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Identifying competencies for effective osteopathic physicians in the 21st century

by

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Signature was redacted for privacy.

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For the Major Program

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CHAPTER 1. INTRODUCTION

Overview

Osteopathic medicine, founded in 1874, is currently taught at 19 colleges of osteopathic medicine in the United States accredited by the American Osteopathic Association (AOA). Over the past half-century there have been few changes in osteopathic medical curricula. Recently demands for reform in medical education have increased as a result of changes in the responsibilities of the primary care practitioner as well as changes in the physician-patient role due to managed care and social and economic issues.[1] Innovations in technology for teaching and learning as well as diagnosis and treatment have also contributed to demands for significant changes in education and practice. New research-based knowledge has added considerably to medical course content.[2] Furthermore, the purpose of medical education has shifted; to train physicians for the independent practice of medicine is no longer the primary goal of medical schools.[3] Finally, the revolution in payment for and organization of health services has deeply affected medical practice in the United States. However, graduates have not been prepared for changes in practice management nor in population-based care models.[4,1,5] Often students graduate from medical schools lacking the essential competencies required to practice effectively in the 21st century.[5]

For more than a century, the College of Osteopathic Medicine (COMS) at Des Moines University, Osteopathic Medical Center, has provided medical education based on humanitarian service and ideals and the principles of osteopathic medicine. Established in 1898 by Summerfield S. Still (nephew of Andrew Taylor Still, the founder of osteopathic medicine), COMS is the second oldest and fourth largest osteopathic college, by enrollment,

in the nation. Like its counterparts in medical education,[2] COMS has adopted few major curricular changes for the last half-century.[3] Medical education has "a history of reform without change,"[6] while medical practice has experienced radical changes during the same time period.[1,2,7]

Since the implementation of discipline-based curricula in 1871,[1] most medical schools have followed the 2+2 model, with basic sciences in the first two years and clinical experiences in the following two years.[3] This left little room in the curriculum for new issues related to practice management or managed care, improved competencies in communication, evidence-based medicine, patient advocacy or wellness education.

A scientifically based curriculum has been the core of all medical education since the Flexner report in 1910.[7] This emphasis has raised concerns that a practice of science-based and a technologically complex type of medicine has led to dehumanization.[8] Furthermore, educational values oriented toward humanistic and competent physician behaviors have been subordinated to bureaucratic organization and departmental protectionism.[8]

In 1998 the report of the Medical School Objectives Project (MSOP)[3] called for the creation of "a better alignment of educational content and goals with evolving societal needs, practice patterns, and scientific developments"[3] Furthermore, "As circumstances change, medical educators must understand the meaning that these changes have for medical practice and medical education, and must renew the medical student education program accordingly."[3] These changes may include more of a focus on cost effective practice, public healthcare, and management issues throughout all four years of training.

Statement of the purpose

The purpose of this research was to identify the essential competencies for effective osteopathic physicians for the 21st century on which to build a foundation for curricular reform at the College of Osteopathic Medicine and Surgery (COMS), Des Moines University--Osteopathic Medical Center.

Statement of the problem

COMS basic science and clinical faculty were aware that changes in the curriculum were necessary. Past attempts to reduce the amount of lecture time required to cover new medical information were often thwarted by curriculum drift. Each discipline tended to add more lecture hours in order to cover new information. This is a common practice in medical schools. The literature suggests that curriculum tends to reflect what the faculty think should be contained in it rather than what students need to learn.[6] However, the goal of COMS administration was to reduce the number of hours students spend in class and reduce the total hours required in the school year. Therefore, further changes in curriculum needed to be based on what students need to know, to do, and to value. As a result faculty wanted to identify the most important and essential competencies of effective osteopathic physicians.

Research questions

Two research questions emerged from COMS faculty discussions:

1. What are the essential competencies for effective osteopathic physicians in the 21st century?
2. Is there a significant difference between the ranking of competencies by osteopathic physicians and allopathic physicians?

The impetus for a study to identify essential physician competencies at COMS was a curricular review exercise at a faculty retreat in 1999. Basic science and clinical faculty participated in a small-group process of consensus building. Retreat leaders encouraged groups of 10 to 12 faculty members to imagine and describe the ideal osteopathic physician for the 21st century. Faculty members were asked to list the knowledge, skills, and professional attitudes and values of the effective family practice physician of the 21st century. The outcome was a list of competencies ranked in importance by the entire faculty, based on their own knowledge, skills, and attitudes and values, as well as their predictions of the needs of patients in the new century (see Table 1).

COMS faculty questioned whether or not all essential competencies had been identified. To gain wide participation and broad-based consensus, faculty leaders decided to ask physicians and other health care professionals to identify and validate competencies for effective physicians. Because osteopathic and allopathic physicians receive training in different medical schools, the faculty wanted to know if there is a difference in the ranking of competencies for effective physicians as compared to rankings by allopathic physicians.

Participants in the research were faculty members representing various departments in COMS, two medical students, instructors from the College of Podiatry and from the College of Health Sciences, and selected members of the administration and staff. Two medical practitioners and educators and one researcher and educator (from outside the University) joined the Curriculum Redesign Task Force. The task was to identify and define the competencies necessary in the development of quality osteopathic physicians who will become life-long learners and teachers in serving and providing for the total health care needs of the public.

Table 1. List of competencies from COMS faculty retreat

Scholar and master of clinical and basic sciences
Brings to his/her work a strong foundation of science and knowledge and experience.
Demonstrates ability to analyze basic science and clinical data and utilize rapidly.
Integrates clinical practice and basic science.
Exhibits good clinical judgment.
Understands pathophysiology.
Professional development
Possesses lifetime learning attitude; develop life-long learning skills.
Consumes and understands meaning of research literature and evidence based practice.
Keeps abreast of trends.
Models ethical, moral and professional behavior.
Be true to yourself and to osteopathic medicine's holistic heritage.
Demonstrates recognizable patient-centered philosophy and practice.
Practices preventative medicine.
Exhibits professional loyalty and participation.
Business skills
Demonstrates ability to understand business and administration of medicine.
Understands role as health care coordinator.
Displays an intimate knowledge of managed care, regulatory issues, and government influence on practice.
Demonstrates physical and practice skills that enable quality care.
Participates in and utilizes team philosophy of practice.
Possesses clinical openness to most appropriate (including alternative) treatments.
Understands and synthesizes complementary medicine.
Interpersonal skills
Demonstrates empathy, caring, sensitivity and compassion.
Uses good communication skills with medical team.
Relates to and deals effectively with patients.
Demonstrates good listening skills.
Exhibits good leadership skills.
Becomes an humble leader.
Practices time management.
Values diversity.
Intra personal skills
Nurtures self, family, patients
Technical skills.
Demonstrates expertise in OMM Osteopathic Manipulative Medicine (Manipulative Treatment).
Demonstrates ability to do physical diagnosis, technical and problem solving.
Educator
Be a patient communicator
Be a political communicator
Understands behavioral aspects of health care
Provide service to the community and profession.
Spirituality.
Advocates for patients in health care marketplace
Is a health-promoting role model for students, patients and the community.

Theoretical perspective

A curriculum based on a foundation of essential medical competencies provides a bridge between the behavior required for professional practice and the preparation necessary for students to achieve these outcomes. Competencies indicate classes of behavior, not statements of subject matter; and learning objectives based on core competencies identify more than knowledge content. It is not enough to *know* or *understand*; rather the student must perform at an acceptable level or to a professional standard. Competencies address professional standards, specific skills, and mastery of cognitive knowledge, as well as attitudes and values. They are used to assess the attainment of objectives and measure achievement and accountability in the practice of medicine.[7] A competency-based curriculum allows experts to analyze and construct the subject matter necessary to achieve competence. Rather than simply listing the discipline-specific knowledge necessary for being a good physician, a competency-based approach identifies the subject matter as a necessary ingredient in making one more competent in certain areas of expertise.

The Accreditation Council for Graduate Medical Education (ACGME)[9] states four factors which express the need for medical education to base curriculum educational outcomes assessment on core competencies.

1. Accountability

   Our system of medical education relies heavily on considerable public funding. We therefore need to be accountable to the public in terms of both meeting *public needs* and *preparing well-qualified new physicians* (emphasis in original) in the most cost-effective way possible.

2. Process vs product

   Measuring program quality by examining structure and process is not a direct or complete measure of the quality of the educational outcomes of a program.

3. Department of Education requirements

   The U.S. Department of Education spearheaded a movement in the 1980s aimed at greater inclusion of outcomes assessment in the accreditation process.

4. Political need for better measures of quality

   Availability of educational outcomes based data is necessary to inform discussions with policymakers and others who have become increasingly focused on issues related to funding for medical education, and, most recently, on issues of patient safety. [9]

While Des Moines University-COMS is a private medical school and not state supported, accountability is still an important factor. Patient demands require accountability in the medical field. For economic reasons, as well as ethical reasons, the public has a right to expect the best medical care when they put their trust in osteopathic physicians. Furthermore, medical students hold their schools accountable for their preparation as competent and effective physicians. As the pool of candidates for medical school becomes smaller, colleges have added incentives to prove accountability to students who enter their programs.

Limitations of the study

This study of effective competencies for osteopathic physicians for the 21st century had two phases: Phase I, the Nominal Group Technique (NGT), and Phase II, the

questionnaire. The NGT used face-to-face meetings with a broad base of healthcare professionals, medical students and residents, and some health care consumers. Groups were established based on convenience of location, although an attempt was made to reach a variety of health care professions. All but two groups were located in Iowa within a day's driving distance of the University. Two groups, one of allopathic and osteopathic physicians and instructors and one of osteopathic medical students, were located at one medical school in Florida; however, there was little or no difference in the most important physician competencies identified by in state and out-of-state physicians and students.

The questionnaire was sent to a carefully selected, random sample of osteopathic physicians and allopathic physicians in all states in the United States that have schools of osteopathy. This was done purposively to ensure that allopathic physicians would be well aware of osteopathic physicians. However, random samples of other healthcare professionals, such as nurses, podiatrists, and physical therapists were from Iowa, and not necessarily representative of those in all 16 states where osteopathic medical schools are located. The survey was sent to all science educators in medical schools that belonged to a certain association of science educators. In addition responses from science educators (faculty) at Des Moines University heavily weighted the results of the survey.

Furthermore, because the COMS Curriculum Task Force was most interested in how osteopathic physicians ranked the list of 91 competencies identified by the NGT, a random sample of 2,000 osteopathic physicians received the questionnaire as compared to a random sample of 500 allopathic physicians. This may have had some effect on the outcome of the comparison of rankings by D.O. and M.D. physicians, although the data analysis methods addressed this possible risk.

Finally, the rate of response to the Phase II survey was 15 percent. This response may have had some effect on the overall ranking of competencies. Low response from physicians is a common problem in survey research.

Significance of the study

The Task Force identified several reasons for redesigning the medical curriculum based on a foundation of core competencies. First, the Task Force would assist the faculty to compare COMS curricular practices to the current practice of osteopathic medicine. Curriculum review is a regular activity in the process of continuous quality improvement (CQI). Curriculum is not static, but evolves along with social and economic changes and medical advances in research, diagnosis, and treatment. While COMS has a long tradition of excellence in osteopathic medical education, the College must constantly maintain its vitality and efficacy as well as preserve its distinctive status as an educator of primary care, osteopathic physicians.

By establishing the individual competencies that a student must demonstrate to qualify for graduation and entry into the profession, COMS must set standards. For these standards to be of real value, COMS must have in place methods to measure the degree to which a student has acquired and can demonstrate the competencies needed to care for patients.

In addition, COMS faculty were interested in knowing if osteopathic physicians would rank certain competencies higher than allopathic physicians. This would be an important aspect of a new osteopathic curriculum at the medical school, as it would serve to further define the difference between the osteopathic and allopathic medical education and add emphasis to those competencies deemed more important by osteopathic physicians.

Definitions

The following definitions serve to clarify and inform readers in their understanding of the terminology used in this study.

Doctor of Osteopathic Medicine (D.O.)

The Doctor of Osteopathic Medicine, or D.O., is a fully trained and licensed physician who can practice in every state. The following explains the osteopathic philosophy:

> Osteopathic Medicine emphasizes the relationship of the body's nerves, muscles, bones, and organs. The osteopathic philosophy of treating the whole person is applied to the prevention, diagnosis, and treatment of illness, disease and injury.[10]

There are approximately 42,000 D.O.s practicing today in the United States. [10] Sixty-four percent of D.O.s enter primary care medicine, which includes family practice, pediatrics, obstetrics/gynecology and internal medicine. In addition to primary care medicine, D.O.s may enter any medical or surgical specialty, such as neurology, cardiology, psychiatry or orthopedics. [10]

Allopathic physicians

Medical doctors are often called allopathic physicians, especially by osteopathic physicians, as a way to make a distinction between the two medical professions. D.O.s and medical doctors (M.D.s) take the same medical board licensing examinations, compete for the same residencies, and enter the same medical and surgical specialties.[10]

Defining competencies

The Task Force reviewed published literature on competency-based curriculum. Many studies defined competencies in specific areas of medical education, such as primary care physicians;[11] preventive medicine;[12] physician administration;[13] physicians in medical management;[14] and pediatrics.[15] The Task Force also reviewed recent national studies in medical education: the Medical School Objectives Project (MSOP) through the Association of American Medical Colleges;[3] the 1998 Pew Health Professions Commission Report;[16] and the Council on Graduate Medical Education (COGME) Thirteenth Report.[5] A competency was defined in each report or study in similar and complementary ways. The following definitions helped define competency as used by Task Force researchers.

