Faculty Development Initiatives to Advance Research Literacy and Evidence-Based Practice at CAM Academic Institutions

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Abstract

Objectives: To present the varied approaches of 9 complementary and alternative medicine (CAM) institutions (all grantees of the National Center for Complementary and Alternative Medicine) used to develop faculty expertise in research literacy and evidence-based practice (EBP) in order to integrate these concepts into CAM curricula.

Design: A survey to elicit information on the faculty development initiatives was administered via e-mail to the 9 program directors. All 9 completed the survey, and 8 grantees provided narrative summaries of faculty training outcomes.

Results: The grantees found the following strategies for implementing their programs most useful: assess needs, develop and adopt research literacy and EBP competencies, target early adopters and change leaders, employ best practices in teaching and education, provide meaningful incentives, capitalize on resources provided by grant partners, provide external training opportunities, and garner support from institutional leadership. Instructional approaches varied considerably across grantees. The most common were workshops, online resources, in-person short courses, and in-depth seminar series developed by the grantees. Many also sent faculty to intensive multiday extramural training programs. Program evaluation included measuring participation rates and satisfaction and the integration of research literacy and EBP learning objectives throughout the academic curricula. Most grantees measured longitudinal changes in beliefs, attitudes, opinions, and competencies with repeated faculty surveys.

Conclusions: A common need across all 9 CAM grantee institutions was foundational training for faculty in research literacy and EBP. Therefore, each grantee institution developed and implemented a faculty development program. In developing the framework for their programs, grantees used strategies that were viewed critical for success, including making them multifaceted and unique to their specific institutional needs. These strategies, in conjunction with the grantees' instructional approaches, can be of practical use in other CAM and non-CAM academic environments considering the introduction of research literacy and EBP competencies into their curricula.

Introduction

HEALTHCARE EDUCATORS HAVE A critical role in preparing their students for a complex health system that is becoming increasingly reliant on a dynamic and voluminous research base. Healthcare providers need to be able to ef-

fectively obtain and understand clinical research findings in order to integrate the best research evidence with clinical expertise and patient values in making decisions about the care of individual patients.¹ While the importance of these skill sets has become conventional wisdom in many health-related professions over the past 20 years,^{2–4} inclusion of

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research and evidence-based practice (EBP) in complementary and alternative medicine (CAM) academic programs is relatively recent.⁵

Preparing students to practice healthcare from an evidence-based perspective depends largely on the ability of faculty to teach research literacy and model EBP in clinical training. Successful faculty development programs can be a powerful tool for engaging faculty in making important changes to learning environments,^{6–8} such as those required to integrate EBP. Current perspectives on faculty development in medical education include the need to ground it in a theoretical framework, to provide structured activities to support collaborative learning and knowledge sharing, and to promote scholarship.⁸

A recent National Institutes of Health/National Center for Complementary and Alternative Medicine (NCCAM) initiative awarded research education grants to 9 CAM institutions to increase the quality and quantity of research content in their curricula.^{9,10} This article presents the varied approaches the CAM grantees used to develop faculty expertise in research literacy and EBP and to integrate these concepts into faculty teaching and clinical activities. In the spirit of the NCCAM initiative, this article offers the collective experience of introducing a research perspective into faculty development programs as a key approach to enhance research content in the curricula of CAM academic institutions.

Materials and Methods

Information for this article was gathered to capture the approaches and experiences of the grantee institutions regarding their faculty development initiatives during the first 4 to 6 years of funding. On the basis of annual reports presented at the NCCAM-initiated program directors' meetings and discussions with directors and other key personnel, a survey with room for open-ended responses was developed. The survey was designed to elicit information in 6 areas: EBP competencies that were developed and adopted; target audiences; size, formats, and hours of training programs; instructional approaches; evaluation methods; and faculty incentives to participate.

The survey was administered via email to program directors in September 2011, and all 9 grantees completed it within the month. Eight of the grantees also provided narrative summaries of faculty training outcomes. Information from the narrative summaries was extracted only if it related directly to the questions on the survey.

One authors analyzed the survey by calculating frequencies of the categorical responses. The completed surveys and the frequencies were shared with the remainder of the authors, who did not disagree with these results. Two authors analyzed the open-ended survey responses and select narrative summaries by identifying key themes and their relative frequency.

