is no reason to expect that CME can, or even should, be immune from the social, political, and economic agendas of the institutions that sponsor it or those of the wider society" (p. 136). Therefore, medical educators should not view CME as innocent or neutral. Rather, they should examine their practice with the aim of understanding the various other purposes and orientations that are carried along with the CME activities they organize, as well as the social, political, and economic agendas of the institutions that govern and sponsor the activities.

As with AE, many cultural and social factors influence CME's purpose, content, delivery, reception, and outcomes. Pietrykowski (1996) argues that:

> Adult educators [should] not lose sight of the connection between knowledge and power, all individuals in educational settings occupy multiple subject positions through which they construct a complex and often contradictory understanding of their lifeworld, and that adult educators [should] be attuned to the various ways in which power is deployed through their own discourse about particular discipline-specific knowledge. (p. 82)

However, Apps (1985) warns educators against subscribing to any one educational philosophy:

> Once one reads through a description of these various philosophies, the tendency is to try to fit one's own philosophy into one of these established philosophies. Once one has done so, the inclination is to become comfortable with this new-found intellectual home and stop questioning and challenging and constantly searching for new positions. We cannot retreat into someone else's philosophy as a kind of storm cellar that protects us from facing our practice head on. (pp. 72–73)

This researcher urges all medical educators to continually question their educational philosophy and constantly search for new philosophic positions. It is not the intent of this critique to identify one particular philosophy as *the philosophy* through which medical educators should always view their practice. Rather, the intent is to suggest one philosophy medical educators can use to periodically examine their practice and determine who benefits from their work versus who should benefit, and also identify hegemonic influences that may hinder their work.

Cervero and Wilson (1994) contend that when planning an educational activity, it is critical for educators to consider to whom they are "politically and ethically answerable" (p. 5). Merriam and Brockett (2007) assert that the application of critical theory to contemporary AE reveals "the field's growing preoccupation with technical competence at the expense of social action" (p. 44). Quigley (1993) writes that the field of AE "is becoming—some say has already become—an instrument of the state without the advisement, consent, or even the full awareness of the field" (p. 118). Hirsch (1989) alleges that "people are not born with political ideas. All states use the education system to politically socialize their citizens in an attempt to reproduce their desired vision of reality" (p. 63). Jarvis (1993) agrees and asserts that, "there have been occasions when the state has needed [AE], some when it has used it, others when it has

supported it, and still others when it has merely tolerated it" (p. 15). Consequently, educators may unknowingly adopt hegemonic concepts (that are disseminated through social discourse) as "normal." Cunningham (1995), Merriam and Brockett (2007), and Titmus (1989) all claim that when an organization uses AE, it does so to promote its own agenda and to reinforce existing power structures. On this point, Wilson holds this view:

> Adult education matters in the struggle for knowledge and power in society. Because there is no innocent place to stand in that struggle, as educators we must question who does benefit and who should benefit from our work. To practice a politics of possibility in the struggle for knowledge and power, we constantly face challenges to our commitments to social justice and the democratic practice of education. (A. L. Wilson, personal communication, September 13, 2007)

Thus, when CME is viewed as a type of AE, educators may not appreciate the power they have; how the choices they make can affect other people's lives; or how they may, through their own actions, support hegemonic concepts that may not serve the best interests of physicians or their patients. Another purpose of this critique of CME is to motivate medical educators to reflect on the question of *who* benefits from the CME activities they organize and who *should* benefit from those activities. Fortunately, Antonio Gramsci refined a concept previously espoused by Marx that can serve as a lens to help medical educators identify hegemonic thought and determine who should benefit from their work.

Origins of the Professions

Most people would probably agree that society generally awards professionals a higher status than most other types of workers, and that professionals enjoy significantly more freedom than the average worker in terms of how they do their work. Traditionally, professionals have

had the *freedom of independence* to make judgments—which are generally not subject to question—about the application of their professional knowledge. In order to gain an understanding of the possible reasons why many in society grant professionals significant social status and power, it is useful to examine the origins and evolution of the professions and why society generally defers to practitioners who hold the "nonconventional" (Houle, 1980) knowledge society deems so useful in solving its problems.

The literature suggests that specific power centers within society gave birth to the professions and that there is an association between "nonconventional" or special knowledge and those whom society views as professionals. According to Spencer (1896), "All of the professions originate by differentiation from the agency which, beginning as political, becomes . . . politico-ecclesiastical, and thereafter develops the professions chiefly from its ecclesiastical element" (p. 316). Spencer adds:

> Egypt which, by its records and [ancient] remains, exhibits so well the early phases of social progress, shows us how at first various governmental functions, including the professional, were mingled in the king and in the cluster of those who surrounded the king. (p. 316)

In ancient Egypt, the king typically appointed relatives as chief priests, and some priests also performed administrative functions within the king's hierarchy (Spencer, 1986). According to Baines (1995), Egyptian kings had the power to appoint chief priests because, "kingship [was] almost always associated with religious values: rulers [were] very often credited with divine power and status as well as divine sanction and support. These characteristics were present in full measure in [ancient] Egypt" (p. 3). Having an appointment from the king served as an endorsement from a higher power, a forerunner to the contemporary practice of the state

certifying a professional to practice a craft or engage in an occupational pursuit. Consequently, anyone who received an appointment from the king enjoyed a level of status and power that was subordinate to the king but above the rest of society. Lutz (1924) asserts this about ancient Egypt's rulers:

> The Pharaoh of classical Egypt is conceived of as the son of the sungod, and, therefore, as himself divine. His will is the expression of the godhead. This is the most striking characteristic of the Egyptian king; all his various functions are but the outflow of his divinity. (pp. 447–449)

In addition, Egyptian society held priests in high regard because, in addition to their royal appointments, priests had "knowledge of unseen things" (Spencer, 1986, p. 319), which the king's subjects viewed as being particularly valuable. For example, the king's subjects believed high priests could communicate with the gods and receive knowledge from them. Claiming to have knowledge of unseen things placed the priests in a distinct social position, since few people held a regal appointment and could lay claim to that kind of special knowledge. Priests could also rid souls of spirits that caused disease, or so people believed, and according to Spencer, the aim of ancient science was to serve religious needs. For example, the faithful needed to know when they should make sacrifices that would please the gods. Spencer writes:

> Equally in savage tribes and among early civilized peoples, ghosts and gods [were] believed to be everywhere and always influencing men's lives for good or evil; and hence of chief importance is information concerning the ways in which conduct may be so regulated as to obtain their favours and avoid their vengeance. Evidently the man who knows most about these supernatural beings, the priest, is the man from whom this information of highest value is to be obtained. (1986, p. 274)

Because knowledge of unseen things was the domain of priests and because society valued that knowledge, priests' social influence and prestige grew. Furthermore, one priestly responsibility was to continuously seek more knowledge, and as Egyptian society evolved, some priests began to serve as architects, medicine men, and legal experts. Spencer asserts, "Not only were priests the judges and the interpreters of law, but they at one time discharged subordinate legal functions" (1986, p. 269). In addition, Spencer claims that when priests took on these other roles, society viewed them as "acting naturally" (1986, p. 317) rather than "supernaturally," yet society continued to hold them in high regard because of the special knowledge they held.

Houle (1980) asserts that the church served as the origin of professions, and he contends that "the Council of Trent, which ended in 1563, condemned the reformation and urged the education of a priesthood to combat its heresies" (p. 21). This was because the church had much to lose if poorly educated priests distorted church doctrine or could not sufficiently defend church dogma. In addition, priestly education included what Houle (1980) describes as "nonconventional knowledge, the possession of which has since been defined by many people as the touchstone of professionalism" (p. 20). According to Spencer (1896), "the priest-class comes of necessity to be distinguished above other classes by knowledge and intellectual capacity" (p. 184). Spencer goes on to assert that the priest's power "is augmented by those feats and products which exceed the ability of the people to achieve or understand" (p. 184). For example, during mediaeval times, Christians depended on priestly observance of the moon to tell them the date upon which Easter fell each year (Spencer, 1986). Says Spencer:

> Distinguished in early stages as the learned man of the tribe or society, and especially distinguished as the possessor of that knowledge which was thought of most value—knowledge of unseen things—the priest of necessity became the first teacher. (p. 319)

In addition, Thomas (1903) points out that a profession needs patronage in order to grow, and kingdoms and the church conveniently provided that patronage. Moreover, professions that "favored the needs and claims of the church" (Thomas, 1903, p. 18) received more encouragement from the church than did other professions, which members of society viewed as official endorsements of those professions. Encouragement and an endorsement from a locus of social power served to place into a distinct social position those select individuals who held what society believed was special knowledge.

Thomas (1903) explains the continued growth of the professions beyond the church by pointing to economic factors, such as the division of labor. When nonconventional knowledge is held by a select group of individuals and society views that knowledge as having value, market economics favor the development of a professional class. For example, Simon (2005) describes how pharmacists in post-revolutionary France emerged from the spice merchants of that era and began to distinguish themselves through their special knowledge. Subsequently, a school of pharmacy opened in Paris, which produced a specific educational curriculum and resulted in state-sanctioned licensing (Simon, 2005). That formal process of education, in addition to licensure and sanctioning by the state, provided legitimacy to pharmacists, as well as a higher social standing. It is unlikely that all of these developments would have occurred if society in post-revolutionary France had had no use for the services pharmacists were able to provide. Further, it is reasonable to suspect that as civilization advanced and as the volume of "nonconventional" knowledge grew, specific circumstances combined to favor the development of other professions. Those circumstances likely included: (a) the existence of special knowledge held by a few respected individuals; (b) society placing a high value on that special knowledge due to its usefulness in solving the important problems individuals and society

wanted solved; and (c) a citizenry that lacked access to or an understanding of that special knowledge, which then created a societal need for practitioners who held that knowledge and could apply it in a way desired by most citizens. When these circumstances combined and persisted over time relative to the important problems individuals and society wanted solved, conditions were favorable for a profession to emerge. As with religion, a profession needs patronage that seeks what it has to offer. Consequently, it is the patron who confers professional status on the practitioner.

Schön (1983) views the professions in terms of social power: "The professions are vehicles for the preemption of socially legitimate knowledge in the interest of social control" (pp. 288–289). By extension, one can view a professional as being a practitioner who has unconventional knowledge that is not widely held and to whom society defers in the application of that knowledge. Schön (1983) argues that "in a familiar psychological extension of the formal contract, the client agrees to show deference to the professional" (p. 292). This generally confers substantial power upon professionals, and in the case of health care, it confers substantial power on physicians (and on health care systems), thus legitimizing their approach to patient care.

In Cervero's (1988) view:

> It is appropriate for professionals to be given extraordinary rights and privileges in their work and social rewards in terms of money and status. This is the bargain that society strikes with professionals in exchange for their highly valued and indispensable role in matters of social importance. (p. 24)

Traditionally, professionals have enjoyed significant freedom to make judgments about their practice and the application of their unconventional knowledge, and society generally does not question those judgements. Occupations that have long claimed professional status and to which

society has granted such status include physicians, lawyers, architects, engineers, and accountants. According to Cervero (1988), "many occupations seek professional status" (p. 24), and Houle (1980) observes that "if an occupation is inherently not a profession, continuing education [CE] cannot make it one" (p. 24). However, it is society and its discourse that define professionalism and what it means to be a professional. The meanings of both *profession* and *professional* are social constructs; therefore, their meanings can change over time and are dependent upon one's point of view (Barrow & Milburn, 1990; Cervero, 1988; Schein, 1972). Regardless, many people today would agree that physicians have long enjoyed high social status and the power that accompanies that status (Cervero, 1988). Therefore, it is important for medical educators to understand how that status and power can, in a hegemonic manner, obscure physicians' responsibility to accurately assess their learning needs and then seek CME activities that will help them remediate their needs.

Professional Competency

Generally, physicians who do not engage in CME activities are less likely to maintain their professional competency (Balas & Boren, 2000; Bennett et al., 2000; Corriere, Minang, Sisson, Brancati, & Kalyani, 2014; Eva, 2009; Flexner, 1910; Institute of Medicine, 2010; Lucey, 2013; Nissen, 2015; Norman, Shannon, & Marrin, 2004; Snyder, Hazelett, Allen & Radwany, 2013). Nowlen (1988) describes the professions as an "undefined, vast, and sometimes troubled field" (p. 11), and points out that "the one unchanging feature of the professional is unceasing movement toward new levels of performance. In the achievement of these new levels, inadequacies of performance become clear and better levels of performance possible" (p. 11). Norman et al. (2004) assert that:

> Like all professions, medicine is granted professional autonomy by society under the assumption that its practitioners will be deemed competent on entry into practice and will maintain competence for as long as they practise. Traditionally it is the responsibility of the individual practitioner to do whatever is necessary to remain competent. (p. 999)

Professional competency is at least partly dependent upon the knowledge held by the practitioner (Cervero, 1988; Houle, 1980; Nowlen, 1988). Competency is also dependent upon the manner in which practitioners act on or apply that knowledge. The relationship between knowledge and professional competency is not exclusive or direct, and furnishing practitioners with specific knowledge will not ensure they will take the desired action in specific circumstances or will achieve specific outcomes. For example, one health care provider told a medical educator this about health care providers who do not test patients for minor medical conditions: "Often, you hear providers say, 'I don't want to test patients for that because I don't want to deal with what I might find'" (Name withheld, personal communication, November 8, 2013). Furthermore, an educator who trains medical students in cultural competency told a colleague about an exceptionally religious medical student he encountered. During a discussion of the high prevalence of sexually transmitted diseases (STDs) among males who have unprotected sex with other males, the medical student expressed his view that the high prevalence of STDs in homosexual males was punishment from God for homosexuals' sinful life. As a result, the medical student stated he would prescribe prayer for homosexual patients who have STDs so that the patients could make things "right" with God (E. Libey, personal communication, June 8, 2010). Freidson (1986) argues that:

> To assume, as do many who analyze documentary sources alone, that textbooks and other publications of academics and researchers reflect in consistent and predictable ways the

> knowledge that is actually exercised in concrete human settings is either wishful or naïve. (p. 229)

Queeney (2000) asserts that "providing knowledge and skills alone is not sufficient for competence maintenance and enhancement" (p. 377), and Cervero claims that "participation in a learning activity does not guarantee that learning will take place" (p. 61). Factors that influence practitioners' competency regardless of the knowledge they hold include culture, values, religious beliefs, employer requirements, social attitudes, biases, level of dedication, government regulation, insurance restrictions and requirements, intuitiveness, morals, politics, finances, greed, health, social standing, etc. All of these factors have the potential to influence physician performance despite physicians' participation in effective CME activities. It is beyond the scope of this research to investigate the myriad reasons why practitioners might have specific knowledge but not apply it when circumstances warrant it. However, regarding medical knowledge and the process by which health providers diagnose illness, Norman and Eva (2010) write:

> There is little discussion about the interaction between knowledge and skill. If the clinician has not heard of amyotrophic lateral sclerosis, no amount of introspection about cognitive bias will make [the clinician] think of it when faced with a patient with progressive paralysis. (p. 99)

A study conducted by DesRoches et al. (2010) revealed that 17% of physicians "had direct personal knowledge of a physician colleague who was incompetent to practice medicine in their hospital, group, or practice" (p. 187). Kruger and Dunning (1999) assert "that those with limited knowledge in a domain suffer a dual burden: Not only do they reach mistaken conclusions and make regrettable errors, but their incompetence robs them of the ability to realize it" (p. 1132).

While it is desirable to believe that all physicians will identify their deficiencies and then complete CME activities that will improve their performance, Moore (2008) observes, "there are a variety of other issues and considerations that affect the decision to pursue learning" (p. 33).

Bennett et al. (2000) claim that "physicians direct their own learning" (p. 1169), and they argue "optimal CME is highly self-directed, with content, learning methods, and learning resources selected specifically for the purpose of improving the knowledge, skills, and attitudes that physicians require in their daily professional lives that lead to improved patient outcomes" (p. 1167). Norman et al. (2004) assert that professionals have a responsibility to "do whatever is necessary to remain competent" (p. 999). Moreover, maintaining one's competency in order to achieve the best possible outcome for one's client is fundamental to all professions, including the medical profession (Brennan, 2002; Cervero, 1988; Houle, 1980, 1988). Regarding the relationship between professionals and their clients, one characteristic of that relationship is society's expectation that whether solving a problem or delivering a service, professionals will use their experience and nonconventional knowledge to deliver a desirable outcome for the individual or society (Cervero, 1988; Houle, 1980; Schön, 1983). Society does not expect its professionals to deliver suboptimal performances that lead to poor outcomes. Crocker (2014) writes that "many commercial transactions have traditionally been conducted under the caution, caveat emptor, let the buyer beware; whereas in the arena of professional services these transactions have operated under the credo *credit emptor*, 'let the buyer trust'" (p. 333; italics in original). Crocker further asserts that the idiom "let the buyer trust" is "the essence of the professional/client relationship" (p. 333). In other words, society trusts, indeed expects, its professionals to perform in a way that produces desirable outcomes. In the case of health care, most patients trust and expect their physicians to have the special knowledge that is required to

accurately diagnose known illnesses, make correct medical decisions, and offer state-of-the-art treatment for well-known diseases (Della Porta, 2011). As a result, society's lofty expectations of physicians combined with physicians' hegemonic power can prompt some individuals to misplace blame for poor health outcomes on CME activities and not look deeper for other causes or contributing factors.

Regarding what motivates physicians to identify their learning needs and subsequently decide which educational activities they will engage in, Nowlen (1988) claims that "professionalization narrows what consumer-professionals desire in [CE]" (p. 202). For example, physicians might focus their CME on lucrative areas of their practice while ignoring CME that might improve their knowledge in another area of their practice that generates less revenue. Alam (2000) cites the case of one group of medical specialists that had "a pecuniary interest in limiting the surgical procedures performed by dermatologists" (p. 1098). Meanwhile, Alam adds that "dermatology departments [at academic medical centers], unlike much of academic medicine, have the capacity to bolster their income via the provision of nonessential cosmetic services and surgical procedures of all types. To some extent, these opportunities have been exploited" (p. 1096). Consequently, in their quest to increase their incomes, physicians might focus on CME activities that further that agenda and, as a result, minimize their participation in CME that deals with less profitable areas of practice even if that CME could help them improve their practice with less profitable treatments. Lawsuits filed against physicians for performing unnecessary medical procedures have prompted investigations that suggest some physicians perform procedures they are not qualified to perform, but they do so because of the revenue such procedures generate (Creswell, 2015). Nowlen also points out that "the

professional is an individual who may have personal short-comings, and those short-comings can affect performance. [CME] may not alleviate those short-comings" (p. 201).

Continuing Medical Education

According to the Institute of Medicine (2010), CME for health professionals has a relatively short history, but Gallagher (2007) claims it originated in England during the 19th century as a result of the speed with which new medical knowledge was then being produced. The Institute of Medicine contends that:

> After World War I, medical faculties became increasingly concerned with the need to spur professional growth of physicians in practice, and [CME] was used as a way to help well-trained practitioners keep up to date with the advancing knowledge. Although reports from the 1930s and 1940s called for the continuation of medical education beyond undergraduate and graduate level education, it was not until after World War II that these calls were acted on (Commission on Graduate Medical Education, 1940; Shepherd, 1960). (2010, p. 20)

Despite its apparent utility and previous success in helping physicians maintain their competency, CME has come under considerable criticism during the last two decades for being unable to effectively support physician competency (Institute of Medicine, 2010). However, this educator believes CME's success depends on many factors, and its success is a shared responsibility among physicians, educators, and the health systems that employ them.

> The American Medical Association (AMA; 2017) claims that CME consists of: Educational activities which serve to maintain, develop, or increase the knowledge, skills, and professional performance and relationships that a physician uses to provide services for patients, the public or the profession. The content of CME is the body of knowledge

> and skills generally recognized and accepted by the profession as within the basic medical sciences, the discipline of clinical medicine and the provision of health care to the public. (p. 2)

Cervero and Gaines (2014) claim that CME activities include "academic detailing, case-based learning, demonstrations, feedback, lectures, problem-based learning, point-of-care techniques, role play, and patient simulations" (p. 8). The Institute of Medicine (2010) further defines CME activities as including the authoring of journal articles, making poster presentations at conferences, earning a medical-related advanced degree such as a master's in public health, self-directed independent learning, reading journal articles, reviewing journal articles, authoring tests for other physicians, discussions with colleagues, clinical experience, self-assessment activities that measure competence, and teaching other medical professionals. According to Davis, Davis, and Bloch (2008), CME can be defined as "any activity which serves to maintain, develop, or increase the knowledge, skills and professional performance and relationships that a physician uses to provide services for patients, the public, or the profession" (p. 652), and Rampatige, Dunt, Doyle, Day, and van Dort (2009) claim that CME "includes the continuous acquisition of new knowledge, skills, and attitudes to enable competent practice" (p. S35). Hager, Russell, and Fletcher (2008) cite research indicating that attendees at a 2007 national conference on CME in the health professions agreed that "much professional learning takes place informally and outside accredited formats" (p. 14). These descriptions of CME appear to be so comprehensive that almost any medically-related educational activity physicians might undertake could be considered "CME." However, the AMA (2017) says physicians should not claim CME credit "for learning which is incidental to the regular professional activities or practice of a physician" (p. 2), and the association provides the following examples of activities for which physicians

should not claim CME credit: "clinical experience, charity or mission work, mentoring, surveying[1], serving on a committee, council, task force, board, house of delegates or other professional workgroup [or] passing examinations that are not integrated with a certified [educational] activity" (p. 2). In addition, the AMA (2010) contends that physician participation in accredited CME activities should not serve as a direct assessment of physicians' competency—which is precisely how most critics of CME view physicians' portfolios of their completed CME activities.

A widely accepted premise among those involved in CME activities, whether as a participant or organizer, is that an essential part of being a competent health professional includes the timely acquisition of new knowledge (Cervero, 2010; Cervero & Gaines, 2015, 2014; Houle, 1988, 1980; Institute of Medicine, 2010; Lloyd & Abrahamson, 1979; Norman et al., 2004). Brennan (2002) contends that "medical ethics has traditionally held that physicians owe patients the best care possible. The most profound commitment for the physician is to the patient's good" (p. 973). Indeed, working toward the best possible outcome for the client is intrinsic to all professions (Cervero, 1988; Houle, 1980, 1988; Schön, 1983). Kenny, Mann, and MacLeod (2003) assert that a "central virtue" of the medical profession is "clinical competence" (p. 1207), and Holmboe and Bernabeo (2014) argue that physicians are obligated to address their professional deficiencies, especially those that affect the health outcomes and safety of their patients. However, Croskerry (2009) reports that "autopsy findings have consistently shown a 20% to 40% discrepancy with the antemortem diagnosis" (p. 1022), suggesting a lack of competence among some physicians, as well as suggesting the need for effective CME. Moore (2008) asserts that "recently published work recognizes that CME, no matter how well planned,

[1]"Surveying" is a process by which a group of medical professionals collect and review information about a specific health care organization in order to determine whether the organization has met performance standards.

cannot produce changes in physician performance and patient health status by itself" (p. 55). Unfortunately, patients will die or endure needless suffering when physicians fail to keep up with advances in medical knowledge (D. Dietrich, personal communication, August 18, 2011).

To make matters worse, some physicians may participate in CME activities for compelling reasons that may have little to do with maintaining their competency. For example, Nissen (2015) asserts, that rather than help physicians remediate their knowledge gaps and improve health outcomes for patients, "many educational offerings focus on helping physicians meet the regulatory requirements for licensure, not on practice improvement or enhancement of patient outcomes" (p. 1813).

Criticisms of CME

Hager et al. (2008) cite these criticisms of CME for health professionals:

- "Too much [CME] relies on a lecture format and counts hours of learning rather than improved knowledge, competence, and performance" (p. 14).
- "Too little attention is given to helping individual clinicians examine and improve their own practices" (p. 14).
- "Insufficient emphasis is placed on individual learning driven by the need to answer the questions that arise during patient care" (p. 14).
- "[CME] does not promote inter-professional collaboration, feedback from colleagues and patients, teamwork, or efforts to improve systems of care, activities that are key to improved performance by health professionals" (pp. 14–15).
- "There is too little high-quality scientific study of [CME]" (p. 15).

According to Holmboe and Bernabeo (2014) "quality and safety problems have plagued many health care systems," (p. 90) and:

> Multiple studies have highlighted substantial deficiencies in doctor training and continuing professional development programmes in [quality, safety, and systems science]. Regardless of what their formal training programmes did or did not provide, all doctors have an obligation to acquire, at minimum, basic competencies in improving quality and safety. (p. 91)

The Institute of Medicine (2010) also claims that:

> In theory, the purpose of [CME] is to update and reinforce knowledge, which should ultimately result in better patient care. But in practice, there often are conflicting ideas about the purpose of [CME]. Some health professionals see [CME] as a means to attain credits for the licensure and credentialing they need to practice their occupations. (p. 17)

Kokemueller and Osguthorpe (2007) cite a joint committee consisting of the AMA, the Association of American Medical Colleges, the American Hospital Association, the American College of Physicians, the American Academy of Pediatrics, the American Psychiatric Association, the American College of Obstetricians and Gynecologists, and the American Academy of General Practice that stated "(1) [CME] was one of the most important problems facing medical education [and] (2) there was a serious gap between available knowledge and application in medical practice" (p. 1332). The Institute of Medicine (2010) asserts that "on a larger scale, the nation's approach to CE for health professionals fails to support the professions in their efforts to achieve and maintain proficiency" (p. 1). In addition, Ebell and Shaughnessy (2003) claim that "traditional [CME] has been disconnected from the actual practice of medicine and has not focused on providing the most useful information in the most efficient way" (p. S53). Despite these complaints, Cervero and Gaines (2015, 2014) assert that CME has been shown to improve the quality of care that physicians render to patients.

According to Brennan et al. (1991), the need for CME is significant because, in addition to the constant production of new medical knowledge, "there is a substantial amount of injury to patients from medical management, and many injuries are the result of substandard care" (p. 370). However, Norman and Eva (2010) note a general study in which "94% of academic doctors rate themselves as performing within the top half of their profession" (p. 96), suggesting that, perhaps, some physicians overestimate their knowledge and skill, which may influence their decisions to engage in CME or not. Eva (2009) claims, "with so much emphasis placed on self-regulated learning in the health professions it is necessary to understand how people decide whether they know enough or whether further study is required" (p. 73).

Houle (1980) describes the most common means by which those involved in continuing professional education (CPE) measure CPE:

> The most widespread measure of [CPE] is simply the number of hours spent in learning activities, usually in programs offered or approved by some such authority as a university or a professional society. The measure is not related to how well the learner performs during participation or subsequently but only to how much time has been spent. (pp. 238–239)

The fact that the usual means of measuring the success of a CME activity is not related to how well the learner performs during participation or subsequently in actual practice but, rather, only to how much time has been spent in the learning activity is a primary source of criticism of CME for physicians. Despite this criticism, the medical community has consistently applied this approach to measuring CME since 1968 (Houle, 1980). Holmboe and Bernabeo (2014) report that criticism of CME for the health profession is not restricted to Western cultures, it is worldwide:

> Medical education has also performed inadequately worldwide in preparing doctors to meet the needs of their specific populations and health care systems. Indeed, the resulting frustration among both educators and policymakers has been a major catalyst in the competency-based movement. This gap between education and clinical care was noted over 35 years ago in a World Health Organization report. (pp. 91–92)

Unfortunately, physicians who are not aware of deficits in their knowledge and skills have the potential to harm patients and deliver poor health outcomes before they, their employers, or their patients become aware of those deficits.

The discovery of a bacterium that thrives in the acidic environment of the human stomach serves as an example of how important it is for physicians to keep their knowledge and skills up-to-date by engaging in some form of CME so that they can deliver good health outcomes to patients. The same discovery also serves as an example of why CME sometimes fails to improve physician performance despite the best intentions of those involved in organizing CME activities.

For years, medical schools taught students that "stress and lifestyle factors were the major causes of peptic ulcer disease" (Ahmed, 2005, p. 1), an illness that causes stomach cancer and can lead to death (Marshall & Warren, 1984). In 1982, physician Barry Marshall and pathologist Robin Warren discovered that "gastritis, and ulceration of the stomach or duodenum, were the result of infection" (Ahmed, 2005, p. 1) by an unusual bacterium called *Helicobacter pylori*. Microbiologists and physicians consider *H. pylori* unusual because it thrives in the human stomach's acidic environment, and until the researchers' accidental discovery in 1982, experts did not believe a bacterium could thrive in that kind of environment. Perhaps even more important than the discovery that *H. pylori* caused gastritis, stomach ulcers, and stomach cancer,

was Marshall's subsequent discovery that physicians could administer antibiotics to cure the infection and save lives. As a result, "[*H. pylori*] infection is on a fast decline in most Western countries, mainly due to the success of therapeutic regimens and improved personal and community hygiene that prevents re-infection" (Ahmed, 2005, p. 1). Moreover, "stomach cancer—once one of the most common forms of malignancy—is almost gone from the Western world" (Weintraub, 2010, p. 66). Reducing the occurrence of stomach cancer would not have been possible without the knowledge Marshall and Warren developed and without CME activities that made that knowledge available to physicians.

Although Marshall and Warren eventually received a Nobel Prize in Physiology/Medicine in 2005 for their discovery, physicians initially responded to this new knowledge with "skepticism and a lot of criticism," and "it took quite a remarkable length of time for their discovery to become widely accepted" (Ahmed, 2005, p. 1). In the meantime, some patients with bleeding ulcers caused by *H. pylori* continued to suffer, and some developed stomach cancer and died, even though Marshall was already successfully treating his own ulcer patients (Weintraub, 2010). Among the possible reasons why it took physicians so long to adopt this new knowledge despite CME was that Marshall and Warren's discovery was so contrary to the long-held belief that bacteria could not survive in an extremely acidic environment, physicians refused to adopt the new information into their practice despite the evidence. Says Marshall:

> I presented [my] work at the annual meeting of the Royal Australasian College of Physicians in Perth. That was my first experience of people being totally skeptical. To gastroenterologists, the concept of a germ causing ulcers was like saying that the Earth is flat. After that I realized my paper was going to have difficulty being accepted. You

> think, “It’s science; it’s got to be accepted.” But it’s not an absolute given. (Weintraub, 2010, p. 7)

Another reason why it may have taken physicians so long to adopt the new information is that physicians recognized the financial loss they would sustain if they prescribed a fast and relatively inexpensive cure for ulcer patients who would otherwise need continuous treatment for a chronic health issue. There is a financial incentive for physicians to provide multiple treatments for a chronic illness (such as gastritis) over time as opposed to prescribing a quick, effective cure (Weintraub, 2010). Said Marshall, speaking of gastritis and his discovery of a simple cure, “Because it was a recurring disease that you could never cure, the patients kept coming back. And here I was handing [the cure] on a platter to the infectious-disease guys” (Weintraub, 2000, p. 8).

