



Published in final edited form as:

Explore (NY). 2012 ; 8(1): 68–72. doi:10.1016/j.explore.2011.11.007.

Evidence Informed Practice as the Catalyst for Culture Change in CAM

Roni Evans, DC MS,

a professor, dean of research and the director of the Wolfe-Harris Center for Clinical Studies at Northwestern Health Sciences University, Bloomington, MN

Michele Maiers, DC, MPH,

associate professor and associate dean of research and knowledge transfer at the Wolfe-Harris Center for Clinical Studies at Northwestern Health Sciences University, Bloomington, MN

Louise Delagran, MA,

a senior educational specialist at the Center for Spirituality and Healing at the University of Minnesota, Minneapolis, MN

Mary Jo Kreitzer, PhD, RN, FAAN, and

the director of the Center for Spirituality and Healing and a professor in the School of Nursing at the University of Minnesota, Minneapolis, Minnesota. She is a member of the executive committee of the Consortium of Academic Health Centers for Integrative Medicine.

Victor Sierpina, MD

the W.D. and Laura Nell Nicholson Professor of Integrative Medicine, Professor Family Medicine, Director of Medical Student Education, at the University of Texas Medical Branch in Galveston, TX. He is an associate editor for *Explore* and immediate past chair of the Consortium of Academic Health Centers for Integrative Medicine.

Abstract

The NIH National Center for Complementary and Alternative Medicine (NCCAM) has funded two rounds of R25 education grants. The first set of R25 grants were awarded to conventional schools and focused on integrating CAM content into health professions education programs. Grants were awarded to medical and nursing schools predominantly, with one grant going to the American Medical Student Association and one grant being awarded to an institution integrating CAM into nursing, medicine and pharmacy. The second round of R25 grants were awarded to CAM institutions and focused on introducing evidence-based practice into curricula of CAM schools including schools of chiropractic, naturopathic, and acupuncture and Oriental medicine. Although not an explicit objective of the grant program, one of the most significant and enduring outcomes reported by investigators has been culture change. This article describes individual and organizational culture changes that occurred at Northwestern Health Sciences University.

— Mary Jo Kreitzer and Vic Sierpina

Content on integrative healthcare and complementary and alternative medicine is being taught in hundreds of educational programs across the country. Nursing, medical, osteopathic, chiropractic, acu-puncture, naturopathic, and other programs are finding creative and innovative ways to include these approaches in new models of education and practice. This column spotlights such innovations in integrative healthcare and CAM education and presents readers with specific educational interventions they can adapt into new or ongoing educational efforts at their institution or programs.

We invite readers to submit brief descriptions of efforts in their institutions that reflect the creativity, diversity, and interdisciplinary nature of the field. Please submit to Dr. Sierpina at vssierpi@utmb.edu or Dr. Kreitzer at kreit003@umn.edu. Submissions should be no more than 500-1500 words. Please include any Website or other resource that is relevant as well as contact information.

Application of the knowledge and skills necessary for evidence-informed practice (EIP) requires academic and clinical cultures that encourage the behavior.¹ The CAM Practitioner Research Education Partnership Project, sponsored by the National Center for Complementary and Alternative Medicine (NCCAM), offers an unprecedented opportunity to shift CAM professional cultures to become more evidence informed. The project is serving as a catalyst for such change at Northwestern Health Sciences University (NWHSU) through the creation of multifaceted educational programs for CAM students, faculty, and field clinicians in three disciplines: chiropractic medicine, massage, and Acupuncture and Oriental Medicine (AOM). Developed in collaboration with the University of Minnesota Center for Spirituality and Healing, these new and innovative programs are aimed at influencing attitudes toward research, and ultimately clinical behaviors so that the best available science will be routinely integrated with clinical judgment and patient preferences in CAM clinical practices.

To achieve these goals, real changes in culture must be achieved at both the individual and institutional levels, addressing underlying values and belief.²⁻⁴ This paper describes an overview of our project and the culture related outcomes being realized at NWHSU as a result of the R25 project.