1. ". . . behaviors that assist the performer to overcome known barriers to achieving performance standards."[17]
2. ". . . the condition of being capable. Necessary competency indicators -- knowledge, skills, and appropriate professional attitudes."[2]
3. " . . . encompassing knowledge and performance-- the capacity to function. Physician competency is mastery of the necessary knowledge base and the ability to utilize this knowledge in the delivery of effective medical care."[18]
4. Medical management competencies: i.e., the ability to perform a complex task or function in different contexts. "Competency implies an ability to transfer skills and knowledge to new situations. Competency pertains not only to subject matter but also to procedural knowledge and judgment."[19]

5. ". . . possession of sufficient physical, intellectual and behavioral qualifications (i.e., knowledge, skills, abilities, and attitudes) to perform a task or serve in a role which adequately accomplishes a desired outcome."[20]

The Task Force selected the following definition of competency for its study of competencies of effective osteopathic physicians: A competency is a general statement of physician traits, attributes, and qualifications required to perform effectively. Elements that define competence include the necessary knowledge, skills, and associated professional attitudes and values needed in order to perform a complex task or function. Competencies are not learning objectives. Learning objectives are statements of what the student should be able to do following instruction. A competency is a broader, overall category under which many learning or behavioral objectives may be grouped. The role of the instructor is to assist students to acquire each competency deemed essential to become an effective osteopathic physician.

When a medical college is able to identify and define the competencies they expect their students to attain, the school must develop instruments to assess student competence. The institution needs to develop standards agreed upon by the faculty. How the instruments are to be used and what is acceptable evidence for competence needs to be determined in advance.

Summary

Chapter 1 introduced a current dilemma in medical education brought on by major changes in healthcare. In addition to managed care and social and economic issues, rapid changes in medical technology and information systems have demanded reform in training and practice. Changes in the responsibilities of the primary care practitioner and the

physician-patient role requires reform in medical education, as the primary goal of medical schools is no longer to prepare solo practitioners. Medical education must also encompass new research-based knowledge in its content. However, medical schools have adopted few major curricular changes for the last half-century. As a result of reform without change, medical students are often ill prepared to handle the healthcare demands of their patients in the 21st century.

The purpose of this research was to identify the essential competencies for effective osteopathic physicians for the 21st century on which to build a foundation for curricular reform at Des Moines University College of Osteopathic Medicine. Faculty developed an initial list of competencies for the ideal osteopathic physician and a Task Force was appointed by the Dean to develop a broad-based consensus of competencies that would become the foundation for curriculum reform at COMS. While several national studies have defined new, essential competencies for physicians, COMS was interested in developing its own master list of competencies. Most national studies have identified competencies for physicians in general. Because of its unique philosophy of treating the whole person and its emphasis on prevention and wellness, COMS wanted competencies defined specifically for osteopathic physicians and the osteopathic philosophy of medicine.

The two research questions that emerged were:

1. What are the essential competencies for effective osteopathic physicians in the 21st century?
2. Is there a significant difference in the ranking of competencies by osteopathic physicians and by allopathic physicians?

The Task Force selected the following definition of competency for its study of competency-based curriculum design: a competency is a general statement of physician traits, attributes, and qualifications required to perform effectively. A competency is a broad, overall category under which many learning or behavioral objectives may be grouped. The role of the instructor is to assist students to acquire each competency deemed essential to become an effective osteopathic physician.

Chapter 2 reviews the literature studied in order to develop a design for the research that identifies the most important competencies for effective osteopathic physicians.

CHAPTER 2. REVIEW OF THE LITERATURE

Introduction

As a background for the research identifying and defining essential competencies for practitioners of osteopathic medicine, this chapter examines a variety of studies in the literature that identify and define medical competencies required by physicians. An extensive review revealed a combination of methods for listing and ranking competencies, including: asking the experts, such as educators and administrators in the discipline; examining tests, exams, and boards; past studies, such as the 1991 PEW Health Professions Commission; observing practitioners in the field; and examining simulations and standardized patients.[14,21] In addition, researchers examined patient needs, reviewed patient medical records[22] and actual requirements of clinical practice, and surveyed consumers through questionnaires.[13] Groups of health care professionals were surveyed, and some practicing physicians contributed reports of individual self-studies of competencies.[13]

Methods used in identifying competencies

Past studies often used a combination of several strategies to determine, refine and rank lists: panels of experts;[23,27] nominal group/consensus, focus groups[25,3] (random, expert, and practicing physicians);[14] literature reviews and surveys;[15] telephone surveys; [26,23] and Delphi poll or modified Delphi techniques.[28,13,29]

Expert panel determines core competencies

In a 1997 study on core competencies for physician practice success,[23] an expert panel was used to assess competencies needed for a staff physician. Ten people representing both clinical and administrative areas of a 650 physician, salaried group was assembled. Approximately 20 percent of this group worked in managed care. All panel members

rated consistently as outstanding performers and had a mean tenure of eight and a half years in the practice. The panel was given information on the competency clusters and asked to think about characteristics needed to perform the job in a superior manner.

Competency clusters:

- Achievement/Action
- Helping/Human Service
- Impact and Influence
- Managerial
- Cognitive

The panel was asked to rank order the traits needed for job success. Then the panel was asked to rank order characteristics important for job performance in this group in fee-for-service medicine and managed care settings using their knowledge of the different expectations of physicians in each environment. Each panel member ranked the characteristics independently. Finally the rankings were discussed and consensus characteristics were compiled.[23]

The study defined competency as "an underlying characteristic of an individual that is causally related to criterion-referenced effective and/or superior performance in a job or situation". Furthermore, a competency is an attribute of personality and also a predictor of behavior and performance. "A characteristic of an individual is not a competency unless it is a predictor of performance in the real world."[23]

The study defined two kinds of competencies:

1. Threshold competencies, the basic skills necessary for minimum performance in a given job;
2. Differentiation competencies, the factors that distinguish superior from average performance.[23]

Competencies determined through several groups of experts

In a study to determine competencies in Canadian geriatric medicine,[24] the following method was used. Researchers reviewed four published lists of training objectives in geriatric medicine. Then they carried out a task analysis of practice and defined the competencies that were required in everyday clinical duties. Eleven competencies were itemized.

The list of competencies was sent to 13 colleagues practicing geriatric medicine in Canadian academic centers with residency training programs and to members of the executive of the Canadian Society of Geriatrics. The list was expanded and categorized into the areas of knowledge, attitudes and skills. The revised list was sent to all 131 members of the Canadian Society of Geriatric Medicine for their input. Fourteen written replies were received.

In another effort to collect more input, 45 practitioners and trainees in geriatric medicine attending an annual meeting were given the opportunity to respond to the proposed list of competencies. At every stage alterations were made in response to feedback. The next step was to convert competencies into specific behavioral goals. Competencies required were put in categories of knowledge, attitudes and skills.

Competencies determined by patient needs

A 1994 study of generalist physician's training developed competencies from actual patient needs. It did not "rely on a consensus process among specialties to define the scope of primary care practice." Instead the study attempted "to derive generalist physician training components from an analysis of the actual requirements of clinical practice."[22]

The following method was used to develop a comprehensive list of training components necessary to prepare physicians for generalist's practices. First the study reviewed three types of data:

1. Leading causes of morbidity and mortality that could be reduced by primary and preventive care (e.g. Substance abuse, nutrition, and exercise counseling, and cardiovascular and cancer screening).
2. The most common presenting conditions, diagnoses and other encounters (e.g. preventive screening and counseling) that trained generalist physicians could be expected to manage.
3. Expert reports defining the competencies needed for generalist practice.[22]

The study analyzed the training components to define the content and scope of generalist practice, which contained the following characteristics:

- Care for a broad spectrum of the population
- Care for patients in multiple settings
- Provision of comprehensive preventive care
- Treatment of common acute illnesses
- Provision of continuous and coordinated care for common chronic conditions
- Behavioral problems[22]

In each of these six groupings, specific and comprehensive training components were then identified using the above data sets. A seventh category of other specific competencies that are essential for generalist physicians (evaluation of undifferentiated conditions, patient education, risk management, cost-effective care, critical medical literature appraisal) was developed from a synthesis on the literature on primary care practice.

This method generated a list of 60 training components divided into the seven categories that reflect the broad scope of training required to prepare generalist physicians

for the variety of conditions they should be able to manage.

Competencies determined through examination of physician medical records

The Journal of Internal Medicine[18] reported that physician competency might be determined through the use of medical records of physicians. In 1979 a team of trained non-medical abstractors studied and evaluated medical records of physicians, collecting uniformly reliable and unbiased data. In this study, competency was defined as: "encompassing knowledge and performance--the capacity to function. Physician competency is mastery of the necessary knowledge base and the ability to utilize this knowledge in the delivery of effective medical care."[17] The study criticized tests designed for assessing knowledge only as a measure of competence.

> There is a need for objective measure of physician performance, a need for a means to assess judgment, logic, and interpersonal skills. If this is possible, competency can be ascertained objectively on the basis of cognitive examination and clinical performance. The medical profession has too long relied on knowledge assessment as a proxy for assessment of competent performance. [17]

Difficulties with this type of assessment of performance, however, were the patient records themselves: lost or misfiled laboratory tests, physician handwriting that was not legible, a cumbersome method of record retrieval, and missing or incomplete physician notes.

Another example of utilizing several groups of experts used concept documents from the Residency Review Committee for Preventive Medicine and the American Board of Preventive Medicine.[12] Researchers in 1998 developed a list of proposed competencies for

managerial medicine. Surveys were mailed to medical directors of all members of the American Association of Health Plans and to a random sample of diplomats of the American Board of Preventive Medicine. Respondents were asked to rate the importance of these competencies of a population-oriented clinician manager.[12]

Delphi technique determines competencies

A Delphi procedure was conducted in 1998 to identify the most important competencies physician executives, in medical groups and other ambulatory settings, need to have in the next five years.[13] The research also explored the specific job skills, knowledge, and abilities (SKA) that physician executives need to acquire these competencies.

The Delphi technique, developed by the RAND Corporation, has been used extensively in a variety of health care settings to predict future trends and establish priorities. A Delphi study is a multi-staged survey using sequential questionnaires. This study determined that "medical practice physicians require a large array of competencies involving managing clinical quality, as well as business and finance issues."[13] In this study ACMPE physicians were asked to identify the top five competencies that medical practice physicians will need to know in the next five years. Respondents were asked to describe the specific management skills, knowledge, and abilities (SKAs) medical practice physicians will need to achieve the referent competency. Open-ended questions were used to gather the job knowledge and language of the respondents. Additional insight was gauged for each competency by asking what particular SKA supported the chosen competency. A list of unique competencies and the number of times physicians listed each competency was supplied to the expert panel. Then the panel grouped the competencies into 13 management domains.

During the second round of decision making, ACMPE physicians were asked to review the feedback and to assign relative importance ratings for the SKAs within each management domain on a 7-point relative bipolar adjective rating scale. The respondents' demographics were collected as well.[13]

Another study,[29] did not specifically address competencies but is a good example of the Delphi technique in use. The Delphi technique is a means for "systematically aggregating the opinions of a panel of experts in developing a consensus to inform the development of a subsequent plan of action. The Delphi technique is based on the assumptions that many heads are often better than one; that a group estimate can be more reliable than that of one expert."

The purpose of the study was to determine curriculum for a one-month ambulatory care clerkship in the fourth year in a medium-size school of medicine. According to the authors, the first task in developing curriculum is to obtain the opinions of (a) representatives of society, (b) learners and (c) experts in the discipline. The committee obtained the opinions of clinicians and educators throughout the state experienced in ambulatory medical care and or medical student education.[29]

Questionnaires were used in three successive iterations to collect the views of the experts. This allowed them to remain anonymous while preventing domination by particular individuals who might otherwise be overly influential in a group decision. The purpose of the initial iteration was to identify broad issues based on the components of a curriculum (e.g., objectives, teaching strategies, and evaluation approaches). Responses to the questions addressed in the first questionnaire were synthesized and then used to construct the second

questionnaire, which asked respondents to rate the importance of each issue raised in the first iteration as that issue pertained to development of the curriculum.

