Enhancing nutrition education through faculty development: from workshops to Web sites¹⁻⁴

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ABSTRACT Faculty resistance to changing medical school curricula is a major barrier to overcome in the effort to expand nutrition education. With clinical clerkships becoming more decentralized and basic science courses utilizing more small group teaching, the problem of reform is compounded by the increasing numbers of a more dispersed teaching faculty. A faculty development program was designed to complement a thematic approach to the inclusion of nutrition in a 4-y curriculum. The program offers workshops to help faculty learn how to teach in new settings while acquiring new knowledge about nutrition. Additionally, a themes Web site offers a window that faculty may use to review current nutrition content, to plan their teaching agendas, and to continually reassess where nutrition fits in the curriculum. Am J Clin Nutr 2000;72(suppl):877S–81S.

KEY WORDS Faculty development, nutrition education, curriculum, curriculum theme, Web site, search

INTRODUCTION Changing an entire medical school curriculum is difficult work, the task of which can be compared with turning an aircraft carrier or moving a graveyard (1). When leaders of educational reforms are asked about the task of revising medical school curricula, they report faculty resistance to change as one of the major obstacles (2). This resistance is frequently related to faculty feeling uncomfortable about their lack of expertise in a new content area. This article addresses a range of methods—from workshops to Web sites—that can be used to enhance the nutrition knowledge base of a large teaching faculty.

EDUCATIONAL CHANGE AND NUTRITION IN THE CURRICULUM Medical schools are constantly challenged to teach the latest information in rapidly changing fields of medicine, from genetics to nutrition, by faculty who may not have been trained or who may not have remained current in such domains. Few, if any, of our faculty at Harvard Medical School (HMS) were introduced to nutrition during their own years in medical school or medical residency. In 1985 60% of the schools surveyed by the National Research Council Committee on Nutrition in Medical Education reported <20 h of required nutrition instruction in their curriculum (3). Just as corporate entities are attempting to reframe themselves as learning organizations (4) with heavy investments of time and money in employee training, so too are medical schools required to consider the professional development of both students and teaching faculty.

In the past, finding a new expert and establishing an additional course, or adding several lectures to the existing curriculum, could solve the problem of introducing new content to medical school curricula. This strategy worked when the curricular model of choice was what we now refer to as the traditional teacher-centered model or lecture-based curriculum, but as Barr and Tagg (5) indicate, we are in the midst of a paradigm shift in educational models, moving toward a more learner-centered approach. In this new model, we seek to establish a learning community for our students and faculty in which the traditional role of teacher is not solely as a transmitter of knowledge but more as a facilitator or tutor. The student adopts a more active role in self-discovery and in constructing his or her own knowledge base. Although this shift may eliminate some pressure on the teaching faculty, ie, obviating the need for them to be experts in all fields of medicine, it does not remove their anxiety of mastering new small-group teaching techniques or teaching a case involving unfamiliar content. Therefore, faculty are uneasy with curricular change on 2 fronts: not only do they feel ill informed with respect to the new content, but they are also unprepared to teach using an unfamiliar format.

This 2-pronged problem actually provides us with an extraordinary opportunity to support our faculty in developing new teaching methods while acquiring new content information at the same time. During the redesign of our hybrid curriculum (6), a serious commitment was made both to help faculty both acquire the new skills needed to tutor in the problem-based learning tutorials of first and second year courses and to provide expert knowledge on content when requested. For some content areas, it was not always possible or practical to add a new course to an already packed curriculum. Curricular themes were therefore developed as a way to

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incorporate important new material in several underrepresented areas. These themes initially included nutrition, addictions, and ethics, but with the advent of this thematic approach (7) the need to develop faculty expertise in these new content areas emerged.

THE NUTRITION THEME

Nutrition was designated a medical school curriculum theme in 1992, thereby requiring the careful integration of this topic into relevant courses throughout the 4-y curriculum (8). Although many of our first year lectures and tutorial cases provided a strong basic science background for nutrition, the students continued to request more information on the application of nutrition to patient care. An existing required course entitled Preventive Medicine and Nutrition in the second half of the year-2 curriculum was redesigned to provide that transition from the basic science of nutrition to its relevant clinical application. The objectives of the nutrition theme continue to be addressed in clerkships, electives, and advanced biomedical science courses in years 3 and 4, providing students with a centrally planned presentation of the core nutrition requirements across the entire 4-y curriculum. In a similar themed design, Hoting and Littlefield (9) described the inclusion of nutrition information with continuous reinforcement throughout their 4-y curriculum. They also highlighted the need for orchestrating the efforts of faculty in courses across the curriculum to help students integrate nutrition-related topics from the various disciplines. In the description of our theme Web site in the second part of this article, we will describe the methods we are using to address this problem.

