

HOW AND IN WHAT CONTEXT  
DO OSTEOPATHIC MEDICAL STUDENTS  
LEARN ABOUT  
INTERPROFESSIONAL PRACTICE

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In Memory

For my father whose love for me and  
steadfast belief in the value of education  
was and continues to be a foundation in my life

And for Auntie Mom

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## ABSTRACT

The purpose of this study was to explore how and in what context osteopathic medical students learn about interprofessional practice. A mixed method design was used to gather data on attitudes of first- and second-year osteopathic medical students toward interdisciplinary practice and to elicit a rich description of their experience in a community-based elder visit program. Sixteen students participated in the qualitative portion of the study and 329 in the quantitative portion.

The qualitative findings described the students' experiences of interdisciplinary interactions, and the quantitative findings described the attitudes of students before and after the program. Qualitative data included transcripts of focus groups and interviews, field notes and surveys.

Based on the quantitative data, students enter osteopathic medical school with (a) generally positive attitudes about the value of teamwork as a contributor to quality of patient care, (b) some concerns about the effort required to develop and maintain effective teams, (c) reservations about sharing leadership in the team, and (d) relative confidence about their teamwork skills. Post-program data showed statistically significant positive change in attitudes about the value of teamwork, efficiency of teams, and teamwork skills.

Both quantitative and qualitative results contributed to understanding students' expectations of their role and the roles of other providers on the team. Principles from intergroup contact theory and a knowledge creation metaphor provided a framework for viewing students' reflections of their interdisciplinary teamwork experience. As a result of the program, students' expressed awareness of the importance of diversity of skills, communication, and teamwork were increased.

## CHAPTER ONE

### INTRODUCTION

The quotations below describe the rationale for encouraging better interdisciplinary (ID) cooperation in healthcare practice and education. As discussed later in this document within the frame of Activity Theory (AT), stimulus for change in large systems like healthcare and health professions education is motivated by structural tension or contradictions within the system. However, change in such systems occurs over long periods of time. The major paradigm shift regarding healthcare outcomes reflected in the excerpts below has led to a long overdue examination of how we educate healthcare professionals in general. Safety issues have been paramount in stimulating the re-examination of the education of physicians.

At least 44,000 Americans die each year as a result of medical errors. . . . The number may be as high as 98,000. Total national costs (lost income, lost household production, disability and healthcare costs) of preventable adverse events (medical errors resulting in injury) are estimated to be between \$17 billion and \$29 billion, of which healthcare costs represent over one-half (Institute of Medicine, 2000, p. 27). These figures offer only a very modest estimate of the magnitude of the problem since hospital patients represent only a small proportion of the total population at risk, and direct hospital costs are only a fraction of total costs (Institute of Medicine, 2000, p. 2).

Interdisciplinary teams are critical in dealing with the increasing complexity of care, coordinating and responding to multiple patient needs, keeping pace with the demands of new technology, responding to the demands of payors, and delivering care across settings (Institute of Medicine, 2003, p. 54). In fact, because in the current healthcare system “lack of continuity and coordination of care, miscommunication,

redundant and wasteful processes, and excess costs have resulted in patient suffering” (Institute of Medicine, 2003, p. 31), the “redesigned system is predicated on interdisciplinary teams” (Institute of Medicine, 2003, p. 30).

Healthcare professionals have historically been educated in discipline-specific silos. As part of the medical education socialization process “some recommended values (e.g., accountability) are taught frequently, some (integrity) are taught rarely, and some (interprofessional relationships) are taught in ways contradictory to medical school recommendations” (Stern, 1996, p. iv).

### Rationale

Numerous recent studies and reports culminating and continuing in the historic and challenging Quality Chasm reports from the National Institutes of Health’s Institute of Medicine (IOM) (Institute of Medicine, 2000; Institute of Medicine, 2003; Institute of Medicine, 2001) have concluded that the United States healthcare system is neither providing the level or quality of care promised; nor is it consistently functioning in ways that are in the best interest of the patient and society (Agency for Healthcare Research and Quality, 2000; Agency for Healthcare Research and Quality, 2002; Chassin, Galvin, & National Roundtable on Health Care Quality, 1998; Institute of Medicine, 2000; Institute of Medicine, 2001; Institute of Medicine, 2004). Lack of patient safety is a primary concern of reformers, but other issues also detract from the “health, functioning, dignity, comfort, satisfaction, and resources of Americans” (Institute of Medicine, 2001, p. 2) and contribute significantly to ongoing patient, provider, and payor frustration with the system. Even after years of concern and effort, safety systems are not close to

meeting goals set in IOM recommendations (Longo, Hewett, Ge, & Schubert, 2005, p. 2858).