APPROACH

The ADDIE instructional model⁵ has provided the framework for our approach to impacting the attitude and behavioral changes necessary to influence NWHSU's culture. Focusing on analysis, design, development, implementation, and evaluation, this iterative model is consistent with and complementary to models of behavioral change,⁴ which emphasize constant monitoring and evaluation to ensure an intervention is meeting its targeted objectives.

ANALYSIS

Extensive analyses were performed prior to initial funding of the program in 2007 to assess research-related values, beliefs, and perceived needs of students, faculty, and practitioners. We also solicited participation in the creation of the broad evidence-informed practice competencies that serve to define the targeted evidence-informed behaviors we hope to achieve at the individual level.⁶ Data collection included quantitative and qualitative methods involving one-on-one interviews, surveys, and focus groups. Approval for all data collection activities was obtained by NWHSU's institutional review board.

Early surveys revealed a general belief among both students and faculty that acquiring the skills to integrate research into CAM clinical practice was important (student mean = 7.8-9.4; faculty mean = 7.5-9.0, on a 0-10 scale; ranges represent means scores by program). However, they also rated their own ability to accomplish this, as generally low (student mean = 5.1-7.3; faculty mean = 4.0-7.0). Further, student satisfaction with existing research coursework was also low (4.2 to 6.1 on a scale of 0-10). Focus groups found students frustrated with an inconsistent emphasis on the value and use of research information across existing curricula.⁷

This gap between beliefs and perceived skills, particularly among the faculty, illustrated the need for educational strategies that would bolster their abilities and confidence in understanding and using research, and result in diffusion of research through the CAM academic curricula.

Additional faculty surveys based on Rogers' Diffusion of Innovation Theory⁸ and Davis' AVICTORY Model⁹⁻¹¹ confirmed the integration of research and EIP was compatible with

faculty beliefs (mean = 8.5), and their approach to teaching and clinical practice (mean = 8.0). Faculty members also thought the new R25 educational project to be consistent with NWSU's institutional values (mean = 8.2). More neutral responses were garnered however, regarding faculty beliefs that including research content represented a departure from their own teaching practices (mean = 6.5), and institutional practices as a whole (mean = 5.1). These findings suggested that changes in research and EIP behaviors would require shifts in existing organizational processes including more emphasis and support for faculty development.

Interviews with NWSU administrators also revealed the value they themselves placed on the research-related educational programs. Overall, they were enthusiastic about the program, and believed the students were motivated to learn about research and EIP. They saw EIP as a means to increase the credibility of their professions and expand the employment opportunities available to their graduates. The administrators acknowledged the existing gap between students' need for research and EIP skills, and the necessity of paying more attention to them in their curricula.

Importantly, administrators saw the potential for the project to serve as a vehicle for meeting other institutional goals related to the organizational culture as a whole. Examples included the introduction of educational strategies (e.g., active learning techniques, online learning), which could be used throughout the curriculum, and the facilitation of evidence-informed best practices within the clinic systems. Additionally, it was offered that the project could provide a much needed opportunity to hone students' critical thinking skills, making them less susceptible to professional experts promoting unproven practices.

DESIGN, DEVELOPMENT, AND IMPLEMENTATION

Our design, development, and implement phases began in the second year, and are on-going. They have focused on a broad spectrum of educational strategies and resources to meet our target audiences' individual needs identified in the analyses. Given our audiences' demonstrated research-related beliefs congruent with the R25 project's objectives at the onset, more focus was placed on developing their research and EIP-related skill sets (as defined in the EIP competencies⁶), where they felt less confident. These included research and EIP coursework ranging from foundational (eg, Foundations of Evidence Informed Practice coursework) to comprehensive (eg, Research Fellowship Program). Delivery methods include online courses, traditional classes, seminar series, case conferences, workshops, and individual and group mentoring, some of which have been described previously. In particular, special emphasis has been placed on creating robust faculty development programs.⁶ Table 1 details the educational strategies and resources developed to date. Our assumption was that by enhancing research-related skills and confidence, reinforced by repeated application, we would start to see changes in behaviors.