During the planning phase of the thematic presentation in this expanded content area, we looked for windows of opportunity in which to introduce nutrition objectives in a developmentally appropriate sequence for students. Design and implementation of the complementary professional development programs for faculty was conducted in parallel with the development of the themes. Early efforts with faculty focused on the tutors for Preventive Medicine and Nutrition and preceptors in the Primary Care Clerkship. Both are required courses for the students and the faculty is composed predominantly of general internal medicine physicians. Teaching faculty are dispersed across all Harvard-affiliated hospitals and clinics in the metropolitan Boston area. We encountered 3 challenges that required solutions on multiple levels: 1) how to train faculty to teach in new settings, 2) how to incorporate nutrition content in a decentralized clerkship, and 3) how to train >20 tutors for Preventive Medicine and Nutrition.

ELEMENTS OF PROFESSIONAL DEVELOPMENT

To train >100 primary care clerkship preceptors, as well as the clinical faculty who teach in other programs, we are fortunate to have an annual retreat organized by the Primary Care Division. For example, in a keynote address given in 1999, Robert Fletcher, Professor of Ambulatory Care and Prevention at HMS, gave an overview of vitamin supplementation and Martin Miner, Clinical Instructor in Family Medicine at Brown University, spoke on the most commonly used herbs in primary practice. Workshops at the retreat included the following: 1) teaching with patients in the ambulatory setting, 2) modeling and focused observation, 3) teaching with patients at the bedside, and 4) computer-based learning.

The curriculum that the 21 tutors in Preventive Medicine and Nutrition teach, in addition to the complementary professional development program, offers an active learning environment that is designed to expand the tutor’s knowledge base in nutrition while they develop new skills in tutoring. The training follows a 3-step process, which includes 1) an overall course orientation for all tutors, 2) an observation of each tutorial with feedback to the tutor (and sometimes students) from a medical educator, and 3) a weekly meeting of all tutors during the 14-wk course.

The orientation and weekly tutor meetings are conducted by both content and process experts and provide the critical opportunity to introduce nutrition information. The weekly hour-long meetings conducted by experts who review the highlights of the upcoming case promote knowledge acquisition in a workshop-type environment. Because each case deals with disease prevention at different stages of the life cycle, there is ample opportunity to introduce substantial new nutrition information, from breastfeeding to the effect of diet on adult obesity and atherosclerotic heart disease. Faculty are comfortable in the collegial environment of these workshops in which tutors from various clinical sites gather to share multiple perspectives and acquire new information relevant to the cases they will be discussing with students in weekly tutorials.

Example of a professional development workshop

An example from 1999’s orientation will illuminate the value of the approach for content acquisition and process review. One week before the start of the course, the 21 tutors met with the course directors for an afternoon. The agenda for this session included a course overview and introduction to major course goals, followed by a practice tutorial session in which the tutors participated in their own tutorial as “students” with an expert tutor. The tutorial allowed the tutors to experience the learning process and address the new content in much of the same way as real students would approach new material. The course goals, as defined by the course directors in consultation with nutrition experts, are for the student to be able to do the following (10):

- Assess the nutritional status and nutritional needs of patients of all ages.
- Discuss and demonstrate methods of dietary assessment.
- Identify components of a healthy diet and explain the rationale for current nutritional guidelines for children and adults in the United States.
- Demonstrate how to counsel a patient regarding dietary change.
- Assess one’s own health habits to facilitate the setting of personal goals for staying healthy throughout medical training and beyond.

To meet these goals, students study a series of cases that span the life cycle from infancy to old age and illustrate the nutrition and disease prevention issues at each stage of life. Cases are discussed in groups of 8 or 9 students with a faculty tutor or facilitator. These small group discussions are supplemented by large group sessions in the format of lecture, discussion, and debate. The case “A Healthy Baby” (11) used for the practice tutorial in the orientation session is the first case used in the course.

The case: A Healthy Baby

Carol Thomas is a 22-y-old African American woman who presents for her first office visit. She requests a check-up because she and her husband are planning to start a family and they want to know what they need to do to have a healthy baby. Ms Thomas considers herself in good health. She has never been seriously ill, been hospitalized, had any surgery, or been pregnant,
and she has no history of sexually transmitted diseases. She has taken birth control pills for 4 y without difficulty and has been taking a multivitamin since she was told she was anemic 2 y ago. She recently increased her multivitamin to 2 tablets daily because she heard she would need extra vitamins during pregnancy. Her sister, who recently had a child, told Ms Thomas that her doctor had prescribed extra zinc tablets for her to take during her pregnancy. Ms Thomas asks if she should take extra zinc tablets.