IOM reports (Institute of Medicine, 2000; Institute of Medicine, 2003; Institute of Medicine, 2001) document numerous problems with the current system, set goals for healthcare services, and make recommendations for improvement in the educational preparation of health professionals. Goals for the provision of healthcare services aim for care that is safe, timely, effective, efficient, equitable, and personalized (Institute of Medicine, 2001, p. 39). Preparing a workforce to deliver care that meets the goals recommended by the IOM will require at least recalibration of current training programs and methods. Stated in the form of competencies, IOM makes five recommendations intended to guide educational institutions as they train health professionals. The five core competencies (Institute of Medicine, 2003, Chapt. 3) hold educational institutions accountable to train students to:

1. Provide patient-centered care.
2. Work in interprofessional teams.
3. Employ evidence-based practice.
4. Apply quality improvement processes.
5. Utilize informatics.

Interprofessional (IP) team practice is seen as particularly critical to improving safety, quality of care, and cost effectiveness. Current health professions education and practice cultures are consistently socialized in isolated, hierarchy fostering, individualistic settings (Hall & Weaver, 2001). Further, because in the current healthcare setting, the “lack of continuity and coordination of care, miscommunication,

redundant and wasteful processes, and excess costs have resulted in patient suffering” (Institute of Medicine, 2003, p. 31), recommended system changes are based on interprofessional teams (Institute of Medicine, 2003). Though professionals in most healthcare settings still operate in a highly autonomous fashion, those in the fields of hospice care, geriatrics, rehabilitation, chronic disease management, and care of the underserved have been forging increasingly collaborative systems of care in response to the complex types of health conditions afflicting their patients. Accordingly, within these settings reside some very positive models of education and practice through which health professions students can see and learn more effective communication and interprofessional collaboration skills (Drinka & Clark, 2000). Implementing interprofessional education (IPE) programs throughout the health professions will require significant changes in the attitudes and knowledge of those school- and community-based faculty who are assisting with the preparation of young health professionals including physicians (Aron & Headrick, 2002).

The attitude and curriculum changes necessary to teach the new competencies will be difficult since helping students learn “soft skills” necessary for effective interprofessional communication and practice is generally viewed by students or faculty as a lower priority than learning clinical knowledge and skills. Finally, the changes will require shifts in faculty attitudes and behaviors related to interprofessional practice that are currently being taught/caught at the most enduring subconscious levels during professional training and practice as part of the “hidden curriculum” (Coulehan & Williams, 2001; Hafferty, 1998; Hafferty & Franks, 1994; Hundert, Hafferty, & Christakis, 1996; Stern, 1996; Wear, 1998; Wear, 1997).



### *Interprofessional Education*

Most articles on interprofessional education (IPE) are more accurately described as project reports than as research. However, increasing pressure is being placed on educators to provide evidence that the investment of resources necessary for interprofessional education is worthwhile. Because sorting through and detecting trends in the annually increasing flow of relevant information is so daunting, systematic reviews from reliable sources offer prudent practitioners a helpful alternative.

Three major systematic reviews related to IPE have been conducted and published recently. The first two were registered with the Cochrane Collaboration (Zwarenstein et al., 1999; Zwarenstein & Bryant, 2000). The other, published in book form (Barr, Koppel, Reeves, Hammick, & Freeth, 2005), has now completed further review and is registered with the Best Evidence Medical Education (BEME) Collaboration.

In the first Cochrane review, *A Systematic Review of Interprofessional Education* (Zwarenstein et al., 1999), no articles were found that met the Cochrane criteria for inclusion—there were no randomized controlled trials (RCTs), controlled before-and-after studies (CBAs), or interrupted time series studies. The second Cochrane review, *Interventions to Promote Collaboration Between Nurses and Doctors*, identified two articles that met the criteria. Findings in those studies indicated that improving collaboration modestly improved outcomes viewed by patients and healthcare managers as important (Zwarenstein & Bryant, 2000).

### *The JET and BEME Systematic Reviews*

Recognizing that more and better-designed studies were being reported in the literature, the 2005 JET systematic review (Barr et al., 2005) was initiated by several

researchers involved in the 1999 Cochrane IPE review. Known as the Joint Evaluation Team (JET), the researchers revised Cochrane protocols to better fit the education research literature. The 2005 review initially identified 10,495 abstracts; retrieved 884 papers; determined 353 studies were qualified for inclusion; and judged 107 as "higher quality studies." Dimensions considered in determining quality included fit between evaluation design and research aims/questions; criteria for selection of research participants; and documentation of issues of validity, reliability, authenticity, and trustworthiness.