Results

The number of faculty at each grantee institution targeted by the faculty development programs ranged from 34 to 121, with varying proportions of full- and part-time faculty (Table 1). Among the 9 grantee institutions, 6 CAM academic programs were represented: acupuncture, Chinese/

TABLE 1. COMPLEMENTARY AND ALTERNATIVE MEDICINE GRANTEE INSTITUTIONS (2011–2012)

	Institution								
	A.T. Still U	Bastyr U	NCNM	NUHS	NWHSU	Palmer	UNT	UWS	
Targeted health professions programs	Osteopathy	Naturopathy	Acupuncture, classical Chinese medicine, naturopathy	Acupuncture, chiropractic, Oriental medicine, naturopathy	Acupuncture, chiropractic, Oriental medicine, massage therapy	Acupuncture, Oriental medicine	Chiropractic	Osteopathy	Chiropractic
Faculty targeted (n)	34 FT	36 FT 84 PT	30 FT 91 PT	60 FT 20 PT	113 R	12 FT 38 PT	120 FT	52 FT	45 FT 5 PT

A.T. Still U, Kirksville College of Osteopathic Medicine at Still University; NCNM, National College of Natural Medicine; NUHS, National University of Health Sciences; NWHSU, Northwestern Health Sciences University; OCOM, Oregon College of Oriental Medicine; Palmer, Davenport Campus of Palmer College of Chiropractic; UNT, Texas College of Osteopathic Medicine at University of North Texas Health Sciences Center; UWS, University of Western States; FT, full-time; PT, part-time/adjunct; R, ranked.

Oriental medicine, chiropractic, massage therapy, naturopathy, and osteopathy. The faculty development programs took place over 4 to 6 years, with grantee institutions at various stages of implementation.

The primary aim of all of the grantees was to train faculty in the basic concepts and principles of research literacy and EBP. Grantees also reported goals of integrating research and EBP into the curricula, including the classroom ($n=9$) and clinical educational settings ($n=7$). Most of the grantees also aimed to increase faculty participation in research ($n=7$). Only 2 grantee institutions mandated faculty participation in at least some research literacy and EBP training. However, most of the programs included some training at required faculty meetings. In addition, all grantee programs offered supplementary voluntary training opportunities that were more in-depth in nature.

Following is a summary of 3 main areas related to the grantees' overall approach to achieving their faculty development-related goals: (1) implementation strategies, (2) instructional approaches, and (3) program evaluation.

Implementation strategies

The grantees used a variety of strategies to achieve their faculty development aims and implement their new programs. The following describes the strategies found to be the most useful; Table 2 provides rationales and specific examples.^{11–18}

Assess needs and barriers. In the initial planning phase, nearly all grantees ($n=7$) conducted faculty surveys, individual interviews, and focus groups to assess attitudes, perceived skills, and behaviors related to research literacy and EBP. Faculty preferences, perceived needs, and barriers were also assessed. These baseline data informed the design of the faculty development programs. In addition, grantees researched successful faculty development programs in other disciplines and used several of these strategies to guide their programs.^{7,11,19,20}

Although grantees reported that faculty attitudes toward research were generally positive, some found there were faculty who did not feel research utilization or activities were part of their faculty responsibilities. Others identified concerns regarding workload and competing institutional priorities. Several grantees also found that some faculty felt threatened by EBP, in particular those in CAM practices that had a limited research base. Further, many CAM faculty had received little or no prior training in research literacy or EBP before the grant initiatives and needed skill development and tools to navigate electronic research information resources.

Faculty preferences for a variety of instructional approaches were also identified, including didactic lectures, small-group activities, and online learning activities. In addition to the planning phase assessments, grantees benefitted from each other's work and experiences during the NCCAM-hosted annual meetings of the program directors and other key personnel. Grantees regularly shared resources and approaches over the course of their initiatives, which in turn influenced the interinstitutional faculty development programs.