Special efforts have been made to continuously engage faculty and administration so that the new research and EIP related competencies can permeate through the organizational fabric. This is accomplished by involving membership from all programs and administrative levels to participate in project related teams and committees responsible for the design and development of the educational programs, and on-going oversight. It was anticipated that by having broad representation of individuals participating in a meaningful way, the project would be better situated to work in synergy with other institutional initiatives. Further, this increased the probability that the newly recognized foundational principles of EIP would be considered and integrated throughout NWSU's programs where appropriate.

Additional strategies for influencing the larger institutional culture have included "project branding" involving the design of an evidence informed practice logo, which represents a

visual representation of the integration of research, clinical judgment, and patient preferences. This logo appears on all project-related resources, including “Evidence-in-Practice” mugs, given to faculty upon completion of EIP faculty development coursework. We have also developed strategies for dissemination of project activities and progress to reach students, faculty and practitioners, including an “Evidence in Action” Newsletter, regular features in NWSHU's President's monthly newsletter, and the twice yearly NWSHU Alumni Bulletin.

EVALUATION

The evaluation of our culture-related outcomes occurs at both the individual and institutional levels using various qualitative and quantitative methods. We use regular longitudinal assessment of students' and faculty members' research and EIP-related beliefs and behaviors via quantitative surveys. Through qualitative interviews of faculty and administration we ascertain their global assessment of how the R25 project is affecting the institutional culture at NWSHU. We also monitor participation rates in the various project related activities. Further institutional artifacts (eg, strategic plans, etc.) are routinely collected and reviewed for documented examples of the adoption of research and EIP principles.

RESULTS

Cultural-related outcomes at the individual level reveal the R25 is having a positive impact at NWSHU. Over 600 CAM students have now received training through the new Foundations of EIP courses that were created for the NWSHU's CAM programs. Overall, we have observed a consistent change in student's self-reported EIP skills after the new Foundations of Evidence Informed Course (postcourse means = 6.9-8.0, compared to precourse means = 4.3-5.9). Importantly, in the one cohort for which data is available, these changes are sustained over three trimesters. Students also report changes in EIP related behaviors including discussing research with others, using research review articles, and applying the EIP model (Figure 1).

Faculty participation in research and EIP related coursework continues to increase, with nearly 90% of ranked faculty participating in basic EIP online training, and over a third completing advanced online training. Nearly 25% of faculty members have participated in the more intensive Research Scholars seminar series.⁶ Quantitative surveys of the faculty Scholars illustrates increased confidence in a range of EIP-related skills (postcourse means = 7.4-8.5, compared to precourse means = 5.6-7.5) and modest changes to in research and EIP behaviors such as using research to answer a clinical question (from one to two times per month to three to four times per month). Ways in which faculty Scholars use research in their teaching include inspiring students to use research as a means to communicate risk/benefits of treatments with patients, using research as a way to promote students' critical thinking skills, and including relevant research articles as reading assignments to form the basis for group discussions. Curricula mapping has yielded a glimpse at other faculty behaviors, specifically the integration of EIP learning objectives into nonresearch coursework. We found 64% of chiropractic courses, 20% of AOM courses, and 60% of massage therapy courses reporting one or more EIP learning objectives.

Continuing education efforts for practitioners have recently being launched, which has generated interest from other educational institutions and professional associations. The first one-half day EIP workshop for field practitioners will be offered at NWSHU's 2012 Chiropractic Homecoming. Three practitioners are currently enrolled in the comprehensive Research Fellowship Program (two chiropractors and one AOM practitioner), which will culminate in a Master of Science in Clinical Research from the University of Minnesota.