The higher quality IPE studies were grouped into three categories by focus: preparing individuals for collaborative practice, cultivating collaborative team/group practice, and developing services and improving care. Using an expanded version of Kirkpatrick's (1998) four-point typology, outcomes were aggregated into six response levels including reaction, attitude/perception change, knowledge/skill change, behavior change, organizational practice change, and patient benefit change. Because many of the 107 studies produced more than one outcome, 225 reported outcomes were identified. Of these 225 outcomes, 182 were positive, 28 were mixed, 14 were neutral, and 1 was negative (Barr et al., 2005).

The review from the BEME Collaboration—*A Best Evidence Systematic Review of Interprofessional Education* (Hammick, Freeth, Koppel, Reeves, & Barr, 2007)—started with the JET review. The JET team again revised search protocols, raised the criteria for inclusion, and ended up with 21 studies included in the review. Findings from the BEME report show that IPE is most often positively received by trainees, and it facilitates the learning of skills and knowledge necessary for collaborative working.

While it is particularly effective for quality improvement initiatives in clinical practice and services, it is less effective at positively influencing attitudes and perceptions towards providers from other disciplines. Training IPE program preceptors in adult learning and facilitation techniques and situating learning activities within authentic practice environments are critical to program success.

### Purpose of Study

The purpose of this study was to identify and describe the knowledge and attitudes held by osteopathic medical students regarding interprofessional education (IPE) and practice. Students assimilate attitudes about other disciplines and working together from all directions before and during the training process. Often these attitudes are assimilated in negative ways through the hidden curriculum. Research shows that avoiding errors and improving outcomes requires coordination and collaboration among healthcare providers (Institute of Medicine, 2000; Institute of Medicine, 2003; Institute of Medicine, 2004; Longo et al., 2005). Understanding the nature, source, timing, and methods of acquisition of knowledge and attitudes about interprofessional practice can help medical school faculty design educational strategies to attain more positive outcomes.

Studies on the attitudes and knowledge of health professions students toward interprofessional teamwork have included British and American allopathic medical students (Horsburgh, Perkins, Coyle, & Degeling, 2006), but only two project reports specifically documenting inclusion of osteopathic medical students have been located (Harter & Krone, 2001; Singla, MacKinnon, III, MacKinnon, Younis, & Field, 2004). Because a high portion of osteopathic physicians select practices in high-need geographic

areas and primary care specialties, both of which benefit from a team approach to patient care,(Drinka & Clark, 2000), the outcomes of this study can be of significant benefit in the preparation of future osteopathic physicians.

### Conceptual Framework

From the perspective of pragmatic epistemology, knowledge is made up of “models” that represent aspects of the environment in ways that facilitate problem solving. Theoretical models generally evolve using all or part of several other models and verifiable data enhanced through use of heuristics and intuition. Since the likelihood that a reasonably understandable and usable model could ever encompass all related situations appears low, researchers must choose the simplest possible models that appear to produce correct or approximate predictions about the problem in question, even if making such choices at times leads to inclusion of contradictory models (Heylighen, 2000).

The following discussion of theoretical models highlights the theories selected for this study. The first concept, intergroup contact theory, helps illuminate the issues involved in the establishment and maintenance of effective working relationships with students and practitioners from other health professions. The second concept, a knowledge creation model that encompasses activity theory, helps guide our understanding of the education and practice environment in which osteopathic medical students learn (Paavola, Lipponen, & Hakkarainen, 2004).

Medical education is an extremely complex process which occurs in a unique and complex culture (Hafferty, 1998; Howe, 2002; Howe, Billingham, & Walters, 2002). Role modeling, mentoring, values, and professionalism are concepts which are currently

receiving much attention in medical education. While these concepts are not extensively discussed in this study, they are defined, and their influence in the learning process and intergroup contact examined. The two theoretical models – intergroup contact theory and a knowledge creation metaphor – that guide this study of osteopathic medical education are presented below.

#### *Interprofessional Education (IPE) and Intergroup Contact Theory*

Intergroup contact theory supports the idea that attitudes toward diverse groups may become more positive when members of the groups are in contact under specific conditions (O'Neill & Wyness, 2005). Intergroup contact theory holds that intergroup prejudice can be reduced by contact between groups under certain conditions (Pettigrew & Tropp, 2006b). Allport (1954) described four conditions necessary for positive outcomes: (a) equal status between group members in the contact situation, (b) common goals, (c) no competition between the groups, and (d) authority sanction for the contact. Findings in Pettigrew and Tropp's (2006) review of research on intergroup contact revealed the following: (a) greater intergroup contact is typically associated with less intergroup prejudice, (b) intergroup contact effects differ among members of minority and majority status groups, and (c) intergroup contact effects typically generalize beyond participants in the immediate contact situation to the entire outgroup.