Develop and adopt research literacy and EBP competencies. One strategy used by all grantees was to develop and

adopt research literacy and EBP competencies for their programs. The creation of these competencies at the individual institutional levels served as a "shared vision" for both faculty development⁶ and other grant-related efforts promoting EBP. Overall, there was general agreement across grantee institutions in terms of required competencies that focused on research literacy and EBP. It was anticipated that faculty would need varying degrees of support to master these competencies themselves before integrating them into classroom and clinical settings.

Target early adopters and change leaders. A common strategy ($n=5$) for grantees was to identify early adopters and potential change leaders who were enthusiastic about the grant-related educational programs and could facilitate implementation within their institutions. These grantees viewed train-the-trainer programs^{11,21,22} tailored to focus on research literacy, EBP, and effective teaching techniques as essential for success. These institutions targeted the early adopter faculty for initial training. It was anticipated that they would grow into leaders, enhancing peer-to-peer influence and the long-term sustainability of the faculty development programs. Further, grantees appreciated the influence of motivated faculty who, in their roles as clinic supervisors and classroom instructors, would serve as important role models for students in the application of EBP.

Employ best practices in teaching and education. Several of the grantee institutions emphasized best practices in education when designing, developing, and implementing their instructional approaches. Emphasis was placed on making program content contextually relevant¹² by including research and scenarios meaningful to CAM practice. Many of the grantees actively worked to integrate teaching techniques focused on experiential and collaborative learning,^{22,23} and several programs used Schön's concept of the reflective practitioner²⁴ to encourage faculty participants to deepen their questioning and understanding. A common strategy was to apply multi-disciplinary and group-training to encourage collegiality and build communities of research literacy and EBP practice.^{12,25}

Provide meaningful incentives. Faculty incentives, especially in the form of continuing education credit and release time for program participation, were felt to be important strategies to motivate faculty participation at many of the grantee institutions ($n=7$). Some grantees implemented these new programs concurrently with changes in promotion criteria requiring evidence of faculty research and scholarship. This was especially relevant for faculty who participated in small-group training that resulted in scholarly products, which then became part of their successful applications for promotion.

At some institutions, faculty members were also offered the opportunity to apply for small grants to attend research-related national seminars and conferences. Submission of abstracts and attendance at research and education conferences were encouraged by most grantees as a means of promoting scholarship and reinforcing the idea that research should inform practice.⁸

Capitalize on resources provided by conventional partner. The NCCAM-mandated framework of each grant

TABLE 2. STRATEGIES FOR RESEARCH LITERACY AND EVIDENCE-BASED PRACTICE FACULTY DEVELOPMENT

<i>Strategy</i>	<i>Rationale</i>	<i>Examples at grantee institutions</i>
Assess needs, barriers and others' experiences	Understanding faculty and institutional needs and barriers will allow for well-designed programs appropriate for the circumstances and goals. ^{11,12}	Needs assessments, including surveys, focus groups, individual interviews, syllabi review, and curriculum mapping; inform faculty development programs ^{13–15}
Develop and adopt research literacy and EBP competencies	Faculty need to master research literacy and EBP competencies themselves before they could integrate into their teaching and clinical responsibilities. Well-articulated competencies within each institution serve as a common vision to facilitate institutional change. ⁶	Shared competencies: articulate an answerable clinical question, effectively gather information, critically evaluate scientific literature, synthesize and interpret the evidence, effectively apply relevant evidence to clinical practice
Target early adopters and change leaders	Faculty who receive early and in-depth training and achieve research literacy and EBP competencies would serve as mentors and leaders in ongoing faculty development programs empowering others to act on vision. ⁶	Train-the-trainer models, research scholars and vanguard Faculty programs ^{14–17}
Employ best practices in teaching and education	Faculty research literacy and EBP skills will be optimized through participation in development programs with strong theoretical underpinnings of teaching. ^{11,12} Such approaches contribute to faculty's overall professional development and increase quality of education within the CAM institutions.	Use established theories/principles of learning with emphasis on experiential, collaborative, and interactive learning; contextually relevant material; and reflective practice
Provide meaningful incentives	Some faculty are motivated by incentives, particularly when institutions lack reward mechanisms for teaching excellence or scholarly work. ¹² Incentives that meet their professional needs would be perceived as beneficial.	Continuing education credits; release time; participation linked to promotion criteria; opportunity to apply for small grants, professional conference registration, and travel fees; advanced degree program fees
Capitalize on resources provided by conventional partner	Faculty will benefit from resources frequently used by their conventional medicine colleagues, but otherwise unavailable at their home CAM institution.	Faculty clinical exchange program; ¹⁸ participation in advanced degree programs (e.g., MPH, MS); instructional design/educational specialist resources
Provide external training opportunities	Faculty will benefit from engagement and practice of research literacy/EBP with other health disciplines, diminishing isolation from the broader academic health community. Full immersion would allow time for undivided attention and focus.	Participation in external multiday EBP focused training programs with other health professions (see Table 3)
Garner support from institutional leadership	Administrative leadership can serve as important institutional champions and role models given their positions as decision makers regarding institutional direction and finances; their engagement is key to long-term viability.	Participation of administrative leadership in training programs; engagement of leadership in key educational programs committees/teams; acknowledgment of faculty development program within institutional strategic planning initiatives; institutional financial support to supplement program initiatives