The responses to the second questionnaire were analyzed and communicated to the respondents in the form of a third questionnaire that asked them to reconsider their ratings of the curricular characteristics based on the group response and to select what they felt were the most essential characteristics concerning each issues.[29]

Survey of practitioners rank predefined competencies; consumers rank practitioners

A 1994 study of physician competence built on those competencies predefined by Pew Health Professions Commission in 1991. According to the study, "For medical education to reflect the perceived needs of communities, it is imperative to identify which of the competencies are deemed important by physicians and by patients. Also imperative is an understanding of how well physicians are currently performing in these areas." [30]

The Pew Health Professions Commission in 1991 examined the importance of various areas of competence in medical practice from the perspective of 300 randomly selected practicing physicians. Researchers asked physicians how important they believe it is for medical education to provide training in the 17 competency areas identified by the commission and how well they were trained in each area.

In this study, medical healthcare consumers were asked about the importance of seven of the competencies rated earlier by the physicians. They also asked respondents to rate the performance of their own physician in each of these areas: diagnosis and treatment of illness, communication with the patient, ethical conduct, cooperation with other health care professionals, promotion of preventive care, use of technology, and consideration of the cost

to the patient. These seven competencies were chosen for the investigation because the Pew Health Professions Commission believed that they were the most relevant to consumers. The consumers' perspectives were then compared with the physicians' ratings of the importance of these competencies and with the physicians' report of the quality of the training they received in each area.[20]

Another study building on the competencies of the Pew Health Professions Commission was reported by Finocchio et al. in 1995.[26] The Pew study identified competencies from the skills, attitudes and behaviors defined as necessary for the nation's health care practitioners to meet society's evolving health care needs. The purpose of this study was to examine physician's attitudes toward 16 competencies deemed essential to the effective practice of medicine in the changing health care system.

In early 1991 a telephone survey was conducted of 300 physicians from random samples selected as representative of the physician population in the continental US. The physicians were categorized as general practitioners, surgery specialists, and other specialists, and as belonging to the graduation cohorts of 1960-1969, 1970-1979, and 1980-1989. The physicians were asked to rate 1) the importance of formal undergraduate training in each of 16 competencies and 2) the adequacy of their own undergraduate training in the competencies.[26]

Selected subjects were from three random samples of physicians: 665 general practitioners, 225 surgery specialists, and 610 specialists in other areas, from the population of physicians in the continental United States. Subjects were contacted by telephone to set up an appointment for a telephone interview. According to the report, "Doctors of osteopathy were excluded because osteopathic curricula differ from allopathic curricula."[26]

Work groups and surveys of practitioners determine competencies

Defining competency as "the ability to perform a complex task or function... to transfer skills and knowledge to new situations," a study to define competencies and performance indicators for physicians in medical management used the following method.[14] The American College of Preventive Medicine (ACPM) formed a work group on medical management competencies, comprised of physician executives and preventive medicine residency program directors with expertise in medical management. The 13-member group included twice as many practitioners or employers as academicians. The ACPM convened a two-day meeting of the work group in December 1996.

The results of the working session were discussed at the Annual Workshop of Preventive Medicine Residency Program Directors held later that month and various forums held in conjunction with the National Prevention '97 conference.

In addition, the medical management competencies and related updated management and administration core competencies were mailed to a broad audience of interested parties for comment: preventive medicine residency program directors in all three specialty areas; members of the board of regents of the ACPM; members of the American Board of Preventive Medicine (ABPM); members of the Residency Review Committee (RRC) for Preventive Medicine of the Accreditation Council for Graduate Medical Education (ACGME); Members of the Board of Directors of both the American Board of Medical Management (ABMM) and the American College of Physician Executives (ACPE), and other individuals.

Researchers identified performance indicators for each of the competencies. They determined categories of evidence to be collected and used as a foundation for judging

attainment of competency. These indicators distinguished between successful and unsuccessful performance, identified the characteristics of superior performance, and served as examples for residents, faculty, and future employers to gauge mastery of the competencies.

Literature review and survey determine competencies

In order to develop, implement and evaluate a list of competencies that a resident must possess in order to satisfactorily complete a pediatric residency program, researchers reviewed pediatrics literature to determine what other investigators thought were the tasks most frequently performed by pediatricians.[15] They found that these tasks could be grouped into 11 categories parallel to the medical decision-making process. These 11 categories were collapsed into seven areas of common content that were compatible with the definitions for roles and competencies.

Researchers validated the seven basic roles of the general and ambulatory care pediatrician by submitting the survey questionnaire to the directors of 236 residency programs approved by the American Board of Pediatrics. Each of the roles was scored quantitatively on a scale of 1 to 6, where 6 indicated "strongly agree" (that the role is essential). The residency directors were also asked to provide the following demographic information regarding their programs: type of program affiliation; single versus more than one training site, location of the residency and population of the area, and age and size of the residency program.

Interviews, survey and focus groups determine competencies

In its initial phase, the Medical School Objectives Project (MSOP)[3] of the Association of American Medical Colleges, Division of Medical Education interviewed

prominent physicians who had written extensively about issues related to attitudes and values objectives. Then, they developed an instrument with student representatives of the AAMC and the Organization of Resident Representatives to be used to assess the perceptions of students and resident physicians about the impact of the "silent curriculum" on their attitudes and values.

Finally they held focus group sessions with groups of program directors in the six core specialties which commonly required clinical experiences in the medical school curriculum-internal medicine, pediatrics, family medicine, obstetrics/gynecology, surgery and psychiatry.

The Accreditation Council for Graduate Medical Education[7] identified six General Competencies by thoroughly researching the literature and other documentation, gathering input, obtaining feedback, and preparing numerous revisions. ACGME used an extensive input and feedback process that involved published reports, curriculum documents, surveys, interviews, and focus groups. Representatives from the medical profession, residents, and educators, employers of physicians, patients, and society-at-large as typified by a private foundation, the U.S. government, health care quality monitors, and community health providers were involved. Executives representing nurses, physician assistants and allied health professionals were also queried. From a compilation of the data, an original list of 86 statements was cut to six General Competencies.[3]

Summary

Because physicians do not work in a vacuum, their ability to work in teams, to collaborate and confer with other health professionals, to attend to not only the patient but also the patient's family and environment, are important aspects of their effectiveness. D.O.s

and M.D.s both can identify competencies that they believe are important to their success as a healthcare giver; however, as the literature shows, other health care professionals, from nurses to community health providers, health care administrators and patients themselves have much to add to the definition of a competent physician.

Chapter 2 looked at 12 studies of physician competencies within the last 12 years, examining diverse methods used to develop a master list of competencies. Most studies used more than one method to identify and validate competencies. One may conclude that a broad base consensus of health care professional's perceptions of physician competencies is useful and desirable, as are the perceptions of patients. However, physicians themselves often determine the final list of most important competencies among those identified by others. Perhaps this points to the need for both the osteopathic and allopathic professional medical organizations to develop clear standards that are recognized and adopted by each medical school as a measurement of medical student competencies. Also of note is that none of the studies in the literature examined competencies of osteopathic physicians or the differences in competencies between the two types of physicians.

Chapter 3 discusses the methodology selected by the COMS Curriculum Task Force and explains the sample used in Phase I and Phase II.

CHAPTER 3. METHODOLOGY

Introduction

Chapter 2 reviewed the methods 12 studies used to identify competencies for present and future physicians. These included physician self-studies, physician interviews, physicians surveyed in small and large groups, including the use of focus groups and nominal groups. Also used was the Delphi technique, an iterative method of building consensus among experts in the field who have the ability to predict changes. Questionnaires were mailed to some respondents and telephone interviews collected input from many different sources, including healthcare administrators and nurses as well as medical consumers. Some studies looked at the records of physicians to determine what patients are treated for and what competencies are needed by physicians to treat them.

The COMS Curriculum Task Force determined a need to gain wide participation to develop a broad base consensus of physician competencies. Because a distinction exists between osteopathic and allopathic physicians, the Task Force was interested in how respondents from the two professions would rank the importance of a list of competencies. This chapter defines the sample used in both Phase I and Phase II of the study and further explains the design of the study. Also, the treatment of the data is explained.

Study design

The Task Force concluded that there is no one right way to identify and define competencies; several different methods reach the goal of identifying the most important competencies of effective physicians to use as a basis for establishing the osteopathic medical school curriculum. COMS faculty already had identified the competencies they

believed students at COMS need to acquire in order to become effective physicians. The Task Force chose to expand the list and to validate it through further research.

Proposed was a two-phase process to identify, define, and validate essential competencies on which to base a revised curriculum. The two phases were: Phase I: the Nominal Group Technique (NGT); Phase II: Questionnaire. The master list would be compared with those competencies identified by COMS faculty and with other research studies, such as the MSOP. In this way, the group process of identifying and validating competencies would be expanded to a broader base of individuals outside the faculty and outside the medical college environment.

Phase I: The Nominal Group Technique

The NGT is a small-group strategy for generating ideas developed in 1968 by Andre Delbecq and his associates at the University of Wisconsin.[31] The purpose of the NGT is to identify broad issues. As a qualitative research technique, the NGT has been widely used for program planning in health care, social service, education, industry, and government organizations. NGT encourages individual participants to silently identify and list their ideas in response to a research question, and then, through a round-robin process, bring these ideas to the group. Participants may or may not know each other. They are part of a group--in name only--which is the meaning of nominal. The Task Force expected that the NGT would result in rich, meaningful data on which to build consensus on the most important competencies for physicians

Over the course of seven months (December 1999 to June 2000), Task Force members held 16 nominal group sessions involving different groups of people. These one-to two-hour sessions included osteopathic and allopathic practitioners and educators; medical

students and resident groups; patients; nurses; physician attendants; pharmacists; mental health professionals; nursing home administrators; podiatrists; community health providers and administrators; and medical educators, both clinical and basic scientists.

The NGT involved three major steps:

Step 1: Moderator listed ideas in brief phrases on a flip chart.

After explaining the purpose and benefits of NGT to participants, the moderator directed individuals to write down ideas in response to the question: "What are the essential competencies for an effective osteopathic physician for the 21st century?" The group leader resisted responding to requests for clarifications to avoid leading participants. In other words, members were not instructed to think only of those competencies that could be acquired in four years of medical school, nor were they asked to limit suggestions to primary care physicians. The moderator encouraged participants to list ideas from their own points of view or fields of expertise and to predict the competencies that physicians of the future would require. When questioned about the use of the term osteopathic in the research question, the moderator told participants only that the COMS curriculum is designed to educate osteopathic physicians.

Step 2: Each recorded idea discussed for clarification.

The second step of the NGT was a round-robin recording of participants' ideas on a flip chart. Individuals stated one idea from their worksheets, summarized in a brief phrase or a few words. Participants skipped their turn when their list was exhausted, but were encouraged to reenter the process later to add new ideas, even if these were not listed on the original worksheet. The moderator encouraged participants not to discuss or debate the attributes or problems associated with any one idea until all ideas had been recorded. The

recorder also attempted to list ideas in the exact words of the participants, sometimes asking individuals to restate their comments more briefly.

After all ideas had been presented, group members discussed each item on the flip chart. The moderator encouraged comments about the relative importance of each item. Participants contributed questions, clarifications, statements of agreement or disagreement, and examples.

Step 3: Individuals voted to reach consensus.

In the final step of the NGT, individuals voted on the relative importance of each item. Participants selected the five items from the list on the flip chart that they viewed as most important. They ranked the top five items according to priority, assigning a value of five to the item viewed as most important and a value of one to the item viewed as least important. The moderator tallied the votes and recorded them on the flip chart. If time allowed, participants were encouraged to point out similarities or dissimilarities of ranked ideas or to comment on the process or the results of the process.

More than 130 men and women participated in the consensus-building exercises. Most of the groups were located in rural and urban Iowa, within a day's driving distance of the University. One nominal group of allopathic and osteopathic medical instructors and one nominal group of osteopathic medical school students participated from Nova Southeastern University Osteopathic Medical School. Each group generated from 20 to 60 competencies and, through consensus, developed a list of the top 10 competencies needed by an effective physician. The result of the nominal group sessions was a list of over 150 potential competencies. Members of the Task Force then refined the list by reducing redundancies and combining some statements. The product was a final list of 91 potential competencies (see

Table 2). Researchers attempted to retain the integrity of the ideas presented by individual participants by using the participants' original wording and syntax. Some redundancies remained; some statements were complex (addressing more than one idea), and some statements were not worded clearly. However, this list formed the basis of a questionnaire for Phase II of the research.

Phase II: The questionnaire

Because the practice of medicine continues to be influenced by many outside forces, factors such as technological developments and reimbursement plans, and the organization of health services,[4] predicting the educational needs of osteopathic physicians of the future is problematic. The Task Force decided to ask experts in the field—practicing health care professionals and medical educators—to rank and comment on the list of competencies identified by the NGT. In this way, the findings of Phase I (NGT) would be validated by practicing experts. Phase II of the Task Force Initiative proposed that a questionnaire containing the competencies be sent to a random sample of allopathic and osteopathic practicing physicians. In addition, a random sample of nurses, physician assistants, and physical therapists from Iowa were asked to complete the questionnaire. Basic science educators in medical schools and members of the COMS faculty at DMU were the third group included in the survey.