#### *Interprofessional Education and the Knowledge Creation Metaphor*

Skills at adaptation and learning are critical given the frequent changes in healthcare as a result of new disease entities, treatments, and care delivery system changes. Further, effective healthcare practice requires learning how to work with others and learning how to engage multiple sets of knowledge toward managing complex

situations and solving problems. While acknowledging the importance and contributions of the acquisition and participation metaphors in education theory, Paavola, Lipponen and Hakkarainen (2004) proposed that a third metaphor may provide a bridge between the other two and offer a frame for understanding the development of shared projects or products and, in the case of healthcare, collaborative working. The knowledge creation metaphor integrates principles from the work of Nonaka and Takeuchi (1995), Engeström (2001; 2007), and Bereiter (1991) into a learning model which offers a very helpful frame for interprofessional practice and education.

While the three models are distinct, Paavola, et al., (2004) identified seven commonalities in the works of the theorists listed above that contribute to effective knowledge building. These include (a) a goal of developing something new, (b) use of mediating objects to avoid dualism, (c) understanding the importance of social interaction in knowledge creation, (d) appreciating the role of individual knowledge in knowledge creation, (e) recognizing contributions of tacit knowledge, hunches, and intuition to innovation, (f) emphasizing the importance of conceptualization and explication, and (g) organization of collaboration to innovatively develop shared objects.

The issues involved in preparing future osteopathic physicians and other health professionals are myriad; the issues involved in preparing them to work well together are even more numerous and complex. As noted earlier, the use of multiple theories may be needed to provide a frame for studying an issue or solving a problem. Intergroup contact theory offers insights on how members of groups develop attitudes about members of other groups. Elements of the knowledge creation metaphor of particular relevance to this study are (a) the importance of individual contributions to group problem solving, (b)

understanding the importance of social interaction in knowledge creation, and (c) the use of mediating objects (patient care plans, policies or procedures, etc.) to avoid dualistic mindsets. These two theoretical models provide frames for this research and offer a number of additional perspectives on the issues involved in IPE.

### Research Questions

Inquiry focused specifically on how osteopathic medicine (OM) students perceive the experience of interprofessional/interdisciplinary (IP/ID) team learning and working in a community-based, patient-focused activity. Student experiences with and attitudes about other health professions, as well as the process and outcomes of their collaboration, were explored to gain insight into how prior contact with other professions and the formal and hidden OM curriculum contribute to their current knowledge and attitudes. The overarching focus of this study was, How and in what context do osteopathic medical students learn about interprofessional practice? Specific research questions that guided the investigation were:

1. What beliefs do OM students bring to the interdisciplinary house calls (IHC) experience?
2. What are the expectations of OM students regarding:
  - a. Their role within the team?
  - b. The roles of other providers within the team?
3. What in the IHC experience did the OM students see as particularly powerful in shaping or influencing their view of ID healthcare practice?
4. In what ways do students perceive that their practices and beliefs about ID practice have changed as a result of participation in the IHC Program?

## Methods

Qualitative research methods were used within a naturalistic design (Lincoln & Guba, 1985) to investigate the research questions. Data were collected using interviews, focus groups, document review, and observation. A purposeful sampling process was used to identify osteopathic medical students who were participating in interdisciplinary teams in the House Calls Program and who had varying levels of healthcare experience. These students were interviewed to gain a better understanding of their perceptions of interprofessional working, how they came to hold the beliefs they have about interprofessional work, and how their attitudes and beliefs influence their practice.

Survey data on interdisciplinary teamwork attitudes were collected from the OM classes of 2008 and 2009. Data sets were analyzed and results integrated into the findings.

## Research Procedures

Global and local recommended, written, and tested curricula were reviewed to identify and describe content related to interprofessional learning and work. Global recommendations for health professions education are included in publications and reports from a variety of sources including the World Health Organization, the Society for Teachers of Family Medicine (STFM), American Osteopathic Association (AOA), and American Association of Colleges of Osteopathic Medicine (AACOM). Review of local curriculum guidelines included the medical school first- and second-year curricula, course exams, and the college handbook.

Interviews were conducted in the spring and summer of 2007. A purposeful sample of first- and second-year students from one Midwestern school of osteopathic



medicine were interviewed to determine their attitudes about other professions and interprofessional learning and practice and to assess the tacit messages that are part of the culture for first- and second-year students. Audiotapes of the interviews were transcribed, coded, and analyzed for themes.

Interprofessional House Calls team observations were conducted during House Calls debriefing sessions which are part of the curriculum within the Complete DOctor course in the second and third quarters of the first medical school year.