EBP, evidence-based practice; CAM, complementary and alternative medicine.

included collaboration between investigators from a CAM and a conventional research institution. Consequently, grantees in collaboration with their partner institutions identified unique resources and collaborative working relationships important in fostering faculty development appropriate for the grantees' CAM institution's needs. These resources and relationships varied widely across institutions.

For example, a Faculty Clinical Exchange program provided one grantee's faculty with opportunities to observe point-of-care evidence-based medicine training techniques at its conventional university partner's teaching clinics.¹⁸ Faculty at several schools were able to enroll in programs at their research-intensive university partner institution to obtain research training and advanced degrees.

Provide external training opportunities. Several grantees ($n=6$) used off-site training strategies, which increased their faculty's exposure to other healthcare professions and helped overcome the tendency to remain isolated. Grantees reported that the faculty who attended multiday, off-site immersion programs found great benefit in the level of engagement and hands-on practice with their peers from other health disciplines. This in turn increased collegiality and collaboration with fellow faculty at their own institutions and faculty at their conventional university partner institutions. Further, full immersion allowed time and focus away from other institutional priorities.

Garner support from institutional leadership. Some of the grantees actively engaged their institutional leadership in various aspects of their grant initiatives so that they could serve as institutional champions for the faculty development programs. Examples included involving administrative leaders in program committees and teams responsible for design and development; including them as members of advisory and decision-making teams; and having them secure necessary in-kind and donor contributions to bolster new programs.

Instructional approaches

On the basis of their planning phase assessments, and their own experiences, grantees recognized they would need to offer a variety of instructional approaches and resources to meet faculty preferences and needs. Table 3 summarizes the primary instructional approaches used by the grantee institutions.^{26–33}

Most of the grantee programs used a variety of instructional approaches for faculty development. However, details varied considerably across institutions. Differing time requirements and delivery approaches geared toward facilitating participation rates were based on the unique features and needs of each institution.

Grantees, in collaboration with their conventional institutional partners, developed their own research literacy and EBP faculty development programs. The most commonly used instructional approach was stand-alone workshops of various lengths, using a combination of didactic and interactive formats ($n=8$). Other approaches included a wide range of online resources ($n=6$), such as continuing education courses and useful EBP tools (such as PowerPoint presentations and YouTube videos). Grantees also held in-person short courses ($n=6$).

Some grantees ($n=5$) also used in-depth seminar series offered regularly over extended time periods to small groups of select faculty, with an emphasis on experiential and collaborative learning, reflective practice, and useful scholarly output relevant to participants' faculty roles. Many of the grantees capitalized on existing and established research literacy and EBP resources and programs, including intensive multiday extramural training programs offered by other organizations ($n=6$). Several of the grantees also developed or capitalized on existing professional training programs ($n=5$), culminating in certificate, fellowship, and advanced degree programs at the grantee or partnering conventional institution.

Regular journal clubs, case conferences, and grand rounds were also used, with a focus on cases relevant to CAM

practice ($n=5$). Some grantees offered a variety of individual and group mentorship opportunities ($n=3$) in which trainees were mentored in the practice and teaching of EBP. Examples included guided practice, consultation on lesson plans and course development, observations of classroom teaching and point-of-care EBP clinical training techniques, and mentored team-teaching.