Distribution of questionnaire: Sample

Researchers selected a sample of 3,061 participants. Because Task Force members were most interested in what osteopaths could contribute to the research study, the group of experts used in COMS curriculum research included a random sample of 2,000 doctors of osteopathy from the 16 states in the United States that have osteopathic medical schools.

Table 2. Ninety-one competencies ranked in order of importance by M.D., D.O., basic science instructors, and allied health professions (n 471)

Rank	Question
1.	Exhibits competency in clinical skills.
2.	Elicits an accurate and complete medical history and performs a thorough physical examination.
3.	Recognizes personal limitations and clinical skills and knows when to refer or obtain consultation.
4.	Demonstrates respect for patient confidentiality and privacy.
5.	Integrates information gained from medical history and physical examinations with the principles of science and patho-physiology to arrive at appropriate diagnosis and treatment.
6.	Demonstrates empathy and compassion, comforts patients and provides patients with realistic expectations about outcomes while preserving hope.
7.	Demonstrates knowledge of hygiene and sterile techniques.
8.	Performs basic clinical skills to standards recognized by the profession.
9.	Deals fairly and honestly with patients, peers, and the public in professional and business affairs
10.	Demonstrates the ability to recognize normal and abnormal conditions, know their causes, and identify the unusual medical condition based on a foundation of knowledge and experience.
11.	Employs professional standards and principles in prescribing medication or performing medical procedures.
12.	Demonstrates knowledge of and ability to develop and implement a treatment plan appropriate for the patient and condition.
13.	Demonstrates an understanding of normal anatomy and physiology as well as patho-physiological conditions as they relate to the disease process.
14.	Demonstrates knowledge of preventive medicine, including immunizations, and commits to keep people well rather than just treat disease.
15.	Evaluates the effectiveness of the treatment plan for patient and modifies as appropriate.
16.	Demonstrates an ability to establish rapport with patients
17.	Demonstrates tolerance and does not discriminate based on age, gender, sex, cultural differences, or any other factor.
18.	Provides information, both written and oral, in a way that is concise, clear, and easy to understand.
19.	Pursues knowledge and continuing medical education and integrates new developments into clinical practice.
20.	Interacts appropriately with staff and patients with respect for individual rights and differences.
21.	Demonstrates ability to deal with end-of-life issues.
22.	Encourages patients to actively participate in their health care, including end-of-life issues.

Table 2. Continued

Rank	Question
23.	Monitors and continues to be involved in patients' care and condition, does not inappropriately refer or abandon.
24.	Demonstrates knowledge of the infectious disease process and disease.
25.	Demonstrates skills and knowledge regarding the ordering, performance, management and interpretation of laboratory, radiology and other diagnostic studies.
26.	Advocates treating the whole patient, including his or her physical, social, economic, psychological and family needs.
27.	Demonstrates an ability to collaborate with other health care professionals in caring for the health of patients and communities.
28.	Displays confidence in clinical skills to patients and staff.
29.	Demonstrates the ability to use inductive and deductive reasoning as a foundation for problem solving and learning.
30.	Demonstrates knowledge of pain prevention, treatment and management.
31.	Demonstrates knowledge of medical care for aging populations and the aging process.
32.	Demonstrates knowledge and skill in palliative medical care when appropriate for the patient's condition.
33.	Develops and adheres to a system of patient communication to ensure proper follow-up and care.
34.	Demonstrates an understanding of the body's ability to function and heal itself as well as knowledge of the interrelationship of structure and function.
35.	Educates staff to be patient-friendly while developing an attitude of patient advocacy.
36.	Emphasizes healthy lifestyle habits as well as health risk problems of the home and workplace.
37.	Applies principles of wellness, exercise programs, and good nutrition to benefit patients.
38.	Advocates for patients' benefit by proper referral and utilization of other resources in the health care community.
39.	Demonstrates knowledge and skills in diagnosing and treating patients and their families with mental or behavioral health issues.
40.	Demonstrates knowledge of normal behavior and affect as well as pathological behavior.
41.	Communicates with the patient and conveys information about alternatives to therapy and advances in medical care.
42.	Demonstrates knowledge of the effect nutrition has on wellness, disease states, and healing.
43.	Recognizes the personal risks of alcohol dependency, substance abuse, marriage infidelity, divorce, loss of affection of children and family that the practice of medicine presents.
44.	Recognizes and utilizes appropriate reporting procedures to regulatory bodies for STD's, abuse, neglect and issues of public safety to protect the public and benefit the patient as well.

Table 2. Continued

Rank	Question
45.	Establishes a mechanism to ensure that access to care is readily available for patients.
46.	Is involved in and aware of other influences in the patient's life that affect health care and decisions such as family, job, and economic situations.
47.	Recognizes the role of primary care in the health care system while maintaining respect for specialty services.
48.	Embraces diversity and demonstrates sensitivity to differences in patients' religious beliefs, ethnic values and beliefs, social or sexual diversity or special needs across cultural or language differences.
49.	Critically evaluates, appraises, interprets and applies scientific literature and clinical studies to the practice of medicine.
50.	Recognizes the signs and symptoms of "burn out".
51.	Develops an attitude of customer service and patient-centered practice patterns.
52.	Adapts to the evidence-based method of medical care.
53.	Demonstrates an understanding of responsibilities and patients' rights when a research or experimental protocol is involved in patient care.
54.	Interprets and applies legal requirements and obligations to medical practice.
55.	Develops a good sense of humor and uses it effectively in the workplace.
56.	Recognizes individual patients' spirituality, core values and beliefs and their role in health care.
57.	Demonstrates competency in performing basic surgical procedures.
58.	Develops and practices good time management skills for the benefit of the clinician's patients, staff, and family.
59.	Uses the scientific method to evaluate and compare non-traditional therapies, alternative health systems, consumer driven medicine, and alternative medicine.
60.	Practices medicine in an efficient, cost-effective manner.
61.	Is aware of, involved in, and knowledgeable of, developing medical and social changes and scientific advances as they evolve.
62.	Practices medicine with an awareness that some of his/her patients may be accustomed to different systems of health care delivery.
63.	Seeks, accepts and appropriately responds to performance evaluation.
64.	Develops skills in conflict resolution involving self, patients, and regulatory or review agencies.
65.	Participates in professional meetings to gain information and collegiality.
66.	Knows and applies regulatory expectations that affect practice.
67.	Manages the problems of diverse populations with special needs.
68.	Recognizes how the office practice environment influences patient care and knows how to modify as needed.

Table 2. Continued

Rank	Question
69.	Demonstrates communication skills required to serve a diverse and multilingual population.
70.	Applies knowledge of genetics and genetic effects on wellness and pathophysiology.
71.	Demonstrates knowledge of self-driven learning environments and practices adult education principles for patient and community education.
72.	Acquires and implements diverse skills that allow the physician to practice successfully in a variety of practice settings.
73.	Demonstrates knowledge of the public health system in the community and the nation, the core functions it performs and the contribution it makes to health care of patients and community as a whole.
74.	Utilizes adaptive equipment to benefit patient care.
75.	Is conversant in the language of the patients' reimbursement system and policies, including indigent services, HMO's, and private insurance companies.
76.	Demonstrates knowledge of, interprets, and applies the laws and regulations that surround human resources, staff and personnel rights and responsibilities.
77.	Participates in practices that serve diverse populations and underserved settings.
78.	Knows the total cost of health care for patients, including the cost of non-compliance and poor care on total health care expenditures.
79.	Educates the public and patients about the osteopathic medical profession.
80.	Engages in teaching students, other physicians and educating the public for the advancement of health.
81.	Demonstrates ability to communicate to patients the rights, responsibilities, and benefits of their coverage, including government, managed care, and insurance.
82.	Demonstrates knowledge of and implements the business skills needed to successfully operate a medical practice.
83.	Possesses skill with computers, the Internet and other technological means to access information, do research, and perform business and management functions to benefit patient care.
84.	Develops and demonstrates leadership skills within the profession and the community.
85.	Demonstrates excellence in osteopathic manipulative therapy and diagnosis and incorporates these skills into practice.
86.	Demonstrates knowledge of molecular and cellular biology.
87.	Demonstrates an understanding of statistics and their interpretation in advancing knowledge and in making clinical decisions.
88.	Demonstrates loyalty to school and profession by supporting these institutions financially, politically and publicly.
89.	Participates in the formation of health policy and regulations that affect health care.
90.	Demonstrates knowledge of business and market development.
91.	Participates in medical and clinical research to advance the practice of medicine.

These 16 states represent 75 to 80 percent of practicing osteopathic physicians. In addition, the survey included a random sample of 500 medical doctors from the same 16 states. Researchers sent questionnaires to 250 science educators nationwide, and a random sample of 250 Iowa physician assistants, Iowa physical therapists, and Iowa nurses. Finally, 61 faculty members at COMS at DMU-OMC completed the survey.

The Task Force piloted the survey in June 2000 to 12 participants, all experts in the osteopathic medical education field. As a result of the pilot, some wording was changed; however, all 91 competencies were retained in the final questionnaire (see Table 2).

Each questionnaire was mailed with a cover letter to obtain maximum survey response rates. Reminders were mailed to those who did not return their questionnaires after two months.

The questionnaire asked respondents to rate the importance of each of the 91 descriptions of ideal skills and traits of primary-care physicians. A five-point Likert-type scale was used, with 1) not at all important; 2) not very important; 3) neither important nor unimportant; 4) somewhat important; 5) very important.

Treatment of data

In Phase I, the NGT, the data from the 16 nominal groups were collected in one list, with similar statements grouped together. Responses were analyzed qualitatively by sorting, categorizing, and searching for common threads. Then Task Force members edited the list, eliminating redundancies and clarifying the wording of some statements of competencies. Because the list was extensive, faculty combined competencies that were similar in content. Researchers attempted to retain the integrity of the ideas presented by individual participants

by using the participants' original wording and syntax whenever possible. The list of over 150 potential competencies was reduced finally to 91.

In Phase II, the 91 competencies were randomly ordered in a questionnaire, which asked respondents to rank order the competencies on a Likert scale of 1 to 5, with one being the lowest and 5 being the highest.

The data were analyzed with the Statistical Package for the Social Sciences (SPSS-X). A factor analysis was done on the data from 471 respondents, based on the ranking of each item. The 91 competencies from the survey loaded into 11 factors with 16 complex factors or factors that did not correlate highly with any factor. A second factor analysis performed on factor 1--a large group that included 31 competencies--resulted in three factors. As a result, the two of the three factors were added to the 11 to make a 13-factor solution. The next step was to name the factors according to the similarity of the items or characteristics in each factor. At this point, researchers determined that many of the items did not cluster well together, in part because the ranking of each of the 91 competencies was equally high. A second problem recognized was that some of the 91 items were very complex (addressing more than one idea), and some statements were not worded as clearly as necessary.

Researchers and COMS faculty content experts reworked the clusters, rationally grouping more similar statements of competencies. This was done by analyzing the ideas and themes, determining what they had in common, and fitting like statements together. This analysis reduced the number of competencies to eight, with 72 sub-competencies divided under those eight major clusters. The process overcame the problems in wording of

competencies and in the erroneous placement of sub-competencies within the clusters due to close ranking by respondents.

Also in Phase II of the research, the questionnaire, the median ranking of the list of competencies from doctors of osteopathy was compared to the median ranking from allopathic physicians through Mann-Whitney and Wilcoxen Ranks tests. These two tests are non-parametric tests for two independent samples. The Mann-Whitney and Wilcoxen Ranks tests are appropriate because the measurement scale was a Likert-type scale, which is based on an ordinal scale and not an interval or ratio scale, and the distribution of variables was not normal.

Summary

The purpose of the research was to determine the essential competencies of osteopathic physicians in the 21st century. To accomplish this, the Task Force wanted a broad base consensus of physicians and health care professionals as well as patients. The research was divided into two phases: Phase I: The NGT, and Phase II, Questionnaire. The NGT is a consensus-building method working with numerous small groups to determine the most important competencies. To validate and rank the competencies, experts in the field—practicing health care professionals and medical educators—were asked to rank and comment on the list of competencies identified by the NGT. The 91 competencies ranked in order of importance by M.D., D.O., basic science instructors, and allied health professions are listed in Table 2. Questionnaires were sent to 3,061 participants. This included 2,000 doctors of osteopathy from the 16 states in the United States that have osteopathic medical schools and 500 medical doctors from those same states. Also 250 science educators from across the United States and 61 educators from COMS were included in the sample. Finally,

the study included a random sample of 250 Iowa physician assistants, Iowa physical therapists, and Iowa nurses.

The Mann-Whitney test and Wilcoxen Ranks test were applied to the rankings of the D.O. and the M.D. respondents to determine if either group ranked any of the 91 competencies higher than the other.

Chapter 4 reports and explains the results of Phase I and Phase II of the research study.