### Significance of Study

Major problems of patient safety exist in today's healthcare system (Institute of Medicine, 2000). A number of recommendations for improving the system have been made (Institute of Medicine, 2003). To enhance communication and collaboration, these recommendations include the need for significant improvement in the training of healthcare professionals for work in interprofessional teams. Facilitating the change from discipline-centric attitudes, beliefs, and values to team-friendly ones will require significant effort on the part of campus- and community-based faculty and mentors. The results of this study will provide information on where osteopathic medical students currently stand on the issue of interprofessional teamwork.

Given the quality issues facing the U.S. healthcare system and the recommendations for system improvement from numerous expert study groups (Institute of Medicine, 2000; Institute of Medicine, 2004; Institute of Medicine, 2001; Chassin et al., 1998), physicians and other health professionals must find ways of improving attitudes and knowledge about working well with each other. Given the increasingly complex health issues of the U.S. population, providing safe and effective care for

patients is of the utmost importance to both the physical and financial health of U.S. citizens.

#### Limitations of the Study

The study was limited to a single site—a private health sciences university with a medical school in the rural, midwestern U.S. Whether the students participating in the study represented the full range of attitudes and beliefs about ID education is unknown; however, there was considerable consistency in their responses. While students participating in focus groups or interviews may have altered the expression of their reflections in response to peer or facilitator comments, the researcher did not identify evidence of inhibition of student expression.

A further limitation of this study was the project timeline which enabled inclusion of only half of the program activities. By the end of the research project students had completed only the orientation, two of the four House Calls visits and review sessions, and the summer preceptorships. While the major House Calls Program events and the major first/second year clinical events were complete and were included in the focus group discussions and interviews, additional changes in attitudes and beliefs could be anticipated. Quantitative survey data will be collected at the end of the program to assess participants' attitudes at that time.

## Definition of Terms

- Professional competency: a professional competency is described as “the habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values, and reflection in daily practice (Epstein & Hundert, 2002). In response to patient safety concerns described in the earlier IOM reports (Institute of Medicine, 2000; Institute of Medicine, 2001), the 2003 IOM report on improving health professions education recommended that all health professionals be competent in five areas including teamwork (Institute of Medicine, 2003).
- Complete DOctor: The Complete DOctor is a curriculum thread in “doctoring” for first- and second-year students at the medical school. Coursework includes patient assessment, diagnosis, and management skills, life span health promotion, professionalism, and a variety of topics related to communication with patients, patient contact documentation, etc.
- Curriculum: It is the regular or a particular course of study in a school (1996).
  - Formal curriculum: the explicit, stated, intended, and formally offered and endorsed curriculum (Hafferty, 1998). It includes lectures, small group sessions, simulations, basic science labs and clinical skills labs, clinical rotations, preceptorships, clerkships, quizzes and exams, assigned readings, etc.
  - Hidden curriculum: the unwritten, latent (Dreeben, 1976), or informal (Hafferty, 1998) curriculum. It is an implicit curriculum consisting of a set of influences that function at the level of organizational structure and culture. Major areas include policy development, evaluation, resource allocation, and institutional slang (1998).

- Healthcare system: A healthcare system is a set of adaptive, interconnected parts or agents—including smaller systems, caregivers, and patients—bound by a common purpose and acting on their knowledge (Institute of Medicine, 2001).
- House Calls Program: House Calls is a community-based, geriatrics-focused program at the study university. Each medical student is assigned to an elder in the community and, as a member of a team, visits the elder 4 times over 12 to 14 months. Teams are made up of two to three medical students (medical student only – MSO – teams) or a medical student, a nursing student, and a health science student from a neighboring university (interdisciplinary–ID–teams).
- Institute of Medicine (IOM) – IOM is a nonprofit, honorific membership organization. It was chartered in 1970 and is the focus of a major initiative to improve the quality of healthcare here in the U.S. From the IOM website: The IOM's mission is to serve as adviser to the nation to improve health. The IOM works outside the framework of government to ensure scientifically informed analysis and independent guidance. As a component of the National Academy of Sciences, the Institute provides unbiased, evidence-based, and authoritative information and advice concerning policy related to biomedical science, medicine, and health to policy-makers, professionals, leaders in every sector of society, and the public at large.
- Interprofessional (IP) or interdisciplinary (ID) team: The terms interprofessional or interdisciplinary team used to describe a group of healthcare providers who collectively develop and implement a healthcare plan for a given patient. The team consists of “members from different professions and occupations with varied and specialized knowledge, skills, and methods . . . [who] integrate their observations,

bodies of expertise, and spheres of decision-making to coordinate, collaborate, and communicate with one another in order to optimize care for a patient or group of patients” (Institute of Medicine, 2003). The terms interdisciplinary, interprofessional and collaborative are discussed by Drinka and Clark:

We considered using the term interprofessional, but realized early on that this term is limiting in the sense that the team might consist of more than just professionals (e.g., nursing assistants, technicians, or other community support systems). . . . We could have used the term collaborative, but it is not always essential for team members to collaborate because in many situations team members must practice autonomously. Thus, we decided on the term interdisciplinary more for its inclusiveness than anything else (Drinka & Clark, 2000, p. xvi).