Program evaluation

Grantees used a variety of assessment strategies and tools to evaluate the effect of faculty development initiatives on their institutions. The success of the programs was gauged by several metrics, including participation rates, participant satisfaction, engagement with researchers and peers at partner institutions, and the integration of research literacy and EBP learning objectives throughout the academic curricula. Most grantees measured longitudinal changes in beliefs, attitudes, opinions, and competencies with repeated faculty surveys ($n=8$), and some also administered knowledge tests ($n=5$). All but 1 monitored faculty progress through professional development activities, such as capstone projects, participation in conferences, presentations, and publications. Many programs ($n=7$) used curriculum mapping to capture changes in classroom teaching that involved research and an evidence-informed perspective.

While systematic and long-term reporting of the grantees' program evaluation outcomes is not yet complete, faculty development outcomes from some of the grantee institutions are promising. Grantees have reported creation of new EBP courses and increased integration of EBP content throughout CAM curricula.^{13,15} Enhanced faculty-rated attitudes, confidence, and skills related to EBP have also been reported.^{13–15,17}

Discussion

There have been numerous calls for CAM providers to become more evidence-based,^{34–39} and the general consensus is that education and training are needed to improve research literacy and enhance EBP within the CAM professions.^{35,38–40} Increasing the ability of CAM faculty to teach research literacy and model EBP in clinical training through faculty development initiatives is crucial to meeting these needs.

To be effective, faculty development requires the use of well-designed programs that embrace best practices in teaching and learning through multiple and diverse educational methods.¹¹ Despite this, approaches for trainee development in EBP in the medical literature describe only single strategies, such as workshops or e-learning courses.^{4,41,42} In contrast, the 9 CAM grantee institutions created and implemented multifaceted programs that are consistent with current recommendations for faculty development in medical education.⁸ These programs included a variety of instructional approaches emphasizing a range of strategies designed to meet the needs and preferences of the individual faculty members and institutions.

Grantees were most enthusiastic about instructional approaches that integrated collaborative and small-group learning strategies. These were viewed as having several benefits, which included providing faculty a relatively rare and much appreciated opportunity to interact with their

TABLE 3. PRIMARY INSTRUCTIONAL FORMATS USED BY GRANTEES

<i>Format [Format details]</i>	<i>Description</i>	<i>Examples of useful instructional approaches and resources</i>
Workshops [1–2 h; 8–20 h offered over consecutive half-days or full days]	One stand-alone session; combination of lecture and interactive sessions; mix of large- and small-group sessions; offered at grantee or partner institution; team taught by individuals from grantee and partner institutions	Intended to facilitate faculty learning and model new teaching approaches using active and experiential learning, learner-centered teaching, and reflective practice approaches
Online resources [Format details varied]	Materials and/or courses (including PowerPoint presentations, YouTube videos, interactive modules, and checklists) offered on Web-based social media, open source, and continuing education platforms	Open Source Online Resources: http://bastyr.libguides.com/content.php?pid=264924&sid=3150338 http://stilllearning.unl.edu/ http://www.nuhs.edu/research/evidence-based-practice/faculty-development/ http://www.palmer.edu/EBCPResources https://www.uws.edu/evidence-informed-practice-resources/ https://www.youtube.com/user/ebpatnuhs Online Continuing Education: A.T. Still University: “Evidence Based Medicine for Clinicians” at https://secure.atsu.edu/cme Northwestern Health Sciences University: contact_continuing@nwhealth.edu
In-person short courses [1–8 h in length for total of 2–20 h per short course]	Two or more sessions on a topic with the same participants; lecture-based	
Extramural training programs [2–5 d]	Intensive, multiday immersion at organization external to grantee institution	Oxford Workshop on Evidence Based Practice, ²⁶ The Rocky Mountain Workshop on How to Practice Evidence Based Health Care, ²⁷ Tufts Information Mastery: A Practical Approach to Evidence Based Care, ²⁸ McMaster University’s Improving Your Practice/Teaching Through Evidence Based Clinical Practice ^{29,30}
Seminar series [1 h–1 d/mo over 1–2 y; 2 h/wk over the course of a semester]	Small-group (≤ 10 participants) sessions offered regularly over extended time periods; focused on related topics with the same participants	Based on previous Scholars programs in other professions, ^{22,25,31} emphasis on collaborative learning; ^{15,32} specific examples include Research Scholars ^{16,33} and Vanguard Faculty ¹⁷ programs
Regular journal clubs, case conferences, research grand rounds [Format details varied]	Regular meetings in which faculty present and interact with other faculty, health professionals, and/or students	Case-based, focused on topics relevant to CAM practice using EBP principles; specific examples include One-hour Webinars, Lectures and Sessions (OWLs), and Relevant Evidence in Acupuncture Discussion (READ)
Professional Programs [1–5 y]	Trainee support (e.g., tuition, stipend) for advanced research and/or EBP training culminating in a certificate or advanced degree	Clinical research fellowships, masters of public health, masters of clinical research programs at grantee or partner institution
Mentorship [Format details varied]	Individual and group mentorship by EBP and educational mentors at grantee and/or partner institution	Interactive exercises, role-playing, guided practice, observation, consultation, syllabi review, lesson plan development on an individual basis and in group settings; exchange program to observe point-of-care EBP training techniques at conventional university partner’s teaching clinics ¹⁸