Ms Thomas also wonders what to eat during pregnancy and how much weight she should expect to gain. She has always been a bit heavy, struggles to maintain her weight, and is now on a diet hoping to lose 20 lbs. She is worried about taking the weight off after pregnancy and wants to minimize her weight gain if possible.

Upon exam, she appears well. Her blood pressure is 112/68, she weighs 170 lbs, and is 66 inches tall with a body mass index (in kg/m²) of 27.5. The rest of her physical examination, including a pelvic examination, is normal.

Students may raise questions for discussion on the basis of this case example, such as the following:

- What advice would Ms Thomas be given about diet and weight gain during pregnancy?
- What, if any, vitamin supplements should be recommended and why?
- What other disease prevention issues might be considered for Ms Thomas?

The use of this case as a vehicle for our orientation to this course stimulates active discussion by the tutors, who draw on their collective wisdom, and highlight gaps in knowledge. Because the tutors anticipate using this case to facilitate their own student tutorials in the following week, they are not only provided with information but are also motivated to review the case-related literature and attend the focused student lecture on vitamin supplementation before the first tutorial. Thus, the tutoring itself and the weekly meetings for tutors create a desire to learn, with opportunities for immediate application of new skills and knowledge. Often, tutors find these teaching experiences to be a significant benefit to their own clinical practice and research.

As the course progresses, the focus on nutrition continues with the use of an adolescent case, “Nan Tarbin,” (12) an underweight 16-y-old. This case provides a vehicle for introducing assessment of nutritional status and growth patterns, as well as eating disorders. During the second tutorial for this case, a dietitian joins each tutorial to co-facilitate a discussion on assessing diets.

It is often said that the best way to learn something is to teach it. As the role of teacher has taken on new meaning and the number of teachers required has dramatically expanded, the imperative for professional development faculty programs has become even more critical. The workshop model presented here has the benefit of quickly engaging large numbers of faculty in a new teaching process while simultaneously offering updates of new nutrition information.

THEMES WEB SITE

Despite the success of the nutrition faculty in integrating nutrition material into the medical school curriculum through the addition of material and faculty workshops to courses and clerkships, some challenges remain for nutrition and the other disciplines treated as themes. We have turned to technology to help us solve these problems. These challenges, and how the themes Web site successfully addresses most of these challenges by turning tedious and near impossible tasks into exercises that can be accomplished in a brief amount of time, are described below.

Five new themes have been added since 1992 when the first 3 themes, including nutrition, were introduced into the curriculum. Efforts to integrate each theme into the curriculum was championed by a faculty theme leader. Each new theme leader faced the task of identifying areas in the curriculum where their material might find a natural home, identifying the faculty who control the target territory in the curriculum, and convincing these faculty to add theme-related material to already full courses. In addition, after accomplishing these tasks, each theme leader needed to periodically resurvey the curriculum to ensure that theme material that was successfully integrated 1y earlier did not subsequently disappear with the evolvement of other courses. To give a sense of the labor-intensive nature of this process, we repeat here the advice of Kushner et al (13) regarding the first in the sequence of steps recommended for inserting the priority nutrition topics into medical school curricula (14): “The implementation of nutrition course work into the medical curriculum may begin with syllabuses from all basic and clinical science-course directors being obtained, with the content and quantity of nutrition-related topics being noted...Additionally, priority nutrition topics that are insufficiently addressed or are neglected in the curriculum can be identified.” This step was undertaken by the nutrition theme leader at Harvard in 1992 and for the ~25 basic and clinical science courses in the HMS core curriculum.

These shared challenges among all theme leaders led to their collaboration in a series of mutual problem solving meetings. At these highly structured meetings, theme leaders participated in exercises that used the creativity-enhancing techniques of metaphor construction and wishful thinking (15, 16). The resulting desire of the assembled theme leaders was that they become omniscient of all aspects of the HMS curriculum and have a universal communication system that would improve contact with course faculty, students, and each other. Fulfillment of this wish also required that all members of the medical school community become more aware and supportive of each theme.

At first these wishes seemed quixotic until 1990 when something approximating omniscience and universal communication was made possible with the aid of imagination, electronic memory, modern search engines, and Web servers in the finite world of medical school curricula. The themes Web site emerged as a result of wishing for what seemed an impossibility.

The themes Web site (Figure 1) features 2 major dimensions. One dimension, the curriculum dimension, illustrated by the column of titles on the left in Figure 1, contains much of the content of the required curriculum. The other dimension, the theme dimension, illustrated by the column of titles to the right of the school shield, is devoted to each of the 8 themes. Through these 2 dimensions, faculty from every corner of every division, department, and discipline search the curriculum to review what it contains, and the theme leaders may reach out into the entire community of students and faculty to communicate important information about a theme.