- Interdisciplinary/Interprofessional education (ID/IPE): ID/IPE occurs when two or more professions associated with health or social care engage in learning with, from, and about each other (Barr et al., 2005). Through ID/IPE, students prepare to cooperate, collaborate, communicate, and integrate care in teams to ensure that care is continuous and reliable (Institute of Medicine, 2003).
- Mentoring: Mentoring is a chosen relationship in which an expert provides counsel, guidance, and tutoring/coaching to a less experienced individual (Hudson, 2002).
- Multidisciplinary, interdisciplinary, and transdisciplinary (Dyer, 2003):
  - Multidisciplinary – according to Garner and Hoeman (cited in Dyer, 2003), a multidisciplinary care process that includes a faculty “gatekeeper” who determines which other disciplines are involved. Each discipline assesses and determines treatment plan autonomously. There is little coordination among team members; treatment goals and results are directly or indirectly communicated.

- Interdisciplinary – a subset of the multidisciplinary process expanded through collaborative communication which includes collaborative goals, service plan, and problem solving. Interdisciplinary faculty teams require institutional support as they prepare curricula, learning management strategies, and communication.
- Transdisciplinary – evolution of the interdisciplinary team that yields a team who understands and values the knowledge and skills of individual team members; depends on frequent, effective team communication; and promotes efficient delivery of educational or health services. Knowledge, skills, and responsibilities are shared across disciplinary boundaries leading to task-specific flexibility and cross training. Turf-issues are devalued; trusting relationships are essential. One team member (frequently a social worker or nurse) functions as primary professional leader and serves as information repository and communicator. Transdisciplinary care requires professional competence and security and a willingness to adapt roles and skills.
- Professionalism: The American Board of Internal Medicine (ABIM) Professionalism Project summarizes important professionalism elements in two categories—fundamental principles and professional responsibilities. Fundamental principles include patient autonomy, social justice, and the primacy of patient welfare. Professional responsibilities include maintaining commitment to professional competence, honesty with patients, patient confidentiality, maintaining appropriate relations with patients, improving quality of care, improving access to care, a just distribution of finite resources, scientific knowledge, maintaining trust by managing conflicts of interest, and professional responsibilities (Blank, Kimball, McDonald, & Merino, 2003).

- Professional responsibility: Professional responsibility is “the aspect of professionalism that embodies the sort of person the physician must be and the sort of work he or she must engage in if one were to call him or her a good physician” (Edwards, 2000, p. 18). Unlike “professionalism” which is argued to be either an art or a skill depending on one’s perspective, professional responsibility can be cultivated through habit and practice (Edwards, 2000).
- Role model: A role model is a person whose behavior in a particular role is imitated by others. Role modeling occurs as you live, and others see and choose consciously or unconsciously to be like you.
- Socialization: Su, Goldstein, Suzuki, and Kim (1997) define professional socialization as “the process by which neophytes come to acquire, in patterned and selective fashion, the beliefs, attitudes, values, skills, knowledge, and ways of life established in the professional culture” (p. 279).
- Values: Webster defines values as “the positive (or negative) ideals, customs, institutions, etc., of a society toward which people of the group have an affective regard” (1996). From the GPEP report by the AAMC, “We believe that every physician should be caring, compassionate, and dedicated to patients – to keeping them well and to helping them when they are ill. Each should be committed to work, to learning, to science, and to serving the greater society. Ethical sensitivity and moral integrity, combined with equanimity, humility, and self-knowledge are quintessential qualities of all physicians” (Association of American Medical Colleges, 1984).

## CHAPTER TWO

### REVIEW OF LITERATURE

In Chapter One, I presented an overview of this research project which explores the attitudes and beliefs about interprofessional education and practice held by osteopathic medical students working in interprofessional teams. In this chapter, I will first discuss the theoretical concepts which provide the framework for this study—intergroup contact theory and a knowledge creation model encompassing knowledge creation, knowledge building, and expansive learning theories. These two theoretical concepts create a frame for understanding the learning skills and attitudes needed by physicians-in-training to maximize their relationships with other health professionals-in-training and to foster safer, more effective collaborative patient care.