colleagues and health educators from other disciplines, both intra-institutionally and extramurally. These enhanced professional networks, along with the resulting collegiality, may prove important in reaching goals for EBP at CAM institutions.⁶

One instructional format, the multihour seminar series, was also highly recommended by grantees because of its popularity and outcomes.^{15–17} These programs, adapted from successful examples in other health professions,^{22,25,31} provided dedicated time for small faculty groups to observe and give formal presentations, participate in guided EBP discussions, reflect upon and consolidate new information, and practically apply EBP in ways not achievable in larger, faculty-wide sessions.

As was seen with other faculty development initiatives, grantees encountered challenges in implementing their programs, including faculty workload and scheduling logistics.^{15,43} To overcome scheduling barriers, some grantees attempted to align training opportunities to standard institutional events, including institution-wide meetings and other faculty development efforts. Many grantees made training materials available online so faculty could access them when most convenient. However, grantees found that some faculty preferred face-to-face encounters versus online delivery because of learning preferences and computer literacy and access.

Obtaining appropriate release time for participation in some of the programs was also challenging. This was particularly apparent for faculty participating in the more time-intensive seminar series and professional programs. One grantee found that arranging adequate release time for faculty to participate in their off-site research training fellowship was a barrier they could not overcome, resulting in the elimination of this opportunity after the first grant year. Faculty turnover occurred at all grantee institutions, necessitating repeated faculty training offerings over time so new faculty would be included in the research literacy and EBP skill development efforts. The creation of online resources, and in particular online learning courses, was one strategy used to overcome these barriers.

Moving forward, a common challenge for the grantees will be to sustain and further enhance the research literacy and EBP skills among their faculty. Sustainability will depend on faculty and administrative champions. Early adopter and change-leader faculty at the grantee institutions are anticipated to play key roles in using and applying research in their teaching and clinical domains and encouraging their peers and students to join them.⁶ Engaged administrative leadership can help ensure institutional support (i.e., financial) to continue grant-developed programs, provide faculty incentives, and maintain research literacy and EBP goals as elements of the institutional culture (i.e., by inclusion in mission statements, strategic plans, and graduation competencies).¹² Grantees who consider their programs successful have achieved at least some of these sustainability elements and must continue to advocate for their inclusion.

Conclusions

A common need across all 9 CAM grantee institutions was foundational training for faculty in research literacy and

EBP that would allow them to integrate these principles into their teaching and clinical responsibilities. Therefore, each grantee institution developed and implemented a faculty development program. In developing the framework for their programs, grantees used strategies that were viewed critical for success, including making them multifaceted and unique to their specific institutional needs. These strategies, in conjunction with the grantees' instructional approaches, can be of practical use in other CAM and non-CAM academic environments considering the introduction of research literacy and EBP competencies into their curricula.

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