According to Balas and Boren (2000), “studies suggest it takes an average of 17 years for research evidence to reach clinical practice” (p. 66), while the Institute of Medicine (2010) argues that “shortening this period is key to advancing the provision of evidence-based care and will require the existence of a well-trained health professional workforce that continually updates its knowledge” (p. 16). However, Balas and Boren also assert, “relying on the passive diffusion of information to keep health professionals’ knowledge up to date is doomed to failure in a global environment in which about two million articles on medical issues are published annually” (2000, p. 66). Queeney (2000) alleges, “the knowledge base of almost every profession is expanding at a rate that makes it virtually impossible for practitioners to keep up with new information and current skills” (p. 383), and Milicevic (2015) claims that “half of what is known today was not known 10 years ago” (p. 657). In some cases, it is possible that the length of time required for physicians to adopt new knowledge can be attributed to the

tremendous amount of knowledge they must sort through before identifying and learning that which is relevant to their practice, and this length of time may contribute to the false impression that some CME activities are defective. Neimeyer, Taylor, and Rozensky (2012) assert:

> The concept of the "half-life" of professional knowledge has been introduced as an indicator of professional obsolescence over time. It has been described as the length of time it takes a practicing professional, without any new learning, to become roughly half as knowledgeable or competent to practice, owing to the generation of new knowledge within the field. (p. 364)

Dubin (1972) argues that the faster knowledge is produced in a field, the shorter is the half-life of knowledge in that field, and Apps (1991) says this about the rate at which knowledge is produced:

> We are literally awash in information, bits and pieces of facts, row upon row of numbers, report after report of research and survey findings. Some of the information is accurate, some false, some applies to our lives, most of it does not. (p. 3)

Consequently, in light of the fast pace with which knowledge is produced and the significance of the knowledge produced, it is reasonable to believe that some practitioners have knowledge deficits with respect to their field of practice and that those deficits could affect practitioners' competency and could result in poor outcomes for their clients. Furthermore, it is reasonable to expect that other occurrences, in which the production of new knowledge will exceed professionals' ability to assimilate that knowledge into practice, will occur again, and probably with increasing frequency. Says Houle (1980), "Knowledge is growing at a far more rapid pace than is the capacity of the human mind to absorb it" (p. 43). In Houle's (1980) view, "A major, never-ending task of every practitioner is to examine each situation encountered to see what can

be learned from it" (p. 43). Houle's view requires the assumption that practitioners have the expertise that is required to examine each situation and then recognize what they can learn from it. Research into physician knowledge deficits by Boutis, Fischer, Freedman, and Thomas (2014); Coco-Martin et al. (2013); Corriere et al. (2014); Glauser, Roepke, Stevenin, Dubois, and Ahn (2015); Harkin, Berger, Guo, Schwartzbard, and Gianos (2015); McGowan et al. (2013); Sehgal and D'Urzo (2014); and Snyder et al. (2013) does not, in general, support the idea that practitioners have the expertise that is required to examine each situation and recognize what they can learn from it. Quite the opposite; physicians may be unaware that they have knowledge deficits, and those deficits could hinder physicians when they attempt to examine each situation to determine what they can learn from them (Eva & Regehr, 2008).

In 2007, the medical community perceived the problems with CME to be so numerous and enduring that it held a conference to discuss them. Among the problems conference attendees identified were (1) physicians and activity organizers do not associate CME with improved health care, (2) organizers often use attendance at a CME activity as an indicator of the activity's success or failure, and (3) CME lectures are ineffective—except when used to pass on new information (Hager et al., 2008). According to Merriam and Bierema (2014), "At the heart of self-directed learning is the notion that the learner takes control of his or her own learning; that is, the learner decides what and how to learn" (p. 62). Lloyd and Abrahamson (1979) allege, "The most common methods employed to evaluate CME programs have been those that are inexpensive and easiest to apply: attendance and participant satisfaction" (p. 258). To counter this, CME stakeholders should commit resources to evaluating the efficacy of the CME activities they organize. That is because, as Queeney (2000) contends, participation in a CME activity "is no guarantee of learning or improved practice" (p. 376).

Self-assessment

Continuing medical education is largely comprised of self-directed learning activities. Consequently, physicians, as professionals, are responsible for maintaining their competence so that they can deliver good health care (Bennett et al., 2000; Corriere et al., 2014; Eva, 2009; Flexner, 1910; Institute of Medicine, 2010; Lucey, 2013; Nissen, 2015; Snyder et al., 2013). Because physicians are responsible for maintaining their competence, they are also responsible for identifying their learning needs and then completing CME activities that will address their needs. Norman and colleagues (2004) contend that "traditional approaches to continuing education that rely on self-assessment and self-learning are likely to be ineffective" (p. 999), and:

> A fundamental gap remains between the learning needs of the individual practitioner and the priority educational needs identified by bodies for [CME] for course offerings. The two are not synonymous. Learning needs are personal, specific, and identified by the individual learner through practice experience, reflection, questioning, practice audits, self-assessment tests, peer review, and other sources. Although, in theory, doctors should use these methods to create self-directed learning plans, there is no evidence for most doctors that this actually happens. (p. 1000)

Says Eva and Regehr (2008), "It is generally well accepted in health professional education that self-assessment is a key step in the continuing professional development cycle" (p. 14). A frequent and long-standing criticism of CME is that it is predicated on the belief that physicians are able to accurately assess their medical skills and knowledge, identify their deficits, and then participate in CME activities that address those deficits. However, there is significant evidence that suggests all humans—not just physicians—are deficient at accurately assessing their skills and knowledge, and there is little evidence that physicians actually select CME activities based

on their perceived learning needs (Berner & Graber, 2008; Chao, Wang, Chang, Ma, & So, 2015; Eva & Regehr, 2008). This aspect of human nature may contribute to the impression that CME is unable to support physician competency. If physicians are not skilled at identifying their deficits in knowledge and skill, how can they identify CME activities that will remediate them? Sibley et al. (1982) conducted a randomized trial of CME in order "to determine whether [CME] affects the quality of clinical care" (p. 511). They concluded:

> Despite statistically significant gains in their knowledge of how to evaluate and manage a variety of indicator conditions, the study physicians in this trial had neither clinically important nor statistically significant improvements in the documented overall quality of care that they provided to patients with these conditions. (p. 514)

The researchers went on to assert:

> Special scrutiny should be given to the assumption that adult learners are aware of gaps and deficiencies in their performance and should therefore be involved with their teachers in a mutual process of setting learning objectives. Finally, those who plan [CME] programs may wish to consider the possibility that the results of this trial are both correct and generalizable. If so, [CME] programs that compel physicians to attend yet permit them to select their high-preference areas for instruction may represent the worst of both worlds. (p. 515)

Research by Kitto et al. (2013) reveals that CME is hindered by "the absence of systematic strategies for identifying [the continuing education] needs" (p. 85) of physicians. The result is that physicians are "left to design their own CME based on their own impressions of how good they are, or how not good they are, which is often a flawed approach" (p. 86).

As previously discussed, the definition of what constitutes a CME activity is so broad that almost any medically related learning activity has the potential to remediate physician deficits in knowledge or skill. Furthermore, in today's electronic world, it is fairly easy to access a huge library of peer-reviewed medical knowledge. For example, PubMed provides access to over "28 million citations for biomedical literature from MEDLINE, life science journals, and online books" (National Center for Biotechnology Information, 2018, p. 1), and the Cochrane Library includes six health-related databases that contain more than 1.3 million documents related to systematic reviews, controlled trials, reviews of effects, clinical trial methodologies, health technology, and health economics (Cochrane Library, 2018). Clearly, a vast library of medical knowledge and information is available to anyone who is serious about seeking answers to their medically related questions. Therefore, when physicians know they have knowledge and/or skill deficits, there is no shortage of resources by which they can remediate them. In this context, it seems illogical to claim that CME is unable to support the competency of physicians. Certainly, an educational activity might include a defective curriculum or an inferior author or presenter, but physicians are responsible for completing CME activities that serve to maintain their competence, and physicians have many methods available to them that can help them achieve that. With so many avenues available to physicians who want to remediate their deficits, it is simply not possible that every CME activity available to physicians is somehow defective.

Because physicians have a higher standing in the workplace and possess more social power, critics may tend to blame someone or something else besides physicians when physicians deliver poor health outcomes. Defective CME serves as a convenient scapegoat. Regardless, because CME is a self-directed learning activity, it is critical for physicians to conduct periodic assessments of their knowledge and skill, but there is little evidence that physicians do this (Eva

& Regehr, 2008). As a consequence, physicians' deficits in knowledge and/or skill sometimes result in poor health outcomes for patients, and CME receives the blame. Consider the following scenario: A primary care physician (PCP) admits a 37-year-old woman to the same local hospital three times over a period of several months for treatment of *Pneumocystis jiroveci* pneumonia. HIV specialists consider *Pneumocystis jiroveci* pneumonia to be a near-certain indicator of HIV infection that has progressed to AIDS, yet the woman's PCP does not test her for HIV infection and tries, without success, to treat her pneumonia with powerful antibiotics. Upon the patient's third hospital admittance, the PCP consults with an infectious disease specialist who immediately recommends HIV testing. The HIV test and subsequent testing show that the patient is HIV positive and that HIV has almost completely destroyed the patient's immune system. Because of the delay in diagnosing the infection, the patient developed AIDS, and she faces a difficult road to recovery—if she manages to survive. When Bordage (1999) asked "ten community-based internists attending a continuing education activity" (p. S138) if they missed a diagnosis in the past year and why they missed it, each of them "reported an average of four diagnostic errors" (p. S138). Among the reasons given for their errors was "I didn't know enough about the disease" (Bordage, p. S138). Bordage says this about the diagnostic process, "If you don't know what you are looking for, there is a good chance you won't see it no matter how thoroughly you look" (p. S140). As Eva (2009) states, because CME is a self-regulated learning activity, it is important to understand how physicians can determine whether they have enough medical knowledge or need to gain more. Eva and Regehr (2008) relate physicians' typical use of CME to the way people use a dictionary. That is, few people randomly decide to read a dictionary because they feel the need to improve their vocabularies; instead, they look for a dictionary when they encounter an unfamiliar word and they want to learn its meaning. In other words, they seek

more knowledge after they have identified a need. Likewise, most physicians are unlikely to engage in CME unless they first identify a need to do so, and even after identifying a need, some physicians may not engage in CME. Gorman and Helfand (1995) claim that "primary care physicians have many questions about optimal care while they are seeing patients, but they pursue only about 30% of their questions," (p. 113) and the researchers add that data from their research "suggest that primary care physicians are concerned and curious, but busy and practical" (p. 118). Consequently, Gorman and Helfand argue that because physicians are busy and practical, they are more likely to remediate their knowledge deficits if they believe the information they will gain from a learning activity will provide "a direct and immediate benefit, in the form of information that will help them solve the problems of patient care" (1995, p. 119). To argue that because physicians are professionals, they will always recognize their failures and will always work toward optimal outcomes for their patients is illogical. Eva and Regehr (2008) claim that:

> There appears to be little research that directly tests whether or not the habit of self-directed assessment seeking can be taught in a manner that leads the learner to apply the habit cross-contextually, or whether intentionally engaging in this sort of activity is pedagogically advantageous. (p. 15)

They also claim that although humans are generally not adept at self-assessment, that "should in no way imply that reflection on performance is a useless activity" (Eva & Regehr, 2008, p. 15). In addition, they propose that the phrase "self-directed assessment" should not mean an activity conducted in isolation; rather, it should include feedback from colleagues, mentors, and other sources of information, such as reviews of patients' charts, that can serve as indicators of performance. They add:

> We believe that the most important educational activity related to self-assessment as a generalizable, reflective process of generating an unguided, personal, summative assessment of one's own level of ability or performance should entail helping people overcome their personal belief that they can rely on it. (Eva and Regehr, 2008, p. 17)

In light of the shared responsibilities for the success of CME activities, Eva and Regehr argue that a:

> Personal, flawed self-confidence in our own self-assessment ability . . . has led us as educators to perpetuate the myth that the effective self-identification of strengths and weaknesses is even possible. As a result, we educators have not only failed to be part of the solution, we have actually been part of the problem." (2008, p. 17)

Eva, Cunnington, Reiter, Keane, and Norman (2004) argue that keeping up with the literature requires two separate skills. The first is identifying one's deficits vis-à-vis the literature, i.e., "self-assessment." The second skill is proficiency at identifying and completing an activity or activities that will remediate the deficits, i.e., self-directed learning. Consequently, one might wonder: How can physicians know what they don't know and then engage in appropriate CME, if physicians don't know what they don't know?

Gramsci and Hegemony

Antonio Gramsci (1891–1937) was an Italian economist, philosopher, and political activist who was jailed by Benito Mussolini for leading political opposition to his rule (Brookfield, 2000). Gramsci died in prison and is primarily known as a "Marxist theorist of culture and of social struggle as a battle for consent (in Gramsci's terms, *hegemony*)" (Calhoun, 2002, p. 197; italics in original). Jarvis (1990) defines hegemony as "the exercise of covert power in a non-formal manner (e.g., without the threat of physical force) so that the ideas of the

dominant group are assumed to be correct and become taken-for-granted" (p. 83). Despite his imprisonment, Gramsci continued to write extensively about his main project, "cultural hegemony," which "describes the power of a dominant class to present one authoritative definition of reality or view of culture" (Zaidi, Vyas, Verstegen, Morahan, & Dornan, 2017, p. S93). In Gramsci's view, the state and society's dominant class seeks to preserve its power in capitalist societies, and the preservation of power is not achieved through force or the threat of force, but through the propagation of a false social ideology accepted by those being oppressed. According to Dahlström (2002):

> Hegemony is a condition of power in which the major cultural, social and economic aspects of life are influenced by a dominant group in society. This power is spread amongst the subordinate people in society through socio-cultural influence and the winning of consent. (p. 23)

Apple (1996) refers to this false social ideology as "an ideological umbrella under which different groups who usually might not totally agree with each other can stand" (p. 15). According to Calhoun (2002), Gramsci viewed the working class as being oppressed "not merely by its relationship to the means of production and its vulnerability to the coercion of the state but also by the fabrication of consent to the dominant ideology through education and other cultural means" (p. 197). As such, the working class does not recognize its oppression via hegemony because it is not an overt act; rather, "it is an insidious process built into sociocultural landscapes" (Zaidi et al., 2017, p. S93). According to Brookfield (2000), Gramsci used the word hegemony to:

> Describe the process by whereby ideas, structures, and actions come to be seen by the majority of people as wholly natural, preordained, and working toward their own good

> when in fact they are constructed and transmitted by powerful minority interests to protect the status quo that serves these interests so well. (p. 41)

Through cultural hegemony "the ideas and practices of hegemony become part and parcel of everyday life—the stock opinions, conventional wisdoms, or common-sense ways of seeing and ordering the world that people take for granted" and the "subtlety of hegemony is that over time it becomes deeply embedded, part of the cultural air we breathe" (Brookfield, 2000, p. 41). In addition, besides propagating ideas and beliefs that best serve the state and the dominant class, hegemony also precludes critical examination of alternative ideas and ways of viewing things, because the oppressed class views the dominant ideology as "common sense" (Dahlström, 2002) and, therefore, uncritically rejects conflicting ideologies. It is the aim of this researcher to suggest that some medical educators might not recognize the hegemonic assumptions under which they occasionally operate when planning and conducting CME activities. Brookfield describes how hegemony influences AE: "Hegemonic assumptions about [AE] are those that are eagerly embraced by practitioners because they seem to represent what's good and true about the field and therefore to be in educator' and learners' own best interests" (2000, p. 41).

An example of cultural hegemony in health care is medicine's long-standing focus on researching men's health issues and ignoring women's health issues. Another example includes Fairclough's (1995) description of the hegemony that is present during the typical doctor–patient exchange:

> Doctors ask questions according to preset agendas, patients are limited to answering questions, and trying to squeeze anything which does not fit into the doctors' agendas into elaborations of their answers. The tone is impersonal and often brusque, the patient being treated as a bundle of symptoms rather than a person. (p. 94)

Medical educators might find the concept of hegemony useful when they reflect on their work, because for Gramsci, "every relationship of 'hegemony' is necessarily an educational relationship" (Dahlström, 2002, p. 28). That is because hegemony involves the successful dissemination to the masses of a particular point of view, which becomes accepted and, therefore, preserves the status quo. Another example of hegemony in medicine is the "application of industrial, assembly-line management techniques to medical care" in which "seeing more patients for shorter periods of time to meet a managerial quota has led, predictably, to less satisfying relationships for both physicians and patients" (Churchill, 2007, p. 412). Quite often from an administrative perspective, the application of industrial, assembly-line management techniques to medical care is viewed as "common sense" because it leads to "more efficient health care." Mumby (1997) asserts that "Gramsci's point is that as long as common sense characterizes individuals' modes of thinking, their ability to penetrate ideological meaning systems will be limited" (p. 368) and that a "dialectical understanding of hegemony allows for a critical conception of organizations and society that is more sensitive to the nuances of resistance and control" (p. 370). Wilson (2000) urges educators to critically examine how certain dominant ideologies expressed through CME serve to reproduce hegemonic ideology and weaken educators' and physicians' practice. Moreover, Zaidi et al. (2017) assert that "emancipatory pedagogy is based on the concept that education should play a fundamental role in creating a just and democratic society by emphasizing critical consciousness, which is a reflective awareness of power and privilege" (p. S94). Goodman (2017) writes that understanding Gramsci's theory of cultural hegemony "opens up a discussion on what being an intellectual might mean and of how power is exercised and maintained, concepts [that are] applicable to health education" (p. 1). She adds, "Gramsci experienced a concrete prison of walls imposed by [a] fascist regime. We

might experience a 'prison of the mind' constructed by dominant cultural ideas (hegemony) imposed by ourselves upon ourselves through the process of normative governmentality" (pp. 1–2).

Hegemony in Health Care

Whether educators realize it or not, they are exposed to and act on hegemonic beliefs every day (Lovat & Smith, 1993). For example, a state health department expresses the belief to a group of medical educators that the way to improve physician performance regarding a major public health issue within a health care system is to obtain "buy in" from the system's leadership about organizing "free" CME activities for physicians. In reality, the public health issue the state health department wants to address through CME has such a long history and is so well documented, an educator would have a difficult time finding any health system leaders who would be willing to publicly dismiss the issue and decline an offer of free CME for their physicians. Therefore, so-called "buy in" from health system leadership is a certainty. However, most experienced medical educators know that "buy in" from a health system's leader sometimes has little to do with whether or not CME activities that improve physician practice actually take place within a health system—let alone whether they are effective in helping physicians improve their competency and improve the health care they deliver to patients.

One irony of hegemony is that by embracing hegemonic assumptions through their work, educators unknowingly reproduce and reinforce those assumptions. Another example is the long-held tenet that CME activities should meet the needs of physicians. However, educators sometimes "identify" or "assess" physicians' learning needs against an agenda set by others, and that agenda may include hegemonic assumptions. For example, after reviewing data from a hospital's electronic health record system, the director of quality improvement (QI) discovers

that a women's health clinic operated by the hospital is not meeting government-based metrics associated with screening patient populations for tobacco use, counseling patients against that use, and then referring patients for treatment for their nicotine dependence. Because the clinic is not meeting this metric, the hospital is at risk of being penalized by Medicaid (in the form of lower Medicaid payments to the hospital), so the QI director asks a medical educator to organize CME activities on tobacco cessation that are intended to improve physician performance so that the clinic can meet the metric.

The clinic provides primary health care to pregnant women, the majority of whom have low or no income; low health literacy; and long, complicated medical histories that include drug and alcohol abuse, serious mental health issues, unstable housing, and injuries resulting from domestic violence. Furthermore, because many of these patients have low or no income, a majority of them are insured via Medicaid. In addition, patients often miss their medical appointments because they lack access to transportation. They also lack access to healthy food options. As a result of all of that, patients and their unborn children are at risk for many different and serious health issues—all of which the clinic's physicians must attempt to diagnose and treat during a visit that is only ten minutes long (based on hospital decree). Tobacco use aside, a ten-minute visit does not give physicians time to deal with all the health issues of a typical patient seen at this clinic.

The QI director arranges a meeting between himself, the medical educator, and the clinic's medical director, who is one of the physicians who provides primary health care to the women. After the QI director explains why he called the meeting and states that the medical educator can arrange tobacco cessation training for her staff, the physician responds to the plan by stating:

> My clinicians have ten minutes with every patient. They're homeless, they're pregnant, they don't have access to nutritious food, they're addicted to drugs and alcohol, and they're facing threats of domestic violence. My clinicians have to treat many health issues during the ten minutes they have with each patient. They will not use that time to talk to patients about their tobacco use.

The educator recognizes that because of the brief time the hospital's administration allows for primary care visits at this clinic, physicians have to "triage" patients' health issues and then attempt to treat patients' most serious, most pressing issues during each ten-minute visit. He has witnessed this kind of pushback from primary care physicians before. Physicians who deliver primary care often complain that the health systems they work for do not give them adequate time to deliver all the health care their patients need. This stands in contrast to physicians, such as cardiologists, plastic surgeons, and bariatric surgeons, who deliver specialized care. Because the delivery of primary care usually generates little income for most health systems relative to the income generated by specialized care, health systems sometimes require physicians to see many patients during the day, which means physicians have little time to spend with each patient. In the case above, if a patient lives long enough, the cigarettes she smokes will certainly harm her and her unborn child. However, the patient and her unborn child are facing multiple health risks, many of which include immediate threats to the health of both. A mother and her fetus could die or suffer permanent injury due to the mother's drug and alcohol abuse. Both could freeze to death as a result of being homeless during a cold winter night. In addition, patients with a behavioral health diagnosis can put themselves at risk of harm in multiple ways, including failure to adhere to a treatment plan.

A consequence of this meeting was that the medical educator determined that a CME activity on tobacco cessation for the physicians was unlikely to "improve" the physicians' practice. Rather than conduct a CME activity on tobacco cessation, the educator recommended the hospital hire additional staff, whom the educator would train, to counsel all tobacco-using patients seen at the clinic. Ostensibly, the QI director saw a "clinical" need for the physicians to improve the way they screened, counseled, and referred for treatment tobacco-using patients, and he proposed CME to achieve that goal. In reality, the CME activity proposed by the QI director was an attempt to meet *the needs of the hospital* vis-à-vis Medicaid insurance requirements; the activity was *not* proposed in order to meet the learning needs of the clinic's physicians, who were painfully aware of all the harms their patients faced, including their use of drugs, alcohol, and tobacco.

Given the many real-life cases that are illustrated by the one described here, a concern of the Institute of Medicine (2010) is this:

> Health professionals and their employers tend to focus on meeting regulatory requirements rather than identifying personal knowledge gaps and finding programs to address them. Many of the regulatory organizations that oversee [CME] tend not to look beyond setting and enforcing minimal, narrowly defined competencies. (pp. 3–4)

The Institute of Medicine's concern illustrates how hegemonic concepts permeate the world of CME.

Audit Culture

Nearly every medical educator is familiar with the value government bureaucracies and health care organizations place on data gathered from CME activities. Data is the product that the state and other bureaucracies require CME organizers to produce, and, as with anything of

value, the more data organizers produce, the more bureaucracies like it. Data from CME activities typically include variables such as learning objectives, number of participants (broken down by level of education), duration of the activities, date, time, location, etc. It seems that if the educator can easily record a variable, the variable must be reported to a higher authority. The information satisfies a bureaucracy's desire to assess whether or not an educational effort is working toward the correct goal. According to Apple (2005), education in a neo-liberal world has a "market" orientation and "requires the constant production of evidence that [educators] are doing things 'efficiently' and in the 'correct' way" (p. 14). In addition, the state, which monitors and regulates so much educational activity, is, according to Apple, "increasingly subject to commercialization," (p. 14) in which the state and other bureaucracies apply free-market concepts to educational programs. This results in what Apple calls an "audit culture," (2005, p. 14) which is prevalent in education and health care today. Shore (2008) claims the phrase audit culture describes:

> Not so much a type of society, place or people so much as a *condition*: one shaped by the use of modern techniques and principles of financial audit, but in contexts far removed from the world of financial accountancy. In other words, it refers to contexts in which the techniques and values of accountancy have become a central organizing principle in the governance and management of human conduct – and the new kinds of relationships, habits and practices that this is creating. (p. 279; italics in original)

In an audit culture, "the emphasis is on the constant production of evidence that one is doing the 'the right thing'" (Apple, 2014, p. xx). Strathern (1999) claims that in an audit culture, the state constructs a means by which it can ensure control, and this means of control is so ubiquitous that practitioners view it as normal. Consequently, Shore and Wright (1999) claim that the audit

culture has a "hegemonic nature" (p. 569) to it, and Apple (2005) says that is because "the widespread nature of these evaluative and measurement pressures, and their ability to become parts of our common sense, crowd out other conceptions of effectiveness and democracy" (p. 15). The audit culture present in health care and in medical education is an outcome of the hegemonic notion that business concepts and principles should be applied to the fields of education and health care, fields that society once viewed as being primarily altruistic in nature and, therefore, exempt from most business practices. Rudge (2011) concludes that audit culture as it exists in "healthcare systems world-wide has meant that power and the possibility of change has been co-opted in the service of the smooth operation of the system and into systems of accountability" (p. 174). To be clear, audit culture does provide benefit in the sense that it encourages medical educators to gather data on the activities they organize, which helps with program evaluation. For example, collecting data on the types of clinicians who participate in a CME activity can help organizers determine whether those activities appeal to the intended audience. If a CME activity is intended for physicians but only registered nurses complete the activity, that data could help organizers reorganize or re-market the activity so that it attracts the intended audience. The point here is that conducting a CME activity in order to collect reportable data should not be the primary reason for conducting the activity. The primary reasons should be to improve physician competency and improve health outcomes for patients.

Another effect of the hegemony of the audit culture is that it encourages medical educators to devalue or ignore critical aspects of the CME activities they organize, such as whether or not those activities actually help physicians improve their competency or help physicians deliver good health outcomes to their patients. Medical educators often concentrate more on meeting regulatory or funder requirements than on measuring the effectiveness of their

programs in improving physician competency and health outcomes. As long as medical educators collect and report the usual data (e.g., number of participants, whether or not attendees "liked" the activity, suggestions for improvement, etc.) to their employers or program funders, their work is finished. More important questions, such as whether or not an activity was effective and why it was or was not effective, are left unanswered. Furthermore, Shore (2008) claims that an audit culture "changes the way people perceive themselves: it encourages them to measure themselves and their personal qualities against the external 'benchmarks,' 'performance indicators,' and 'ratings' used by the auditing process" (p. 281). As a result, the increasing presence of audit culture in the fields of education and health care warrants attention because "it increasingly shapes our lives, our relationships, our professional identities and the manner in which we conduct ourselves" (Shore, 2008, p. 281). Shore adds that "the social and psychological effects of these techniques and practices on organizations and individuals should not be underestimated" (p. 282). Merriam and Brockett (2007) remind educators that when education takes place in a context that is tainted by culture, "various other purposes and orientations are also carried along" (p. 79) with that education. Consequently, the hegemonic elements of an audit culture "are not, as [bureaucracies] claim, just neutral or politically innocent practices designed to promote 'transparency' or efficiency: rather, they are disciplinary technologies – or 'techniques of the self' – aimed at instilling new norms of conduct into the workforce" (Shore, 2008, p. 283). For many educators, the effects of those "new norms" on one's practice may go unrecognized.

Of interest to medical educators is this observation from Owczarzak, Broaddus, and Pinkerton (2016):

> While staff and directors at [community-based organizations] may acknowledge the potential contribution of evaluation data to the improvement of agency services, the results of evaluation are often used to demonstrate fiscal prudence, efficiency, and accountability to funders and the public, rather than to produce information for the organization's benefit. (p. 326)

For example, information that could provide real benefit to a medical center would be data on whether or not a CME activity actually helped physicians improve their competence to deliver good health care. Data from CME activities that demonstrate fiscal prudence, efficiency, and accountability serve the needs of bureaucracies, but not necessarily the needs of physicians or patients. Owczarzak and colleagues add that "numbers-based reporting and accountability practices affect the ways in which service providers interact with clients, their roles within organizations, and the work context more broadly" (2016, p. 327). For example, as many medical educators have experienced, the number of clinicians that participated in a particular CME activity is viewed by the state and by health care organizations as a key indicator of how successful the activity was, regardless of whether or not the activity actually helped physicians improve their competence to deliver good health care. As a result, some medical educators may assign priority to achieving CME metrics that satisfy program funders and bureaucracies—at the expense of improving physicians' competence or improving patients' health outcomes. This contributes to institutional isomorphism, which is the tendency for institutions that share the same goal, such as all academic medical centers that organize CME activities, to gradually morph into functional units that closely resemble each other and function in nearly identical ways because they all seek the same goals through the same approach. Shore (2008) asserts that "we have all bought into the audit culture and allowed it to shape our thinking and our

subjectivities," and "this is because of the insidious way it has of implicating all of us in its web of power" (p. 283).

Effective CME is viewed as a key means of controlling escalating health care expenditures. By providing effective CME, physicians can learn how to best utilize new pharmaceuticals, new diagnostic procedures, and new surgical techniques so that physicians can produce maximum benefit at minimal cost. Karner, Rheinheimer, De Lisi, and Due (1998) claim that "in the current health care climate of cost containment, demonstrated effectiveness of [CME] programs has become increasingly important" (p. 100). Paradoxically, the audit culture, with its emphasis on recording and reporting easily captured CME metrics that have little correspondence with the true success of the activity, currently dominates the world of CME. Moreover, an audit culture "may unintentionally cause organizations to distance themselves from aspects of their work that are difficult or impossible to measure," (Owczarzak et al., 2016, p. 327) such as whether or not the CME actually improved physicians' performance. In addition, "meeting compliance numbers and audit measures and creating and filing paperwork associated with audits (policy documents, audit reports, and research findings) may become the target of work themselves and distract employees from providing quality services" (Owczarzak et al., 2016, p. 327). In an audit culture, providing the "correct" data about CME activities averts the need to provide high quality data about the effect the activities may have had on physicians' competence and on patients' health outcomes. By recognizing the hegemonic effects of the audit culture, medical educators can refocus "the purpose of evaluation from 'accountability' to 'learning,' [which] creates opportunities for a reconsideration of evaluation and audit methodologies" (Owczarzak et al., 2016, p. 336). By recognizing the hegemony of an audit culture and by reflecting on how that hegemony affects their CME activities, medical educators

are better equipped to understand *who* benefits from the CME activities they organize and who *should* benefit from those activities.