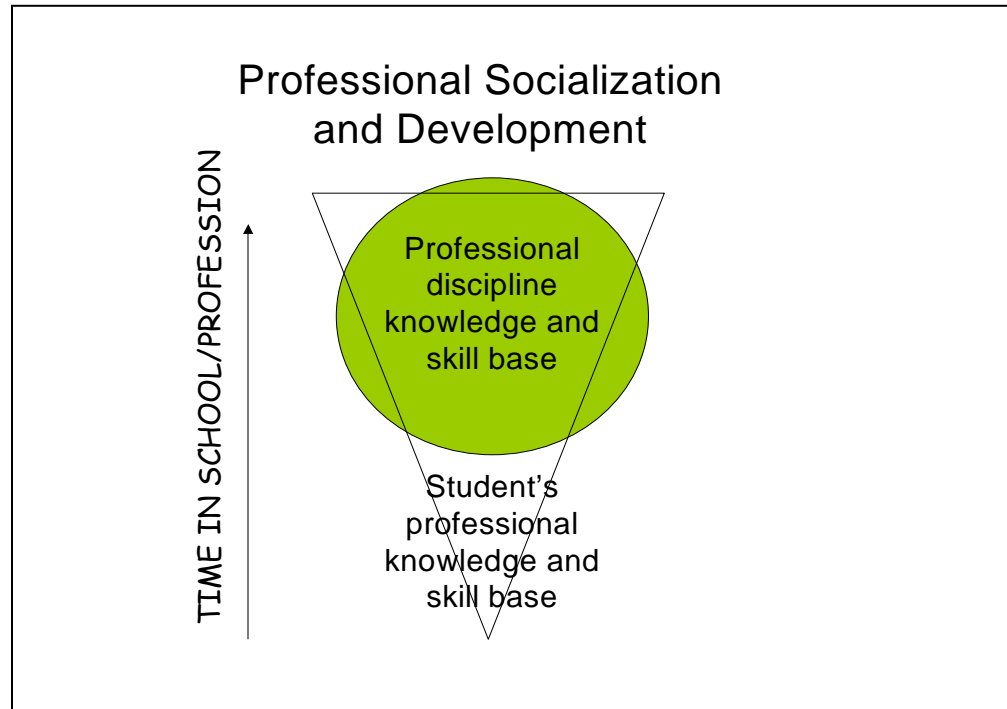
Second, I will review the literature related to interprofessional education, including findings from the more significant studies identified in three recent systematic reviews. Finally, various aspects of the curricular framework frequently noted in the education and medical education literature will be considered in relation to commonly noted elements of the socialization process for medical students—professionalism, values, mentoring, and role modeling.

#### Conceptual Framework

Though individual healthcare professionals are committed to bettering the lives of their patients and the healthcare system, they are poorly equipped through their education and frequently poorly supported at their work sites to work effectively as a member of the healthcare team. And yet, working effectively with others is essential if the huge problems of the healthcare system are to be solved (Institute of Medicine, 2003).



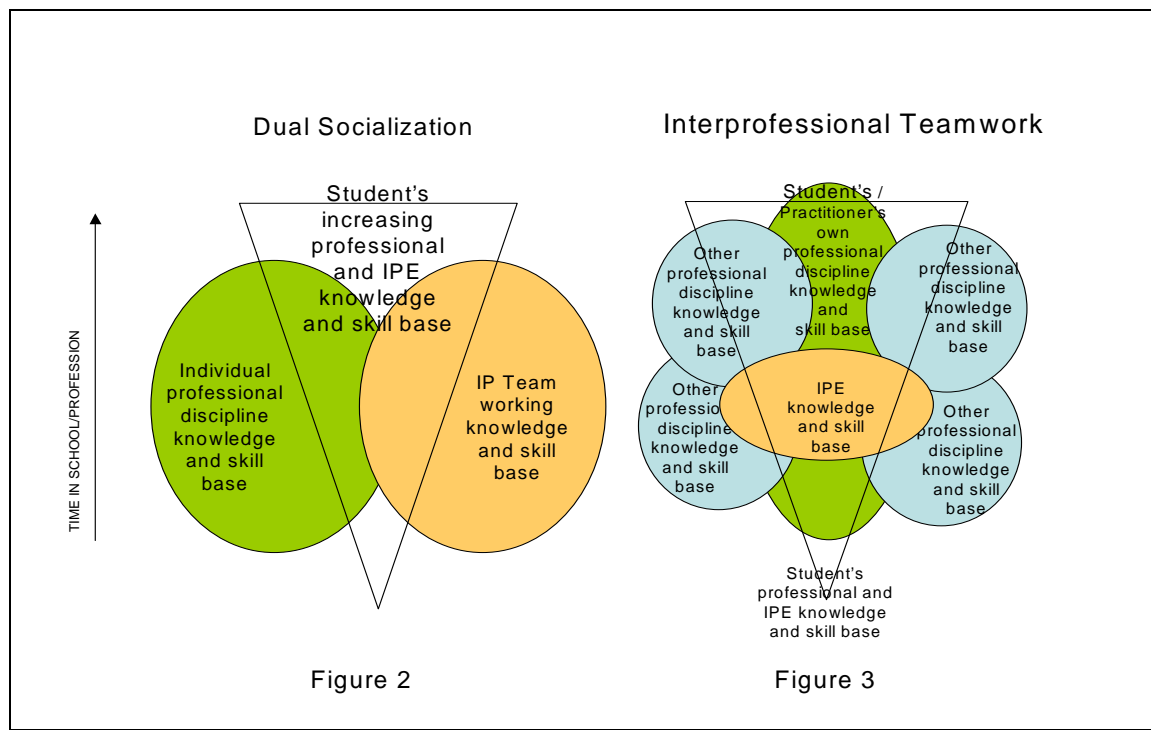
The process of acquiring both the knowledge, attitudes, values, and skills necessary for competent practice of a healthcare discipline and those needed to work effectively with other health professionals in healthcare teams has been called dual socialization (Clark, 1997). Clark also notes that the “education and training of healthcare professionals shape their identities, values, and norms of practice in certain ways that may either enhance or inhibit effective communication and collaboration in clinical practice setting” (p. 441). Figure 1 below is a representation of the professional development and socialization trajectory for learning one’s own profession.