CHAPTER 4. RESULTS

Description of the sample

The two phases of the research study collected data on the essential competencies for osteopathic physicians of the 21st century. Phase I, the Nominal Group Technique (NGT) identified over 150 possible competencies through a structured, rigorous qualitative method of consensus building by physicians, medical students, nurses, physician assistants, podiatrists, other health care professionals, and science educators. Members of the COMS Task Force refined the list of over 150 possible competencies by reducing redundancies and combining some statements of competence that seemed similar. The product was a final list of 91 potential competencies that were ranked by respondents of the questionnaire (see Table 2). Some redundancies remained; some statements were complex (addressing more than one idea), and some statements were not worded clearly. Nevertheless, this list formed the basis of a questionnaire for Phase II of the research.

In Phase II, researchers mailed a questionnaire to 3,061 D.O., M.D., other health practitioners, and basic science faculty and COMS faculty. A total of 471 responded to the survey, or about 15 percent of the potential respondents.

Table 3 details the demographic information of the 471 survey respondents. Groups responding were D.O.: 252; M.D.: 45; science educators and COMS faculty: 91; other health professionals (nurses, physical therapists, podiatrists): 83. The questionnaire asked for some demographic information: 1. Affiliation with medical training; 2. Involvement with medical care; 3. In practice or not in practice; and 4. Gender. Of the respondents who were doctors of osteopathy, 55.2 percent (139) were affiliated with medical training, as compared to 66.7 (30) percent of medical doctors.

Table 3. Survey Results D.O., M.D., other health care professionals, basic science educators (n=471)

	D.O. N	M.D. N	Allied N	BS N	Total N	D.O. %	M.D. %	Allied %	BS %
Gender:									
Male	180	36	17	62	295	71.4	80.0	20.5	68.1
Female	69	8	64	28	169	27.4	17.8	77.1	30.8
Missing	2	1		1	4				
Affiliation with medical training									
Yes	139	30	31	87	200	55.2	66.7	37.3	95.6
No	107	14	51	1	172	42.5	31.1	61.4	1.1
Missing	6	1	3	1	11	2.4	2.2	1.2	3.3
Involvement with medical care									
Full time	62	11	11	84	167	24.6	24.4	13.3	91.2
Part time	104	23	30	4	161	41.3	51.1	36.1	4.4
Not involved	81	11	40	3	135	32.1	24.4	48.2	3.3
Missing	5								
Practice									
In practice	75	5	14	68	162	29.9	11.6	16.5	74.7
Not in practice	177	40	69	23	309	70.1	88.4	83.5	25.3

Of the science educators (87), 95.6 percent worked in medical training and in allied health professions, only (31) 37.3 percent worked in medical training. Over all, 63.7 percent were affiliated with medical training.

Involvement in medical care included the following: D.O. full time (62) 24.6 percent, D.O. part time (104) 41.3 percent; not involved (81) 32.1 percent; M.D. full time (11) 24.4 percent, part time (23) 51.1 percent and not involved (11) 24.4 percent. Science educators were full time (84) 91.2 percent; and part time (4) 4.4 percent; Allied health: full time (11) 13.3 percent; part time (30) 36.1 percent; and not involved (40) 48.2 percent. The total respondents involved in medical care full time were 35 percent, part time 34 percent and not involved 28 percent.

Respondents included D.O. in practice (75) 29.9 percent, not in practice (177) 70.1 percent; M.D. in practice (5) 11.6 percent, not in practice (40) 88.4 percent; science educators in practice (68) 74.7 percent and not in practice (23) 25.3 percent; allied health in practice (14) 16.5 percent and not in practice (69) 83.5 percent. Overall 33.1 percent of the respondents were in practice and 66.8 percent were not in practice.

Of the respondents (180), 71.4 percent of the D.O. group were male and (69) 27.4 percent were female; M.D. were (36) 80.0 percent male and (8) 17.8 percent female; science educators 68.1 percent male (62) and 30.8 percent female (28); allied health were (17) 20.5 percent male and (64) 77.1 percent female. Over all the respondents were (63) 60 percent male and (37) 38.2 percent female.

While participants had the opportunity to answer the survey on an Internet website set up for that purpose, only two respondents completed the questionnaire electronically.

Answers to research questions

The goal of the research was to determine the essential competencies for effective osteopathic physicians in the 21st century. These competencies are to be the foundation for a new curriculum. Also, because osteopathic physicians and allopathic physicians have some basic differences in philosophy, the Task Force was interested in knowing if D.O. respondents would rank any of the competencies higher than would allopathic physicians. Therefore, the following were the research questions:

1. What are the essential competencies for effective osteopathic physicians in the 21st century?
2. Is there a significant difference between the ranking of competencies by osteopathic physicians and allopathic physicians?

The Nominal Group Technique used in Phase I identified over 150 statements of competence. Task Force members reduced these down to 91 competencies (see Table 2), which were then randomly listed in a questionnaire for Phase II. The data returned from 471 respondents showed how D.O. and M.D. physicians, physician assistants, podiatrists, nurses, and science educators ranked the 91 competencies in order of importance (see Table 3).

Task Force members used factor analysis, based on the ranking of each item, to organize the 91 competencies into groups of competencies. Researchers studied the resulting factors to determine what the competencies in each have in common, and then named them according to their commonality. They grouped statements of competencies into clusters. During this exercise, however, the Task Force decided that many of the competencies did not fit within the clusters determined statistically. Again, these competencies were complex and often not discreetly stated. Furthermore, most all of the competencies were rated highly. To

correct inconsistencies caused by unclear wording of competencies, many of the competencies were rationally placed into clusters. While some of the competencies could fit into two or more clusters, they were placed where they most closely fit and complemented the other competencies in that cluster. The result was a list of eight major competencies and 72 sub-competencies (see Table 4).

The second research question asked if there were significant differences in the rankings of the 91 competencies between the osteopathic and allopathic physicians. To answer this question, median rankings of D.O. and M.D. physicians were compared using the Mann-Whitney test and the Wilcoxen Ranks test (see Table 5). Because the number of osteopathic physicians who returned the survey (252) was more than four times the number of allopathic respondents (45), the number of D.O.s was randomly split and both halves were compared to M.D. responses. This provided further assurance that the differences in ranking were not due to numbers of respondents alone. Using a confidence rating of 0.05, seven rankings of competencies were determined to be significantly higher by D.O.s than by M.D.s. by applying this method. One competency was ranked significantly higher by one half of D.O.s and not by the other half.

The tests found that Doctors of Osteopathy ranked seven competencies higher than medical doctors ranked the same competencies. Medical doctors did not rank any competency significantly higher than osteopathic physicians.

Table 4. COMS Curriculum Redesign Task Force master list of 8 competencies and 72 sub-competencies

Cluster 1. Osteopathic Foundations

1. Advocates treating the whole patient, to include his or her physical, social, economic, psychological and family needs, spirituality, core values and beliefs.
2. Demonstrates an understanding of the body's ability to function and heal itself as well as knowledge of the interrelationship of structure and function.
3. Achieves professional standards in knowledge and skills in osteopathic manipulative therapy and diagnosis and incorporates these skills into their practice.
4. Educates the public and patients and their families about the osteopathic medical profession.

Cluster 2. Patient Health Development and Wellness Education

1. Demonstrates knowledge and skills of hygiene and sterile techniques as they affect patient care.
2. Demonstrates knowledge of preventive medicine, including immunizations, and commits to disease prevention and wellness.
3. Demonstrates an ability to collaborate with other health care professionals in caring for the health of patients and communities.
4. Demonstrates knowledge and skill in palliative medical care when appropriate for the patient's condition.
5. Demonstrates knowledge of the aging process and medical care for aging populations.
6. Applies principles of wellness, exercise, and nutrition to maintain healthy populations.
7. Educates the population about healthy lifestyle habits as well as health risk problems of the home and workplace.
8. Communicates with the patient and conveys information about alternatives to therapy and advances in medical care.
9. Develops an attitude of customer service and patient-centered practice patterns.
10. Incorporates adult education principles in patient and community education.

Cluster 3. Clinical Diagnosis and Evaluation

1. Exhibits competency in clinical skills to standards recognized by the profession.
2. Elicits an accurate and complete medical history.
3. Performs a thorough physical examination.
4. Demonstrates the ability to recognize normal and abnormal conditions related to the disease process, know their causes, and identify the unusual medical condition based on a foundation of knowledge and experience.
5. Demonstrates knowledge of and ability to develop and implement a treatment plan appropriate for the patient and condition.

Table 4. Continued

6. Demonstrates knowledge of the infectious disease process and disease prevention.
7. Demonstrates ability to order appropriate lab tests and be able to interpret all lab results.
8. Demonstrates knowledge and skills in diagnosing patients with mental or behavioral health issues and educating their families about these issues.
9. Demonstrates and applies genetic molecular and cellular principles in wellness and pathology.

Cluster 4. Patient Prescription and Treatment Modalities

1. Demonstrates respect for patient confidentiality and privacy.
2. Demonstrates an ability to establish rapport with patients.
3. Demonstrates empathy and compassion, comforts patients and provides patients with realistic expectations about outcomes while preserving hope.
4. Evaluates the effectiveness of the treatment plan for patient and modifies as appropriate.
5. Provides information, both written and oral, in a way that is concise, clear, and easy to understand.
6. Demonstrates ability to deal with end-of-life issues.
7. Demonstrates knowledge of pain prevention, treatment and management.
8. Is aware of other influences in the patient's life that affect health care and decisions such as family, job, and economic situations.
9. Knows what is available in adaptive equipment to benefit patient care.

Cluster 5. Practice Management, Health Care Delivery and Patient Services

1. Interacts appropriately with staff and patients with respect for individual rights and differences.
2. Educates staff to practice appropriate attitudes towards all patients.
3. Continues to monitor patients' condition, including after referral, to ensure proper follow-up and care.
4. Establishes a mechanism to ensure that access to care is readily available for patients.
5. Recognizes and utilizes appropriate reporting procedures to regulatory bodies for STDs, abuse, neglect and issues of public safety to protect the public and benefit the patient as well.
6. Interprets and applies legal requirements and obligations to medical practice.
7. Demonstrates good time management skills for the benefit of the **clinician's** patients, staff, and family.
8. Practices medicine in an efficient, cost-effective manner.
9. Demonstrates an understanding of statistics and their interpretation in advancing knowledge and in making clinical decisions.
10. Demonstrates knowledge of the public health system, the core functions, and its contributions.

Table 4. Continued

11. Is knowledgeable of the patients' reimbursement system and policies, including indigent services, HMOs, and private insurance companies.
12. Demonstrates knowledge of, interprets, and applies the laws and regulations that surround human resources, staff and personnel rights and responsibilities.
13. Demonstrates knowledge of and implements the business skills needed to successfully operate a medical practice.
14. Possesses skill with computers, the Internet, and other technological means to access information, do research, and perform business and management functions to benefit patient care.

Cluster 6. Scientific Knowledge and Methodology

1. Demonstrates the ability to use inductive and deductive reasoning as a foundation for problem solving and learning.
2. Demonstrates an understanding of statistics and their interpretation in advancing knowledge and in making clinical decisions.
3. Critically evaluates, appraises, interprets and applies scientific literature and clinical studies to the practice of medicine.
4. Adapts to the evidence-based method of medical care.
5. Evaluates non-traditional therapies, alternative health systems, consumer driven medicine, and alternative medicine based on scientific method.
6. Demonstrates knowledge of the effect nutrition has on wellness, disease states, and healing.
7. Demonstrates knowledge of medical biochemistry and molecular and cellular biology.
8. Applies knowledge of genetics and genetic effects on wellness and pathophysiology.

Cluster 7. Patient Advocacy

1. Demonstrates tolerance and does not discriminate based on age, gender, sex, cultural differences, special needs, or any other factor.
2. Demonstrates sensitivity to differences in patients' religious beliefs, ethnic values and beliefs, social or sexual diversity or special needs across cultural or language differences.
3. Demonstrates communication skills and other skills required to serve a diverse and multilingual population often in underserved settings.
4. Encourages patients to actively participate in their health care, including end-of-life issues.
5. Advocates for patients' benefit by proper referral and utilization of other resources in the health care community.
6. Displays confidence in clinical skills to patients and staff.

Table 4. Continued

Cluster 8. Demonstrated high personal and professional standards and accountability

1. Deals fairly and honestly with patients, peers, and the public in professional and business affairs.
2. Employs professional standards and principles in prescribing medication or performing medical procedures.
3. Participates in the formation of health policy and regulations that affect health care.
4. Participates in professional meetings to gain information and collegiality.
5. Develops and demonstrates leadership skills within the profession and the community.
6. Demonstrates an understanding of responsibilities and patients' rights when a research or experimental protocol is involved in patient care.
7. Pursues knowledge and continuing medical education and integrates new developments into clinical practice.
8. Engages in teaching students and other physicians and educating the public for the advancement of health.
9. Develops skills in conflict resolution involving self, patients, and regulatory or review agencies.
10. Demonstrates loyalty to school and profession by supporting these institutions financially, politically, and publicly.
11. Recognizes the role of primary care in the health care system while maintaining respect for specialty services.
12. Recognizes the personal risks of alcohol dependency, substance abuse, marriage infidelity, divorce, burnout, loss of affection of children and family that the practice of medicine presents.