Summary/Conclusions

In this researcher's experience, many physicians practicing today care about their patients, want to deliver good health outcomes to them, and want to maintain their competency so that they can provide good health care. These physicians also make effective use of the myriad CME activities available to them. However, most of them struggle to keep up with developments in their particular field of medicine (Queeney, 2000), and this is understandable given the fast pace at which new medical knowledge is produced and the pace at which existing medical knowledge becomes obsolete (Milicevic, 2015; Neimeyer et al., 2012). Medical educators can help physicians stay up-to-date by keeping up with the literature themselves and by keeping their eyes on the horizon in terms of new medical developments. Perhaps most important is the need for medical educators to reflect on their practice and determine who is benefiting from their work and who should benefit from their work. Educators? Health systems? Physicians? Patients? Medical educators can apply Apple's theory of audit culture to their work to help them answer the question of who really benefits from their work.

Davis et al. (1999) assert, "Although physicians report spending a considerable amount of time in [CME] activities, studies have shown a sizable difference between real and ideal performance, suggesting a lack of effect of formal CME" (p. 867). In this researcher's opinion, although some studies have shown "a sizable difference between real and ideal physician performance," that does not necessarily mean that CME has a "lack of effect." Rather, it suggests that at a deeper level, some stakeholders are evading their responsibility to make CME as effective as possible, and the problem of ineffective CME requires further investigation.

Borrowing from the investigative methodology used by the National Transportation Safety Board to determine the causes of transportation accidents and then draw conclusions that serve as useful lessons for stakeholders, Pace (as quoted by Freking) claims that "simply focusing on an immediate cause is usually not enough to understand deeply how to improve safety" (Freking, 2015, para 5). Because ineffective CME poses a threat to patients' safety, CME stakeholders need to look deeper for reasons why specific CME activities might be ineffective; they should look beyond placing blame on the activity itself.

Houle (1980) warns those who plan CME activities that the "essential problem of all measures of extent of [practitioner] participation . . . is that they carry no assurance that desired changes in the competence or performance of participants have occurred" (p. 233). Consequently, medical educators should remain vigilant for evidence of practitioners' continued knowledge deficits or the development of new deficits. Cervero (1988) claims that "educators may need to expand the vision of their role in fostering participation" (p. 62) in educational activities. Medical educators do have a role to play in bringing attention to and remediating knowledge deficits that practitioners unknowingly exhibit. Toward that end, medical educators can increase the impact of CME by working to identify practitioners' knowledge deficits, providing feedback to physicians, and then offering CME programs designed to remediate those deficits. Furthermore, educators should scrutinize the educational agendas of all stakeholders for signs of hegemony. According to Houle (1980), "too few professionals continue to learn throughout their lives, and the opportunities provided to aid and encourage them to do so are far less abundant that they should be" (p. 303). Both medical educators and physicians need to learn how to solicit feedback from colleagues about their own performances so that they rely less on their own assessments of their performances. Educators have a responsibility to play that role for

physicians. Furthermore, in order to comprehend all the challenges physicians face when providing health care, medical educators should observe clinic activity and attend clinic and health system meetings so that they hear physicians' complaints and the challenges they face in delivering good health care. Nissen (2015) reports that:

> In a study of primary care physicians (N = 455) who commonly treated patients with chronic obstructive pulmonary disease, only 33% knew the correct criteria for diagnosis. In a large study of patients with heart failure (N = 15,381), only 27% of patients received all of the guideline-recommended therapies for which they were potentially eligible. These knowledge gaps reflect poorly on the effectiveness of CME in disseminating contemporary disease management recommendations. (p. 1813)

This is a typical complaint about CME, and in making his claim that physicians' "knowledge gaps reflect poorly on the effectiveness of CME," Nissen is ignoring the fact that (1) physicians, as professionals are responsible for identifying and then remediating their deficiencies, (2) all human beings are generally unskilled at identifying their knowledge deficits, and (3) there are multiple types of CME activities that can serve to remediate physicians' deficits in knowledge and skill. Therefore, critics should not single out CME as the only culprit when physicians perform poorly. In addition, hegemonic ideology in health care may serve, on occasion, to marginalize medical educators and diminish their power to change the status quo. By reflecting on their practice and staying up-to-date in the world of CME, including maintaining an understanding of CME's problems, educators can work to avoid the epistemic denial they may encounter from the state and from health systems when working to improve CME. Minei and Bisel (2013) contend that "epistemic denial occurs when ways of knowing are discounted or

disqualified, often as a means of positioning one's identity as expert and another's identity as illegitimate or unworthy" (p. 23).

Kitto et al. (2013) researched continuing education for physicians, and one physician participant offered this observation:

> I think there's recognition that the more you don't know about an area, the more you will fail to realize that you don't know. The concept of self-assessment as a means of helping people to identify, be inspired and motivated to learn something in an area that's important for their practice, which is a gap in their knowledge that they need to fill in to deliver both safe and high-quality care, is probably flawed because of that. Probably what needs to be developed to address that or what needs to go in hand with that is the capacity to provide comparative feedback to people on how well they're doing relative to others. (p. 85)

Determining how physicians can best identify their knowledge deficits is probably the biggest challenge facing CME today. Medical educators should ask themselves: Who is responsible for creating opportunities to improve physicians' knowledge, skills, and attitudes when physicians fail to identify their professional shortcomings and seek CME activities that could remediate them? This researcher believes it is the responsibility of *all* CME stakeholders. Unfortunately, Moore (2008) reports that "no single tested theory exists that CME planners and others could use as a guide for planning educational activities," (p. 45) and Mann (2004) asserts, "Many different theories and models have been employed to understand and facilitate change in provider behavior, yet the results have been inconsistent" (p. S22). This is unfortunate, but it should not stop educators from working to overcome hegemonic thought and principles and from working to improve the efficacy of CME.

Lloyd and Abrahamson (1979) argue that CME for physicians takes "physicians away from patient care," which results in "a loss of the physician to the patient as well as lost income to the physician" (p. 255). There is no doubt that Lloyd and Abrahamson's claims are true; physicians do need to see many patients each day and need to generate revenue for themselves or for the health systems that employ them. However, this view represents the "audit culture" so prevalent in health care and medical education today, which subordinates patients' interests. Medical educators should ask: What is the loss to patients when physicians fail to prescribe life-saving treatment because they failed to recognize the presence of disease or they were unaware that life-saving treatment exists?

Cervero (1988) claims that we know little about the ways in which capable medical educators work to organize CME activities or how the "program development processes" (p. 112) of successful educators differ from those of unsuccessful educators. However, Nowlen (1988) declares, "Linking continuing education with performance requires no special magic, just the dedicated focus of major stakeholders taking one modest step at a time" (p. 227). Perhaps a distinguishing characteristic of successful educators is that they recognize hegemony when it is present, and they understand its deleterious effects on their practice. Most importantly, they know how to overcome those effects on the CME activities they organize.

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CHAPTER 2

CONTINUING MEDICAL EDUCATION ACTIVITIES ON ANTIRETROVIRAL THERAPY: THE EVIDENCE FOR ACTIVITY SUCCESS

Introduction

The emergence of new knowledge within a profession generally drives the need for continuing education (CE) in that profession. One profession in which the need for CE is prodigious is medicine, since the desire to improve health outcomes for patients drives the production of new drugs and new information from research, as well as advances in medical tests and procedures, all of which contribute to the rapid growth of new medical knowledge and to the obsolescence of existing knowledge (Nissen, 2015). According to Nissen:

> In the 1930s, the U.S. Food and Drug Administration (FDA) approved an average of fewer than two new molecular entities annually, accelerating through the ensuing decades to an annual rate of more than 30 new drugs per year. For a physician who completed postgraduate training in 1985, more than half of all the critically important newly available pharmaceutical agents were introduced after they completed their training. Many therapies in common use a few years ago are now [considered] ineffective or harmful (e.g., digoxin, niacin). (2015, p. 1813)

Specifically, one area of medicine that has seen rapid growth in knowledge is treatment for infection by the human immunodeficiency virus (HIV). Not many years ago, HIV infection meant certain death for almost every infected patient. However, effective treatment, often referred to as "highly active antiretroviral therapy" (HAART) or "antiretroviral therapy" (ART), is now available (Fisher, 2008). With early diagnosis and effective ART, most HIV-infected patients can expect to live long, productive lives. They will not develop acquired

immunodeficiency syndrome (AIDS), a medical condition in which HIV-infected patients lose immune system function and become vulnerable to opportunistic infections (OIs) such as *Pneumocystis jirovecii* pneumonia or progressive multifocal leukoencephalopathy. Without effective, timely treatment that includes ART, OIs usually lead to death. Frame (2003) asserts that the "introduction of effective [ART] had a lifesaving effect similar in magnitude to the effect the introduction of insulin had on the mortality of type I diabetes. AIDS mortality in the U.S. fell by 75% between 1995 and 2000" (p. 206).

Therefore, for the benefit of HIV-infected patients and their health outcomes, it is important for medical educators to determine whether a causal relationship exists between physicians' participation in continuing medical education (CME) activities on ART and physicians' competency in treating HIV-infected patients, and to determine the effectiveness of CME programs on ART in improving the health outcomes of patients.

Cervero and Gaines (2014) contend that CME activities include "academic detailing, case-based learning, demonstrations, feedback, lectures, problem-based learning, point-of-care techniques, role play, and patient simulations" (p. 8). The Institute of Medicine (2010) claims that CME activities include authoring journal articles; making poster presentations at conferences; earning a medical-related advanced degree, such as a master's in public health; self-directed independent learning; reading journal articles; reviewing journal articles; authoring tests for other physicians; having discussions with colleagues; gaining clinical experience; participating in self-assessment activities that measure competence; and teaching other medical professionals. Hager, Russell, and Fletcher (2008) cite research indicating that attendees at a 2007 national conference on CME in the health professions agreed that "much professional learning takes place informally and outside accredited formats" (p. 14).

Referencing the "triple aims" of "improving the individual experience of care, improving the health of populations, and reducing the per capita costs of care for populations" (Berwick, Nolan, & Whittington, 2008, p. 759), Johnston, Kendall, Hogel, McLaren, and Liddy (2015) write:

> Despite the fact that improving the patient experience of care was one of the three priority goals for improving healthcare in the Triple Aim Framework proposed by the Institute for Healthcare Improvement, there has been a dearth of ongoing development over the past decade of HIV care performance indicators aimed at capturing the patient's experience in receiving care. It is concerning that we may not adequately advance our understanding of how the experience of care for people with HIV is impacted by changes in how health services are delivered. (p. 8)

Regarding CME as it relates to health care for HIV/AIDS patients, Davidson, Sensakovic, Helm, and Saunders (1990) write, "[CME] in AIDS has a significant and important positive relationship with physicians' personal involvement in all aspects of the identification and management of HIV-infected patients" (p. 303). Clearly, CME activities, whether formal or informal, that are specifically designed for physicians who treat HIV-infected patients have the potential to affect the health outcomes of those patients and their "experience of care." Likewise, ineffective CME activities for physicians on ART have the potential to adversely affect the performance of physicians and the health outcomes of the patients they treat. Rackal et al. (2011) assert that HIV/AIDS patients enjoy "improved medical outcomes when treated by a provider with more training/expertise in HIV/AIDS care in the outpatient (clinic) setting" (p. 2); thus, "the training and qualifications of providers treating patients with HIV/AIDS is very important" (p. 2). Therefore, and by extension, understanding any relationship between physicians' participation in

CME activities on ART and improved physician competence in prescribing ART is also important.

Consequently, the purpose of this research is to determine what evidence exists to support a claim that CME activities for physicians on the subject of ART for HIV infection in adult patients (i.e., age 21 and older) lead to improved physician competence in prescribing ART and to improved health outcomes for HIV-infected adult patients. According to Van De Valk and Constas (2011), identifying a relationship between two things (in this case, physicians' participation in a CME activity on ART and subsequent improvement in patients' health outcomes) and "establishing causality are not the same thing" (p. 79). Shadish, Cook, and Campbell (2002) write:

> In a classic analysis formalized by the 19th-century philosopher John Stuart Mill, a causal relationship exists if (1) the cause preceded the effect, (2) the cause was related to the effect, and (3) we can find no plausible alternative explanation for the effect other than the cause. (p. 6)

Determining any relationships between physician participation in CME activities on ART and improved competence to prescribe ART has the potential to assist medical educators in improving the efficacy of CME activities on ART and to improve health outcomes for HIV-infected patients. Stakeholders in the care of HIV-infected patients include health care systems, health care professionals, insurance companies, the general public (due to concern about HIV transmission), state and federal government agencies, and HIV-infected patients. All of them share an interest in improving physician competence and the health outcomes of patients, and some of them contribute resources (e.g., funding, medical expertise, legislation) toward that goal. Because Houle (1980, 1988), Cervero (1988, 2010), Cervero and Gaines (2014, 2015), and

Nowlen (1988) assert that CME can support the competency of physicians, it is important for medical educators who organize CME activities to know what evidence exists to support a claim of causality that physician participation in a CME activity on ART for HIV infection in adult patients will improve the practice of physicians who prescribe ART and will subsequently improve health outcomes for the HIV-infected adult patients they treat. In order to determine what evidence exists, the researcher conducted a scoping review of the literature on CME activities for physicians on the subject of ART. The researcher then sought to identify and scrutinize claims of causal inference between CME participation and improved physician competence to prescribe ART.

When conducting a review of the medical literature that is intended to identify claims of causal inference in a particular field, the researcher conducting the review must be on alert for elements that pose threats to the internal validity of such claims (Cook, Mulrow, & Haynes, 1997; Craig et al., 2008; Higgins & Green, 2011; Hill, 2005; Reeves, Deeks, Higgins, & Wells, 2011). Therefore, regarding the strength of a claim of causal inference found in the literature that physician participation in a CME activity on ART improves physician competence to prescribe ART, this researcher planned to scrutinize other researchers' descriptions of the purpose of CME activities and the researchers' methodologies in designing experiments that control or eliminate threats to the internal validity of their experiments. That scrutiny would then lead to the researcher determining the strength or weakness of the validity of any claims of causal inference and, subsequently, to this researcher accepting or rejecting a claim.

Hill (2005) provides a list of nine characteristics medical researchers can use to gauge the validity of claims of causal inference when such claims are drawn from medical research. First among those characteristics is the "strength" of the association between cause and effect, and

Hill cites as an example the strong association that has been demonstrated via long-term research between cigarette smoking and lung cancer. Second is "consistency," referring to the reproducibility of a specific result given specific conditions. The third condition is "specificity," meaning the cause and its effect are specific to one another. The fourth characteristic is "temporality," referring to the requirement that the cause must precede the effect. The fifth characteristic is "biological gradient," meaning the effect varies with the cause. The sixth characteristic is "plausibility," and with regard to this characteristic, Hill reminds researchers that the proposed association between cause and effect researchers might draw from an experiment could be new to science and, therefore, stand in contrast to long-standing beliefs. Consequently, researchers should not summarily reject a claim simply because it represents a new way of thinking, as some physicians did with the cause-and-effect relationship between *H. pylori*, gastritis, stomach ulcers, and stomach cancer (Ahmed, 2005). Rather, the claim and the research upon which the claim is based may require further scrutiny. The seventh characteristic is "coherence," meaning that "the cause-and-effect interpretation of [the] data should not seriously conflict with generally known facts" (p. 10). The eighth characteristic is the type of "experimental design." In other words, what experimental design did the researchers use? Did they use a control group? Did they randomize test subjects or test items? Were investigators blinded as to which test subjects or items received the treatment? The ninth characteristic is "analogy." By this, Hill is referring to how well the causal inference coincides with known medical knowledge. For example, certain drugs and certain viruses have been shown to harm a woman's fetus. Therefore, it is not out of the realm of possibility that other drugs and other viruses yet to be identified can cause the same harm, albeit to a greater or lesser degree.

As useful as these nine characteristics might be, Hill (2005) still points out limits of applying them to claims of causal inference:

> None of my nine [characteristics] can bring indisputable evidence for or against the cause-and-effect hypothesis and none can be required as a *sine qua non*. What they can do, with greater or less strength, is to help us to make up our own minds on the fundamental question—is there any other way of explaining the set of facts before us, is there any other answer equally, or more, likely than cause and effect? (p. 11)

Consequently, this researcher planned to scrutinize claims of causal inference based on criteria set forth by Shadish, Cook, and Campbell (2002) and by Hill (2005).

Methodology

Overview of Literature Review Methodologies

In order to find information relevant to CME activities for physicians on ART, the researcher considered several approaches to conducting a literature review, as described by Armstrong, Hall, Doyle, and Waters (2011), including a "traditional" or "narrative" review, an "integrative" review, a "systematic" review, a meta-analysis, and a "scoping" review. Arksey and O'Malley (2005) claim that "undertaking reviews of the literature has resulted in a plethora of terminology to describe approaches that, despite their different names, share certain essential characteristics, namely collecting, evaluating and presenting the available research evidence" (p. 20). Therefore, the needs of the researchers should dictate the type of literature review they choose to undertake, and if properly conducted, a literature review allows researchers to gain an understanding of a subject's literature base, make observations, and reach conclusions. The different types of literature reviews serve the specific needs of the research project, including the

level of inclusiveness sought, the type(s) of information sought, and the broadness or narrowness of the research question.

Researchers conduct a "traditional" literature review (also known as a "narrative" review) in an "attempt to summarize results of a number of studies" (Cronin, Ryan, & Coughlan, 2008, p. 39). The traditional review provides a wide view of the literature and, therefore, it can illustrate why a research question is relevant by highlighting knowledge gaps within a field that invite further study. According to Cronin et al. (2008):

> A literature review is an objective, thorough summary and critical analysis of the relevant available research and non–research literature on the topic being studied (Hart, 1998). Its goal is to bring the reader up-to-date with current literature on a topic and form the basis for another goal, such as the justification for future research in the area. (p. 38)

According to Whittemore and Knafl (2005), "The integrative review method is an approach that allows for the inclusion of diverse methodologies (i.e., experimental and non-experimental research) and has the potential to play a greater role in evidence-based practice" (p. 547), which can be particularly helpful in a profession such as medicine where clinicians and hospitals both seek to deliver evidenced-based medicine. According to Billay and Myrick (2008):

> An integrative review of the literature is a nonexperimental design in which information derived from primary research is systematically categorized (Ganong, 1987). To that end, past research is summarized and overall conclusions are drawn from many different studies that reflect the past and current state of knowledge pertaining to a particular subject. (p. 258)

According to Armstrong et al. (2011), "Systematic reviews use a transparent and systematic process to define a research question, search for studies, assess their quality and synthesize findings qualitatively or quantitatively," and "a crucial step in the systematic review process is to thoroughly define the scope of the research question" (p. 147). Cronin et al. (2008) assert that "systematic reviews use explicit and rigorous criteria to identify, critically evaluate and synthesize all the literature on a particular topic" (p. 39). Consequently, researchers conduct a "systematic" review in order to synthesize empirical data that can answer a specific research question. Such reviews are intended to be thorough and are conducted via predetermined, rigorous search protocols, and researchers conduct a systematic review in order to find all studies that are relevant to their research questions (Armstrong et al., 2011). The aim of a systematic review is to reduce research bias, ensure transparency, and produce results that can withstand the scrutiny of other researchers (MacLure, Paudyal, & Stewart, 2016). In addition, a "systematic" review can include a meta-analysis.

According to the Cochrane Library, a meta-analysis involves "the use of statistical techniques in a systematic review to integrate the results of included studies" (Cochrane Community, n.d.), and the term "meta-analysis" is "sometimes misused as a synonym for systematic reviews, where the review includes a meta-analysis" (Cochrane Community, n.d.). As such, a meta-analysis combines data from similar studies in order to increase the magnitude of the effect of the larger study (i.e., the meta-analysis), as opposed to that which a single study can provide.

Arksey and O'Malley (2005) describe a scoping review as "a technique to 'map' relevant literature in the field of interest" (p. 20). According to Armstrong et al. (2011), researchers employ a scoping review when their research question is broad and not specific, when they plan

to review search results in order to include or exclude certain results after the review is completed, or when the quality of the results is not initially important. In addition, researchers may or may not extract data from the review. A scoping review allows researchers to swiftly identify the limits of a body of literature, as well as its gaps in terms of what is not known about a subject. Finally, the synthesis of data from a scoping review is more qualitative as opposed to quantitative. Consequently, a scoping review generally involves a broad, quick review of the literature on a given topic in order to provide researchers with "a map or a snapshot of the existing literature without quality assessment or extensive data synthesis" (Armstrong et al., 2011, p. 149).

Scoping Review of the Literature: CME on ART

In order to gain an understanding of the size of the literature base on HIV and CME activities, the researcher conducted an "All Fields" search via PubMed for literature dealing with "HIV" and found 322,930 documents. A second "All Fields" search via PubMed for literature dealing with "HIV infection" found 4,456 documents. Because of the large number of search results for "HIV" and for "HIV infection," and because of the possibility that the researcher would include some results and exclude others after he completed his search effort, the researcher decided to conduct a scoping review of the literature in order to find articles relevant to his research question. That research question is: What evidence exists to support a claim of causality that physician participation in a CME activity on ART for HIV infection in adult patients will improve the practice of physicians who prescribe ART and will subsequently improve health outcomes for the HIV-infected adult patients they treat?

Because this researcher recognizes that peer-reviewed articles have passed a higher level of scrutiny as compared to "gray" literature, the researcher decided to restrict his research to

information published in peer-reviewed journals and to peer-reviewed information found in databases. Despite the higher level of scrutiny peer-reviewed information endures, those who read that information must judge for themselves as to whether or not authors' claims of causality are justified. Fletcher and Fletcher (1997) assert this about peer-reviewed information:

> Articles in the major peer-reviewed journals have passed through an extraordinarily extensive and careful process intended to improve them relative to the original, submitted manuscript, and manuscripts are improved in the process. Nevertheless, articles, even in the most prestigious journals, are far from perfect when they are published. Readers must take personal responsibility for judging the validity and clinical importance of the information for themselves. (p. S10)

In order to identify appropriate publications and databases that contain peer-reviewed information about CME on ART for physicians, the researcher surveyed six HIV specialists, all of whom are physicians and licensed to practice in New York State, for the names of the HIV/AIDS medical publications that each of them review on a regular basis in order to stay current in the field of HIV medicine. The researcher asked this question of the HIV specialists because he is aware that medical publications do contain articles about CME activities on ART. Furthermore, the researcher selected the six specialists because he knows them personally through his work as a program manager for CME activities in infectious disease and in public health sciences at a university-affiliated medical center in New York State. In addition, the researcher has more than 26 years of experience organizing continuing education activities for people who deliver health care and more than 16 years' experience evaluating the efficacy of CME activities on ART for physicians.

All of the specialists the researcher queried have presented in or authored CME activities on ART for physicians, and they each have:

- Treated HIV-infected patients in the United States for more than 20 years'
- Published original research on treatment for HIV/AIDS and associated morbidities
- Taught physicians and provided clinical care to patients at academic medical centers in the United States
- Presented on HIV/AIDS clinical care to health care professionals, including physicians, at regional medical conferences

That physician survey produced a list of twelve medical publications. One of the twelve publications that all six HIV specialists read on a regular basis was *Morbidity and Mortality Weekly Report, Recommendations and Reports* (*MMWR*), which is published by the Centers for Disease Control and Prevention (CDC). However, the researcher excluded *MMWR* from his final list of peer-reviewed publications because the CDC acknowledges that the content of *MMWR* is not peer-reviewed in the same manner as is the content of publications such as *The New England Journal of Medicine* or *The Lancet*.

In addition, only one of the six HIV specialists acknowledged reading a non-peer-reviewed publication on HIV/AIDS medicine (other than *MMWR*). That specialist reported that he reads the non-peer-reviewed publication only to gain a better understanding of unsubstantiated claims of HIV "cures" and "treatments" so that he can respond appropriately when his patients ask about them. Furthermore, the specialist specifically stated that he does not use non-peer-reviewed publications to guide the ART he prescribes.

Because all six HIV specialists reported they do not use so-called "gray literature" to guide the ART they prescribe for their patients, the researcher excluded from his scoping review

all HIV/AIDS publications that are not peer-reviewed. See Appendix A for the final list of eleven peer-reviewed medical publications.

The researcher recognized that similar guidance from medical educators regarding the literature they read in order to maintain their competency would help guide his review of the literature on HIV/AIDS medical education. Consequently, the researcher surveyed six medical educators who organize CME activities on ART for physicians for the names of the medical education publications each of them reviews on a regular basis in order to stay current in the field of CME. Each of the six medical educators are personally known to the researcher through his own work organizing CME activities on ART in New York State, hold advanced degrees in education and/or public health, and have more than ten years of experience organizing and accrediting CME activities on ART for physicians at major medical centers in the United States.

Three of the educators cited the *Journal of Continuing Education in the Health Professions* as the peer-reviewed CME journal they read with regularity. A fourth educator cited the *Journal of Graduate Medical Education*. A fifth educator reported that he does not regularly review journals about medical education; rather, he uses the Internet to find specific information about HIV/AIDS CME when he needs it. The sixth medical educator identified *Medical Education* and *Academic Medicine* as the journals he refers to in the course of his work. See Appendix B for the final list of four peer-reviewed medical education publications.

In order to ensure a thorough search of the medical literature regarding CME on ART, the researcher consulted with a research librarian in the Edward G. Miner Library at the University of Rochester Medical Center (URMC) who is an expert in conducting online searches of medical literature, and with three reference librarians at Cornell University. Furthermore, the researcher recognized that some online databases include more information than others and that a search for

relevant literature in a larger database, such as PubMed, would identify some of the same articles found via a search of other, more focused databases, such as PsycINFO. In addition, the researcher also recognized that searching multiple databases would contribute to a more thorough search for relevant articles. Consequently, in order to conduct a thorough search of the literature for peer-reviewed articles about CME activities for physicians on ART, the researcher searched for appropriate articles via the eight databases listed in Appendix C.

In order for an article to be included in this study, the article must:

1. Be published in one of the peer-reviewed publications listed in Appendices A or B
2. Describe a CME activity for physicians in the United States or Canada
3. Report participant outcomes from a CME activity on antiretroviral treatment for HIV-infected adult patients since 1987 (when the FDA approved the use of zidovudine for the treatment of HIV infection; De Clercq, 2009)
4. Be published in English (as this research project had no funding to support the translation of foreign-language articles)

The researcher drafted the inclusion criteria described above because, after conducting several preliminary searches and consulting with the previously mentioned research librarians, the researcher believed that articles meeting the inclusion criteria could help him answer these two questions:

1) What evidence exists to support a claim of causality that physician participation in a CME activity on ART for HIV infection in adult patients will improve the practice of physicians who prescribe ART?
2) What evidence exists to support a claim that physician participation in a CME activity on ART for HIV infection in adult patients will improve health outcomes for those patients?

Because health care for HIV-infected patients in countries with limited resources can differ significantly from care found in countries with many resources, such as the United States and Canada (Rackal et al., 2011), and because the care provided to HIV-infected patients is influenced by health policy in that country, the researcher decided to limit his research to articles that reference CME activities on ART for HIV-infected adult patients specifically in the United States and Canada, where specialized health care and cutting-edge ART are generally available. If an article did not meet the four criteria described above, the researcher did not include it in this review.

Furthermore, when the search webpage of a journal or a database offered the user the option of searching (either simultaneously or separately) "titles," "abstracts," and "keywords," the researcher used those options and searched for specific acronyms and phrases that he selected based on preliminary searches of the literature and on consultations with the aforementioned librarians whom the researcher sought out because of their expertise in online research. (Note: Not all journals and databases offer the option of searching "titles," "abstracts," and "keywords.") The researcher planned to record specific metrics (on a spreadsheet) from each article that met the inclusion criteria for this project. See Appendix D for a list of metrics the researcher planned to capture about the articles that meet the inclusion criteria, including information about the type(s) of data (i.e., quantitative, qualitative, or mixed) and potential threats to the internal validity of causal inferences described in each article. (Note: Because the researcher did not find any articles that met all four inclusion criteria, there were no articles included in the study and no metrics to record.)

Research Designs & Internal Validity

Whether designing experiments, observing experiments in progress, or reviewing data from experiments conducted by oneself or by others, researchers must be concerned with the internal validity of an experiment's design. That is because threats to the internal validity of the design affect the strength of causal inferences drawn from the experiment. Shadish et al. (2002) defines internal validity as "the truth of, correctness of, or degree of support for an inference" (p. 513). According to Johnson (2002):

> Internal validity is the design's ability to rule out other explanations for the observed results. A design with strong internal validity enables the researcher to be much more confident that the [treatment] caused the observed results. A design with weak internal validity makes it harder to convince others that the [treatment] caused the observed results. (p. 52)

In addition, Johnson warns that because it is impossible to eliminate all threats to the internal validity of an experiment, "all research is flawed" (p. 48) to some extent. Moreover, Shadish et al. (2002) claim:

> We can never be certain that all of the many inferences drawn from a single experiment are true or even that other inferences have been conclusively falsified. That is why validity judgements are not absolute; various degrees of validity can be invoked. (p. 34)

A primary goal of much research is to investigate the effect something has on something else, such as the efficacy of a drug in controlling a disease. Cause-and-effect research, which allows researchers to make causal inferences from experimental outcomes, requires researchers to identify, eliminate, and/or control variables that could affect the outcomes. That is because identifying, eliminating, and/or controlling variables that could affect the outcomes generally provides a reasonable assurance that the outcomes are due to the "cause" being investigated and

not due to other variables. In addition, using a control group and a "treatment" group, with random assignment of members to each group, is essential to cause-and-effect experiments in order to demonstrate causation (Johnson, 2002; Pearl, 2000; Shadish et al., 2002). Johnson writes:

> The classic experimental design, sometimes called the true experiment, is considered the strongest design for cause-and-effect or impact questions because it rules out most other possible explanations for observed changes. Random assignment, its essential component, assures that the two groups are comparable. (2002, p. 44)

Van De Valk and Constas (2011) assert that "for empirical research, the warrant for causal inference is strongly dependent on conditions under which data are collected and analyzed" (p. 74). When researchers fail to identify, eliminate, and/or control variables that could affect the outcomes of their experiments, causal inferences drawn from their experiments have less certainty (or no certainty) that the outcomes are due to the variable under investigation.