Culture-related outcomes at the institutional level are also being documented. The breadth of participation and investment is large, with over 40 faculty members and administrators (approximately one-third of institutional membership) participating on R25 project-related teams or committees. Global assessments of program administrators reflect a perceived cultural shift across academic programs. Research and EIP is noted as being integrated “into,” versus “added onto,” the curriculum, bridging the gap between didactic and clinical training. Administrators express a sense of widespread acceptance of EIP as a foundational principle, and as part of NWHHSU's identity (“who we are”). They also see the R25 research education project as providing a constructive forum for institutional self-reflection, and offering faculty unprecedented opportunity to participate in program development and implementation. They view students as having greater expectations that EIP be central to their education and clinical practice, and as something they seek out when forming clinical collaborations, particularly in multidisciplinary settings.

NWHHSU's administrators also express the perception that the R25 research education project is serving as a “a cultural stepping stone” for the University's evolution as a center for higher learning, focused around academic discovery and problem solving. These opinions are reflected in the measurable, transformative changes taking place at NWHHSU in key institutional areas including a renewed emphasis of research and EIP in the mission statement and annual strategic plan, and on-going institutional benchmarking where goals have been set and are routinely monitored for new R25 educational program development. Importantly, NWHHSU has embraced research and EIP as part of its value system, adopting a new institutional guiding principle stating the very definition of EIP: “We rely on research, clinical experience and patient preferences to inform academic and clinical programs.” Additionally the substantial in-kind contribution provided by NWHHSU to support the extensive research related education program precipitated by the R25, represents a tangible measure of the value the institution places on EIP.

SUMMARY

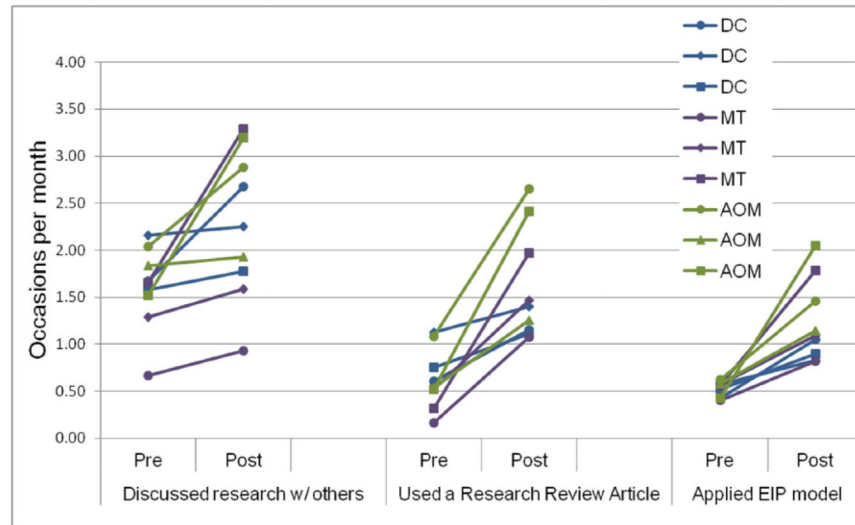
The NCCAM-funded R25 project has provided the impetus for meaningful culture change at Northwestern Health Sciences University (NWHHSU) which, over the long term, can affect the professional culture of our CAM constituents. Benefiting from a unique collaboration with the University of Minnesota Center for Spirituality and Healing, we are making substantial progress in developing our CAM professionals' research-related skill sets so that they may truly learn and practice in evidence informed ways.

A large part of our success thus far is attributable to the already motivated student, faculty, and practitioner base with research-related beliefs in alignment with the project's goals. This for the most part, is unique among CAM academic institutions. Similarly, NWHHSU has a remarkably engaged institutional membership at both the faculty and administrative levels who value research and are willing to commit the necessary resources to promote the advancement and growth of evidence-informed CAM practice.