Table 5. Mann-Whitney Test/Wilcoxon Ranks Test

	Competency	Median Rank		Sum of Ranks	
		D.O.	M.D.	D.O.	M.D.
1.	Exhibits competency in clinical skills and communicates confidence to patients and staff.	5	5	34344.998	9019.999
2.	Demonstrates knowledge of the infectious disease process, disease prevention and hygiene and sterile technique as they affect patient care.	5	5	34129.501	9235.500
3.	Elicits an accurate and complete medical history and performs a thorough and accurate physical examination.	5	5	34324.500	9040.500
4.	Demonstrates communication skills required to serve a diverse and multilingual population.	4	4	34585.500	8485.500
5.	Demonstrates excellence in osteopathic manipulative therapy and diagnosis and incorporates these skills into practice in all primary care and specialty settings for the benefit of patients.	4	2	39364.501	3706.499**
6.	Monitors and continues to be involved in patients' care and condition at all times; does not inappropriately refer or abandon.	5	5	34391.999	8678.999
7.	Emphasizes healthy lifestyle habits such as smoking cessation, safe sex, use of seat belts, gun control and safety, avoidance of alcohol and other drugs, domestic and family coping skills and avoidance of domestic violence as well as health risk problems of the home and workplace.	5	5	34345.998	9018.999
8.	Demonstrates knowledge of the public health system in the community and the nation, the core functions it performs and the contribution it makes to health care of patients and community as a whole.	4	4	33992.998	9371.999
9.	Knows, interprets, and applies the laws, regulations and issues that surround human resources, staff and personnel rights and responsibilities.	4	4	34273.999	8212.000
10.	Knows and applies regulatory expectations that affect practice.	4	4	33307.499	8597.499

Table 5. Continued

11.	Practices medicine in an efficient, cost-effective manner.	4	4	33474.000	9012.000
12.	Uses the scientific method to evaluate and compare non-traditional therapies, alternative health systems, consumer driven medicine, and alternative medicine.	4	5	33303.001	9474.999
13.	Demonstrates the ability to use inductive and deductive reasoning as a foundation for problem solving and learning	5	5	33789.998	9280.999
14.	Demonstrates the ability to recognize normal and abnormal conditions, know their causes, and identify the unusual medical condition based on a foundation of knowledge and experience.	5	5	33830.999	9239.999
15.	Participates in medical and clinical research to advance the practice of medicine.	3	3	34356.499	9008.499
16.	Demonstrates an understanding of statistics, their interpretation, and utilizes in advancing knowledge in making clinical decisions.	4	4	33288.499	9782.499
17.	Interacts appropriately with staff and patients with respect for individual rights and differences.	5	5	33596.999	8888.999
18.	Demonstrates knowledge of business and market development.	4	3	35997.998	6779.999**
19.	Recognizes personal limitations and clinical skills and knows when to refer or obtain consultation.	5	5	34086.001	9278.999
20.	Participates in professional meetings to gain information and collegiality.	4	4	33957.500	9113.499
21.	Advocates for patients' benefit by proper referral and utilization of other resources in the health care community.	5	5	34145.001	9220.000
22.	Knows the total cost of health care for patients, including the cost of non-compliance and poor care on total health care expenditures	4	4	33299.501	9478.500
23.	Recognizes and utilizes appropriate reporting procedures to regulatory bodies for STD's, abuse, neglect, issues of public safety to protect the public and benefit the patient as well.	4	5	32832.998	9652.999

Table 5. Continued

24.	Utilizes adaptive equipment to benefit patient care.	4	4	32012.498	7327.499
25.	Recognizes individual patient's spirituality, core values and beliefs and their role in health care.	4	4	34051.499	8434.499
26.	Demonstrates an understanding of normal anatomy and physiology as well as patho-physiological conditions as they relate to the disease process.	5	5	33735.998	9041.
27.	Performs basic surgical procedures.	4	4	34493.999	8283.999
28.	Employs professional standards and principles in prescribing medication or performing medical procedures for personal gain or profit.	5	5	33776.500	8709.499
29.	Participates in the formation of health policy and regulations that affect health care.	4	3	34354.500	8131.499
30.	Acquires and implements diverse skills that allow the physician to practice successfully in a variety of practice settings.	4	4	34454.000	8324.000
31.	Recognizes the personal risks of alcohol dependency, substance abuse, marriage infidelity, divorce, loss of affection of children and family that the practice of medicine presents.	5	5	33406.001	8210.000
32.	Seeks, accepts and appropriately responds to performance evaluation.	4	4	34315.499	7879.500
33.	Demonstrates knowledge of normal behavior and affect as well as pathological conditions.	5	5	33128.000	9649.999
34.	Engages in teaching students and other physicians as well as educating the public for the advancement of health.	4	4	35514.500	7263.500*
35.	Performs basic clinical skills to standards recognized by the profession.	5	5	34100.998	8970.000
36.	Educates the public and patients about the medical profession.	4	3	38691.501	3794.500**
37.	Recognizes the role of primary care in the health care system while maintaining respect for specialty services	5	4	34761.501	8309.500

Table 5. Continued

38.	Demonstrates knowledge of and implements the business skills needed to successfully operate a medical practice.	4	4	36027.500	6750.499**
39.	Is conversant in the language of the patient's reimbursement system and policies, including indigent services, HMO's, and private insurance companies.	4	4	34807.998	7678.000
40.	Educates staff to be patient-friendly while developing an attitude of patient advocacy.	5	5	33918.501	9152.500
41.	Manages the problems of a diverse population with special needs.	4	4	33646.000	7969.999
42.	Demonstrates knowledge of molecular and cellular biology.	4	4	33250.000	9236.000
43.	Possesses skill with computers, the Internet and other technological means to access information, do research, prepare presentations, and perform business and management functions to benefit patient care and practice flow and management.	4	4	35087.500	7690.500
44.	Develops and demonstrates leadership skills within the profession and the community.	4	4	35390.999	7680.000*
45.	Develops and practices good time management skills for the benefit of the clinician's patients, staff, and family.	4	4	35063.000	7714.999
46.	Demonstrates loyalty to school and profession by supporting these institutions financially, politically and publicly.	4	3	35949.001	6536.999**
47.	Demonstrates tolerance and does not discriminate based on age, gender, sex, cultural differences, or any other factor.	5	5	33876.998	9193.999
48.	Demonstrates empathy and compassion, comforts patients and provides patients with realistic expectations about outcomes while preserving hope.	5	5	34427.999	8936.999
49.	Demonstrates knowledge and skills in diagnosing and treating patients as well as their families with mental or behavioral health issues.	5	5	33685.500	8800.499

Table 5. Continued

50.	Applies knowledge of genetics and genetic effect on wellness and pathophysiology.	4	4	33554.498	9810.499
51.	Demonstrates knowledge of the effect nutrition has on wellness, disease states, and healing.	5	4.5	34766.999	8598.000
52.	Demonstrates skills and knowledge regarding the ordering, performance, management and interpretation of laboratory, radiology and other diagnostic studies that relates to patients' conditions.	5	5	34074.000	9291.000
53.	Demonstrates knowledge of preventive medicine, including immunizations, and commits to keep people well rather than just treat disease.	5	5	34048.999	9021.999
54.	Demonstrates an understanding of the body's ability to function and heal itself as well as knowledge of the interrelationship of structure and function.	5	5	35064.001	8301.000
55.	Demonstrates an understanding of responsibilities and patients' rights when the utilization of a research or experimental protocol is involved in patient care.	4	4	33076.999	9409.000
56.	Communicates with the patient and conveys information about alternatives to therapy and advances in medical care.	5	5	34634.999	8142.999
57.	Demonstrates ability to deal with end-of-life issues.	5	5	33887.499	9183.499
58.	Practices medicine with an awareness that some of his/her patients may be accustomed to	4	4	33888.000	8598.000
59.	Interprets and applies legal requirements and obligations to medical practice.	4	4	34460.499	8317.500
60.	Demonstrates ability to communicate to patients the rights, responsibilities, and benefits of their coverage, including government, managed care, and insurance.	4	4	34511.500	7974.499
61.	Recognizes the needs of the office practice environment on patient care and modifies as needed.	4	4	33710.000	8485.000
62.	Demonstrates knowledge of medical care for aging populations and the aging process.	5	5	33439.499	9631.499
63.	Demonstrates knowledge of pain prevention, treatment and management.	5	5	32972.000	9513.999

Table 5. Continued

64.	Demonstrates knowledge of and ability to develop and implement a treatment plan appropriate for patient and condition.	5	5	33739.499	9331.499
65.	Demonstrates knowledge of self-driven learning environments and practices adult education principles for patient and community education.	4	4	33095.998	9098.999
66.	Deals fairly and honestly with patients, peers, and the public in professional and business affairs.	5	5	33992.501	8785.500
67.	Provides information, both written and oral, in a way that is concise, clear, and easy to understand.	5	5	34168.001	8610.000
68.	Advocates treating the whole patient, including his or her physical, social, economic, psychological and family needs.	5	5	34347.501	8430.499
69.	Establishes a mechanism to ensure that access to care is readily available for patients.	5	5	34089.998	8981.000
70.	Demonstrates an ability to establish rapport with patients.	5	5	34125.501	8945.499
71.	Embraces diversity and demonstrates sensitivity to differences in patients' religious beliefs, ethnic values and beliefs, social or sexual diversity or special needs across cultural or language differences	5	5	33546.001	9232.000
72.	Demonstrates knowledge and skill in palliative medical care when appropriate for patient's condition.	5	5	33829.000	9242.000
73.	Is aware of, involved in, and knowledgeable of, developing medical and social changes and scientific advances as they evolve.	4	4	33720.001	8766.000
74.	Applies principles of wellness, exercise programs, and good nutrition to benefit patients.	5	5	34501.001	8569.999
75.	Encourages patients to actively participate in their health care, including end-of-life issues.	5	5	33961.001	9109.999
76.	Develops skills in conflict resolution between self, patients, and regulatory or review agencies.	4	4	34634.001	8437.000
77.	Develops and adheres to a system of patient communication to ensure proper follow-up and care.	5	5	33948.501	8829.499

Table 5. Continued

78.	Demonstrates respect for patient confidentiality by establishing protocols to manage patient records and provide medical record security.	5	5	34082.500	8988.500
79.	Demonstrates an ability to collaborate with other health care professionals in caring for the health	5	5	34572.498	8498.499
80.	Develops a good sense of humor and uses it effectively in the workplace.	5	4	35762.498	7602.500
81.	Integrates information gained from medical history and physical examinations with the principles of science and pathophysiology to arrive at appropriate diagnosis and treatment.	5	5	33704.998	9366.000
82.	Pursues continuing medical education and knowledge and integrates new developments into clinical practice.	5	5	34106.000	8965.000
83.	Critically evaluates, appraises, interprets and applies scientific literature and clinical studies to the practice of medicine.	4	5	33379.998	9690.999
84.	Is involved in and aware of other influences in the patient's life that affect health care and decisions such as family, job, and economic situations.	5	5	33614.000	8580.999
85.	Evaluates the effectiveness of the treatment plan for patient and modifies as appropriate.	5	5	33646.998	9131.000
86.	Develops an attitude of customer service and patient-centered practice patterns.	4	4	33909.499	8576.500
87.	Adapts to the evidence-based method of medical care.	4	5	32695.498	9209.500
88.	Participates in practices that serve diverse populations and underserved settings.	4	4	34031.499	8454.500
89.	Recognizes the signs and symptoms of "burn out".	4	4	35182.001	8182.999
90.	Displays confidence in clinical skills to patients and staff.	5	5	35202.500	7868.499
91.	Demonstrates knowledge of hygiene and sterile techniques as they affect patient care.	5	5	34077.999	8992.999

* $p<0.05$
** $p<0.01$

Those that were significant at the .01 level were:

Demonstrates excellence in osteopathic manipulative therapy and diagnosis and incorporates these skills into practice in all primary care and specialty settings for the benefit of patients.

Demonstrates knowledge of business and market development.

Educates the public and patients about the medical profession.

Demonstrates knowledge of and implements the business skills needed to successfully operate a medical practice.

Demonstrates loyalty to school and profession by supporting these institutions financially, politically and publicly.

Those that were significant at the .05 level were:

Engages in teaching students and other physicians as well as educating the public for the advancement of health.

Develops and demonstrates leadership skills within the profession and the community.

One competency ranking showed a significant difference when one half of D.O. respondent rankings were compared to all M.D. respondent rankings, but did not appear significantly different when the second half of D.O.s was compared with the M.D. respondent rankings:

Develops a good sense of humor and uses it effectively in the workplace.

The answer to Research Question 2: "Is there a significant difference between the ranking of competencies by osteopathic physicians and allopathic physicians?" is positive. Researchers found that indeed there were significant differences in rankings of seven of the

91 competencies. D.O.s ranked seven of the competencies higher than they were ranked by M.D.s

Summary

Chapter 4: Results described the sample used in Phase I, the Nominal Group Technique, and in Phase II, Questionnaire. Chapter 4 also reported the following outcomes:

- Demographic information of D.O., M.D., other health care professionals, basic science educators. (See Table 3)
- COMS Curriculum Redesign Task Force master list of 8 competencies and 72 sub-competencies. (See Table 4)
- Comparison of rankings of competencies by D.O. and M.D. physicians. (See Table 5)

Seven of the 91 competencies were ranked significantly higher by D.O.s than by M.D. physicians. One competency was ranked significantly higher by one half of the D.O. respondents as compared to all M.D. respondents.