According to Shadish et al. (2002), there are at least nine potential threats to the internal validity of causal inferences. The first threat is "ambiguous temporal precedence" (p. 55), meaning it is not clear which of two variables occurred first. A second threat is "selection bias," in which, for example, the performance of two different groups of physicians will be compared to each other, but one group possesses significantly more training and clinical experience than the second group. In such a situation, the researcher does not realize one group has more training and experience, and so the performances of the two groups are compared to each other as if their backgrounds were equivalent. Johnson (2002) asserts that random assignment of test subjects to one of the two groups, either the treatment group or the control group, "assures that the two groups are comparable" (p. 44). A third threat is the occurrence of an unplanned event

(i.e., "history") during the experiment that has the potential to affect the outcome. A fourth threat is "maturation," in which, for example, the health of some patients improves shortly after they receive a new treatment, but the improvement is actually the result of the illness running its natural course. The fifth threat to internal validity is "regression." Shadish et al. describe regression by claiming that "when units are selected for their extreme scores, they will often have less extreme scores on other variables, an occurrence that can be confused with a treatment effect" (2002, p. 55). A sixth threat is attrition, which occurs when the subjects being studied are lost to follow-up. Shadish et al. (2002) term the seventh threat "testing," in which study participants' knowledge of test scores affects their performances and scores on subsequent tests. The eighth threat to internal validity is "instrumentation," in which "the nature of the measure may change over time or [over] conditions in a way that could be confused with a treatment effect" (Johnson, 2002, p. 55). The ninth threat to internal validity described by Shadish et al. is "additive and interactive effects," in which "a threat can be added to that of another threat or may depend on the level of another threat" (2002, p. 55). Additionally, threats to the validity of causal inferences can range from weak to strong, depending upon an experiment's design; the researcher's efforts to identify, eliminate, and/or control threats to internal validity; and the plausibility of alternative explanations for the experiment's outcomes.

Johnson (2002) asserts that causality is:

> A relationship in which a change in one variable (the independent variable) causes change in another variable (the dependent variable). X causes Y to happen. Variables can be associated, in that the variables change in predictable ways when measured together, but one does not cause the other to change. Elements needed to determine

> causality include time-order, co-variation, elimination of rival explanations, and a logical theory. (p. 207)

Shadish et al. (2002) specify three conditions that must be met before researchers can draw causal inferences from an experiment: cause must precede the effect, cause must covary with the effect, and plausible alternate explanations for the results can be rejected.

The design for experiments intended to demonstrate whether a causal link exists between two variables includes (1) data representing "before" and "after" measurements, (2) at least two groups with only one group receiving the treatment or stimulus, and (3) random assignment of members or items to the two groups (Johnson, 2002; Shadish et al., 2002). However, because every experiment has shortcomings that threaten the internal validity of causal inferences drawn from them, there is a need for researcher scrutiny in terms of experimental design and threats to the internal validity of causal inferences (Johnson, 2002).

As was previously stated, an essential part of being a competent health professional includes the timely acquisition of new knowledge, and health professionals participate in CME activities in order to maintain their competence (Cervero, 2010; Cervero & Gaines, 2014, 2015; Houle, 1980, 1988; Institute of Medicine, 2010; Lloyd & Abrahamson, 1979; Norman, Shannon, & Marrin, 2004). Also stated previously was the goal of this research, which is to investigate what evidence exists to support a claim of causal inference that physician participation in CME activities on ART improves physician competence in prescribing ART and leads to improved health outcomes for HIV-infected patients. However, because deliberately preventing one group of physicians from completing CME activities on ART in order to create a "control group" of physicians not exposed to the "treatment" provided by a CME activity has the potential to adversely affect the health outcomes of the patients being treated by physicians in the control

group, creating a control group as part of the experimental design is unethical. Nevertheless, it is possible to compare the competency of physicians who have completed more CME activities on ART to other physicians who have completed fewer such activities and to compare the competence of those physicians to prescribe ART. However, in that case, researchers would not have the benefit of random assignment of physicians to the two groups, which is a significant threat to the internal validity of causal inferences.

According to Johnson (2002), in order for researchers to determine whether a causal relationship is present, several requirements must be met:

- The independent variable must come first (time order).
- Both variables must change (co-variation).
- The relationships (and the variables) must be connected by a logical theory.
- All other possible explanations must be ruled out. (p. 18)

Furthermore, it is important for researchers to recognize that variables can be associated with one another without being causally related (Johnson, 2002). Regarding claims of causal inference, Shadish et al. (2002) assert that "a precise definition of cause and effect has eluded philosophers for centuries" (p. 3). However, Shadish et al. do assert that when a claim of causality is made such that X causes Y, the researcher must demonstrate that (1) X preceded Y in time, (2) X covaries with Y, and (3) no other explanation is plausible to explain the relationship between X and Y. Shadish et al. (2002) also claim that the "cause" of an "effect" can be one condition or "a constellation of conditions" (p. 4) that produce the effect and that "an effect is the difference between what did happen and what would have happened" (p. 5) if the cause had not been applied.

Shadish et al. (2002) define "construct validity" as "the degree to which inferences are warranted from the observed persons, settings, and cause-and-effect operations sampled within a study to the constructs the samples represent" (p. 506). The scientific community learned many years ago that maintaining scientific rigor and carefully examining the reported evidence for threats to validity are essential if researchers intend to use experiments (and the data they produce) to identify causal relationships (Samhita & Gross, 2013).

Therefore, the ideal experimental design to investigate a causal relationship between physicians' participation in CME activities on ART and improved physician competence to prescribe ART would, for example, include the selection of 100 physicians who share identical professional backgrounds, including medical education and clinical experience in HIV/AIDS care, and randomly assign the physicians to one of two groups of 50 physicians. One group of physicians would serve as the "control group." That is, the researcher would not expose them to the "treatment" of the CME activity on the latest ART treatment regimen. The other group would be exposed to the treatment. The two groups would be tested for ART knowledge immediately before the CME activity and immediately after, and the results would be compared between the two groups. In this way, the researcher could control as many variables as possible such that the only difference between the two groups would be one group's exposure to the treatment, i.e., the CME activity. In addition, in order to investigate physician competence and the possibility of a relationship with patient outcomes, participants from both groups would be required to participate in identical case presentations involving HIV infection and to recommend appropriate treatment strategies, and accredited HIV specialists would evaluate and grade those recommendations. Of course, conducting such an experiment would require the researcher to overcome some daunting practical problems, one of which would be the difficulty of finding 100

physicians who share identical professional backgrounds, including medical education and clinical experience in HIV/AIDS care, and who would be willing to participate in the experiment. Furthermore, a significant threat to the internal validity of claims of causality arising from this experiment would be self-selection bias, the phenomenon by which individuals are more likely to participate in a study intended to measure their knowledge or performance because the individuals have some confidence they will perform well. In addition, researchers can reasonably assume that most health care professionals who participate in CME activities generally do so because they *want* to improve their practice (Benner, 1984; Cervero, 1988, 2010; Cervero & Gaines, 2014, 2015; Houle, 1980, 1988; Nowlen, 1988). As a consequence, some physicians might have completed more CME activities than other physicians because they are more interested in improving their competence than others, and they might begin every CME activity with greater knowledge than other physicians who are less eager to improve their competency. Therefore, researchers can only speculate on the effects CME activities would have on physicians who are less interested in improving their practice and who are, therefore, less likely to volunteer to participate in an experiment involving a CME activity as compared to physicians who are eager to improve their practice.

According to Johnson (2002), there are at least three common research designs: experimental, quasi-experimental, and non-experimental, with quasi-experimental and non-experimental designs having subgroups of designs. Furthermore, quasi-experimental and non-experimental designs do not include random assignment of the subjects being studied.

As was discussed, researchers use the experimental design in order to demonstrate cause and effect, and that design requires the recording of data (i.e., measurements) before the treatment and after the treatment, plus a treatment group and a control group with random

assignment of members to the groups. Experienced researchers looking to demonstrate cause and effect view a randomized controlled trial as the most desirable experimental design because, ideally, threats to internal validity are either controlled or eliminated, and study subjects are randomly assigned to one of two groups, thus assuring the outcome of the experiment is *not* due to chance or other factors; rather the outcome is due to the application of the treatment to one group.

The quasi-experimental design is similar to the experimental design with one exception: the subjects being studied are not randomly assigned to one of the two groups (Johnson, 2002). As was previously discussed, that lack of random assignment poses a significant threat to the internal validity of causal inferences researchers draw from experiments having that design. Within the quasi-experimental design are designs that differ based on the ways in which members are assigned to the groups to be compared. For example, with the "matched-comparison" design, members are assigned to each group based on some characteristic they share, such as socioeconomic status. In a design using "nonequivalent groups," the researcher records pre-treatment and post-treatment data for both a treatment group and a control group and then compares the data (Johnson, 2002). With the correlational research design, researchers collect data on two variables from a sample of a larger population or from a group and then use statistical techniques to compare the results (Johnson, 2002). Researchers use a cross-sectional research design to, for example, collect data on relevant characteristics at a single point in time from the members of a group. The longitudinal research design involves collecting and analyzing information about the same characteristics of members of a group during a few points in time, and the data collected does not have to be for the same members at every collection timepoint. Conversely, the panel research design requires collecting and analyzing information

about the same characteristics during a few points in time from the same members of a group every time (Johnson, 2002).

Like quasi-experimental research designs, nonexperimental designs do not include randomization of the groups, populations, or things being studied. Furthermore, nonexperimental research does not include control over elements or circumstances of the experiments that might threaten their internal validity, only the recording of data; therefore, researchers cannot draw causal inferences from nonexperimental research designs (Johnson, 2002).

It is possible that researchers have examined the efficacy of CME activities on ART for physicians and have made claims of causal inference based on their research. However, it is also possible that those researchers have failed to identify, control, or eliminate threats to the internal validity of their experimental design. Consequently, the researcher intended to scrutinize all research identified via his scoping review in accordance with the definitions provided by Shadish et al. (2002) of "construct validity," "internal validity," and "threats to internal validity" and the criteria provided by Hill (2005) to guide his decisions as to whether to accept or reject claims of causal inference he found in the literature. The researcher planned to reject a claim of causal inference that X causes Y if the data in an article he found did not demonstrate that (1) X preceded Y in time, (2) X covaries with Y, and (3) no other explanations are plausible to explain the relationship between X and Y. For example, the researcher would reject a claim of causal inference that physician participation in a CME activity on ART improved the competency of physicians to prescribe ART if the causal inference were based solely upon a post-activity participant survey in which the physicians (1) describe their level of ART knowledge before and after the activity and (2) report they will use the information they learned to improve their

practice. (See Appendix E for an example of a post-activity participant evaluation form used in a federally funded HIV/AIDS training program.) In that example, there are threats to the internal validity of that claim, and there is a lack of evidence to support a claim for causal inference (Cook et al., 1997; Craig et al., 2008; Higgins & Green, 2011; Hill, 2005; Reeves et al., 2011). Because the survey was administered immediately after the activity, the physicians have not had a chance to apply the knowledge they acquired to their practice. Consequently, the surveys merely represent participants' predictions of the future consequences of their participation in the CME activity. It remains to be seen whether or not the activity actually improved the physicians' competence to prescribe ART.

Procedures and Results

Search Terms

In order to develop a group of acronyms and phrases that would serve to identify literature that is relevant to this research project, the researcher consulted with the four previously described research librarians. As a result of those consultations and his own preliminary literature searches, the researcher decided to identify peer-reviewed literature that includes these three elements of HIV medicine: disease, treatment, and education. That effort resulted in a group of acronyms and phrases, identified as "Search Terms" for his search:

(Element of HIV Medicine: Disease)

HIV OR "human immunodeficiency virus" OR "HIV infection"

AND

(Element of HIV Medicine: Treatment)

HAART OR "highly active antiretroviral therapy" OR ART OR "antiretroviral therapy"

AND

(Element of HIV Medicine: Education)

CME OR "continuing medical education" OR "continuing professional development" OR "continuing education" OR "clinical training" OR "graduate medical education" OR "physician education"

Furthermore, in order to focus his search results, the researcher decided to limit his search efforts to an article's title, abstract, and keywords, if possible.

As was previously mentioned, there are significant differences between the search options offered by the websites for the various medical journals and for online databases. Indeed, the options available via the websites for peer-reviewed medical publications can vary considerably. In cases where none of the search options described above were available, the researcher chose the next most appropriate search options, after consulting with a research librarian who is an expert in online medical research and works in a medical library at an academic medical center.

Moreover, the researcher recognized that his research effort might fail to identify peer-reviewed journal articles that are relevant to his research because of issues beyond his control, such as inaccurate indexing of a journal article or unrecorded gaps in a database's coverage. The researcher is also aware that an absence of relevant peer-reviewed articles in a particular journal or database does not mean that CME activities on ART for physicians have not occurred or that physicians have not learned from those activities.

Review Procedures

This researcher conducted multiple searches of 18 databases, 10 journal and/or publisher databases (*The Lancet*, *New England Journal of Medicine*, John Wiley & Sons, Inc., etc.), and eight other databases (Cochrane Library, PubMed, World of Science, etc.). The researcher

conducted a total of 49 individual online searches (using the previously identified Search Terms) of the 11 peer-reviewed medical publications (listed in Appendix A), four peer-reviewed medical education publications (listed in Appendix B), and eight databases (listed in Appendix C). Table 1, shown below, provides a breakdown of how many searches the researcher conducted for *each* journal and for *each* database. For example, the researcher conducted two different searches of the journal *AIDS*, and the researcher used the "advanced search" website for that journal to conduct both searches. The researcher conducted the first search of *AIDS* for acronyms and phrases (from the Search Terms) that appeared in the abstracts of articles published in *AIDS*. The researcher then conducted the second search of *AIDS* for acronyms and phrases that appeared in the titles of articles published in AIDS. The researcher conducted these two searches of the journal *AIDS* separately, rather than combining them into one search, because the *AIDS* "advanced search" website does not offer users the option to *simultaneously* search the abstracts and titles of articles published in *AIDS*; instead, the website requires users to conduct one search for acronyms and phrases that appear in the abstracts of articles, and another (i.e., second) search for acronyms and phrases that appear in the titles of articles. See Table 1 below and Appendices E and F for more information about the 49 individual searches, including descriptions of the 49 searches.

Table 1

Breakdown of 49 Individual Searches

Journal Name	Search Approach*	No. of Searches
AIDS (Journal of the International AIDS Society)	(1) Abstract; (2) Title	2
AIDS Patient Care and STDs	(1) Abstract; (2) Title; (3) Keywords	3

Annals of Internal Medicine	(1) Title/Abstract + Specified journal name (i.e., *Annals of Internal Medicine*)	1
BMJ (British Medical Journal)	(1) Title/Abstract + Specified journal name (i.e., *BMJ*)	1
Clinical Infectious Diseases	(1) Abstract; (2) Title	2
IAPAC Monthly (International Association of Providers of AIDS Care)	(1) Title/Abstract + Specified journal name (i.e., *IAPAC Monthly*)	1
JAIDS (Journal of Acquired Immune Deficiency Syndrome)	(1a) Abstract; (1b) Title; (2) Title/Abstract + Specified journal name (i.e., *JAIDS*)	3
JAMA (Journal of the American Medical Association)	(1) Title/Abstract + Specified journal name (i.e., *JAMA*)	1
The Journal of Infectious Diseases	(1) Abstract; (2) Title	2
The Lancet	(1) Abstract, Title, Keywords	1
The New England Journal of Medicine	(1a) Abstract/Extract; (1b) Title; (2) Title/Abstract + Specified journal name (i.e., *The New England Journal of Medicine*)	3
Journal of Continuing Education in the Health Professions (JCEHP)	(1) Abstract; (2) Title; (3–9) Abstract (See "Remarks" in Appendix G for detailed information about searches 3 through 9)	9
Journal of Graduate Medical Education	(1a) Title; (1b) Keywords; (2) Title/Abstract + Specified journal name (i.e., *Journal of Graduate Medical Education*)	3
Medical Education	(1) Abstract	1
Journal of Medical Education / Academic Medicine	(1a) Abstract; (1b) Title; (2a) Title/Abstract + Specified journal name (i.e., *Journal of Medical Education*); (2b)	4

	Title/Abstract + Specified journal name (i.e., *Academic Medicine*)	
	Number of Journal Searches:	37
Database Name	Search Approach	No. of Searches
Cochrane Library	(1) Title, Abstract, Keywords	1
EconLit Database (with Full Text)	(1) Abstract; (2) Title	2
Embase Database	(1) Title or Abstract	1
ERIC Database	(1) Title; (2) Abstract	2
PsycINFO Database (Ovid)	(1) Abstract; (2) Title	2
PubMed Database	(1) Title/Abstract	1
SocIndex Database (with full text)	(1) Abstract or Author-Supplied Abstract	1
Web of Science Database	(1) Title; (2) Topic	2
	Number of Database Searches:	12
	Total Number of Combined Searches (i.e., Journals & Databases):	49

Notes. Numbers in parentheses indicate the first search, second search, etc. and what was searched, such as title, abstract, keywords, etc.

Those 49 searches produced 146 results. (See the Figure 1 below for a branching diagram that illustrates how the researcher sorted the 146 results.) Eliminating duplicate results produced a list of 80 unique articles. Two of those articles—Badelon, Gohier, and Chaine (1999) and Stellbrink (2012)—were published in a language other than English and were therefore excluded from further consideration, leaving a list of 78 unique articles printed in English.

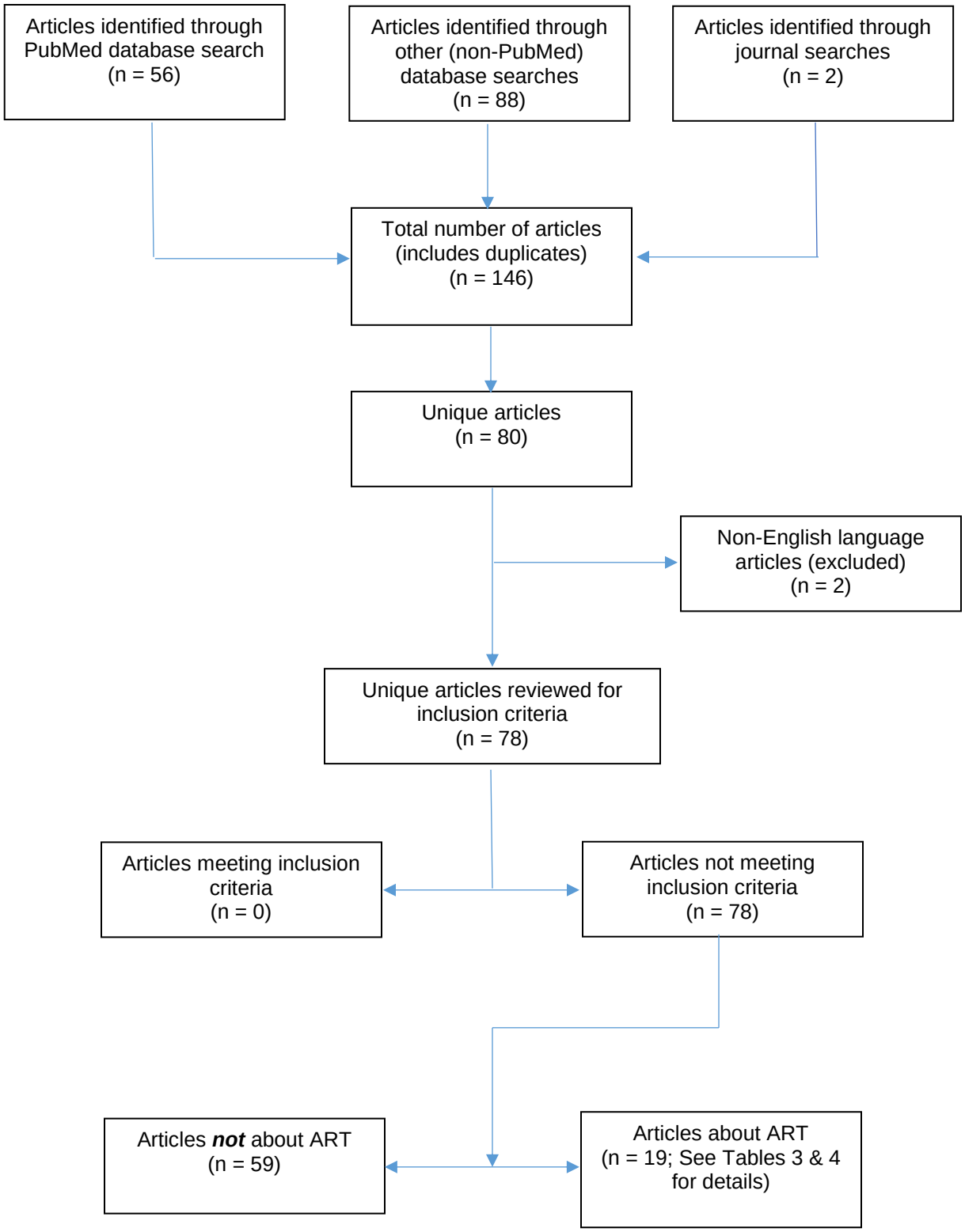

Figure 1. Branching diagram illustrating how the researcher sorted 146 results

The researcher reviewed each of the 78 unique articles in order to categorize them in terms of inclusion criteria and subject matter within HIV/AIDS care. None of the 78 articles met all four criteria for study inclusion. See Table 2 below for a table of classification of the 78 articles by subject matter. See Appendix F for a summary of database and peer-reviewed journal search results. See Appendix G for detailed information about search results for specific journals, and see Appendix H for detailed information about database search results.

Table 2

Categorization of 78 Articles by Subject Matter within HIV Care

Subject Matter within HIV Care	# of Articles
Antiretroviral Therapy (ART)	19
ART, Adherence	3
ART, Metabolic Complications of	9
Case Management	1
Coinfection, HIV–HBV	1
Coinfection, HIV–HCV	1
Coinfection, HIV–HPV	1
Coinfection, HIV–Tuberculosis	1
Health Economics (South Africa)	1
HIV & Aging	1
HIV Care via Telemedicine (low-resource settings)	2
HIV & Clinical Education	4
HIV Diagnosis	1
HIV, Education, Nursing & Midwifery	1
HIV Prevention	5
HIV Resistance Testing	1
HIV Specialization	2
HIV Stigmatization	1
HIV-related Health Conditions	9
Needlestick Injuries	1
HIV & Opportunistic Infections	3
HIV & Oral Health	1
HIV & Patient Education	3
HIV & Patient Satisfaction	1
HIV/AIDS Pharmacist CPE	2
STDs	1
Treatment for HIV-associated Health Issue	2
Total:	78

Fifty-seven of the 78 articles mentioned ART in relation to treatment for other medical issues such as treatment for needlestick injuries, other sexually transmitted diseases, HIV stigmatization, patient education, patient satisfaction, treatments for HIV-related health issues, patient adherence issues, HIV prevention, the metabolic complications of ART, HIV as the virus relates to health care provided by nurses and midwives, HIV and aging, opportunistic infections, treatment for HIV–hepatitis B coinfection, treatment for HIV–hepatitis C coinfection, the specialization of HIV care, treatment for HIV–tuberculosis coinfection, case management for HIV patients, health economics in South Africa, HIV education for pharmacists, HIV and oral health, and diagnosing HIV infection. None of those 57 articles described CME activities on ART for physicians, which prompted the researcher to exclude all 57 articles from further consideration. Nineteen of the 78 articles dealt with ART for HIV-infected patients; however, all 19 articles described the latest ART treatment guidelines for HIV and did not describe a CME activity on ART for physicians in the United States or Canada. Therefore, the 19 articles were excluded from further consideration. See Table 3 for a summary of the 19 articles on ART.

Table 3

Table of 19 Articles about ART and Inclusion Criteria Met

#	First Author	Year	Content	Criteria Met
1	Ananworanich	2015	Discusses ART as a possible cure for HIV infection	4
2	Eron	2009	Antiretroviral Therapy: New Drugs, Formulations, Ideas, and Strategies	4
3	Gallant	2007	When to initiate ART	4
4	Gulick	2015	Describes how to choose initial ART	4
5	Günthard	2016	2016 ART Recommendations of the International Antiviral Society–USA panel	1, 4
6	Hoehn	2017	Understanding the delay in starting antiretroviral therapy despite recent guidelines for HIV patients retained in care	4
7	Johnson	2016	Describes when to initiate ART, what ART regimen to prescribe, & how to monitor patients on ART	4
8	Kiser	2016	Descriptions of ART Drug-Drug interactions between Hepatitis C Virus and HIV treatments	4
9	Kiser	2013	Descriptions of ART Drug-Drug interactions between Hepatitis C Virus and HIV treatments	4
10	Kitahata	2009	Describes when to initiate ART	4
11	Kuritzkes	2007	Describes ART & HIV resistance testing	4
12	Levin	2002	ART Recommendations for Pediatric Patients (in South Africa)	4
13	Little	2016	Describes ART for acute HIV infection	4
14	Miles	1997	Describes "new" biologic information, ART, and the clinical implications for HIV infection	4
15	Siliciano	2009	Discusses ART as a possible cure for HIV infection	4
16	Volberding	2017	Describes ART as a tool for HIV prevention	4
17	Volberding	2015	ART Recommendations from 2014 International AIDS Conference	4
18	Yeni	2002	2002 ART Recommendations of the International Antiviral Society–USA panel	1, 4
19	Youle	2001	Recommendations for salvage ART	4

Note. Study inclusion criteria were: (1) Be published in one of the peer-reviewed publications listed in appendices A or B; (2) Describe a CME activity for physicians in the United States or Canada; (3) Report participant outcomes from a CME activity on antiretroviral treatment for HIV-infected adult patients since 1987 (when the FDA approved the use of zidovudine for the treatment of HIV infection; De Clercq, 2009); and (4) Be published in English (because this research project has no funding to support the translation of foreign-language articles).

Because this researcher did not find any articles that met all four inclusion criteria for this study, he did not have any articles to examine in terms of the internal validity of claims of causal inference. As was mentioned previously, this researcher has more than 26 years of experience organizing continuing education activities for people who deliver health care and more than 16 years evaluating the efficacy of CME activities on ART for physicians. Because of that experience and because of his own research on learning and CME activities for health care professionals (Della Porta, 2010a, 2010b, 2011, 2012, 2014), he is aware that experiments from which researchers draw claims of causal inference must meet certain conditions; otherwise, such claims are suspect to a greater or lesser degree, depending on the number of conditions met. In addition, he believes that the conditions specified by Shadish et al. (2002) for "construct validity" and "internal validity" and the characteristics described by Hill (2005) could help him to evaluate any claims of causal inference he might have found via this research project. Furthermore, determining whether or not a specific example of empirical research meets those conditions is best conceptualized as a continuum, with some experimental designs having high construct validity and high internal validity and others having less validity or no validity. Moreover, this researcher agrees with Johnson's (2002) assertion that no experimental design is perfect; consequently, no research design offers perfect internal validity. Researchers must determine the viability of claims of causal inference on a case-by-case basis.

If this researcher had identified research articles that included claims of causal inference, he would have scrutinized the design of the experiment that produced the data on which those claims were based in order to determine the extent to which the experiment's design controlled or eliminated threats to internal validity. The purpose would have been to identify the strengths and weaknesses of the experimental design and to determine whether or not the design contained

a fatal flaw or a series of lesser flaws that render a claim of causal inference invalid. Essentially, this researcher's goal was to judge the validity of the data on which a claim was made and to determine whether or not the researchers' claims are justified. (See Appendix D for a list of metrics the researcher planned to capture about the articles that meet the inclusion criteria, including potential threats to the internal validity of causal inferences described in each article.) Furthermore, if an experimental design had few weaknesses, this researcher would still consider whether or not the authors were justified in making a claim of causal inference based on their data. For example, an experiment might produce empirical data, but those who conducted the experiment might still make a claim of causal inference that the data does not justify. Therefore, a claim of causal inference could be weak or invalid despite the use of a good experimental design.

Finally, this researcher believes that those who organize CME activities cannot deem their CME activities to be successful simply because participants give an activity high marks on a five- or seven-point Likert scale after they complete the activity, especially if activity organizers have not measured participants' knowledge via tests administered before and after the activity. (See the section "Remediating the Dearth of Peer-reviewed Research" for a theoretical example of a research project that would have significantly more internal validity with regard to claims of causal inference than simply asking participants to complete a post-activity survey.)

Discussion

The researcher used the websites of 15 peer-reviewed publications and eight databases to conduct 49 individual searches for peer-reviewed articles that support a claim of causality that physician participation in CME activities on ART for HIV infection in adult patients will improve the practice of physicians who prescribe ART and will subsequently improve health

outcomes for HIV-infected adult patients. (See Appendices E and F for detailed information about those searches.) None of the 78 unique articles identified via those 49 searches met all four inclusion criteria, and because none of the 78 articles met all four inclusion criteria, the researcher concludes that there is no published evidence to support (1) a claim of causality that physician participation in a CME activity on ART for HIV infection in adult patients will improve the practice of physicians who prescribe ART or (2) a claim that physician participation in a CME activity on ART for HIV infection in adult patients will improve health outcomes for those patients. Indeed, Linsk, Carr, and Schechtman (1997) observe, "Educational methods to teach health providers about HIV care and prevention have seldom been systematically evaluated," and, as a result, "methods that ensure that education is provided in an effective manner and is well received by participants are lacking" (p. 164).

Although this scoping review did not find published evidence to support (1) a claim of causality that physician participation in a CME activity on ART for HIV infection in adult patients will improve the practice of physicians who prescribe ART or (2) a claim that physician participation in a CME activity on ART for HIV infection in adult patients will improve health outcomes for those patients, the review did reveal a focused effort by researchers and clinicians to identify practices and pharmaceutical agents that provide the most benefit to HIV-infected patients. While this focus is appropriate given the threat HIV infection represents to public health, it demonstrates that there is more published information about the care that health professionals should provide to patients than there is about the best methods of *teaching* physicians how they should provide that care. For example, of the 78 articles the researcher identified via this scoping review, just four articles (Chien et al., 2016; Gallagher, Hirschhorn,

Lorenz, & Piya, 2017; Kabra et al., 2009; Weaver et al., 2006) describe CME activities for health care professionals involved in HIV/AIDS care.