REFERENCES

1. Coomarasamy A, Khan KS. What is the evidence that postgraduate teaching in evidence based medicine changes anything? A systematic review. *BMJ*. 2004; 329:1017. [PubMed: 15514348]
2. Peterson MW, Spencer MG. Understanding academic culture and climate. *N Direct Instit Res*. 2006; 1990:3–18.
3. Dagenais ME, Hawley D, Lund JP. Assessing the effectiveness of a new curriculum: Part I. *J Dent Educ*. 2003; 67:47–54. [PubMed: 12540105]
4. Darnton, A. *Practical Guide: An Overview of Behavior Change Models and Their Uses*. HM Treasury; London, UK: 2008.

5. Dick, W.; Carey, L.; Carey, J. *The Systematic Design of Instruction*. 6th ed.. Allyn and Bacon; Boston, MA: 2005.
6. Evans R, Delagran L, Maiers M, Kreitzer MJ, Sierpina V. Advancing evidence informed practice through faculty development: The Northwestern Health Sciences University Model. *Explore (NY)*. 2011; 7:265–268. [PubMed: 21724163]
7. Kreitzer MJ, Sierpina V, Maiers M, et al. Ways of knowing: integrating research into CAM education and holism into conventional health professional education. *Explore (NY)*. 2008; 4:278–281. [PubMed: 18602624]
8. Rogers, EM. *Diffusion of Innovations*. 4th ed.. The Free Press; New York, NY: 1995.
9. Davis, HR. Change and innovation.. In: Feldman, S., editor. *Administration and Mental Health*. Thomas; Springfield, IL: 1973.
10. Davis HR. Management of innovation and change in mental health services. *Hosp Community Psychiatr*. 1978; 29:649–658.
11. Davis, HR.; Salasin, SE. The utilization of evaluation.. In: Struenig, I.; Guttentag, M., editors. *Handbook of Evaluation Research*. Vol. 1. Sage; Beverly Hills, CA: 1975.



Data represents pre-/post- scores of self-reported behaviors collected via quantitative surveys administered before and after new Foundations of Evidence Informed Practice Course.

Graph represents data collected from first 9 cohorts to participate in new FEIP course (DC=Chiropractic, MT=Massage Therapy, AOM=Acupuncture and Oriental Medicine).

Figure 1.
Frequency of student EIP behaviors.

Table 1

Educational Strategies and Resources Developed Through R25

Strategies	Faculty	Students	Practitioners
Traditional class	—	Required: Foundations of EIP; heavy active-learning focus (two credits DC and AOM, one credit MT); integration EIP into non-research courses	—
Online Learning	Basic (short-track): six modules covering principles of EIP Advanced (long-track): 22 modules covering basic and advanced EIP skills (eg, critical appraisal, application)	Advanced: 22 modules	Two standard courses with eight modules, plus additional interactive cases offered through NWHUS continuing education department* OR Customized course for associations and institutions
Research Scholars Seminar Series ⁶	I: Practical application of EIP (36 hours) II: Writing and presenting (36 hours) III: Doing research (90 hours)	III: Doing Research (90 hours)	—
Workshops	One-half to full day, all faculty events, two to three times per year covering various topics (eg, outcome measures, etc.); heavy focus on active learning	—	One-half day event in conjunction with NWHUS Homecoming; practical application of EIP in clinical settings OR Customized workshop for associations and institutions
Internships and Fellowships		Term-long EIP focused clinical internships (DC and AOM)	Four- to five-year Research Fellowships culminating in Masters of Science degree in clinical research
Case Conferences	Monthly presentations provided by faculty (1 hour)	—	—
Mentorship Program	Twice monthly “EIP Instructors” meeting with educational specialist Partnering of experienced research faculty with nonresearch faculty to implement EIP teaching strategies into courses throughout curricula	—	—

All EIP educational strategies and resources are focused on the nine broad EIP competencies, and the more than 150 associated specific learning objectives, developed through the R25.

DC = Chiropractic; AOM = Acupuncture/Oriental Medicine; MT = Massage Therapy.

* All revenue generated from continuing education efforts support online module maintenance and the Research Fellowship program.