Chapter 5 discusses the importance of these findings and its application to osteopathic medical curriculum. In addition, Chapter 5 will make suggestions for further research and provide recommendations.

CHAPTER 5. DISCUSSION OF RESULTS

Introduction

The COMS Task Force questioned the value of establishing a medical curriculum based on competencies. They considered whether competency-based curriculum was as good as, equivalent to, or superior to other methods for curriculum design, for example, a discipline-based curriculum, problem based learning, or a systems-based curriculum. Furthermore they discussed what other factors should drive the curriculum, for example, an assessment tool, such as medical board exams or consumer reports. The Task Force decided, however, that whatever curriculum reform they would attempt, the reform must be based on competencies required for effective osteopathic physicians for the future. Furthermore, competencies must be defined by knowledge, skills, and professional attitudes and values. These competencies would become the benchmarks or standards on which to evaluate each medical student at the end of four years of study.

The research questions

The research studied physician competencies using the Nominal Group Technique to build a list of competencies deemed essential to osteopathic physicians. Then they asked over 3,000 physicians, educators and other health professionals to rank those competencies as to importance. The findings of the NGT and the questionnaire answered the following research questions:

1. What are the essential competencies for effective osteopathic physicians in the 21st century?
2. Is there a difference between competencies identified by osteopathic physicians and those identified by allopathic physicians?

Furthermore, the resulting competencies reflect what has already been determined in studies of allopathic competency research.

Another reaction to the NGT list was that the competencies were too patient satisfaction-centered. While most of the NGT participants were health care professionals and/or medical educators, they were also consumers and patients of physicians. Approximately 40 of the 91 competency statements related to human relations and communication skills (beyond history-taking skills); practice management; patient-physician relationships; and patient satisfaction. This is not an uncommon finding in competency-based curriculum research. For example, the Medical School Objectives Project determined a "growing awareness that, in the future, physicians will be expected to be more effective than now appears to be the case in communicating with patients and their families, and with other members of the health care team" [32] The report continues:

> At present, interpersonal communication skills instruction tends to focus almost entirely on the physician-patient relationship. Although communication with families may be considered an extension of physician-patient communication, students will need specific instruction and practice in order to work most effectively with family members who accompany patients to physician visits, those who serve as caregivers, and those involved in more difficult situations (e.g., delivering bad news). Communication with physicians and other members of the health-care team also requires curricular attention, given the movement toward better-integrated care.[32]

Participants in the NGT identified communication problems that exist between physicians and a host of medical professionals, including pharmacists, nurses and other

caregivers, mental health personnel, physical therapists, other specialists, and insurance companies. Good human relations and communication skills are essential in all relationships, including the doctor-patient relationship.

Actual patients (non-health professionals) were a small part of the total nominal group participants in the research (eight out of 130). The majority of the nominal group participants were medical educators, practitioners, and other health care professionals who related to the research question from their own experience working with physicians in health care settings. The data may reflect their responses as consumers of healthcare; however, increased awareness of consumer satisfaction is one of many reasons why medical education is looking at curriculum reform.[27]

Many of the participants could not have defined content for the curriculum for four years of medical school, but they certainly could distinguish a competent physician from an incompetent physician based on observed behaviors and personal experience. Those participants who had received medical education and training were even more aware of the behaviors and expectations of effective physicians.

A third issue regarding the master list of competencies is that the list may be too comprehensive for a four-year medical curriculum. For example, an analysis of nine major reports on physicians' competencies shows that four of the reports do not show a need for practice management topics in the first four years of medical education and rotations. This suggests that the domain of practice management might be best reserved for post-graduate work.[4] A survey of young physicians reports, however, that only three percent of those who responded believed that their preparation to manage business aspects of a medical practice

was excellent or good.[33] Therefore, it is not clear when certain competencies might best be taught.

The research of the Task Force may have encompassed a broader area of competencies for several reasons. Participants of the NGT were not asked to differentiate between the essential and desirable competencies students should acquire in medical school and those that they should acquire in residencies or after training. Nevertheless, they identified good practice management skills as an essential competency for effective physicians of the 21st century. Furthermore, NGT participants recognized the importance of computer literacy, reading, verbal and written communication skills and research skills. Medical school candidates might be expected to have acquired already some of those competencies, especially as current and future students have increased opportunities to develop these skills in high school and undergraduate institutions. Medical schools in the not-too-distant future may need to increase entrance prerequisites to ensure that all entering students have minimal competence in communication and research skills prior to their first year of medical school.

A third reason why the research did not direct participants to identify competencies that might be expected after four years of medical education is that, in addition to ranking competencies by importance, Phase II of the Task Force Initiative -- the questionnaire -- was expected to help distinguish between prerequisite competencies and those that would be more readily developed during residencies. Participants in the NGT were not expected to differentiate between competencies that are achieved in four years of medical school as compared to those achieved in residency.

Conclusion

Phases I and II of the COMS Curriculum Redesign Task Force initiative revealed that competency-based curriculum design is not only possible, but that it is also practical and valuable. Through their participation, members of the COMS faculty looked beyond what they thought should be taught in the curriculum to what osteopathic physicians should be able to know, do, and value in order to practice effectively. This is a paradigmatic shift from an emphasis on instructor-centered teaching to an emphasis on student-centered learning and an important aspect of having faculty deeply involved in the curriculum reform effort.

In addition to assisting the faculty to become more aware of the needs of medical students, the research process provided a larger, more detailed, and specific list of competencies for effective osteopathic physicians of the future. Furthermore, it groups those competencies into factors or clusters to arrive at a master list of eight major competencies and 72 sub competencies. What the research for a competency-based curriculum accomplished is a foundation for curriculum change. When faculty members begin to determine content, skills and attitudes to be taught in a new curriculum, these competencies will be a valuable guide for any change in curriculum.

Finally, the database developed through the process of research and the study of current course goals and objectives helped COMS faculty see the importance of developing a working database. As a result, COMS is now employing CurrMIT, a database of the American Medical Association. This is certainly an unexpected outcome of the Task Force Redesign Initiative.

The CurrMIT project allows each medical school to manage its own curriculum locally on a database containing common, defined data elements in use nationally. The

database identifies information on course directors to foster networking about courses; track what teaching methods and materials are in use; specify sites used for teaching and learning, contact hours devoted to specific topics, and assessment techniques used to determine whether predefined objectives are being met. It supports the efficient use of successful curriculum reform strategies by documenting and making available detailed information about ongoing reform and innovation.

Perhaps COMS would have adopted CurrMIT without the Task Force effort; however, that step might have been delayed many years, after many other osteopathic colleges adopted the database. Presently COMS is among those osteopathic colleges leading the way.

There was a significant difference between the ranking of competencies by osteopathic physicians and by allopathic physicians (Research Question 2). The results of the Mann-Whitney test and Wilcoxen Ranks test determined that there were seven competencies that D.O. physicians ranked significantly higher than M.D. physicians.

What these tests demonstrate is that most of the same competencies ranked as important by osteopathic physicians also are ranked highly by allopathic physicians. However, D.O.s and M.D.s do not always agree on the essential competencies. While all competencies received high rankings, D.O.s ranked seven, and possibly eight, significantly higher. Whether or not these competencies ranked higher by D.O.s distinguish the D.O. profession from the M.D. profession is not clear and bears further investigation. All 91 competencies should be considered as essential for osteopathic physicians for the 21st century and should be included somewhere in the medical school curriculum. For an osteopathic college of medicine, special attention should be paid to incorporate those ranked more highly

by D.O. physicians, including leadership skills, business skills and market development, and loyalty to school and profession and the osteopathic philosophy. Furthermore osteopathic physicians should be teaching students, other physicians and the public about medicine and public health issues. Finally, most osteopathic physicians agree that the ability to develop and maintain a sense of humor in the workplace, among co-workers and patients, is essential.

Recommendations

Two recommendations emerge from the research that may be helpful for others doing similar curriculum revision projects. First, the nominal group process identified a rich and extensive database of characteristics and traits of effective physicians. While it was important to keep the flavor and meaning of the statements, the risks of using participants' own wording were evident. In an attempt to reduce the more than 150 statements to something more feasible for a questionnaire, statements were combined and some statements of competency became complex. As explained in Chapter 3, this complexity became problematic when factor analysis was used to analyze the data. Furthermore, since all competencies were highly ranked, factor analysis did not clearly delineate factors or clusters.

Second, it is not apparent from the results of the questionnaire whether medical students should achieve all 91 competencies in four years of education or if some should be met in undergraduate or post-graduate work. Therefore it might be helpful to employ a second questionnaire asking respondents from Phase II to place each competency on the continuum of medical education. This information may have far reaching effects for prerequisites for medical school and competencies that should be acquired in residencies.

APPENDIX A. COVER LETTER

Des Moines University
Osteopathic Medical Center

Date

Dear_____:

As we celebrate the second century of our school admire the service our graduates have made to the health of the America, we find that it is time for us to examine the competencies necessary for the physicians of the 21st century and the educational process that we use today. The landscape of medicine, like the landscape of America, is changing at an accelerating pace, and the model we are using for education has been essentially static for the last 40 years with only minor modifications. We feel that it is time for a complete evaluation and design of a new model that will ensure that we equip our graduates with the skills and knowledge they need to continue to grow in knowledge and in the practice of quality medicine throughout their careers.

As the cornerstone of this process I am asking you for your support and assistance in determining the skills and competencies needed not only for physicians today but also those you anticipate that they will need in the future. Your experience, expertise, and leadership make you a critical part of our research process and design.

The competencies identified and prioritized by your input along with others will be the foundation of a new curriculum. Designed to deliver the knowledge and skills needed in an efficient manner, the new model must also be one that will stimulate and equip our graduates to have continuing learning skills. Innovation and versatility in education is our goal.

We have developed a survey that we will ask you to complete either by returning the booklet or by logging on to the web site and completing the requested information on line. If you would like to fill it out on line, please send an email message to Linda Hoyt at lhoyt@iastate.edu to receive further instruction. Otherwise you will soon receive the survey in the mail. Your answers are critical to the success of this project and, we feel, to the future of osteopathic medical education in the country. The individuals listed in the margin of this letter are also leaders of our profession involved with education and have endorsed or are supportive of this process and profession-wide participation. I hope, like them, you will also be supportive and return the survey to us so we can benefit from your input.

The knowledge we gain will be shared through the profession with all who would benefit from it and all who desire access as we see this process as one that will not only benefit us here at Des Moines University Osteopathic Medical Center but the entire Osteopathic profession.

Thank you for your attention and participation.

Ronnie B. Martin, D.O., FACOFP
Professor and Chairman of Family Medicine
Chairman, Curriculum Revision Task Force
Des Moines University Osteopathic Medical Center
College of Osteopathic Medicine and Surgery

Des Moines University
Osteopathic Medical Center

Date

Dear_____,

As we celebrate the second century of our school and admire the service our graduates have made to the health of America, we find that it is time for us to examine the competencies necessary for the physicians of the 21st century and the educational process that we use today. The model we are using for education has been essentially static for the last 40 years. We feel that it is time for a complete evaluation and design of a new model that will ensure that we equip our graduates with the skills and knowledge needed to grow in the practice of quality medicine throughout their careers.

Physicians do not practice in a vacuum. Today, more than ever, we realize the importance of working with allied health care professionals and science educators. Your experience, expertise, perspective and leadership make you a critical part of our research process and design. I am asking for your support and assistance in determining the skills and competencies needed not only for physicians today but also those you anticipate they would need in the future. The individuals listed in the margin of this letter are also leaders of our profession involved with education and have endorsed or are supportive of this process and profession-wide participation.

The competencies identified and prioritized by your input along with others will be the foundation of a new curriculum. We have developed a survey that we ask you to complete either by returning the booklet or by logging on to the web site and completing the requested information on line. If you would like to fill it out on line, please send an email message to Linda Hoyt at lhoyt@iastate.edu to receive further instruction. Otherwise you will soon receive the survey in the mail. Your answers are critical to the success of this project, and to the future of osteopathic medical education in the country.

The knowledge we gain will be shared through the profession with all who would benefit from it and all who desire access. This process will not only benefit us at Des Moines University osteopathic Medical Center but the entire Osteopathic profession.

Thank your for your attention and participation.

Ronnie B. Martin, D.O., FACOFP
Professor and Chairman of Family Medicine
Chairman, Curriculum Revision Task Force
Des Moines University-Osteopathic Medical Center
College of Osteopathic Medicine and Surgery

APPENDIX B. QUESTIONNAIRE

Ideal Skills and Traits of Primary-Care Physicians

The purpose of this survey is to investigate which characteristics and skills are most important for primary-care physicians to possess. Please answer the following questions to the best of your ability.