Chien et al. (2016) describe an HIV mentoring program that covered a range of health care issues in HIV/AIDS for all types of health professionals in Malawi, a "resource-constrained" (p. 11) country, but the researchers do not report how many physicians participated as students in the program and for what subjects in HIV/AIDS care those physicians received mentoring. Consequently, the researcher excluded Chien et al. from this study. Even without that limitation, however, this study would still have been excluded due to its being set in Malawi. As was previously discussed, because health care for HIV-infected patients in countries with limited health care resources can differ significantly from HIV care found in countries such as the United States and Canada (Rackal et al., 2011), and because the care provided to HIV-infected patients is influenced by health policy in that country, the researcher decided to limit his research to articles that reference CME activities on ART for HIV-infected adult patients specifically in the United States and Canada, where specialized health care and cutting-edge ART are generally available. Thus, the study by Chien et al. (2016) would not apply.

The study by Gallagher et al. (2017) serves as an example of how the literature is lacking studies of and empirical data about CME activities on ART in the United States. These researchers used a mixed-methods approach to analyze the types of educational methods (e.g., lecture/workshop, chart/case review, clinical preceptorship/miniresidency, conference call/telephone, computer-based learning, role-playing, etc.) employed by the New England AIDS Education and Training Center (NEAETC) and the learning modalities NEAETC activity participants preferred. Gallagher et al. did not provide specific information about NEAETC curricula, despite reporting this finding: "Interview participants reported that NEAETC trainings

contributed to better patient outcomes such as higher rates of viral suppression" (2017, p. 34). Because Gallagher et al. do not mention *curricula* for ART, the researcher could not be certain that the CME activities Gallagher et al. studied dealt with CME activities on ART for physicians. Indeed, Gallagher et al. mention ART only once, and the authors do so in reference to the fact that prescribing ART is part of HIV/AIDS care: "Primary care providers must pay attention to diagnosing HIV, prescribing antiretrovirals [i.e., ART], and monitoring viral loads while facilitating access to wellness-related care (e.g., mammograms and colonoscopies), and encouraging healthy behaviors: smoking cessation, healthy eating, and exercise" (2017, p. 34). Therefore, the Gallagher et al. (2017) article did not meet all four inclusion criteria, and the researcher excluded the article from this study.

Kabra et al. (2009) specifically describe CME activities on ART, and they report this finding: "The CMEs had a favourable impact on the self-reported knowledge of the participants" (p. 259). However, the CME activities the authors describe took place in India, a low-resource country. As a result, Kabra et al. did not meet all four criteria for inclusion in this study, and the researcher excluded the article.

Weaver et al. (2006) describe a clinical education program in Uganda, another resource-constrained country in Africa, and the authors specifically describe CME activities on ART. However, because the CME activities took place in a country with low health resources, the researcher excluded it from his study. Additionally, although Weaver et al. claim that the four-week CME activity, which included ART, "clearly improved the clinical skills of the doctors who completed it" (p. 301), the authors also note that a limitation of their project was that physicians' "clinical activities and skills did not necessarily represent actual clinical practice" (p. 301). They also suggest that the difficulty of providing specialized health care in a low-resource

country could be responsible for the disconnect between "clinical activities and skill" and "actual clinical practice." Finally, the authors also note that "investment in training of health professionals is guided by only a handful of studies on HIV training programs in resource-limited settings" (2006, p. 293).

Perhaps medical educators have already optimized the delivery of CME on ART for physicians and cannot improve their own practice. However, that possibility appears unlikely given the criticism of CME previously cited (Ebell & Shaughnessy, 2003; Institute of Medicine, 2010; Kokemueller & Osguthorpe, 2007). In light of that criticism, medicine's focus on finding new treatments and pharmaceutical agents is evocative of a criticism of the No Child Left Behind Act of 2001 (NCLB) in that the focus of NCLB is on students meeting specific criteria, but developing or supporting the process by which students are educated receives little attention. With respect to NCLB, Ladd (2017) calls this "pressure without support" (p. 466), meaning there is pressure on educators to help their students meet specific goals, but adequate support is lacking for educators in their drive to help their students achieve those goals. In medicine, advancements in the treatment of disease generate pressure on medical educators to include that new information into curricula so that physicians can deliver better health care. However, published research is lacking that can serve to inform medical educators about the most effective ways to teach ART to physicians so that physicians can meet the dual goals of improving their competency to prescribe ART and improving health outcomes for HIV-infected patients.

Explanations for the Dearth of Evidence

Antiretroviral therapy for HIV infection generally involves a combination of drugs that are designed to inhibit the replication of HIV in the body and allow the body's natural immune system to rebound and prevent the virus from continuing its assault on the body. Such therapy

does not cure HIV infection. If successful, ART changes the nature of HIV infection from one of a deadly infection to a chronic, manageable health condition. Moreover, treatment guidelines involving ART are complex and have changed frequently since zidovudine was approved in 1987 for use in HIV infection (De Clercq, 2009), and ART drugs and treatment guidelines continue to change as researchers and clinicians seek to expand treatment options for patients and improve the quality of life patients enjoy. Both physicians and medical educators have struggled to keep pace with rapidly changing treatment strategies, and they have other priorities. As a result, there might be several reasons why there is no published, peer-reviewed research to support a claim that CME programs for physicians on the subject of ART improve the practice of those physicians and lead to improved health outcomes for their patients. This researcher presents several such possibilities below.

Lack of funding. Perhaps no organization or government agency is willing to provide the significant funding required to thoroughly study the efficacy of CME activities on ART, especially in the face of more pressing problems in HIV/AIDS care that invite research and consume funding. Among those problems are the need to improve the efficacy of ART by developing more efficacious drugs with fewer side effects and the long, expensive effort to produce an HIV vaccine that has yet to achieve success. Globally, an effective vaccine would save many lives and significantly reduce health care expenditures, particularly in low-resource countries. Therefore, many resources are directed toward the search for a vaccine. On April 23, 1984, then Secretary of Health and Human Services Margaret Heckler predicted that a vaccine for HIV would be available in two years (Markel, 2005). The World Health Organization (2015) claims that almost $600 million (USD) is spent annually to find a vaccine for HIV. Despite this

significant investment in research, the world is still waiting for the vaccine that Secretary of Health and Human Services Heckler predicted would be available by 1986.

Continuously changing curriculum. Historically, treatment guidelines for ART have changed frequently (Ammassari et al., 2001; Arnsten et al., 2001; Carr et al., 1998; When To Start Consortium, 2009; Yerly et al., 2003), and poor health outcomes are sometimes blamed on specific ART treatment guidelines that are later shown to be flawed. Moreover, medical educators and physicians involved in the development of curricula for CME activities on ART generally focus their efforts on revising curricula for future CME activities as knowledge of HIV/AIDS medicine expands, rather than researching the efficacy of previous ART education. Furthermore, it is difficult to evaluate the efficacy of educational activity in a field such as medicine when the curriculum changes every few months and there are long-term unknowns associated with a specific curriculum. By the time the outcomes of the educational activities manifest themselves and can be measured, the curriculum that produced the outcome is sometimes considered obsolete. Consequently, there is little interest in studying the efficacy of the CME activities that produced those outcomes, despite the possibility that such research might lead to improvements in CME activities on ART.

Measurement and reporting challenges. After the Vietnam War, an unknown U.S. military officer allegedly asserted, "If you can't count what's important, you make what you can count important" (Anonymous, n.d.), a reference to the fact that the U.S. military did not have an easy and accurate means of measuring its effectiveness during the war. As a result, both the military and the government viewed enemy body counts as an important measure of the military's effectiveness. After the war, it became clear that there was no correlation between enemy body counts and the U.S. military's progress in defeating the enemy. Because it is

difficult, expensive, and time-consuming to accurately measure a CME activity's influence on physicians' competence and on patients' health outcomes, activity organizers usually record and report data that is easy to collect, such as the number of CME activities conducted over time, the number of CME activities offered in a geographic area, the duration of those activities, the number of activity participants, the types of participants (e.g., physicians, pharmacists, dentists, nurse practitioners, physician assistants, registered nurses), the participants' appraisal of the activity, and so on. Furthermore, organizations that fund CME activities on ART usually require program organizers to report that same data. (See Appendix E for a post-activity participant evaluation form that the U.S. Health Resources and Services Administration [HRSA], a branch of the Department of Health and Human Services, required participants to complete after an HRSA-sponsored HIV training program.) Unfortunately, throughout this researcher's experience organizing CME activities, both activity funders and activity organizers have often used those type of data as a proxy indicator of the activities' success or failure and do not publish empirical studies of the efficacy of the CME activities they organize.

Shared goals leading to identical practices. Perhaps the dearth of empirical evidence about the efficacy of CME activities for physicians on ART is a product of institutional isomorphism. That is, perhaps it is due to the tendency of institutions that share the same goal, in this case medical education departments that organize CME activities on ART, to gradually morph into functional units that closely resemble each other and function in nearly identical ways because they share the same operational goals. In HIV medicine, one of those goals is to incorporate he latest empirically derived treatment strategies into all CME activities on ART. By using the latest treatment guidelines derived from empirical studies of clinical trials, CME

activities on ART gain legitimacy, which itself promotes the development of isomorphism (DiMaggio & Powell, 1983). DiMaggio and Powell claim that:

> Two aspects of professionalization are important sources of isomorphism. One is the resting of formal education and of legitimation in a cognitive base produced by university specialists; the second is the growth and elaboration of professional networks that span organizations and across which new models diffuse rapidly. Universities and professional training institutions are important centers for the development of organizational norms among professional managers and their staff. (1983, p. 152)

According to DiMaggio and Powell, isomorphism makes organizations "more similar without necessarily making them more efficient" (1983, p. 147). In other words, as long as university-affiliated medical education departments that organize CME activities for physicians on ART incorporate an empirically proven ART treatment regimen into all curricula and dutifully gather the same activity metrics their counterparts record and report, they can, like their colleagues at other institutions, view their activities as being successful.

Less scrutiny for CME. Furthermore, there is a distinction to be made between general education and continuing education for professionals in terms of responsibility for student success. In primary and secondary education, society places a burden on schools and teachers to produce students who are sufficiently prepared to enter the workforce. In continuing professional education, it is professionals who shoulder the primary responsibility for identifying CME activities that meet their educational needs and for achieving the designated learning outcomes. Society views professionals as being responsible for their competence (Cervero, 1988; Houle, 1980; Nowlen, 1988). As a result, the efficacy of CME activities probably receives less scrutiny in terms of outcomes than other types of education (e.g., primary, secondary,

undergraduate), particularly when those activities are organized by medical centers associated with a university and include curricula based on empirically proven ART treatment guidelines.

ART effectiveness. As was previously noted, Frame (2003) asserts that the "introduction of effective [ART] had a lifesaving effect similar in magnitude to the effect the introduction of insulin had on the mortality of type I diabetes. AIDS mortality in the U.S. fell by 75% between 1995 and 2000" (p. 206). If the number of HIV-related deaths had not fallen dramatically with the introduction of ART, medical educators, government agencies, physicians, and HIV patients would likely have been motivated to understand the reasons why physicians were not saving more lives. It is therefore possible that because physicians have used ART to save so many lives, there is little motivation to expend limited resources investigating the effectiveness of CME on ART—even though such an investigation might produce benefits for HIV/AIDS care and for medicine in general. If HIV-infected patients were dying despite the availability of effective ART, many stakeholders, including HIV patients, the CDC, HIV specialists, state health departments, and insurance companies, would probably demand an investigation into why HIV patients were still dying. Under those circumstances, there would be a clear and urgent mandate to empirically analyze the effectiveness of CME activities on ART. Without that mandate, most medical educators and organizers of CME activities on ART probably feel that dealing with a constantly changing ART curriculum leaves them little time to empirically examine the efficacy of the CME activities they organize and then publish their data, despite the possibility that such research would fill a void in the literature.

Conclusions

The purpose of this research was to determine what evidence exists to support a claim of causality such that physician participation in a CME activity on ART will improve the practice

of physicians who prescribe ART and will subsequently improve health outcomes for the HIV-infected adult patients they treat. After conducting a scoping review of the literature, the researcher found no published peer-reviewed evidence to support a claim of causality that physician participation in a CME activity on ART will improve the practice of physicians who prescribe ART and will subsequently improve health outcomes for the HIV-infected adult patients they treat.

The Institute of Medicine (2010) reports that some medical educators and physicians consider CME to be so profoundly defective that it is incapable of sustaining the competency of physicians. Others claim that CME can support the competency of physicians (Cervero, 1988, 2010; Cervero & Gaines, 2014, 2015; Houle, 1980, 1988; Nowlen, 1988). Benner (1984) reminds those involved in the education of medical professionals that "in the real world, nurses and physicians alike have good days and bad days; some are frankly incompetent" (p. xxi), suggesting that CME activities by themselves, irrespective of their frequency, content, or quality, may not improve the practice of some physicians. Presumably, physicians do participate in CME activities on ART that are ineffective in terms of increasing physician competence and improving health outcomes for HIV-infected patients. However, because AIDS mortality in the United States dropped "75% between 1995 and 2000" (Frame, 2003, p. 206) with the advent of effective ART, one can presume that some CME activities on ART are effective in terms of increasing physician competence and improving health outcomes for HIV-infected patients. However, this leaves medical educators with two important questions: Which of those activities are effective, and why are they effective?

Some authors assert that adult education, including CME activities, can be a complex social process involving many stakeholders with an abundance of competing priorities that can

affect its outcomes (Cervero & Wilson, 1994, 2001, 2005; Jarvis, 1993). Davis et al. (1999) conclude that "although physicians report spending a considerable amount of time in [CME] activities, studies have shown a sizable difference between real and ideal performance, suggesting a lack of effect of formal [CME]" (p. 867). In addition, Linsk, Carr, and Schechtman (1997) question whether "the impact of training upon care and education vary across provider groups" (p. 165), underscoring the possibility that specific types of CME activities, such as didactic presentations, might be effective for training physicians in one field of medicine but less effective for training physicians in another field. Consequently, without empirical evidence, educators who organize CME activities on ART for physicians cannot be certain of the effectiveness of those activities.

Research has shown that the combination of knowledge and experience generally improves physician performance and health outcomes for their patients (Cervero & Gaines, 2014, 2015). However, insufficient empirical evidence is available to describe the impact CME activities on ART have on physicians who prescribe ART. Perhaps this is in part because, as Hager et al. (2008) assert, "much professional learning takes place informally and outside accredited formats" (p. 14), which makes it difficult for researchers to identify and to quantify that learning.

For a variety of reasons, medical educators responsible for arranging CME activities for physicians on ART may not be surprised by the outcomes of this research. That is because this research appears to support Cervero's (1988) claim that:

> Precious little research documents how competent educators actually develop programs and what distinguishes the program development processes of successful and

> unsuccessful continuing educators. Yet this is the area in which the greatest number of people working in continuing professional education are involved. (p. 112)

Complicating the analysis of CME activities in terms of their success or failure is the Institute of Medicine's (2010) observation that:

> In theory, the purpose of [CE] is to update and reinforce knowledge, which should ultimately result in better patient care. But in practice, there often are conflicting ideas about the purpose of CE. Some health professionals see CE as a means to attain credits for the licensure and credentialing they need to practice their occupations. (p. 17)

Consequently, physicians might rate a CME activity highly simply because the activity satisfied their need to accrue CE credits, and those credits allow them to continue to practice—despite the activity's failure to actually improve their practice. Indeed, Nowlen (1988) claims that "teasing meaning" from questionnaires given to CE participants after an activity is "a hazardous process" (p. 151). That is because, for example, "physicians' favorable opinions of changes in their performance resulting from [CME] do not track with audits of quality of care such as chart review measurements" (p. 151). In addition, Moore (2008) concludes:

> Researchers from multiple studies over the past several years have reported that there are distressing gaps between the healthcare services that patients receive and those that they could be receiving. These studies show that many patients do not receive the best possible care, receive suboptimal care, or are victims of errors, despite the fact that approaches to care are improving and demonstrating enhanced outcomes. A variety of approaches have been suggested to address this gap. [CME] has been a longstanding suggestion. For many years, however, people have expressed concerns about the effectiveness of CME. As a result, confidence in the ability of CME to address the

> identified gaps in healthcare delivery was not high. But significant work over the past 20 years has demonstrated the effectiveness of CME, *if* it is planned and implemented according to approaches that have been shown to work. (p. 30; italics in original)

Medical educators responsible for arranging CME activities for physicians on ART might ask, "What types of approaches to CME have been proven to work, and are they applicable to CME activities on ART?" Published evidence appears to be lacking on effective approaches to CME activities on ART.

Regarding the effectiveness of CME, Norman et al. (2004) contend:

> A fundamental gap remains between the learning needs of the individual practitioner and the priority educational needs identified by bodies for [CME] for course offerings. The two are not synonymous. Learning needs are personal, specific, and identified by the individual learner through practice experience, reflection, questioning, practice audits, self-assessment tests, peer review, and other sources. Although, in theory, doctors should use these methods to create self-directed learning plans, there is no evidence for most doctors that this actually happens. (p. 1000)

Clearly, there is a need for empirical evidence on the effectiveness of CME activities on ART for physicians in improving physician competence with respect to treatment for HIV infection.

Remediating the Dearth of Peer-reviewed Research

If sufficient funding could be obtained for a research effort to answer these questions, the researcher proposes the following two-part approach to remediating the dearth of peer-reviewed research:

Part one. Organize multiple types of CME activities on ART for physicians who practice in urban areas and for physicians who practice in rural areas throughout North America. These

activities would include lectures, case-based presentations, discussions, examinations (both written and oral), observation time spent in busy urban clinics with HIV specialists, and role-playing with simulated patients. All activities would include both a pre-test and a post-test, with both tests including individual interviews (conducted by HIV specialists) with each participant about their clinical experiences. The case-based presentations and discussions, lectures, and role plays with simulated patients would highlight key points about various aspects of ART, including HIV resistance testing, selection of optimum ART, when to initiate treatment, ART maintenance, and patient adherence to ART. HIV experts would create curricula, develop the pre- and post-tests, and grade the participants on their performance. In order to ensure enough physicians participated, it is possible that activity organizers would need to offer financial incentives for physicians to participate.

The purpose of offering these CME activities is to measure physicians' knowledge before and after the activities and to correlate individual patient health outcomes with each participant's practice. This effort would require patient chart reviews and follow-ups with every participant.

Part two. Provide each participant with a wireless device equipped with software that automatically tracks the user's visits to medically related websites. The purpose of doing this is to understand (1) the frequency with which participants visit medically related websites, (2) the topics they search for, and (3) the amount of time they spend learning online. The tracking software would automatically record and tabulate this data.

These devices would also prompt the user (on a daily basis) to enter into an online diary all CME-related activities (e.g., conversations with colleagues about HIV/AIDS care, reading hard copies of newsletters and journal articles) they undertook during the previous 24 hours. A

panel of HIV specialists would review the data and issue a report about each participant's competence to prescribe ART.

Questions for Further Research

The lack of published information about CME activities for physicians on ART constrains medical educators who seek to improve their practice by organizing more effective activities on ART, because the answers to a number of questions about ART activities could help them organize more effective activities. For example, from which CME activities on ART do physicians who prescribe ART for HIV-infected adult patients learn best and why? Which activity characteristics maximize physician learning about ART and why? Which activity characteristics diminish physician learning about ART and why? Does a causal relationship exist between physician participation in a CME activity on ART and improved health outcomes for HIV-infected adult patients? If a causal relationship exists, what is the strength of that relationship (i.e., weak, moderate, strong)? More published research on this subject is needed in order for medical educators to answer these questions.

The researcher initiated this project in order to determine what evidence exists to support a claim of causality that physician participation in a CME activity on ART for HIV infection in adult patients will improve the practice of physicians who prescribe ART and will subsequently improve health outcomes for the HIV-infected adult patients they treat. By finding and critiquing evidence that supports a claim of causality, the researcher hoped to inform his practice, as well as those of his colleagues. However, because there is no peer-reviewed evidence, medical educators can only guess as to what CME activities on ART are best for improving physician competency and the health outcomes of patients.

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APPENDIX A

Final List of Eleven (11) Peer-reviewed Medical Publications

1) *AIDS* (*Journal of the International AIDS Society*)
2) *AIDS Patient Care and STDs* (*AIDS Patient Care* was published from 1987 to 1995; beginning in 1996, *AIDS Patient Care* was published as *AIDS Patient Care and STDs*.)
3) *Annals of Internal Medicine*
4) *BMJ* (*British Medical Journal*)
5) *Clinical Infectious Diseases*
6) *IAPAC Monthly* (*International Association of Providers of AIDS Care*; Note: Not to be confused with the *Journal of the International Association of Providers of AIDS Care* [a.k.a. *JIAPAC*] or with the *Journal of the International Association of Physicians in AIDS Care*, which was published from 2002 to 2012 and was peer-reviewed.)
7) *JAIDS* (*Journal of Acquired Immune Deficiency Syndrome*)
8) *JAMA* (*Journal of the American Medical Association*)
9) *Journal of Infectious Diseases*
10) *The Lancet*
11) *NEJM* (*New England Journal of Medicine*)

APPENDIX B

Final List of Four (4) Peer-reviewed Medical Education Publications

1) *Journal of Continuing Education in the Health Professions*
2) *Journal of Graduate Medical Education*
3) *Medical Education*
4) *Journal of Medical Education* / *Academic Medicine* (Note: The *Journal of Medical Education* became *Academic Medicine* in 1989; consequently, the researcher searched both the *Journal of Medical Education* and *Academic Medicine*.)

APPENDIX C

List of Eight (8) Databases Searched

Cochrane Library

EconLit (with Full Text)

Embase

ERIC

PsycINFO (Ovid)

PubMed

SocIndex

Web of Science

APPENDIX D

List of Article Metrics to Be Captured

A) Peer-reviewed Article Metrics

First Author

Year (of Publication)

Country (of Publication)

Citation

Journal/Database of Publication

Search Source

Researcher's Remarks/Notes

B) Reported Program/Activity Metrics

Program/Activity Start Date

Program/Activity End Date

Program/Activity Hours

Program/Activity Days

Program/Activity Weeks

Program/Activity Months

Program/Activity for Physicians Only

Program/Activity Accredited for Physicians

Number of Credits/Units

Accrediting Body

Program/Activity Provides HIV Certification for Physicians

Total Number of Participants

Total Number of Physicians

Total Number of HIV Specialist Physicians

Total Number of HIV Specialist NPs & PAs

Total Number of NPs

Total Number of PAs

Total Number of Pharmacists

All Other Participants

Program/Activity ZIP Code

Program/Activity Organizer

Program/Activity Setting

Program/Activity Registration Fee

Needs Assessment Conducted

Pre-test Conducted

Post-test Conducted

Program/Activity Stated Objectives

Program/Activity Outcome(s) Reported

Description of Program/Activity Outcomes

Improved Health Outcomes for Adult HIV Patients

Researcher's Notes on Program/Activity Reported Outcomes

Program/Activity Reported Success(es)

Researcher's Notes on Program/Activity Reported Success(es)

Program/Activity Reported Failure(s)

Researcher's Notes on Program/Activity Reported Failure(s)

Presenter's/Faculty's Primary Professional Degree

Presenter's/Faculty's Primary Professional Occupational Role

Curricula for Treatment of Adult HIV Patients

Curricula for HAART/ART

Curricula for HIV Treatment Guidelines

Curricula for Overcoming Barriers to Providing Care

Participant Follow-up/Evaluation by Program/Activity Organizers

Follow-up Timeline

Researcher's Notes on Follow-up/Evaluation

Number of Physicians Responding to Follow-up

Live/Enduring Program/Activity

Program/Activity Type

Program/Activity Addresses HIV-related Knowledge Deficits

Researcher's Notes on Addressing HIV-related Knowledge Deficits

Program/Activity Refers to Adult Education Theory

Researcher's Notes on Adult Education Theory

Program/Activity Refers to Continuing Professional Education Theory

Researcher's Notes on Continuing Professional Education Theory

Sponsor/Source of Funding

Researcher's Remarks / Notes

C) <u>Participant (i.e., Physician) Data</u>

Physicians' Principal Employment Setting, Self-reported

Physicians' Principal Employment Setting, Urban

Physicians' Principal Employment Setting, Suburban

Physicians' Principal Employment Setting, Rural

Physicians' Principal Employment Setting, Other

Physicians' Gender, Male

Physicians' Gender, Female

Physicians' Gender, Transgender

Physicians' Gender, Other

Data on Number of Physicians Who Do Not Provide Clinical Care Directly to Patients

Data on Number of Physicians Who Provide Clinical Care Directly to Patients

Data on Number of Physicians Who Do Not Provide Clinical Care Directly to HIV-infected Patients

Data on Number of Physicians Who Provide Clinical Care Directly to HIV-infected Patients

Data on Average Number of HIV-negative Patients Physicians Treat per Month

Data on Average Number of HIV-positive Patients Physicians Treat per Month

Data on Number of CME Credits Physicians Earned During Previous 12 Months

Data on Number of HIV-related CME Credits Physicians Earned During Previous 12 Months

Data on Number of Years Physicians Have Treated All Patients

Data on Number of Years Physicians Have Treated HIV-infected Patients

Data on Number of Years Physicians Have Prescribed Antiretroviral Treatment for HIV Infection

Data on Number of Years Since Physicians Graduated from Medical School

Data on Participant Reports of Barriers to Providing Care in Physicians' Employment Setting

Researcher's Remarks/Notes

D) Type of Data

Quantitative

Qualitative

Mixed

E) Threats to Internal Validity (as described by Shadish et al. [2002])

Ambiguous Temporal Precedence

Selection Bias

History

Maturation

Regression

Attrition

Testing

Instrumentation

Additive and Interactive Effects

APPENDIX E

Participant Evaluation Form

Please completely fill in the circles (●) when answering the questions.

Unique ID Number

M	M	D	D	#	#	#	#
Birth				*Last 4 SSN*			

To create your unique ID number, use the month of your birth, the day of your birth, and the last four digits of your SSN For example, May 29, 123-45- 6789 has the ID number 05296789.

Date of Training (mm/dd/yy)

[ ][ ] / [ ][ ] / [ ][ ]

Your Employer

[ ]

1. **What was your level of knowledge about the training content BEFORE the the training?**
   - ○ Novice
   - ○ Not Very Knowledgeable
   - ○ Knowledgeable
   - ○ Very Knowledgeable
   - ○ Expert

2. **What is your level of knowledge about the training content AFTER the training (now)?**
   - ○ Novice
   - ○ Not Very Knowledgeable
   - ○ Knowledgeable
   - ○ Very Knowledgeable
   - ○ Expert

3. **How would you rate your overall level of HIV expertise?**
   - ○ Novice
   - ○ Not Very Knowledgeable
   - ○ Knowledgeable
   - ○ Very Knowledgeable
   - ○ Expert

4. **How would you rate the overall quality of the program?**
   - ○ Poor
   - ○ Fair
   - ○ Good
   - ○ Very Good
   - ○ Excellent

5. **To what extent do you agree or disagree with the following statement: I can apply the information learned in my practice/service setting.**
   - ○ Strongly Agree
   - ○ Agree
   - ○ Undecided
   - ○ Disagree
   - ○ Strongly Disagree

6. **Did you know about the NY/NJ AETC before today?**
   - ○ Yes ○ No

7. **Comments on the training:**

   _____

   _____

   _____

8. **Do you need training on the following topics? (Select all that apply)**
   - ○ Adherence
   - ○ Antiretroviral Therapy
   - ○ Resistance
   - ○ Billing/ADAP/Medicaid
   - ○ Continuity of Care
   - ○ HIV Testing
   - ○ Mental Health
   - ○ Sexuality
   - ○ Young MSM
   - ○ HIV & Aging

   Other, specify

   [ ]

9. **What educational training technologies will you be likely to use in the next five years? (Select all that apply)**
   - ○ Podcasts
   - ○ Online Videos
   - ○ Online Courses
   - ○ Webcasts/Webinars
   - ○ Web-based Self-study
   - ○ Email/Online Consultation
   - ○ Telemedicine
   - ○ Clinical Decision Support in Electronic Medical Record
   - ○ Clinical Decision Support on Handheld Device
   - ○ Social Networking Sites

   Other, specify

   [ ]

10. **Would you be interested in attending a mini-residency or preceptorship?** ○ Yes ○ No

    If yes, please write your name and email address so that we can contact you.

    _____

    _____

11. **Comments on your future training needs:**

    _____

    _____

    _____

Subsite [ ][ ][ ] **Program Number** [ ][ ][ ][ ][ ][ ][ ][ ] 33503

APPENDIX F

Summary of Database and Peer-reviewed Journal Search Results

Journal/Database	Search Tool	Number of Searches	Results w/Duplicates	Unique Articles	Articles Meeting Criteria
AIDS	*AIDS* website	2	0	0	0
AIDS Patient Care and STDs	*AIDS Patient Care and STDs* website	3	0	0	0
Annals of Internal Medicine	PubMed	1	0	0	0
BMJ	PubMed	1	0	0	0
Clinical Infectious Diseases	*Clinical Infectious Diseases* website	2	0	0	0
IAPAC Monthly	PubMed website	1	0	0	0
JAIDS	*JAIDS* & PubMed websites	3	0	0	0
JAMA: The Journal of the American Medical Association	PubMed	1	1	0	0
The Journal of Infectious Diseases	*The Journal of Infectious Diseases* website	2	0	0	0
The Lancet	*The Lancet* website	1	0	0	0
The New England Journal of Medicine	*The New England Journal of Medicine* & PubMed websites	3	0	0	0
Journal of Continuing Education in the Health Professions	*Journal of Continuing Education in the Health Professions*	9	1	1	0
Journal of Graduate Medical Education	*Journal of Graduate Medical Education* & PubMed websites	3	0	0	0
Medical Education	*Medical Education* website	1	0	0	0
Journal of Medical Education / Academic Medicine	*Medical Education* website	4	0	0	0
Cochrane Library	Cochrane Library	1	0	0	0
EconLit (with Full Text)	EconLit (with Full Text)	2	0	0	0
Embase	Embase	1	53	9	0
ERIC	ERIC	2	1	1	0

PsycINFO (Ovid)	PsycINFO (Ovid)	2	4	0	0
PubMed	PubMed	1	56	56	0
SocIndex	SocIndex	1	1	0	0
Web of Science	Web of Science	2	29	11	0
	Totals:	49	146	78	0

APPENDIX G

Peer-reviewed Journals, Search Results

The search results from each peer-reviewed journal listed in appendices A and B are described below.