Curriculum dimension of the themes Web site

The curriculum dimension of the themes Web site responds to the theme leaders’ desire to be as knowledgeable as possible about all aspects of the curriculum. Not only will theme leaders benefit from this Web site; this technology will be available to
The features of the themes Web site go beyond revealing all the nutrition-related items in the curriculum. A search will yield a list of any curriculum elements including lecture notes, lab exercises, clinical skills training, tutorial cases, workshops or clinical training related to this topic. A click on any item in the list opens the complete text of that item, which is further searchable by additional key words. Contact information is attached to each of these curriculum elements, which lists the individual faculty member responsible for that particular lecture, lab, case conference, clinic, including phone numbers, fax numbers, and e-mail addresses. The nutrition theme leader then sends an e-mail to a faculty member on the spot, directly from the Web site.

Because all members of the medical school community have efficient access to the first time to the content of all print material in the curriculum, it is now possible for everyone to know exactly what the curriculum contains. Course directors, lecturers, clerkship faculty, and preceptors may search to see if material related to their course or topic is presented elsewhere. If it is, they may choose to present the material with a different emphasis or from a new perspective. They may remind the students of where they had previously encountered the information, thus reinforcing the original lesson, or they may tell students where the material will be encountered in the future, thus preparing them to be alert to it in a new context.

Plans for assessment

The search capacity of the themes Web Site offers an extraordinary opportunity for curricular content analysis that was not available in 1992. The current assessment plan includes a retrospective electronic search of several 1992 course guides to compare nutrition content before the introduction of the nutrition theme with nutrition content as it is currently represented in the curriculum. In addition, nutrition content has been included in the school-wide comprehensive examination administered at the beginning of the students’ 4th year. This examination, initiated in 1999, will be conducted annually, giving us the opportunity to monitor students’ knowledge base and clinical skills in nutrition.

Faculty development through the themes Web site

The use of the themes Web site has many implications for faculty development.

For example, a tutor in the second-year course Preventive Medicine and Nutrition may search the contents of the first-year course Chemistry and Biology of the Cell to see what relevant biochemistry was presented to students previously. In the process, tutors may brush up or expand their own knowledge base, thus reducing the nagging worry about being insufficiently knowledgeable when teaching outside their main area of expertise. Through such a review, tutors will be in a better position to help students apply relevant biochemistry concepts in the context of the problem-based nutrition cases. A clinical faculty member in the Women’s and Children’s Health Clerkship may build on information from a scan of the Preventive Medicine and Nutrition cases to devise appropriate follow-up instruction in the area of maternal and infant nutrition. Preceptors in the Primary Care Clerkship may increase their teaching effectiveness by searching the curriculum for material significant to their particular student education agendas. For example, preceptors in primary care clinics may want to maximize the effectiveness of their teaching time by knowing in advance what the students’ training has been with respect to eating disorders in adolescents. A search of the curriculum would yield any lecture notes, laboratory exercises, tutorial cases, workshops or clinical training related to this topic.

Any number of productive preceptor-student teaching techniques can be based on preceptor knowledge of prior student training. Preceptors may review with students, or ask them to review on their own, information covered earlier in the curriculum. They may want to help students reframe their knowledge by pointing out the clinical or social significance of the material students learned previously. They may note that critical material related to their clinical practice was omitted from the curriculum and thus begin the students’ rotation with instruction to fill the need. All of these teaching techniques lead to the development of a more reflective teacher (17).
theme leaders to communicate information about their theme to the medical school community. Theme leaders use this dimension in different ways.

The nutrition theme in Figure 2 includes a list of nutrition theme objectives in the curriculum. Included in this dimension is a schematic map of the medical school curriculum indicating courses with nutrition-related material. Interested faculty and students may consult this map to begin, extend, or guide their search for nutrition information in the curriculum. A calendar lists nutrition courses, conferences, grand rounds, support service rounds, or other events available at HMS-affiliated institutions. Contact information is available for the theme leaders and for all local faculty and staff engaged in nutrition-related research or teaching. The theme leaders may be contacted via e-mail directly from this listing. Nutrition-related Internet sites may be accessed immediately from this dimension of the themes Web site. Being developed, but not yet available, are 2 new features: one that will allow students to sign up for a special interest group in nutrition and another that will contain nutrition teaching resources.

Workshops, faculty retreats, and Internet technology are all useful in the professional development of medical school faculty who are charged with the important responsibility of teaching students about nutrition. As the faculty gain expertise in new educational techniques, their knowledge of appropriate nutrition course content also grows. From a once neglected topic, nutrition at HMS has grown to an important theme in the medical school curriculum.

REFERENCES