A. Using the scale below, please indicate how you would rate the importance of each of the following descriptions to the model of an ideal primary-care physician. (Please circle the number of your answer.)

1 Not at all important
2 Not very important
3 Neither important nor unimportant
4 Somewhat important
5 Very important

For a primary-care physician to exhibit the ideal characteristics for his or her position, how important is it that he or she ...

1. Exhibits competency in clinical skills and communicates confidence to patients and staff	1	2	3	4	5
2. Demonstrates knowledge of the infectious disease process, disease prevention and hygiene and sterile technique as they affect patient care	1	2	3	4	5
3. Elicits an accurate and complete medical history and performs a thorough and accurate physical examination	1	2	3	4	5
4. Develops and demonstrates communication skills including multi-lingualism for serving other population segments	1	2	3	4	5
5. Demonstrates excellence in osteopathic manipulative therapy and diagnosis and incorporates these skills into practice in all primary care and specialty settings for the benefit of patients	1	2	3	4	5
6. Monitors and continues to be involved in patients' care and condition at all times; does not inappropriately refer or abandon	1	2	3	4	5
7. Emphasizes healthy lifestyle habits such as smoking cessation, safe sex, use of seat belts, gun control and safety, avoidance of alcohol and other drugs, domestic and family coping skills and avoidance of domestic violence as well as health risk problems of the home and workplace	1	2	3	4	5
8. Knows the public health system in the community and the nation, the core functions it performs and the contribution it makes to health care of patients and community as a whole	1	2	3	4	5

1 Not at all important
2 Not very important
3 Neither important nor unimportant
4 Somewhat important
5 Very important

For a primary-care physician to exhibit the ideal characteristics for his or her position, how important is it that he or she ...

9. Knows, interprets, and applies the laws, regulations and issues that surround human resources, staff and personnel rights and responsibilities.	1	2	3	4	5
10. Knows and applies regulatory expectations that affect practice.	1	2	3	4	5
11. Practices medicine in an efficient, cost-effective manner.	1	2	3	4	5
12. Uses the scientific method to evaluate and compare non-traditional therapies, alternative health systems, consumer driven medicine, and alternative medicine.	1	2	3	4	5
13. Demonstrates the ability to use inductive and deductive reasoning as a foundation for problem solving and learning.	1	2	3	4	5
14. Demonstrates the ability to recognize normal and abnormal conditions, know their causes, and identify the unusual medical condition based on a foundation of knowledge and experience.	1	2	3	4	5
15. Participates in medical and clinical research to advance the practice of medicine	1	2	3	4	5
16. Knows and understands statistics, their interpretation, and utilizes in advancing knowledge in making clinical decisions.	1	2	3	4	5
17. Interacts appropriately with staff and patients with respect for individual rights and differences	1	2	3	4	5
18. Demonstrates a knowledge of business and market development.	1	2	3	4	5
19. Recognizes personal limitations and clinical skills and knows when to refer or obtain consultation.	1	2	3	4	5
20. Participates in professional meetings to gain information and collegiality	1	2	3	4	5
21. Advocates for patients' benefit by proper referral and utilization of other resources in the health care community	1	2	3	4	5
22. Knows the total cost of health care for patients, including the cost of non-compliance and poor care on total health care expenditures...	1	2	3	4	5
23. Recognizes and utilizes appropriate reporting procedures to regulatory bodies for STD's, abuse, neglect, issues of public safety to protect the public and benefit the patient as well	1	2	3	4	5
24. Utilizes adaptive equipment to benefit patient care.	1	2	3	4	5

1 Not at all important
2 Not very important
3 Neither important nor unimportant
4 Somewhat important
5 Very important

25. Recognizes individual patient's spirituality, core values and beliefs and their role in health care..... 1 2 3 4 5
26. Knows normal anatomy and physiology as well as patho-physiological conditions as they relate to the disease process..... 1 2 3 4 5
27. Performs basic surgical procedures 1 2 3 4 5
28. Employs professional standards and principles in prescribing medication or performing medical procedures for personal gain or profit..... 1 2 3 4 5
29. Participates in the formation of health policy and regulations that affect health care..... 1 2 3 4 5
30. Acquires and implements diverse skills that allow the physician to practice successfully in a variety of practice settings 1 2 3 4 5
31. Knows the personal risks of alcohol dependency, substance abuse, marriage infidelity, divorce, loss of affection of children and family that the practice of medicine presents..... 1 2 3 4 5
32. Seeks, accepts and appropriately responds to performance evaluation..... 1 2 3 4 5
33. Demonstrates knowledge of normal behavior and affect as well as pathological conditions..... 1 2 3 4 5
34. Engages in teaching students and other physicians as well as educating the public for the advancement of health. 1 2 3 4 5
35. Performs basic clinical skills to standards recognized by the profession..... 1 2 3 4 5
36. Educates the public and patients about the medical profession..... 1 2 3 4 5
37. Recognizes the role of primary care in the health care system while maintaining respect for specialty services. 1 2 3 4 5
38. Possesses knowledge of and implements the business skills needed to successfully operate a medical practice. 1 2 3 4 5
39. Is conversant in the language of the patient's reimbursement system and policies, including indigent services, HMO's, and private insurance companies. 1 2 3 4 5
40. Educates staff to be patient-friendly while developing an attitude of patient advocacy..... 1 2 3 4 5
41. Manages the problems of a diverse population with special needs. 1 2 3 4 5
42. Demonstrates knowledge of molecular and cellular biology. 1 2 3 4 5

1 Not at all important
2 Not very important
3 Neither important nor unimportant
4 Somewhat important
5 Very important

For a primary-care physician to exhibit the ideal characteristics for his or her position, how important is it that he or she ...

43. Possesses skill with computers, the Internet and other technological means to access information, do research, prepare presentations, and perform business and management functions to benefit patient care and practice flow and management. 1 2 3 4 5
44. Develops and demonstrates leadership skills within the profession and the community. 1 2 3 4 5
45. Develops and practices good time management skills for the benefit of the clinician's patients, staff, and family 1 2 3 4 5
46. Demonstrates loyalty to school and profession by supporting these institutions financially, politically and publicly. 1 2 3 4 5
47 Demonstrates tolerance and does not discriminate based on age, gender, sex, cultural differences, or any other factor. 1 2 3 4 5
48. Demonstrates empathy and compassion, comforts patients and provides patients with realistic expectations about outcomes while preserving hope. 1 2 3 4 5
49. Demonstrates knowledge and skills in diagnosing and treating patients as well as their families with mental or behavioral health issues. 1 2 3 4 5
50. Applies knowledge of genetics and genetic effect on wellness and pathophysiology. 1 2 3 4 5
51. Demonstrates a knowledge of the effect nutrition has on wellness, disease states, and healing. 1 2 3 4 5
52. Demonstrates skills and knowledge regarding the ordering, performance, management and interpretation of laboratory, radiology and other diagnostic studies that relates to patients' conditions. 1 2 3 4 5
53. Demonstrates knowledge of preventive medicine, including immunizations, and commits to keep people well rather than just treat disease. 1 2 3 4 5
54. Demonstrates respect for wellness and the body's ability to function and heal itself as well as knowledge of the interrelationship of structure and function 1 2 3 4 5
55. Demonstrates an understanding of responsibilities and patients' rights when the utilization of a research or experimental protocol is involved in patient care. 1 2 3 4 5
56. Communicates with the patient and conveys information about alternatives to therapy and advances in medical care. 1 2 3 4 5

1 Not at all important
2 Not very important
3 Neither important nor unimportant
4 Somewhat important
5 Very important

For a primary-care physician to exhibit the ideal characteristics for his or her position, how important is it that he or she ...

57. Demonstrates ability to deal with end-of-life issues..... 1 2 3 4 5
58. Discriminates between different systems of health care delivery in this country and the world..... 1 2 3 4 5
59. Interprets and applies legal requirements and obligations to medical practice..... 1 2 3 4 5
60. Demonstrates ability to communicate to patients the rights, responsibilities, and benefits of their coverage, including government, managed care, and insurance..... 1 2 3 4 5
61. Recognizes the needs of the office practice environment on patient care and modifies as needed..... 1 2 3 4 5
62. Demonstrates knowledge of medical care for aging populations and the aging process..... 1 2 3 4 5
63. Demonstrates knowledge of pain prevention, treatment and management..... 1 2 3 4 5
64. Demonstrates knowledge of and ability to develop and implement a treatment plan appropriate for patient and condition..... 1 2 3 4 5
65. Demonstrates knowledge of self-driven learning environments and practices adult education principles for patient and community education..... 1 2 3 4 5
66. Deals fairly and honestly with patients, peers, and the public in professional and business affairs..... 1 2 3 4 5
67. Provides information, both written and oral, in a way that is concise, clear, and easy to understand..... 1 2 3 4 5
68. Advocates treating the whole patient, including his or her physical, social, economic, psychological and family needs..... 1 2 3 4 5
69. Establishes a mechanism to ensure that access to care is readily available for patients..... 1 2 3 4 5
70. Demonstrates an ability to establish rapport with patients..... 1 2 3 4 5
71. Embraces diversity and demonstrates sensitivity to differences in patients' religious beliefs, ethnic values and beliefs, social or sexual diversity or special needs across cultural or language differences..... 1 2 3 4 5
72. Demonstrates knowledge and skill in palliative medical care when appropriate for patient's condition..... 1 2 3 4 5
73. Is aware of, involved in, and knowledgeable of, developing medical and social changes and scientific advances as they evolve..... 1 2 3 4 5

1 Not at all important
2 Not very important
3 Neither important nor unimportant
4 Somewhat important
5 Very important

For a primary-care physician to exhibit the ideal characteristics for his or her position, how important is it that he or she ...

74. Applies principles of wellness, exercise programs, and good nutrition to benefit patients.	1	2	3	4	5
75. Encourages patients to actively participate in their health care, including end-of-life issues.	1	2	3	4	5
76. Develops skills in conflict resolution between self, patients, and regulatory or review agencies.	1	2	3	4	5
77. Develops and adheres to a system of patient communication to ensure proper follow-up and care.	1	2	3	4	5
78. Demonstrates respect for patient confidentiality by establishing protocols to manage patient records and provide medical record security.	1	2	3	4	5
79. Commits to the practice and concepts of osteopathic medicine.	1	2	3	4	5
80. Develops a good sense of humor and uses it effectively in the workplace	1	2	3	4	5
81. Integrates information gained from medical history and physical examinations with the principles of science and pathophysiology to arrive at appropriate diagnosis and treatment	1	2	3	4	5
82. Pursues continuing medical education and knowledge and integrates new developments into clinical practice.	1	2	3	4	5
83. Critically evaluates, appraises, interprets and applies scientific literature and clinical studies to the practice of medicine.	1	2	3	4	5
84. Is involved in and aware of other influences in the patient's life that affect health care and decisions such as family, job, economic situations	1	2	3	4	5
85. Evaluates the effectiveness of the treatment plan for patient and modifies as appropriate.	1	2	3	4	5
86. Develops an attitude of customer service and patient-centered practice patterns.	1	2	3	4	5
87. Adapts to the evidence-based method of medical care	1	2	3	4	5
88. Participates in practices that serve diverse populations and underserved settings	1	2	3	4	5
89. Recognizes the signs and symptoms of "burn out"	1	2	3	4	5
90. Displays confidence in clinical skills to patients and staff.	1	2	3	4	5
91. Demonstrates knowledge of hygiene and sterile techniques as they affect patient care.	1	2	3	4	5

The last few questions ask for some background information about you and your profession.

92. Do you have an affiliation with a medical school/training program?

1 Yes
2 No

93. Which best describes your involvement in medical education?

1 Involved full time
2 Part-time clinical
3 Not involved

94. What is your profession? _____

95. What percent of your time is spent in the following settings...

____% in Managed Care
____% in Capitated Care
____% in Fee-For-Service
____% in Salaried

-OR- (check if applies)

____ Not in practice

96. What is your zip code? _____

APPENDIX C. HUMAN SUBJECTS APPROVAL

DES MOINES UNIVERSITY-OSTEOPATHIC MEDICAL CENTER

Institutional Review Board

Date: December 4, 2002

To: Diane Ament

From: S. Juanita Robel, Chairperson

Re: "Curriculum Revision for Medical Education"

The above survey research conducted by David Garloff and Shirley Walrod at Des Moines University was a part of the curriculum revision process for the College of Osteopathic Medicine and Surgery. The initial phase was designed to determine competency expectations for a Doctor of Osteopathy (D.O.). At the time that the survey was developed and implemented, I had discussions with Dr. Garloff regarding the need for this survey to be presented to the DMU IRB. At that time, the IRB had not dealt with this type of research, and we had no established procedures for submitting information to the committee.

My understanding of the survey at that time and still today is that it was an educational procedure and met the standards for exemption. I verbally informed Dr. Garloff that the IRB considered this survey research to be exempt.

Subsequently, the IRB established additional procedures to handle these types of situations. In Spring 2001, these procedures were put into place.

I hope that this assists you in explaining the series of events that occurred.

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