***AIDS* (*Journal of the International AIDS Society*)**

Search Tool(s):	*AIDS* Advanced Search website
Website URL:	http://journals.lww.com/aidsonline/pages/advancedsearch.aspx
Date of Searches:	06/03/2017
Number of Searches:	2
Search Approaches:	(1) Abstract; (2) Title
Total Results:	0
Remarks:	None

AIDS Patient Care and STDs

Search Tool(s):	*AIDS Patient Care and STDs* Advanced Search website
Website URL:	http://online.liebertpub.com/search/advanced
Date of Searches:	06/03/2017
Search Approaches:	(1) Abstract; (2) Title; (3) Keywords
Number of Searches:	3
Total Results:	0
Remarks:	Access to search website gained via Edward G. Miner Library, URMC; Mary Ann Liebert, Inc. publishes *AIDS Patient Care and STDs*

Annals of Internal Medicine

Search Tool(s):	PubMed Advanced Search website
Website URL:	https://www.ncbi.nlm.nih.gov/pubmed/advanced
Date of Searches:	06/03/2017

Search Approaches:	(1) Title/Abstract + Specified journal name (i.e., *Annals of Internal Medicine*)
Number of Searches:	1
Total Results:	0
Remarks:	Access to search website gained via Edward G. Miner Library at URMC; Researcher not able to use the "Keyword Search" function for *Annals of Internal Medicine*, as this function limits user to keyword searches of 225 characters; The "Search Terms" contains 290 characters without spaces and 340 characters with spaces

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BMJ (British Medical Journal)

Search Tool(s):	PubMed Advanced Search website
Website URL:	https://www.ncbi.nlm.nih.gov/pubmed/advanced
Date of Searches:	06/03/2017
Search Approaches:	(1) Title/Abstract + Specified journal name (i.e., *BMJ*)
Number of Searches:	1
Total Results:	0
Remarks:	Access to search website gained via Edward G. Miner Library at URMC; *BMJ* advanced search option limits user to maximum of 128 characters with spaces for "Title/Abstract" search; The "Search Terms" contains 340 characters with spaces

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Clinical Infectious Diseases

Search Tool(s):	*Clinical Infectious Diseases* Advanced Search website
Website URL:	https://academic-oup-com.ezpminer.urmc.rochester.edu/cid/advanced-search
Date of Searches:	06/03/2017
Search Approaches:	(1) Abstract; (2) Title
Number of Searches:	2
Total Results:	0

Remarks:	Access to search website gained via Edward G. Miner Library, URMC; "Update" button on *Clinical Infectious Diseases* "advanced search" website activates search function

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***IAPAC Monthly* (*International Association of Providers of AIDS Care*)**

Search Tool(s):	PubMed Advanced Search website
Website URL:	https://www.ncbi.nlm.nih.gov/pubmed/advanced
Date of Searches:	06/03/2017
Search Approaches:	(1) Title/Abstract + Specified journal name (i.e., *IAPAC Monthly*)
Number of Searches:	1
Total Results:	0
Remarks:	Access to search website gained via Edward G. Miner Library at URMC; Websites for *IAPAC Monthly* and for the International Association of Providers of AIDS Care do not offer an "advanced search" option

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***JAIDS* (*Journal of Acquired Immune Deficiency Syndrome*)**

Search Tool(s):	(1) *JAIDS* Advanced Search website; (2) PubMed
URLs of Search Websites:	(1a & 1b) http://journals.lww.com/jaids/pages/advancedsearch.aspx; (2) https://www.ncbi.nlm.nih.gov/pubmed/advanced
Date of Searches:	06/03/2017
Search Approaches:	(1a) Abstract; (1b) Title; (2) Title/Abstract + Specified journal name (i.e., *JAIDS*)
Number of Searches:	3
Total Results:	0
Remarks:	Access to *JAIDS* advanced search website gained via Cornell University Library system; Access to PubMed Advanced Search website gained via Edward G. Miner Library at URMC; Because the researcher found 0 results when he searched *JAIDS* via the

JAIDS Advanced Search website and because he sought to conduct a thorough search of *JAIDS*, the researcher then utilized PubMed's "Title/Abstract" search option combined with PubMed's "Journal" search option to conduct a third search of *JAIDS*. The researcher conducted this third search based on the recommendation of a research librarian who works in the medical library of an academic medical center, and because the researcher sought to confirm, via another means, the results produced via the *JAIDS* Advanced Search website (D. Castillo, personal communication, June 2, 2017).

***JAMA* (*Journal of the American Medical Association*)**

Search Tool(s):	PubMed Advanced Search website
Website URL:	https://www.ncbi.nlm.nih.gov/pubmed/advanced
Date of Searches:	06/03/2017
Search Approaches:	(1) Title/Abstract + Specified journal name (i.e., *JAMA*)
Number of Searches:	1
Total Results:	1
Remarks:	Access to website gained via Edward G. Miner Library at URMC; *JAMA* website is restrictive in terms of how many search terms a researcher can use to find articles published in *JAMA*

The Journal of Infectious Diseases

Search Tool(s):	*The Journal of Infectious Diseases* Advanced Search website
Website URL:	https://academic.oup.com/jid/advanced-search
Date of Searches:	06/03/2017
Search Approaches:	(1) Abstract; (2) Title
Number of Searches:	2
Total Results:	0
Remarks:	None

The Lancet

Search Tool(s):	*The Lancet* Advanced Search website
Website URL:	http://www.thelancet.com/search/advanced?searchType=advanced
Date of Searches:	06/03/2017
Search Approaches:	(1) Article Title; (2) Abstract; (3) Keywords
Number of Searches:	1
Total Results:	0
Remarks:	None

The New England Journal of Medicine

Search Tool(s):	(1) *The New England Journal of Medicine* (*NEJM*) Advanced Search website; (2) PubMed Advanced Search website
Website URL:	(1a & 1b) http://www.nejm.org.ezpminer.urmc.rochester.edu/medical-search; (2) https://www.ncbi.nlm.nih.gov/pubmed/advanced
Date of Searches:	06/03/2017
Search Approaches:	(1a) Abstract/Extract; (1b) Title; (2) Title/Abstract + Specified journal name (i.e., *The New England Journal of Medicine*)
Number of Searches:	3
Total Results:	0
Remarks:	Access to *NEJM* Advanced Search website gained via Edward G. Miner Library, URMC; Access to PubMed Database Advanced Search website gained via Edward G. Miner Library, URMC; because of the limited search options offered by the "advanced search" webpage for *NEJM* (e.g., the website only allows users to conduct separate, individual searches via an article's "abstract/extract" or "title." The researcher also used PubMed's "Title/Abstract" search option combined with PubMed's "Journal" search option to search for relevant articles published in *NEJM*; the

researcher conducted this third search based on the recommendation of a research librarian who works in the medical library of an academic medical center (D. Castillo, personal communication, June 2, 2017).

Journal of Continuing Education in the Health Professions (JCEHP)

Search Tool(s):	*Journal of Continuing Education in the Health Professions* (*JCEHP*) Advanced Search website
Website URL:	http://onlinelibrary.wiley.com.proxy.library.cornell.edu/advanced/search
Date of Searches:	06/03/2017
Search Approaches:	(1) Abstract; (2) Titles; (3–9) Abstract (See "Remarks" below for information about searches 3 through 9)
Number of Searches:	9
Total Results:	1
Remarks:	Access to website gained via Cornell University Library system; The "advanced search" webpage for *JCEHP* states that the user can search all volumes of that journal. However, during the course of his research the researcher discovered that volumes of *JCEHP* published after 2015 are not properly indexed, making it impossible to conduct a thorough search of *JCEHP* (via the *JCEHP* "advanced search" option) for articles published after 2015. Therefore, the researcher searched the seven volumes (one search for each volume, resulting in searches 3 through 9) of *JCEHP* published since 2015 for articles that dealt with HIV and continuing medical education. That search produced one result (Gallagher, Hirschhorn, Lorenz, & Piya, 2017) that did not qualify for inclusion in this research project because it does not meet article inclusion requirements 2 and 3

Journal of Graduate Medical Education

Search Tool(s):	(1) *Journal of Graduate Medical Education* Advanced Search website; (2) PubMed Advanced Search website
Website URL:	(1) http://www.jgme.org/search/advanced; (2) https://www.ncbi.nlm.nih.gov/pubmed/advanced
Date of Searches:	06/03/2017
Search Approaches:	(1a) Title; (1b) Keyword; (2) Title/Abstract + Specified journal name (i.e., *Journal of Graduate Medical Education*)
Number of Searches:	3
Total Results:	0
Remarks:	Access to PubMed Advanced Search website gained via Edward G. Miner Library at URMC; Because the researcher was initially surprised by the results of the first two searches, which produced 0 results, the researcher conducted a third search of the *Journal of Graduate Medical Education* by utilizing PubMed's "Title/Abstract" search option combined with PubMed's "Journal" search option, but used only these acronyms and phrases: HAART OR "highly active antiretroviral therapy" OR ART OR "antiretroviral therapy." The researcher used those acronyms and phrases as a test to learn what search results those acronyms and phrases would produce. That search produced four results, none of which had anything to do with HIV infection or treatment for HIV infection. For example, the authors of the first of the four articles used "ART" in reference to "Anesthesiology Residents-as-Teachers" (Berger et al., 2012, p. 525). The authors of the second article used "art" in reference to "state-of-the-art patient care" (Panda & Desbiens, 2010, p. 562), and the authors of the third article used "art" in reference to "a state-of-the-art simulation laboratory" (Hingle et al., 2009, p. 82). Lastly, the fourth article merely referred to "art" as in "art museum" (Gaufberg & Williams, 2011, p. 546)

Medical Education

Search Tool(s):	Wiley Online Library Advanced Search website
Website URL:	http://onlinelibrary.wiley.com/advanced/search
Date of Searches:	06/03/2017
Search Approaches:	(1) Abstract
Number of Searches:	1
Total Results:	0
Remarks:	Access to search website gained via Edward G. Miner Library at URMC; John Wiley & Sons, Inc. publishes *Medical Education*

Journal of Medical Education / Academic Medicine

Search Tool(s):	(1) *Academic Medicine* Advanced Search website; (2) PubMed Advanced Search website
Website URL:	(1) http://journals.lww.com/academicmedicine/pages/advancedsearch.aspx; (2) https://www-ncbi-nlm-nih-gov.ezpminer.urmc.rochester.edu/pubmed/advanced
Date of Searches:	06/03/2017
Search Approaches:	(1a) Abstract; (1b) Title; (2a) Title/Abstract + Specified journal name (i.e., *Journal of Medical Education*); (2b) Title/Abstract + Specified journal name (i.e., *Academic Medicine*)
Number of Searches:	4
Total Results:	0
Remarks:	The *Journal of Medical Education* became *Academic Medicine* in 1989. Consequently, the researcher searched both journals for relevant articles. As a test of whether or not articles published in the *Journal of Medical Education* can be found by using the *Academic Medicine* website, the researcher used acronyms and phrases unrelated to the

"Search Terms" with the "advanced search" webpage for *Academic Medicine*. The test was successful, as the researcher was able to find articles that had been published in *Journal of Medical Education*. Consequently, the researcher used the "advanced search" webpage for *Academic Medicine* and the "Abstract" and "Title" search options to conduct two separate searches for articles in either *Journal of Medical Education* or *Academic Medicine* that related to his research project. Both searches, the "Abstract" search and the "Title" search, produced no results.

In order to ensure a thorough search of the literature, the researcher used PubMed's "Title/Abstract" search option combined with PubMed's "Journal" search option to separately search for relevant articles published in either the *Journal of Medical Education* or *Academic Medicine*. The PubMed search for articles published in the *Journal of Medical Education* produced no results, and the PubMed search for articles published in *Academic Medicine* also produced no results.

APPENDIX H

Databases, Search Results

The search results for the eight databases listed in Appendix C are described below. A database search that produced "no results" is a consequence of that database not containing articles that are indexed to match the researcher's Search Terms. Furthermore, articles that are relevant to this research will not be found within a database if the articles are not properly indexed (D. Castillo, personal communication, November 17, 2016).

Cochrane Library

Search Tool(s):	Cochrane Library Advanced Search website
Website URL:	http://onlinelibrary.wiley.com/cochranelibrary/search/
Date of Searches:	06/03/2017
Search Approaches:	(1) Title, Abstract, Keywords
Number of Searches:	1
Total Results:	0
Remarks:	Access to website gained via Edward G. Miner Library at URMC

EconLit Database (with Full Text)

Search Tool(s):	EconLit Database (with Full Text) Advanced Search website
Website URL:	http://web.a.ebscohost.com.proxy.library.cornell.edu/ehost/search/advanced?vid=0&sid=0a9bbe27-20c3-495d-917a-bc011ed3eb23%40sessionmgr4008
Date of Searches:	06/03/2017
Search Approaches:	(1) Abstract; (2) Title
Number of Searches:	2
Total Results:	0
Remarks:	Access to Advanced Search website gained via Cornell University Library system; EconLit Database (with full text) does not allow

	the user to search using "Title, Abstract, Keywords" in a single search. Separate, individual searches must be conducted for "abstract," and "title"

Embase Database

Search Tool(s):	Embase Database Advanced Search website
Website URL:	https://www.embase.com/#advancedSearch/default
Date of Searches:	06/03/2017
Search Approaches:	(1) Title or Abstract
Number of Searches:	1
Total Results:	53
Remarks:	Access to website gained via Edward G. Miner Library at URMC; 1 result was published in French (Badelon, Gohier, & Chaine, 1999)

ERIC Database

Search Tool(s):	ERIC Database Advanced Search website
Website URL:	http://web.b.ebscohost.com.proxy.library.cornell.edu/ehost/search/advanced?vid=3&sid=25302981-5f2a-40c9-8565-9e8edf7fb291%40sessionmgr102
Date of Searches:	08/10/2017
Search Approaches:	(1) Title; (2) Abstract
Number of Searches:	1
Total Results:	1
Remarks:	Access to website gained via Cornell University Library System

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PsycINFO Database (Ovid)

Search Tool(s):	PsycINFO Database (Ovid) Multi-Field Search website

Website URL:	http://ovidsp.tx.ovid.com/sp-3.26.1a/ovidweb.cgi?QS2=434f4e1a73d37e8c79e5d8c142641a543e79520e8ac883bb10402a7440cfd87ca489e92fc64ecd6bf89e303b29a2367268951c92231fe0174cc5831171640af588bb935399b42443be5cec557b0ec494c1ef22ee1480cfee0dada79ef57ef34f110a4ec747bb562ca3d1cd33d4aeb0825292767991910d036d76119b2f11223995cf8c0d32c1e33934385231e084ab97494dec7d4f7b98f9f9752d6810d7b2a4aebd10e2643e51710991ea30ca5545ed4216033b2ae1f20c9bd9c4abfdca4919d2636b0778e062117cda3b0591c5ef5dbf57d0c35893c1ce874755fc7b3a1953
Date of Searches:	06/03/2017
Search Approaches:	(1) Abstract; (2) Title
Number of Searches:	2
Total Results:	4
Remarks:	Access to website gained via Edward G. Miner Library at URMC

PubMed Database

Search Tool(s):	PubMed Advanced Search website
Website URL:	https://www.ncbi.nlm.nih.gov/pubmed/advanced
Date of Searches:	06/03/2017
Search Approaches:	(1) Title, Abstract
Number of Searches:	1
Total Results:	56
Remarks:	Access to website gained via Edward G. Miner Library, URMC; Combined “Title, Abstract, Keywords” search option not available at PubMed Advanced Search website

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SocIndex Database (with full text)

Search Tool(s):	SocIndex Database (with full text) Advanced Search website

Website URL:	http://web.b.ebscohost.com.proxy.library.cornell.edu/ehost/search/advanced?vid=0&sid=54be29b4-0aa4-4730-93d8-c0c49a5def0a%40sessionmgr103
Date of Searches:	06/03/2017
Search Approaches:	(1) Abstract or Author-Supplied Abstract
Number of Searches:	1
Total Results:	1
Remarks:	Access to Advanced Search website gained via Cornell University Library system

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Web of Science Database

Search Tool(s):	Web of Science Database Advanced Search website
Website URL	http://apps.webofknowledge.com/WOS_AdvancedSearch_input.do?SID=2EDkhOTOsKpCuH6oTPE&product=WOS&search_mode=AdvancedSearch
Date of Searches:	06/03/2017
Search Approaches:	(1) Title; (2) Topic
Number of Searches:	2
Total Results:	29
Remarks:	Access to website gained via Edward G. Miner Library, URMC; One (Stellbrink, 2012) of the 29 results was published in German

CHAPTER 3

THE AMERICAN ACADEMY OF HIV MEDICINE: AN ANALYSIS OF AAHIVM CORE CURRICULUM & HIV SPECIALIST CRITERIA

Introduction and Research Questions

The American Academy of HIV Medicine (AAHIVM) was established in 2000 as a "professional trade association for medical providers" (AAHIVM, 2017b, p. 2) who have an interest in providing care to HIV-infected patients. The AAHIVM offers an educational resource and a credential for physicians who want to provide care to infected patients. The resource is a 16-module Core Curriculum in HIV care, and the credential certifies physicians as having met AAHIVM criteria for treating HIV-infected patients. Physicians earn the AAHIVM credential, which the organization refers to as AAHIVM Specialist™ or AAHIVS, by meeting a number of criteria that include medical licensure, clinical experience with HIV patient management, completion of a specified amount of continuing medical education (CME), and passing an open-book examination. Furthermore, the AAHIVM is unusual in that it is not currently accredited (as of April 2018) by any educational or medical organization to award the AAHIVS, and its Core Curriculum is not currently approved (as of April 2018) for physician education by any medical organization, such as the American Medical Association (AMA) or the Accreditation Council for Continuing Medical Education (ACCME).

Medical educators generally seek to use approved curricula in the CME activities they organize because such curricula have been shown to support desired physician competencies, and health care systems generally hire medical professionals who have earned credentials that are certified by recognized medical organizations. Because no medical organization has accredited the AAHIVM's Core Curriculum and because the AAHIVM is not accredited to

award the AAHIVS (the AAHIVM awards the AAHIVS credential anyway), this researcher used the following qualitative study to answer three questions:

(1) What is the origin of criteria for the AAHIVS credential?

(2) What kinds of competencies are reflected in the AAHIVM Core Curriculum that are related to the care of HIV/AIDS patients?

(3) To what extent does the Core Curriculum align with CME criteria for the AAHIVS credential?

The purpose of researching the content of the Core Curriculum and the extent to which it supports desired physician competencies to provide care to HIV-infected patients is to determine its applicability for CME activities for physicians that treat HIV patients. That is because organizations that fund or offer CME activities for physicians prefer that those activities use curricula that have been shown to support accepted physician competencies. It is generally difficult to obtain funding for CME activities that use curricula that have not been shown to lead to or support desired physician competencies. Moreover, CME activities employing curricula that have not been shown to lead to or support desired physician competencies generally hold less appeal for physicians seeking to improve their competence.

The purpose of determining the extent to which the Core Curriculum aligns with CME criteria for the AAHIVS credential is to gauge the relationship between the two. For example, does the curriculum serve to satisfy the AAHIVS CME requirement, or is the curriculum somehow deficient? If it is deficient, how is it deficient? In this researcher's view, if the Core Curriculum supports desired physician competencies and there is good correlation between the curriculum and the AAHIVS CME requirement, the AAHIVS has value as a medical credential.

Organization of this Paper

The researcher's first task was to determine the origin of AAHIVS criteria, in order to provide background and a framework for judging the criteria's relevance to HIV/AIDS care. For example, knowing whether the criteria were created based on empirical evidence regarding physician qualifications to treat HIV/AIDS patients or on anecdotal evidence could shed light on the criteria's relevancy to HIV/AIDS care.

The researcher's second task was to compare the AAHIVM Core Curriculum criteria against a known and accepted list of physician competencies. In other words, the researcher sought to determine the extent to which the AAHIVM Core Curriculum supports desired physician competencies in order to gauge the curriculum's usefulness in CME activities and its relevance to HIV/AIDS care. For example, if the curriculum does not support or lead to a set of desired physician competencies, it has little value for CME activities.

The researcher's third task was to compare the AAHIVM Core Curriculum against the AAHIVS CME requirement in order to determine the extent to which the AAHIVM Core Curriculum aligns with CME requirements for the AAHIVS credential. Logic would dictate that alignment between the curriculum and the CME requirements should be good since, according to Grossman (2005), the AAHIVM "was founded in 2000 with the expressed mission to improve the quality of HIV care in the U.S" (para. 7). However, alignment between the two might be poor, in which case the curriculum, the criteria, or both are defective.

Background: HIV Medical Specialization and Credentialing

Research shows that HIV has been infecting humans and causing the health condition now known as AIDS since at least 1959 (Worobey, 2008). Furthermore, the emergence of HIV/AIDS in the United States during the 1980s marked the arrival of what is one of the more politicized medical issues that have confronted public health officials and physicians (Shilts,

1988). In addition, the politics of HIV/AIDS has significantly influenced U.S. health care and policy and the delivery of care to HIV/AIDS patients, and the AAHIVM's founding in 2000 represents an attempt by some physicians to influence care for HIV/AIDS patients.

One of the earliest recorded attempts in the United States to treat what later became known as HIV infection occurred around February 1, 1981, when a physician in New York City administered pentamidine (Shilts, 1988) to a patient suffering from *Pneumocystis carinii* pneumonia (since re-named *Pneumocystis jiroveci* pneumonia), a respiratory infection that was later shown to be associated with HIV-infected patients who had developed AIDS. Soon after, the medical community recognized that a number of young male patients in large metropolitan areas were suffering from the same illness, but the underlying cause of the illness was a mystery, and the impact the illness would have on health care and on medical education was not yet realized. Over time, the medical community advanced its understanding of HIV/AIDS, including an understanding of HIV's pathology and effective treatment strategies for HIV infection, in a way that has allowed physicians to deliver improved health outcomes for HIV patients (Frame, 2003). In addition, the U.S. medical community eventually realized that as HIV spread through the population, the number of HIV-infected patients would increase and place a significant burden on the nation's health care system. Thus, there would be a corresponding need for physicians who were trained to treat patients (Landon, Wilson, Cohn, et al., 2003; Landon, Wilson, Wenger, et al., 2002). Moreover, public health officials reasoned that if there were an insufficient number of physicians trained to treat HIV-infected patients, what was becoming a major public health problem would grow worse (Carmichael et al., 2009; Carrier, Yee, & Stark, 2011).

Early in the HIV epidemic, when treatment options were few and simple to prescribe, the medical community argued over who should treat patients, primary care providers or medical specialists (Relias Media, 1997; Valenti, 2005). However, as knowledge about HIV grew and as researchers developed new treatment regimens for infection, treatment became more complicated to prescribe and manage, and the likelihood that patients would experience adverse events due to treatment increased—especially if the prescribing physician had knowledge deficits vis-à-vis treatment. Eventually, the medical community recognized that physicians with more knowledge about treatment for HIV infection and with more clinical experience caring for HIV-infected patients usually produced better health outcomes for patients than did physicians who possessed less knowledge and had less experience (Ericsson & Smith, 1991; Gerbert et al., 2001; Hecht, Wilson, Wu, Cook, & Turner, 1999; Horberg et al., 2012; Kitahata, 1996; Kitahata Van Rompaey, Dillingham, et al., 2003; Kitahata, Van Rompaey, & Shields, 2000; Valenti, 2002; Volberding, 1996). In addition, research by Turner, Newschaffer, Zhang, Fanning, and Hauck (1999) revealed that health care providers "who focus on delivering HIV services seem to adopt advances in HIV-related treatment faster than other physicians," (p. 984) which was important during the 1990s and early 2000s when knowledge about the disease and treatment for it advanced quickly (Willard, Liljestrand, Goldschmidt, & Grumbach, 1999; Wilson et al., 2005). Thus, the push began around the turn of the last century to develop criteria by which physicians could be certified to treat HIV-infected patients (Valenti, 2002).

It is well established that the acquisition of knowledge combined with practical experience applying that knowledge to specific problems generally lead to professional competence (Cervero, 2010; Cervero & Gaines, 2014, 2015; Houle, 1980, 1988; Institute of Medicine, 2010; Lloyd & Abrahamson, 1979; Norman, Shannon, & Marrin, 2004). In 2001, the

American Academy of HIV Medicine (AAHIVM) issued criteria, which are largely based on education and clinical experience, by which physicians can prepare themselves to treat HIV-infected patients and earn the AAHIVMS credential ("Gold Standard," 2001).

Specialization in Modern Medicine and Emergence of HIV Specialist

Nowlen (1988) asserts that today's physicians rarely practice alone. They typically act as individual health care professionals within large health systems that include many other professionals (e.g., medical technicians, registered nurses, nurse practitioners, physician assistants, etc.) who have varying levels of medical education and who specialize in specific areas of medicine (e.g., cardiology, infectious diseases, oncology, psychiatry, radiology, etc.; Cassel & Reuben, 2011). Consequently, physicians who specialize in a particular area of medicine, such as cardiology, HIV/AIDS, oncology, orthopedics, or pediatrics have, over time, played an increasingly larger role in the health care patients receive, and it is typical for a variety of medical specialists to become involved in cases of complex illness.

According to Weisz (2006), the specialization of modern medicine first began in the 1830s in the major cities of Europe, and it occurred as an outcome of "three processes: the unification of surgery and medicine, the rise of a novel sort of medical research community in the [capitals], and the spread of a new kind of administrative rationality within the hospital system" (p. 3). Specialization was also fueled by the growth in medical knowledge that occurred because of the increasing recognition, via knowledge produced by the medical disciplines of pathology and anatomy, that the human body consists of different tissues, organs, and systems, and that identifiable diseases could harm those tissues, organs, and systems. This development led some physicians to reject the humoral theory of disease (Weisz, 2006). In the humoral theory

of disease, it was thought that illness was caused by an imbalance of the four bodily humors: blood, phlegm, black bile, and yellow bile (Harwood, 1971).

By 1850, Paris had emerged as the leader in the specialization of medicine, although specialization was also occurring in Germany and, to a lesser degree, in England because of that country's rigid adherence to formalities and tradition. After the French Revolution of 1799, the new government reorganized (for the sake of bureaucratic efficiency) the numerous hospitals in Paris, which was then Europe's largest city, so that patients with similar illnesses, especially those with contagious illness, were housed in the same hospital. An outcome of housing patients with similar illnesses in one location was that physicians took notice of commonalities in patients' complaints, symptoms, and disease sequelae (Weisz, 2006). In those settings, physicians could develop and administer treatments to large groups of patients suffering from the same ailment. Those same settings also facilitated physicians' evaluation of the collective health outcomes their treatments produced, which, in turn, accelerated the pace at which treatments and, therefore, medical specialization advanced. In general, medical specialists gained social acceptance more quickly and became more difficult targets for the medical establishment to criticize if they could, through their specialized medical practice, improve health outcomes for large groups of people suffering from the same ailments.

Among the first of the emerging medical specialists were doctors who attended births and whose existence was justified by society's desire to prevent deaths associated with childbirth (Weisz, 2006). By the end of eighteenth century, the medical establishment formally recognized obstetrics (which later combined with gynecology to become obstetrics/gynecology) as a legitimate practice. However, for philosophic and economic reasons, the existing medical establishment in Europe largely opposed the emergence of specialists and took a number of steps

to prevent or limit their practice. Those steps included prohibiting specialists from advertising their services, blocking them from gaining hospital privileges, and banning their membership in medical associations.

A main criticism of medical specialization at that time—and which has continued through today—was that physicians who have a narrow area of practice cannot properly treat patients unless they also have a thorough understanding (from a medical perspective) of the entire body. Indeed, today the American Board of Internal Medicine (ABIM), which was founded in 1936, offers Board Certifications in 20 different medical subspecialties.[2] However, physicians seeking Board Certification in any one of those subspecialties must first gain ABIM Board Certification in Internal Medicine (American Board of Medical Specialties (ABMS), 2018a), which is a reflection of the continuing belief that physician specialization must be accompanied by comprehensive medical knowledge of the entire human body. As an example of how medical specialization has expanded since the 1830s, physicians can now gain ABMS subspecialty certification in "Clinical Informatics" and American Board of Preventive Medicine (APBM) subspecialty certification in "Undersea and Hyperbaric Medicine" (ABMS, 2018a). Physicians can also earn an APBM primary specialty certificate (which is not Board Certification) in "Aerospace Medicine." See Appendix A for a list of the 24-member boards of ABMS.

Around 1841, ophthalmology emerged as one of the first widely recognized and patronized medical specialties in Europe, and despite the continuing specialization of medicine, there were few practicing specialists due to barriers created by the existing medical

[2]ABIM Board Certifications include adolescent medicine, adult congenital heart disease, advanced heart failure and transplant cardiology, cardiovascular disease, clinical cardiac electrophysiology, critical care medicine, endocrinology, diabetes and metabolism, gastroenterology, geriatric medicine, hematology, hospice and palliative medicine, infectious disease, interventional cardiology, medical oncology, nephrology, pulmonary disease, rheumatology, sleep medicine, sports medicine, and transplant hepatology.

establishment (Weisz, 2006). Furthermore, although Germany initially lagged behind France in the development of medical specialties, it eventually surpassed France because of Germany's government-financed university system, which produced new medical knowledge at an ever-increasing rate. Eventually, physicians in America sought specialized medical training at elite universities in Europe, and those physicians who completed their training in Europe were given the most prestigious hospital and university appointments upon their return, which furthered the legitimacy of medical specialization in the United States (Weisz, 2006).

In addition, medical specialists in the United States, as in Europe, were more likely to gain acceptance from the medical community and from patients if they could develop procedures that helped patients with disabilities who were otherwise dependent upon society for their survival. Philanthropy also fueled the growth of medical specialization, particularly in America, and the Boston Eye Infirmary, established in 1824, and the Woman's Hospital in New York City, established in 1855, are two examples. Weisz (2006) writes:

> The fact that American hospitals were philanthropic establishments appealing to patrons for support meant that they had to be seen to offer medical procedures that provided significant practical benefits to the deserving poor. One model for specialty development was for an early specialist to develop a procedure, build a hospital or dispensary around that procedure, and then pursue further clinical research. (p. 66)

Developments of this kind further accelerated the pace of medical specialization as patients, community leaders, and public health officials all recognized the benefits of establishing a cadre of physicians who, because of their education and clinical experience, were able to specialize in treating specific ailments and consistently deliver better health outcomes to patients than could non-specialists.

A complete list of medical specialties and when they emerged is beyond the scope of this paper, and some specialties, such as "electrotherapeutics," have come and gone. Furthermore, the appointment of a physician specialist to a university position where medical education took place did not always gain the approval of the medical community in that country and, as a result, did not always result in the appearance of medical specialties in municipal directories of major European cities (Weisz, 2006). Weisz concludes that "the fundamental justification for [medical] specialization was not so much the improvement of skill that it engendered (though this might occasionally be invoked) as it was its necessary role in the advancement of knowledge and technique" (2006, p. 11). Indeed, as physicians generated specialized medical knowledge and used that knowledge to improve health outcomes for patients, so came the justification and public demand for medical specialization.

Accompanying the growth of medical specialization in the United States was the U.S. medical establishment's desire to avoid governmental regulation of physicians, as had been experienced in Europe (Scott, 1998). Consequently, physicians in the United States established the ABMS in 1933 in order to achieve self-regulation, and Board Certification became the primary means by which physicians gain voluntary certification to practice in a wide range of medical specialties. Yet another consequence of the growth of medical specialization was that specific medical care that had been provided by physicians in general practice became the recognized domain of specialist physicians. For example, Weisz (2006) asserts that general surgeons in England fought to defend "their monopoly over gynecological surgery," (p. 37) but they eventually lost out to obstetricians as knowledge of obstetrics and gynecology grew.

The Emergence of Medical Specialization for HIV Infection

A review of the history of HIV/AIDS and treatment for HIV infection, as well as the development of health policy that governs care for HIV-infected patients in the United States, is beyond the scope of this research project. However, in order to provide relevant background for his investigation of AAHIVS criteria and the AAHIVM Core Curriculum, the researcher explored the development of HIV medical specialization in the United States. The circumstances by which specialization in HIV care emerged in the United States are strikingly similar to the specialization of modern medicine in Europe during the nineteenth century, as described by Weisz (2006). However, a significant difference between specialized medicine in general and HIV medicine is the speed with which the two emerged; specialized medicine emerged slowly over the centuries, while HIV medicine emerged quickly, over a single decade. Moreover, the speed with which HIV medicine emerged is likely a consequence of (1) the recognition that HIV infection had the potential to overwhelm health care systems from a global perspective and (2) the vast array of sophisticated tools available to researchers that allowed them to identify the steps in the virus' life-cycle and then create and produce pharmaceutical agents that hinder the virus' ability to reproduce. Because it takes time for evidence from clinical trials in the diagnosis and treatment of disease to emerge and serve as curricula for CME activities, and because it takes even more time before a majority of physicians complete those activities, the discovery of new information may not have an immediate impact on physicians' practice.

During the early 1980s, clinicians in large urban areas of the United States noticed that significant numbers of young male patients were all suffering from the same symptoms, i.e., unusual cancers and loss of immune system function (Northfelt, Hayward, & Shapiro, 1988; Shilts, 1988; Singh, Dunford, & Carter, 2001). Because of surveillance efforts by the Centers for Disease Control and Prevention, physicians realized fairly early in the epidemic that colleagues

in other cities were also seeing patients who were presenting with the same symptoms and that an unusual and previously unknown disease was afflicting young male patients in urban areas of the United States (Shilts, 1988). During this period, before the virus that causes AIDS was discovered, there was no treatment for HIV infection; physicians could only prescribe treatment for the symptoms of HIV infection and provide palliative care. The main providers of this early care for infection were primary care physicians (Shilts, 1988). Because physicians were desperate to identify effective treatments for the new illness, some physicians began to prescribe experimental treatments and share their results with colleagues (Jaffe, Bregman, & Selik, 1983), and because most HIV-infected patients were clustered in major urban areas in the United States, as opposed to being widely scattered across the country, those clusters allowed groups of physicians to categorize the symptoms of disease, prescribe treatments, observe results, and quickly share their data with colleagues throughout the country.

Over time, researchers identified the virus that was causing the mysterious illness, and they developed drugs that fought the virus (Gallo & Montagnier, 2003). The first medicine, zidovudine, was approved for use in 1987 and was called "monotherapy" because it was the only drug approved for treatment (Yarchoan & Broder, 1987). By the early 1990s, researchers had developed other drugs to fight HIV, and numerous drug trials showed the clinical benefit of prescribing multiple antiviral drugs together to treat a patient's HIV infection (Brosgart et al., 1999). This marked the beginning of antiretroviral therapy, or ART, for HIV-infected patients in which physicians treat each patient with a combination of different drugs from several different classes of drugs, all aimed at inhibiting HIV's ability to replicate itself. By inhibiting HIV's ability to replicate itself, ART assists the body's immune system in reconstituting itself so that it can resume its role in protecting the body from pathogens. Physicians can now select from seven

different classes of drugs, with each class containing a number of drugs, to treat HIV-infected patients, and physicians strive to prescribe the optimal combination of drugs for each patient in order to achieve the best health outcome for that patient. A complete list of the drugs and when they were developed is beyond the scope of this research project. However, as more became known about HIV/AIDS, especially with regard to treatment, care became more complex, and the medical community recognized that physicians with more knowledge about ART for HIV infection and with more clinical experience caring for HIV-infected patients usually produced better health outcomes for patients than did physicians who had less knowledge and less experience (Gerbert et al., 2001; Kitahata, 1996; Kitahata, Van Rompaey, Dillingham, et al., 2003; Kitahata, Van Rompaey, & Shields, 2000; Valenti, 2002). Thus, there was recognition among physicians and public health officials that care for HIV-infected patients was becoming a specialized area of medicine and there was a need for criteria that could be used to train physicians specifically to treat HIV-infected patients. Moreover, before one can organize CME activities for physicians working in a specific area of medicine, a curriculum must first emerge that is based on what is known about the subject, either through physicians' experience or through formal clinical trials. Consequently, the occurrence of CME usually lags somewhat behind the development of new knowledge in medicine.

Modern medical credentials. Within the field of medicine, the use of word "credential" can refer to a variety of physician qualifications, some of them acquired voluntarily, that represent different levels of education and expertise (Dickey, 2000). In the United States, a physician's "credentials" generally include his/her medical degree (or Doctor of Osteopathic Medicine degree, [i.e., DO]), state-issued license to practice medicine, and Board Certifications, including subspecialty certifications from one (or more) of the 24 specialty medical boards that

are members of the ABMS. The 24 ABMS member boards offer Board Certification in 39 medical specialties and 86 subspecialties (ABMS, 2018a). For example, in addition to offering Board Certification in Family Medicine, the American Board of Family Medicine offers subspecialty certification in Pain Medicine, Sports Medicine, and Adolescent Medicine. According to the ABMS:

> Board Certification is a voluntary process, and one that is very different from medical licensure. Obtaining a medical license sets the minimum competency requirements to diagnose and treat patients, it is not specialty specific. Board Certification demonstrates a physician's exceptional expertise in a particular specialty and/or subspecialty of medical practice. (ABMS, 2018b, para. 2)

In addition to offering Board Certification in Internal Medicine, the ABIM offers Board Certification in 20 different subspecialties, such as Geriatric Medicine, Infectious Disease, and Transplant Hepatology. Furthermore, in order for a physician to acquire specialty Board Certification in Infectious Disease, the physician must first become ABIM Board-Certified in Internal Medicine (ABIM, 2018).

At one time, ABMS Board Certifications were valid for the physician's entire lifetime; physicians were not required to recertify. That has changed primarily as a result of the speed with which medical knowledge advances, and physicians are now required to periodically recertify via a process termed "maintenance of certification" (MOC). The ABMS describes its MOC program as a means by which physicians can engage in and demonstrate continuous learning and development of their skills (ABMS, 2018b). Kirkner (2010) says this about MOC:

> A board-certified cardiologist or internist or pediatrician used to be like the Pope: The physician passed a test just once, early on, and carried the "board-certified" designation

> for life, no requalification or retesting required. Board-certified physicians who are held to a stricter standard must complete a battery of requirements and then pass a retest to hold onto that certificate. The process is known as [MOC], and health [insurance] plans are embracing it. (para. 1)

Providers of health insurance obviously have a stake in patients' health care and health outcomes, and as expenditures for health care increase, insurers have increasingly sought influence over who treats their patients, what medical credentials they have, and what treatments they prescribe. In response, physicians have criticized MOC as being expensive and time-consuming for them to complete and unproven in terms of assuring quality patient care (Christman, 2013; Ofri, 2014; Teirstein, 2015). Furthermore, the period between a physician's required MOC is dependent upon the physician's original Board Certification and can range from six years, as in the case of obstetrics and gynecology, to ten years, as in the case of nuclear medicine, ophthalmology, orthopedic surgery, and many other medical specialties.

Of primary interest to this research project is AAHIVM's AAHIVS credential, which, according to the AAHIVM:

> Communicates to patients, colleagues, employers, governments and third-party payers an up-to-date core knowledge [of] HIV care . . . demonstrates support of a uniform national standard for HIV care, and offers appropriate recognition of [a] highly technical sub-specialty . . . protects the healthcare consumer by creating a publicly identifiable professional standard of HIV care, which can be readily identified by a provider's AAHIVS . . . titling. (Hoffman-Terry & Short, 2014)

Although numerous federal, state, and health care organizations, including insurance companies, recognize the AAHIVS credential, the AAHIVM itself is not certified or accredited by any

government entity or medical organization to award the credential (D. Ebeling, personal communication, March 26, 2018), which is unusual in the field of medicine.

There are many reasons why physicians voluntarily obtain credentials beyond their medical degree and medical license. Those reasons may include personal satisfaction, a desire to know more in order to achieve a higher level of medical expertise, a need to obtain employment, etc. Some physicians who treat HIV-infected patients earn both ABIM Board Certification in Infectious Disease (after first gaining ABIM Board Certification in Internal Medicine) and the AAHIVS credential. One reason why physicians seek credentials beyond a medical degree and a medical license is so that they or the health systems that employ them can bill insurance plans for their services. That is because government-based insurances (i.e., Medicaid and Medicare) and many private health insurances require physicians who provide care to be board-certified in the type of medicine they render to patients.

The only credentials a physician needs to practice medicine in New York State are a medical degree earned from an accredited medical school and a medical license. Every other credential is considered "voluntary." However, physicians holding only a medical degree and a medical license can usually find employment only within a closed health care system that does not bill government-based health insurance (e.g., Medicaid and Medicare) or private health insurances for their services. Examples of closed health care systems include the Federal Bureau of Prisons, the U.S. Department of Health and Human Services' Indian Health Service, and the New York State Department of Corrections and Community Supervision.

Graduate medical education vs. continuing medical education. The medical education that leads to these specialized credentials requires explanation. Graduate medical education (GME) generally refers to the formal, full-time medical education programs in which physicians

participate after they graduate from medical school (Brotherton, Simon, & Etzel, 2002). Such training is a lengthy, full-time process. For example, ABIM Board Certification in Internal Medicine requires three years of GME, generally as a full-time student in an Internal Medicine training program (e.g., internship, residency, specialty fellowship) accredited by the Accreditation Council for Graduate Medical Education (ACGME). American Board of Internal Medicine Board Certification in Infectious Disease requires an additional two years of GME as a full-time student in an infectious disease training program accredited by ACGME. Furthermore, in order to gain Board Certification in both Internal Medicine and Infectious Disease, the physician must first complete a three-year ACGME-accredited Internal Medicine program and then pass a written exam and an oral exam in Internal Medicine. Next, the physician must complete a two-year ACGME-accredited training program in infectious disease and then pass a written exam and an oral exam in infectious disease. Consequently, acquiring Board Certification in an area of medicine requires the completion of at least three years of formal, full-time medical education after medical school. The lengthy process by which physicians earn Board Certification in Infectious Disease stands in contrast to the relatively simple process by which physicians earn the AAHIVS credential. Board Certification in Infectious Disease requires a total of five years of formal, full-time graduate study beyond medical school, while physicians can earn the AAHIVS credential after three years of regular medical practice—if they provide direct care to at least 20 persons living with HIV within those three years, complete the AAHIVS CME requirement, and pass an open-book exam.

Another type of post-graduate medical education is CME, which is the predominate means by which physicians already in practice maintain their competency. Commonly referred to as the Update Model (Jeris, 2010), CME is the process by which practitioners keep themselves

up-to-date as knowledge in their field advances, and the principal goal of the process is to remediate physicians' knowledge deficits created by the development of new medical knowledge. Rampatige et al. (2009) assert, "The term CME acknowledges not only the wide-ranging competencies needed to practice high quality medicine, but also the multidisciplinary context of patient care" (p. S35). According to Lloyd and Abrahamson (1979):

> [Continuing medical education] is the last, and the longest, of the three phases of the continuum of medical education:
>
> 1) Undergraduate medical education (medical school);
> 2) Graduate medical education (e.g., internship, residency, specialty fellowship);
> 3) Continuing medical education (practice). (p. 252)

Cervero and Gaines (2014) assert that CME activities include "academic detailing, case-based learning, demonstrations, feedback, lectures, problem-based learning, point-of-care techniques, role play, and patient simulations" (p. 8). Academic detailing generally involves direct person-to-person education between two medical professionals, one of whom provides education to the other, and the education could be about pharmaceuticals, medical procedures, equipment, treatments, or policies. "Point-of-care" CME occurs when physicians engage in an activity, such as using the Internet to find answers to clinical questions, while they are in the process of delivering care to patients. The Institute of Medicine (2010) claims CME activities include authoring journal articles, making poster presentations at conferences, earning a medical-related advanced degree (e.g., a master's in public health), self-directed independent learning, reading journal articles, reviewing journal articles, authoring tests for other physicians, discussions with colleagues, clinical experience, self-assessment activities that measure competence, and teaching other medical professionals.

Analysis of Competencies in the AAHIVS Credential

According to Grossman (2005), the AAHIVM "was founded in 2000 with the expressed mission to improve the quality of HIV care in the U.S." (para. 7) and "through advocacy and education, the [AAHIVM] is committed to supporting health care providers in HIV medicine and to ensuring better care for those living with AIDS and HIV disease" (para. 8). The AAHIVM is also active in terms of advocating for changes in health policy at the federal and state levels. That policy work relates to a broad range of issues (e.g., drug prices, funding for HIV research, HIV testing policies, funding of HIV/AIDS treatment programs, etc.) that are of interest to HIV/AIDS patients and to the clinicians who provide their care.

The AAHIVM awards its AAHIVS credential to "physicians, physician assistants and nurse practitioners working in direct clinical care" (AAHIVM, n.d., para. 1). However, for this project the researcher focused solely on the AAHIVS awarded to physicians, on physicians' role in providing care to HIV-infected patients, and on the AAHIVS credential as it relates to physicians. The AAHIVM has specific requirements physicians must meet before it awards the AAHIVS credential. Those requirements are:

- A medical degree (i.e., MD) or Doctor of Osteopathy degree (i.e., DO)
- Provide direct care to at least 20 persons living with HIV within the 36 months preceding the date of application, or participation in AAHIVM's Clinical Consult Program that was established for candidates who provide care for fewer than 20 persons living with HIV within the 36 months preceding the date of application
- Completion of a minimum of 45 credits or activity hours of HIV and/or hepatitis C-related (HCV-related) continuing education [(CE)] within the 36 months preceding the date of application, and those credits and activity hours can include:

- American Medical Association (AMA) “Category 1” CME credits
- College-level coursework (A transcript showing a passing grade must be submitted.)
- Teaching/lecturing (1 hour of in-class instruction is equivalent to 1 hour of [CE].)
- Participation in an HIV-related residency or fellowship program (A letter from the residency or fellowship director confirming participation and completion of HIV/HCV related didactic instruction must be submitted.)
- Passing a written, open-book exam. (AAHIVM, n.d.)

See Appendix B, AAHIVM HIV Specialist™ Criteria for more information about AAHIVM’s AAHIVS application requirements, and see Appendix C, Explanation of AMA PRA (Physician’s Recognition Award), for a description of AMA Category 1 credit.

The AAHIVM requires every tenth AAHIVS applicant to submit proof he/she has earned the number of CE credits claimed, and it reserves the right to reject credits or activity hours it deems unacceptable (D. Ebeling, personal communication, March 26, 2018). Furthermore, because of the confidential nature of patients’ HIV status, AAHIVM does not require detailed proof that an AAHIVS applicant provided direct care to 20 patients within the 36 months preceding the application; it merely requires the applicant to sign a form attesting to that fact. In addition, the AAHIVS is not a permanent credential; AAHIVM requires those holding the AAHIVS to recertify every three years by again meeting AAHIVS criteria and passing an open-book exam.

Research Question 1: Origin of AAHIVS Criteria

As previously discussed, the researcher believes that determining the origin of the AAHIVS criteria, which the researcher views as a “policy,” will help provide background and a

framework for understanding the credential's relevance to HIV/AIDS care. For example, do the criteria have an empirical basis, or is it based on anecdotal evidence? According to Musick (1998), analysis of a policy "is concerned with two distinct but related activities: the contents of a given policy and the process by which the policy was developed and/or implemented" (p. 1). In order to determine the origin of the AAHIVS criteria, the researcher used conventional content analysis to analyze the content of selected documents while using Grounded Theory, as described by Corbin and Strauss (1990), Bowen (2009), and Hsieh and Shannon (2005), and deductive reasoning. Grounded theory involves the development of a theory based upon close observation of a phenomenon or the systematic analysis of texts, and content analysis is a method by which researchers interpret and code text in order to make valid inferences of the themes and concepts they identify while systematically reviewing texts. In this way, qualitative data become quantitative data. According to Goel, Gold, Kapur, and Houle (1997), "valid deductive arguments involve the claim that their premises provide absolute grounds for accepting the conclusion" and they provide as an example: "All men are mortal; Socrates is a man; therefore, Socrates is mortal" (p. 1305). That is, the truth value of the conclusion is based on the truth of the premise. With inductive reasoning, researchers make broad generalizations from specific observations, and such reasoning can have limited worth. For example, a researcher might wrongly conclude that all swans are white because every swan he has observed was white. According to Elo and Kyngäs (2008), "deductive content analysis is often used in cases where the researcher wishes to retest existing data in a new context" (p. 111).

Because the researcher is a medical educator and has experience organizing CME activities on HIV care for physicians, he has knowledge of the vigorous debate within the medical community regarding the establishment of qualifications for physicians who treat HIV-

infected patients. Therefore, he used deductive content analysis, as described by Elo and Kyngäs (2008), to test his hypothesis that the AAHIVS credential emerged from AAHIVM's effort to meet HIV Specialist criteria set forth by the New York State Department of Health (NYSDOH). However, the researcher was aware that an entirely new theory could emerge from his analysis.

Origin of AAHIVS criteria: Selection criteria for documents. Regarding AAHIVM's criteria for its AAHIVS credential, the researcher searched the AAHIVM website to identify AAHIVM publications, documents, and webpages that contained information about the credential with the intent of analyzing that information to try to determine the origin of the criteria for the AAHIVS credential. The researcher also used PubMed to identify articles about the AAHIVS credential published online in medical journals intended for health professionals. That PubMed search yielded two documents, "AAHIVM releases HIV specialist definition qualifications" ("Gold Standard," 2001) and "Addressing the need for HIV specialists: The AAHIVM perspective," (Grossman, 2006) that refer to the AAHIVS credential. After conducting his searches, the researcher organized the information he identified into four categories of publicly available information (as of April 2, 2018) to help him determine the origin of criteria for the AAHIVS. Those four categories and the specific documents within those categories are:

1) AAHIVM-published documents or webpages that reference aspects of the AAHIVM AAHIVS credential
    a) AAHIVM webpage: "HIV Specialist™" (https://aahivm.org/hiv-specialist/)
    b) AAHIVM webpage: "Credentialing" (https://aahivm.org/credentialing/)
    c) AAHIVM webpage "Who We Are" (https://aahivm.org/about-us/)

2) AAHIVM-published documents or webpages that reference aspects of AAHIVM's Core Curriculum 2017
    a) AAHIVM webpage: "AAHIVM Produces New Web-based Core Curriculum for Frontline HIV Care Providers, Content Now Available to Academy Members" (https://aahivm.org/2016/11/14/aahivm-produces-new-web-based-core-curriculum-for-frontline-hiv-care-providers-content-now-available-to-academy-members/)
    b) AAHIVM webpage: "AAHIVM Core Curriculum 2017" (https://aahivm.org/core-curriculum/)
    c) The 16 modules that comprise AAHIVM Core Curriculum 2017 (https://www.aahivm-core.org/pub/index.html?refer=aahivm.org; See Appendix D for a list of the 16 units)
3) Articles published since 2001 (when AAHIVM announced its HIV Specialist criteria) in medical journals intended for a clinical audience and found via a "Title/Abstract" PubMed search for "AAHIVM" that describe (or reference some aspect of) AAHIVM's HIV Specialist™ credential (a.k.a. AAHIVS credential) or AAHIVM's Core Curriculum 2017
    a) AAHIVM releases HIV specialist definition qualifications. (2001). *AIDS Policy and Law*, *16*(7): 4.
4) AAHIVM Position Statements
    a) Grossman, H. A. (2006). Addressing the need for HIV specialists: The AAHIVM perspective. *The AIDS Reader*, *16*(9), 479–485.
    b) AAHIVM's 2017 "Policy Principle: Recognition of HIV Care as a Medical Specialty" p. 8 (available at: https://aahivm.org/wp-

content/uploads/2017/11/AAHIVM-PolicyPlatform-updated-with-2017-additions.pdf)

c) AAHIVM 2017 Public Policy Platform, "Introduction of Policy," pp. 2–4 (available at: https://aahivm.org/wp-content/uploads/2017/11/AAHIVM-PolicyPlatform-updated-with-2017-additions.pdf)

d) AAHIVM webpage: "Value of Credentialing" by Donna Sweet, MD, AAHIVS, Chair, Board of Directors, American Academy of HIV Medicine (AAHIVM), Chair, Credentialing Committee, American Academy of HIV Medicine (AAHIVM) (available at https://aahivm.org/value-of-credentialing)

Origin of AAHIVS criteria: Analysis of documents. The researcher's analysis of the selected documents for information about the origin of AAHIVM's definition of and qualifications for HIV specialists reveals that, according to the AAHIVM, its AAHIVS criteria were "created with input from frontline HIV care providers and HIV patients" ("Gold Standard," 2001, p. 4). However, AAHIVM does not identify who those HIV care providers and HIV patients were, how many providers and patients were consulted, or when and how the AAHIVM consulted them. Furthermore, a detailed analysis of the content of the selected documents provided no further information about the origin of AAHIVS criteria. Other than the single description cited above ("Gold Standard," 2001) about the origin of the AAHIVS criteria, none of the texts included any other information or themes about the origin of the criteria.

Origin of AAHIVS criteria: Discussion. Grossman (2006) asserts that there is a need for more HIV specialists to provide care for HIV patients and offers some insight into *why* AAHIVM might have developed its AAHIVS credential. According to Grossman, as care for HIV-infected patients became more complex, some health professionals who were new to

HIV/AIDS care could not obtain hospital privileges because they did not have the appropriate credentials to provide care. Grossman also acknowledges that "study after study found that providers who had more experience, had [HIV] patients with better outcomes" and "not only were the outcomes improved, but studies showed that the resultant decrease in morbidity, mortality, and inpatient costs as a result of expert care was cost-effective" (2006, p. 479). Two primary motivators in health care for launching an initiative and for conducting CME activities are the desire to improve health outcomes for patients and the desire to reduce health care expenditures ("Improving Quality Care," 2001). The researcher has organized CME activities for physicians on HIV/AIDS for 16 years, and so he is aware of the active debate that took place during the early 2000s about whether primary care physicians or infectious disease specialists were better qualified to provide care to HIV-infected patients (Bartlett, 2006). He is also aware of concern expressed by public health officials that if there were an insufficient number of physicians who were trained to provide HIV/AIDS care, what is already a major public health problem would grow worse. That discussion is absent from the selected documents. Furthermore, the researcher suspects, but cannot prove, that the AAHIVS credential emerged at least partly out of a primary care physicians' desire to continue to provide care to HIV/AIDS patients at a time when research demonstrated that physicians with more knowledge and experience produced better health outcomes for patients (Gerbert et al., 2001; Kitahata, 1996; Kitahata, Van Rompaey, Dillingham, et al., 2003; Kitahata, Van Rompaey, & Shields, 2000; Patel & Groen, 1991; Shapiro, & Greenfield, 1992; Valenti, 2002). Without the AAHIVS credential, those primary care physicians who did not have ABIM Board Certification in Infectious Disease would most likely have found it impossible to obtain payment for their services from patients' health insurance plans. Because health care systems, state health

departments (such as NYSDOH), and health insurance companies recognize the AAHIVS, physicians who are not board-certified in Infectious Disease can provide care to HIV patients and can bill health insurance plans for their services. If those physicians could not bill health insurance plans, they would most likely stop providing care to patients, which would result in far fewer physicians providing care to HIV-infected patients.

Research Question 2: What kinds of competencies are reflected in the AAHIVM Core Curriculum that are related to the care of HIV/AIDS patients?

The Core Curriculum includes 16 modules that cover these subjects in HIV medical care: (1) HIV Epidemiology & Spread, (2) Mechanisms of Transmission, (3) HIV Transmission Prevention, (4) Immunology, (5) Overview of [Antiretroviral; (ARV)] Therapy, (6) Classes of ARV Medications, (7) Initiation of ARV Therapy, (8) Multidrug-Resistant HIV, (9) ART for Special Populations, (10) Antiretroviral Resistance, (11) Understanding Pharmacokinetics (PK) and Pharmacodynamics (PD), (12) Renal Comorbidity, (13) Bone Complications of HIV, (14) Cardiovascular (CV) Complications of HIV, (15) Neurologic Complications, and (16) Hepatic Coinfection (AAHIVM, 2017a). Each module includes a summary document that contains a list of that module's learning goals, main points and references, a slide set, a narrated slide presentation, and a self-administered test.

Coles and Grant (1985) assert that evaluation of a curriculum for medical education "implies judgement of merit or worth, some expression of value," (p. 407) and Musick (2006) argues that medical education programs should align their curricula with an appropriate set of physician competencies in order to ensure the curriculum will support those competencies. As with many other complex morbidities, effective health care for HIV-infected patients requires competency in the physician's ability to diagnose disease, order a wide variety of tests and

interpret test results, recommend treatments, refer patients for treatment of comorbidities, assess risk to patients, determine prognoses and apply principles from epidemiologic studies, and understand the underlying pathophysiology of disease and have knowledge of basic science applicable to patient care. The ACGME has endorsed six "general competencies" (Kavic, 2002, p. 96) for physicians: (1) patient care, (2) medical knowledge, (3) professionalism, (4) systems-based practice, (5) practice-based learning, and (6) interpersonal and communication skills. However, this vague list of competencies is useless when investigating competencies in a specialized area of medicine, and although the ABIM does not issue Board Certification in HIV care, it does issue Board Certification in Infectious Disease to physicians. That certification requires physicians to pass a written exam and an oral exam, and the ABIM claims its exam for Board Certification in Infectious Disease is "designed to evaluate the knowledge, diagnostic reasoning, and clinical judgment skills expected of the certified infectious disease specialist in the broad domain of the discipline" (ABIM, 2018, p. 1). Moreover, the ABIM claims that 15% of the content of a typical Infectious Disease Board Certification exam consists of questions related to HIV infection (ABIM, 2018).

The medical community views HIV health care as a specialized area of medicine (Gerbert et al., 2001; Kitahata, 1996; Kitahata, Van Rompaey, Dillingham, et al., 2003; Kitahata, Van Rompaey, & Shields, 2000; Valenti, 2002), and although ABIM does not grant Board Certification in HIV care, it is the most widely recognized organization that grants Board Certification in Infectious Disease to physicians. Because HIV infection is an infectious disease and because ABIM issues Board Certification in Infectious Disease to physicians, the researcher used the five ABIM Infectious Disease exam competencies as an external measure by which he

could analyze AAHIVM's Core Curriculum for statements and themes that relate to the five ABIM exam subject competencies.

According to Musick (2006), there is a lack of a unified and accepted approach to the evaluation of medical education curriculum. However, in his view, the evaluation process should include an explanation as to why the evaluation is being done, an explanation of what is being evaluated, and an explanation of the evaluation methodology. In this case, the researcher is evaluating the Core Curriculum because the curriculum is not currently approved by any medical accreditation organization as a CME activity for physicians; thus, the researcher seeks to determine the extent to which the curriculum supports ABIM exam competencies for physicians in the delivery of health care to HIV/AIDS patients.

Knowing to what extent the curriculum supports the ABIM exam subject competencies would serve two purposes for medical educators. First, being able to cite the Core Curriculum as supporting ABIM Infectious Disease exam competencies could help medical educators obtain funding to support their CME activities if they can show those activities include a curriculum that has been demonstrated to support a set of desired physician competencies. The Core Curriculum's current lack of accreditation lessens its desirability for use in a CME activity intended to yield CME credit. Understandably, funders prefer to support CME activities that use curricula that have been shown to correspond with a widely accepted list of physician competencies, such as the competencies specified by ABIM for Board Certification in Infectious Disease. Second, if the Core Curriculum were shown to support the ABIM exam competencies, medical educators could use the curriculum in the CME activities on HIV/AIDS they organize for physicians and be assured (in theory) that the curriculum supports desired physician

competencies. Consequently, an analysis of the Core Curriculum has the potential to provide real benefits to medical educators, physicians, and patients.

AAHIVM Core Curriculum analysis: Methodology. As previously stated, the researcher sought to analyze the content of AAHIVM's Core Curriculum in terms of the extent to which it supports desired physician competencies in HIV care and the extent to which the curriculum aligns with AAHIVM's CME criteria for the AAHIVS. Because HIV is an infectious disease, the researcher used the five physician competencies specified by the ABIM for Board Certification in Infectious Disease as a benchmark in analyzing the Core Curriculum. Those five ABIM competencies are (1) making a diagnosis; (2) ordering and interpreting results of tests; (3) recommending treatment or other patient care; (4) assessing risk, determining prognosis, and applying principles from epidemiologic studies; and (5) understanding the underlying pathophysiology of disease and basic science knowledge applicable to patient care (ABIM, 2018). The researcher used the approach to medical curriculum analysis as described by Coles and Grant (1985) to analyze the curriculum. That process entailed multiple reviews of all materials included in the 16-module curriculum while identifying references and themes related to the five ABIM Core Competencies for physicians. The researcher then made a determination of the extent to which each module of the Core Curriculum aligns with the ABIM Core Competencies. The researcher's purpose in doing this was to determine to what extent the curriculum supports a list of known and accepted physician competencies in the treatment of infectious disease, and by achieving that, the researcher could then determine the extent to which curriculum's content supports physician competency to provide care for HIV-infected patients.

AAHIVM Core Curriculum analysis: Analysis. The researcher evaluated AAHIVM's 16-module Core Curriculum against the ABIM's five exam competencies in Infectious Disease

in order to determine to what extent the curriculum supports the five competencies, and the results of that analysis are shown below. If a Core Curriculum module included a theme or referenced aspects of health care that related to an ABIM exam competency, the researcher assigned the letter "Y" (for "Yes") to that module. Likewise, if a Core Curriculum module did not include a theme or did not reference aspects of health care that related to an ABIM exam competency, the researcher assigned the letter "N" (for "No") to that module.

Table 1

Showing the Extent to Which the 16-modules of AAHIVM Core Curriculum Supports the Five ABIM Subject Competencies

		ABIM Core Competencies				
		1	**2**	**3**	**4**	**5**
		Making a diagnosis	Ordering and interpreting results of tests	Recommending treatment or other patient care	Assessing risk, determining prognosis, and applying principles from epidemiologic studies	Understanding the underlying pathophysiology of disease and basic science knowledge applicable to patient care
AAHIVM Core Curriculum Module No.	**1**	N	N	N	N	N
	2	Y	Y	Y	Y	N
	3	Y	Y	Y	Y	N
	4	Y	Y	Y	Y	Y
	5	Y	Y	Y	Y	Y
	6	Y	Y	Y	Y	Y
	7	Y	Y	Y	Y	Y
	8	Y	Y	Y	Y	Y
	9	Y	Y	Y	Y	Y
	10	Y	Y	Y	Y	Y
	11	Y	Y	Y	Y	Y
	12	Y	Y	Y	Y	Y
	13	Y	Y	Y	Y	Y
	14	Y	Y	Y	Y	Y
	15	Y	Y	Y	Y	Y
	16	Y	Y	Y	Y	Y

Notes. Y = Yes, the AAHIVM Core Curriculum module supports the ABIM exam competency. N = No, the AAHIVM Core Curriculum module does not support the ABIM exam competency. See Appendix D for a list of the 16 AAHIVM Core Curriculum modules.

The researcher's analysis shows that only Module 1, Epidemiology & Spread, does not support any of the five ABIM Core Competencies, and Module 2, Methods of Transmission, and Module 3, HIV Transmission Prevention, support ABIM Core Competencies 1, 2, 3, and 4, but not Core Competency 5, which is "understanding the underlying pathophysiology of disease and

basic science knowledge applicable to patient care" (ABIM, 2018, p. 2). However, the remaining 13 modules of the Core Curriculum support all five ABIM Infectious Disease competencies, and they do that by providing detailed clinical information about treatment for HIV infection and its comorbidities. For example, Module 5, Overview of ARV Therapy, supports ABIM Core Competency No. 3 (i.e., recommend treatment or other patient care strategies) by explaining that:

> The World Health Organization guidelines, U.S. treatment guidelines, and European treatment guidelines all recommend that all HIV-infected patients be treated with antiretroviral therapy [ART], regardless of CD4+ cell count. First-line [ART] regimens should be matched to each patient with respect to dosing, clinical characteristics, resistance, comorbidities, tolerable side effects, cost, and drug-drug interactions with other medications that the patient may be taking. When necessary, ART can be modified for tolerability reasons in persons who have achieved virologic suppression. (Short, 2017, p. 1)

In addition, Module 8, Managing the Patient With Multidrug-Resistant HIV, supports ABIM Core Competency No. 4 (i.e., assessing risk, determining prognosis, and applying principles from epidemiologic studies) by explaining that:

> When virologic failure is determined, the patient regimen may be modified to support continued suppression of viral replication. At virologic failure, a resistance test should be performed while the patient is on failing antiretroviral therapy or within four weeks following treatment interruption so that all resistance mutations can be captured. For first-line failure, a genotypic test may be sufficient; in later lines, a phenotypic test may be required to determine the correct resistance profile. This information should be

> coupled with the patient treatment history to provide a complete picture. Clinical trial evidence is available to guide choice of regimens for patients with first-line virologic failure; for patients in later lines of treatment, the choice of regimen must rely on resistance test results to determine agents to which the patient's virus might be susceptible. (Appelbaum, 2017, p. 1)

The human immunodeficiency virus is prone to mutations, which can cause HIV to become immune to specific ART regimens. When that happens, patients suffer virologic failure. However, HIV specialists can determine patients' prognoses by testing the virus, which will identify other ART regimens that might control the infection. In some cases, the viral mutations are such that no existing ART regimens can control the virus. As a result, the outlook for those patients is poor.

AAHIVM Core Curriculum analysis: Discussion. The AAHIVM offers its Core Curriculum as an online resource for clinicians who are interested in learning about HIV/AIDS care, and AAHIVM created the curriculum to "assist care providers new to the HIV field seeking baseline knowledge on prevention, testing and transmission, as well as provide experienced HIV practitioners with insight into more complex topics and clinical advances" (AAHIVM, 2017a, para 1). This researcher believes Core Curriculum Modules 4–16 excel at providing baseline and advanced knowledge that supports the five ABIM Core Competencies because they provide current, detailed information about the latest treatment regimens for HIV infection and for a number of health issues related to HIV care and how to deliver and monitor that care. Furthermore, Modules 2 and 3 support ABIM exam competencies 1–4, but they do not support competency 5, which is "understanding the underlying pathophysiology of disease and basic science knowledge applicable to patient care." Therefore, Modules 2 and 3 have some utility as

curriculum in a CME activity, but medical educators and physicians should be aware that Modules 2 and 3 do not support an important aspect of HIV/AIDS care.

In terms of shortcomings, the Core Curriculum includes scant information about treatment for HIV-infected patients who abuse substances and little information about treatment for HIV-infected patients with mental health issues. This researcher considers those subjects as having such significance in HIV/AIDS care that they should be separate, additional modules in the Core Curriculum. When asked how the AAHIVM identified the subjects in HIV/AIDS care it included in its Core Curriculum, Dan Ebeling, AAHIVM's Director of Credentialing, stated that a panel of AAHIVS-certified clinicians did not have a pre-determined number of modules in mind before they reviewed the textbook *Fundamentals of HIV Medicine 2017* (Hardy, 2017) and selected what they believed were the "most essential topics in HIV care" (D. Ebeling, personal communication, April 16, 2018). However, research indicates that 40–74% of HIV-infected patients suffer the comorbidity of substance use and 22–50% have a diagnosis of depression (Nedelcovych et al., 2017). HIV-infected patients who are depressed or are substance users are less likely to adhere to a treatment regimen, which significantly complicates treatment for HIV infection. Furthermore, physicians who are less knowledgeable about those comorbidities are likely to provide suboptimal treatment. Therefore, the researcher views the Core Curriculum as being deficient in terms of preparing physicians to treat HIV-infected patients who abuse substances and/or who suffer from mental health issues.

The 16 modules of the Core Curriculum do not collectively support all five of the ABIM Core Competencies for physicians. Module 1 provides useful background information on the scope of the HIV/AIDS pandemic but does not provide specific clinical information on treatment, diagnoses, medical tests, comorbidities, and treatment regimens, i.e., it does not

support any of the five ABIM Core Competencies for physicians. Modules 2 and 3 support ABIM competencies 1–4, but they do not contain information about the underlying pathophysiology of disease and basic science applicable to patient care, which is ABIM Core Competency 5. However, despite these shortcomings, the Core Curriculum does have usefulness for medical educators. Specifically, with respect to care for HIV-infected patients, this researcher believes medical educators can use Core Curriculum Modules 4–16 to support all five ABIM Core Competencies, and can use Modules 2 and 3 to support ABIM Infectious Disease competencies 1–4.

Research Question 3: Alignment between AAHIVS Criteria and Core Curriculum Analysis

As was previously mentioned, the AAHIVM's criteria for its AAHIVS credential includes four elements: (1) medical licensure, (2) clinical experience, (3) CME activities, and (4) an examination. With regard to clinical experience, the AAHIVS applicant must have provided "direct care to at least 20 persons living with HIV within the 36 months preceding the date of" (AAHIVM, n.d., para. 4) the physician's application for AAHIVS. The AAHIVM does not specify the individual health outcomes physicians must achieve while managing patients living with HIV, meaning that a physician could poorly manage the requisite number of patients and still meet the AAHIVM's requirement. Moreover, the AAHIVM claims it will consider applicants who do not meet its clinical experience requirement if the applicants participate in its Clinical Consult Program, in which applicants are mentored by experienced clinicians who have previously earned the AAHIVS.

With regard to CME activities, AAHIVM specifies that the AAHIVS applicant must "complete a minimum of 45 credits or activity hours of HIV and/or HCV-related CE within the 36 months preceding the date of application" (AAHIVM, n.d., para. 5). Consequently, AAHIVS

applicants have significant latitude in satisfying this requirement in terms of CME subjects within HIV care. For example, an applicant could theoretically complete 45 CME activities that are all on the same subject in HIV/AIDS care (e.g., HIV prevention counseling, HIV genetics, patient adherence to ART, etc.) and ignore other subjects, such as mental health issues or substance abuse, that are critical for physicians to know when treating HIV patients. Ideally, AAHIVS applicants would seek to address their specific learning needs or complete 45 CME activities that cover a range of topics in HIV/AIDS health care, but AAHIVM does not require them to do that. Physicians' learning needs in HIV care could include important subjects such as HIV testing, treatment for HIV/HCV co-infected patients, substance use in HIV-infected patients, HIV-associated neurocognitive disorders, behavioral health issues, or HIV infection in older patients. Lastly, AAHIVS criteria include the completion of an open-book examination, which is based on AAHIVM's 16-module Core Curriculum.

Alignment between AAHIVM Core Curriculum and CME criteria for the AAHIVS: Discussion. The CME requirement for the AAHIVS credential stipulates that applicants must complete 45 credits or activity hours of CME on HIV- and/or HCV-related care within the 36 months preceding the date of application. As previously stated, the researcher sought to determine to what extent the AAHIVM Core Curriculum aligns with CME criteria for AAHIVS. In order to determine that, the researcher worked to identify the origin of the Core Curriculum. According to Dan Ebeling, AAHIVM's Director of Credentialing, the content of the entire 16-module curriculum is drawn directly from the textbook *Fundamentals of HIV Medicine 2017* (Hardy, 2017), which was published by AAHIVM; the AAHIVM curriculum committee produced the curriculum by identifying in *Fundamentals of HIV Medicine 2017* what they believed were the "most essential topics in HIV care" (D. Ebeling, personal communication,

April 16, 2018). The researcher determined that applicants can use the Core Curriculum to partly satisfy the AAHIVS CME requirement. The curriculum focuses entirely on clinical treatment for HIV/AIDS; therefore, it satisfies the AAHIVS requirement in terms of content. However, the curriculum falls short of the requirement for 45 activity hours of CME. (Note: One activity hour is equivalent to 60 minutes.) The Core Curriculum equates a total of 9.333 activity hours of HIV-related and HCV-related CME, which is considerably short of the 45 activity hours required for the AAHIVS. Therefore, there is perfect alignment between the Core Curriculum and the CME requirement for the AAHIVS credential in terms of CME content, but only partial alignment between the two in terms of activity hours.

AAHIVS criteria vs. NYSDOH HIV Specialist definition: An analysis. The researcher did not originally plan to examine the extent to which the AAHIVS criteria and the NYSDOH definition align; however, after learning that the AAHIVM claims its AAHIVS criteria are based on "input from frontline HIV care providers and HIV patients" ("Gold Standard," 2001, p. 4) without providing any other information, the researcher sought to compare the AAHIVS with the NYSDOH definition of HIV Specialist in order to determine the extent to which they align. (See Appendix E for information about NYSDOH definition of HIV Specialist.) In order to determine the extent to which the two align, the researcher compared the four AAHIVS—licensure, clinical experience, education, and examination—with the three elements that comprise the NYSDOH HIV Specialist definition. (See Table 2 below for a side-by-side comparison of AAHIVS and NYSDOH HIV Specialist definition.) The results of that analysis are discussed below.

1) *Medical Licensure*: Both the AAHIVS and NYSDOH's definition of HIV Specialist require the physician to hold a valid *medical license* (although the NYSDOH

requirement is implied and not stated). Therefore, there is alignment with regard to medical licensure.

2) *Clinical Experience*: The AAHIVS requires that the physician must provide direct care to at least 20 persons living with HIV within the 36 months preceding the date of application. The NYSDOH's definition of HIV Specialist requires the physician to provide direct clinical ambulatory care to at least 20 patients during the previous twelve months, and NYSDOH specifies that the care must include the prescribing of ART. In contrast, the AAHIVS does not specify the type of care physicians must render to HIV-infected patients during their clinical experience. Because the AAHIVS requires the management of 20 HIV-infected patients over three years and the NYSDOH definition specifies the management of 20 patients over a single year, there is partial alignment between the AAHIVS requirement and the NYSDOH definition with respect to clinical experience, especially considering that NYSDOH *specifies* the type of experience (i.e., the prescribing of ART) the HIV Specialist should have.

3) *CME Activity*: The AAHIVS requires the completion of at least 45 credits or activity hours of HIV and/or HCV-related CE within the three years prior to application, and the AAHIVS does not specify that the CME content must include ART. The NYSDOH definition specifies "ten hours annually of CME including information on the use of [ART] in the ambulatory care setting" (NYSDOH, 2018, para. 5). Theoretically, a physician could satisfy the AAHIVS CME requirement without ever completing a CME activity on the use of ART in the ambulatory care setting. Because the NYSDOH definition is specific about the content of the CME that the

HIV Specialist should have, there is partial alignment between the AAHIVS and the NYSDOH HIV Specialist definition.

4) *Examination*: The AAHIVS requires the completion of an exam, and the NYSDOH HIV Specialist definition does not. Therefore, the AAHIVS criteria and the NYSDOH definition do not align with respect to examinations.

Table 2

Comparison of AAHIVS and NYSDOH HIV Specialist Definition

Category	AAHIVS	NYSDOH HIV Specialist Definition	Alignment
Medical Licensure	Required	Required*	Complete
Clinical Experience	Provide direct care to at least **20 persons** living with HIV within the **36 months** preceding the date of application.**	Provide direct clinical ambulatory care of HIV-infected persons, involving management of antiretroviral therapy, in at least **20 patients** during the previous **12 months****	Partial
CME Activity	**45 credits or activity hours** of HIV and/or HCV-related continuing education within the **36 months** preceding the date of application***	**10 hours annually** of CME including information on the use of antiretroviral therapy in the ambulatory care setting	Partial
Examination	Open-book examination	No examination required	None

Notes. *Requirement is implied, not stated. **Co-management of patients is accepted. ***Other CE options accepted.

The AAHIVS criteria and the NYSDOH definition of HIV Specialist align in terms of the requirement for medical licensure, although that requirement is implied and not stated in the NYSDOH definition. In terms of clinical experience, the AAHIVS criteria require the specialist

to manage the care of 20 persons living with HIV within the 36 months preceding the date of application, while NYSDOH is more specific in this regard, stating, "Direct clinical ambulatory care of HIV-infected persons, involving management of ART, in at least 20 patients during the past year" (NYSDOH, 2018, para. 5). Therefore, alignment between the two is limited with respect to clinical experience, because the AAHIVM requires the management of 20 patients over three years, and the NYSDOH HIV Specialist definition requires the management of 20 patients over a single year and that management must include ART. In terms of CME, the AAHIVS criteria require more CME than does NYSDOH: 45 hours for the AAHIVS credential over three years, and just ten hours annually for NYSDOH. Furthermore, the AAHIVS criteria allow physicians more latitude in selecting the CME activities they will complete, while NYSDOH is more specific as to the content of those CME activities. Therefore, alignment between the AAHIVS criteria and the NYSDOH definition is partial with respect to CME activities. Lastly, the AAHIVS criteria and the NYSDOH definition do not align in terms of examination; the AAHIVS criteria require completion of an exam, while NYSDOH does not.

Discussion/Conclusions

The AAHIVM offers two useful items to physicians who seek to provide care to HIV/AIDS patients: its Core Curriculum and its AAHIVS credential. Regarding the origin of the AAHIVS criteria, the AAHIVM claims the criteria are based on "input from frontline HIV care providers and HIV patients" ("Gold Standard," 2001, p. 4). However, AAHIVM does not identify who those HIV care providers and HIV patients were, how many providers and patients were consulted, or when and how they were consulted. It would seem logical that development of the AAHIVS criteria involved much discussion among many AAHIVM members and staff and that discussion probably resulted in the production of many drafts of the criteria. However,

there appears to be little publicly available information that describes the process by which the AAHIVS criteria emerged. Furthermore, personal communications with AAHIVM staff indicate that the organization employs just nine people and that recent changes in staff have diminished the organization's institutional history (D. Ebeling, personal communication, March 26, 2018).

Regarding the answer to Research Question 1—To what extent does AAHIVM's 16-module Core Curriculum support desired physician competencies in the treatment of infectious disease?—Modules 4–16 fully support the five physician competencies for infectious disease as described by ABIM.

Regarding the answer to Research Question 2—To what extent does the AAHIVM's Core Curriculum align with CME criteria for the AAHIVS credential?—because the CME requirement for the AAHIVS credential is so broad in terms of subject matter, completing 45 credits or activity hours of *any* HIV-related and/or HCV-related CME activity will satisfy that requirement. Because the Core Curriculum focuses on treatment for HIV infection, HCV infection, and HIV/HCV coinfection, the curriculum is in perfect alignment with the CME criteria for AAHIVS in terms of content. However, the 16-module Core Curriculum equates to 9.333 activity hours of CME, and the CME requirement for the AAHIVS is 45 activity hours. Therefore, there is perfect alignment between the Core Curriculum and AAHIVS CME criteria in terms of content, but the curriculum falls 35.666 activity hours short of the AAHIVS CME requirement.

The AAHIVM offers a useful, albeit unusual, option for physicians who are not interested spending the time and money to obtain ABIM Board Certification in Infectious Disease to still become certified to provide care to HIV-infected patients ("Study Underscores the Value of HIV Specialists," 1996). As a result, there are perhaps more physicians providing

care for HIV-infected patients than there would be if the AAHIVS credential were not available. However, the researcher believes AAHIVM can improve the AAHIVS credential by specifying specific CME subjects that AAHIVS applicants are required to complete. For example, knowing how to prescribe optimal ART has been shown to be essential to providing good health outcomes for HIV-infected patients. Therefore, of the 45 credits or activity hours that AAHIVS applicants must complete, AAHIVM should require that at least 10 of those credits or activity hours cover ART in detail.

Regarding AAHIVM's 16-module Core Curriculum, AAHIVM claims physicians seeking its AAHIVS credential can use the Core Curriculum to prepare for the AAHIVS credentialing exam (AAHIVM, 2017a), since the content of the AAHIVS open-book exam is drawn directly from the curriculum. Furthermore, the Core Curriculum is a useful resource for physicians and medical educators involved in the care of HIV/AIDS patients because 13 of the 16 modules fully support all five ABIM Infectious Disease physician competencies. However, the researcher believes AAHIVM should expand its Core Curriculum to include detailed clinical information on the treatment of HIV-infected patients who have mental health and/or substance abuse issues.

As a next step, AAHIVM should seek certification of its Core Curriculum as supporting desired physician competencies from either the AMA or the HIV Medicine Association. By achieving that certification, AAHIVM would increase the likelihood that medical educators everywhere would use all or parts of the Core Curriculum in their CME activities.

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APPENDIX A

List of Member Boards of the American Board of Medical Specialties (ABMS)

The American Board of Medical Specialties (ABMS) was incorporated in 1933. The list below shows the year each board was approved as an ABMS Member Board.

1933 Founding Members:

American Board of Dermatology

American Board of Obstetrics and Gynecology

American Board of Ophthalmology

American Board of Otolaryngology

1935:

American Board of Orthopaedic Surgery

American Board of Pediatrics

American Board of Psychiatry and Neurology

American Board of Radiology

American Board of Urology

1936:

American Board of Internal Medicine

American Board of Pathology

1937:

American Board of Surgery

1940:

American Board of Neurological Surgery

1941:

American Board of Anesthesiology

American Board of Plastic Surgery

1947:

American Board of Physical Medicine and Rehabilitation

1949:

American Board of Colon and Rectal Surgery

American Board of Preventive Medicine

1969:

American Board of Family Medicine

1971:

American Board of Allergy and Immunology

American Board of Nuclear Medicine

American Board of Thoracic Surgery

1979:

American Board of Emergency Medicine

1991:

American Board of Medical Genetics and Genomics

Source: ABMS, 2018b

APPENDIX B

AAHIVM HIV Specialist™ Criteria

HIV SPECIALIST™

HIV Specialist™ (AAHIVS) – physicians, physician assistants and nurse practitioners working in direct clinical care

ELIGIBILITY

Eligible candidates must meet the following requirements for Licensure, Experience, and Education at the time of application:

LICENSURE

Maintain a current, valid MD, DO, PA, or NP license.

EXPERIENCE

Provide direct care to at least 20 persons living with HIV within the 36 months preceding the date of application.

Or,

Participate in AAHIVM's Clinical Consult Program. Candidates with fewer than 20 persons living with HIV will be paired with an experienced AAHIVM Member as a mentor upon approval of their credentialing application.

Candidates who are not in clinical practice are encouraged to apply for the HIV Expert™ Credential.

EDUCATION

Complete a minimum of 45 credits or activity hours of HIV and/or HCV-related continuing education within the 36 months preceding the date of application as follows:

- AMA Accredited Category 1 CME
- College-level coursework (A transcript showing a passing grade must be submitted.)
- Teaching/lecturing (1 hour of in-class instruction is equivalent to 1 hour of CE.)
- Participation in an HIV-related residency or fellowship program (A letter from the residency or fellowship director confirming participation and completion of HIV/HCV related didactic instruction must be submitted.)

Course completion documents or transcripts may be submitted but are required only if the application is audited but can be uploaded to the candidate's account to aid in application review.

To be considered HIV or HCV-related, the CME program must be specifically tailored towards treating persons living with HIV or HCV. Programs devoted solely to comorbidities or other infectious diseases are generally not considered.

Source: AAHIVM, n.d.

APPENDIX C

Explanation of American Medical Association Physician's Recognition Award

How is *AMA PRA Category 1 Credit*™ calculated for each activity format?

Live Activities

 Credit designation: Credit for live activities is calculated based on the length of time of the activity (excluding non-educational portions such as breaks). Credit is designated in 15 minute or 0.25 credit increments, rounded to the nearest quarter hour. The minimum number of credits is 0.25, but there is not a maximum limit to the number of credits for which live activities can be designated.

 Claiming credit: Physicians claim credit based on their individual participation time, up to the designated maximum for the activity, and should do so in 15 minute, or 0.25 credit, increments and round to the nearest quarter hour.

Enduring Materials

 Credit designation: Credit for enduring materials is calculated based on a legitimate estimate of the amount of time it will take a physician to complete the activity and satisfy its objectives and/or purpose. Credit is designated in 15 minute, or 0.25 credit, increments, rounded to the nearest quarter hour. The minimum number of credits is 0.25 but there is not a maximum limit to the number of credits for which enduring materials can be designated.

 Claiming credit: Physicians who successfully complete the activity may claim the full amount of credit for which the activity is designated, regardless of the amount of time it took them to complete the activity.

Other Five Learning Formats

Credit for the other five AMA approved learning formats is value-based rather than time-based.

 Credit Designation: Each learning format has a specified number of credits for which it is designated and can be found in the table below, as well as in the AMA PRA booklet.

 Claiming credit: Physicians who successfully complete the activity claim the number of credits appropriate to the learning format. There is no partial credit.

 Table summarizing credit designation for these five formats:

Journal-based CME	1 *AMA PRA Category 1 Credit*™ per article
Test Item Writing	10 *AMA PRA Category 1 Credits*™ per test item writing activity
Manuscript Review	3 *AMA PRA Category 1 Credits*™ per acceptable manuscript review
Performance Improvement CME	20 *AMA PRA Category 1 Credits*™ per PI CME activity (5 credits per stage if physician completes only one or two stages (Stage A or Stages A and B))
Internet Point-of-Care	0.5 *AMA PRA Category 1 Credit*™ per three-step PoC cycle

(Source: AMA, 2016, p. 2)

Notes. "PRA" stands for "Physician's Recognition Award"; "PoC" stands for "Point of Care"

APPENDIX D

List of the 16 Modules of AAHIVM Core Curriculum

1. Module 1 (2017 Version 2.0): HIV Epidemiology & Spread by Jeffrey Kirchner, DO, FAAFP, AAHIVS
    a. Module 1 Pre-Read
    b. Module 1 Slides & Notes
    c. Module 1 Recorded Presentation (36 minutes)
    d. Module 1 Self-Assessment Questions
2. Module 2 (2017 Version 2.0): Mechanisms of Transmission by William Short, MD, MPH, AAHIVS
    a. Module 2 Pre-Read
    b. Module 2 Slides & Notes
    c. Module 2 Recorded Presentation (23 minutes)
    d. Module 2 Self-Assessment Questions
3. Module 3 (2017 Version 2.0): HIV Transmission Prevention by Jeffrey Kirchner, DO, FAAFP, AAHIVS
    a. Module 3 Pre-Read
    b. Module 3 Slides & Notes
    c. Module 3 Recorded Presentation (43 minutes)
    d. Module 3 Self-Assessment Questions
4. Module 4 (2017 Version 2.0): Immunology by Jeffrey Kirchner, DO, FAAFP, AAHIVS
    a. Module 4 Pre-Read
    b. Module 4 Slides & Notes

c. Module 4 Recorded Presentation (31 minutes)

d. Module 4 Self-Assessment Questions

5. Module 5 (2017 Version 2.0): Overview of ARV Therapy by William Short, MD, MPH, AAHIVS

    a. Module 5 Pre-Read

    b. Module 5 Slides & Notes

    c. Module 5 Recorded Presentation (27 minutes)

    d. Module 5 Self-Assessment Questions

6. Module 6 (2017 Version 2.0): Classes of ARV Medications by William Short, MD, MPH, AAHIVS

    a. Module 6 Pre-Read

    b. Module 6 Slides & Notes

    c. Module 6 Recorded Presentation (30 minutes)

    d. Module 6 Self-Assessment Questions

7. Module 7 (2017 Version 2.0): Initiation of ARV Therapy by Jonathan Appelbaum, MD, FACP, AAHIVS

    a. Module 7 Pre-Read

    b. Module 7 Slides & Notes

    c. Module 7 Recorded Presentation (24 minutes)

    d. Module 7 Self-Assessment Questions

8. Module 8 (2017 Version 2.0): Multidrug-Resistant HIV by Jonathan Appelbaum, MD, FACP, AAHIVS

    a. Module 8 Pre-Read

b. Module 8 Slides & Notes

c. Module 8 Recorded Presentation (29 minutes)

d. Module 8 Self-Assessment Questions

9. Module 9 (2017 Version 2.0): ART for Special Populations by William Short, MD, MPH, AAHIVS

    a. Module 9 Pre-Read

    b. Module 9 Slides & Notes

    c. Module 9 Recorded Presentation (47 minutes)

    d. Module 9 Self-Assessment Questions

10. Module 10 (2017 Version 2.0): Antiretroviral Resistance by Jonathan Appelbaum, MD, FACP, AAHIVS

    a. Module 10 Pre-Read

    b. Module 10 Slides & Notes

    c. Module 10 Recorded Presentation (34 minutes)

    d. Module 10 Self-Assessment Questions

11. Module 11 (2017 Version 2.0): Understanding PK and PD by Jonathan Appelbaum, MD, FACP, AAHIVS

    a. Module 11 Pre-Read

    b. Module 11 Slides & Notes

    c. Module 11 Recorded Presentation (30 minutes)

    d. Module 11 Self-Assessment Questions

12. Module 12 (2017 Version 2.0): Renal Comorbidity by W. David Hardy, MD

    a. Module 12 Pre-Read

b. Module 12 Slides & Notes

c. Module 12 Recorded Presentation (31 minutes)

d. Module 12 Self-Assessment Questions

13. Module 13 (2017 Version 2.0): Bone Complications of HIV by W. David Hardy, MD

a. Module 13 Pre-Read

b. Module 13 Slides & Notes

c. Module 13 Recorded Presentation (31 minutes)

d. Module 13 Self-Assessment Questions

14. Module 14 (2017 Version 2.0): CV Complications of HIV by Jeffrey Kirchner, DO, FAAFP, AAHIVS

a. Module 14 Pre-Read

b. Module 14 Slides & Notes

c. Module 14 Recorded Presentation (41 minutes)

d. Module 14 Self-Assessment Questions

15. Module 15 (2017 Version 2.0): Neurologic Complications by W. David Hardy, MD

a. Module 15 Pre-Read

b. Module 15 Slides & Notes

c. Module 15 Recorded Presentation (51 minutes)

d. Module 15 Self-Assessment Questions

16. Module 16 (2017 Version 2.0): Hepatic Coinfection by W. David Hardy, MD

a. Module 16 Pre-Read

b. Module 16 Slides & Notes

c. Module 16 Recorded Presentation (52 minutes)

d. Module 16 Self-Assessment Questions

Source: AAHIVM, 2017a

APPENDIX E

New York State Department of Health (NYSDOH) Definition of HIV Specialist

NYSDOH HIV Primary Care Medicaid Program, Section 4: Quality of Care Requirements

HIV Specialist Policy

Scientific and clinical knowledge about the management of HIV infection and disease continues to evolve at a rapid pace, resulting in frequent changes in state-of-the-art practice. For this reason, the clinical care of persons with HIV/AIDS requires the participation of clinicians with specialized expertise, which is best gained from hands-on experience that includes the direct management of patients on antiretroviral therapy. The following criteria define an HIV Specialist:

- Direct clinical ambulatory care of HIV-infected persons, involving management of antiretroviral therapy, in at least 20 patients during the past year, and
- Ten hours annually of CME including information on the use of antiretroviral therapy in the ambulatory care setting.

For some facilities, particularly in rural or small urban areas where there may be relatively few patients with HIV infection, referral to an HIV Specialist is impractical. In such cases, facilities may develop formal relationships with an HIV Specialist to co-manage patients.

Source: NYSDOH, 2018