*Figure 1:* Professional development model for learning one’s own discipline.

On the next page, Figure 2 represents the interplay of disciplinary identity and the standard practices and attitudes of collaborative practice or teamwork. Socialization for both one’s own discipline and the knowledge, skills, and attitudes required for working with professionals from other disciplines are implied in this figure. Figure 3 represents

the overlap of multiple professions about which the individual needs to know and the interprofessional skills, knowledge, values, and attitudes needed for effective IP practice.



Figures 2 and 3: Dual socialization and interprofessional teamwork models.

Reddy (1988) notes that managers in both for-profit and not-for-profit organizations recognize (a) the importance of quick responses to crisis, thoughtful planning, and the full use of human resources in solving complex problems and (b) the ability of teams to produce high-quality solutions. Unfortunately, the promise of teams captured in these words “when . . . teams work well, they elevate the performances of ordinary individuals to extraordinary heights” (Bolman & Deal, 1997, p. 81) has had limited influence on the healthcare practice culture and little if any impact on the culture of health professions education.

In fact, interprofessional teams in healthcare and health professions education have been hard to implement. Teamwork is the “quintessential contradiction of a society

grounded in individual achievement” (Weisbord, 1988, p. 35). Preparation and professional training and socialization in medicine, in particular, take the grounding in individual achievement and autonomy to new heights. Despite a medical education system that is noted for teaching “individualism, efficiency, competitiveness, and deception, in direct conflict with the values present in an ‘ideal physician’” (Bulger, 1990), “. . . a major force for improving patient safety is intrinsic motivation; that is, it is driven by the values and attitudes of health professionals and healthcare organizations” (Institute of Medicine, 2000, p. 23).

Most students entering medical school have the best of intentions regarding helping others, and they rely on their campus- and community-based faculty and staff to guide their educational experience. However, through lack of appropriate curricular experiences, most are never given the opportunity to gain the knowledge and develop the skills to be maximally effective in working as part of the many teams—some ongoing and stable, some fluid in composition and structure—necessary to provide the safest and most effective healthcare possible.

#### *IPE and Intergroup Contact Theory*

For almost any human endeavor, communication and collaboration are critical to the highest levels of achievement—particularly in situations where due to the size/complexity of the undertaking, division of labor is necessary as in healthcare. As noted in several studies (Cooke, et al., 2003; Reeves, 2000; Carpenter, 1995; Carpenter and Hewstone, 1996; and Tunstall-Pedoe et al., 2003) from the Best Evidence Medical Education Collaborative (BEME) report on interprofessional education (Hammick et al., 2007), the level of collaboration achievable between and among healthcare providers

sharing the care of a patient is hampered when destructive expectations are involved. Examples from these studies range from student observations that stereotyping about various disciplines can be a problem to characterization of professionals from other disciplines as arrogant, less caring, and depending on the discipline, more or less academic than others.

Evolving from social psychology, the field of intergroup relations concerns itself with how groups and their individual members interact with other groups and their members. More specifically, the focus is on individual attitudes and behavior in the context of social groups and their relationships with other groups. Examples of the contexts in which intergroup theorists work include “race riots, religious intolerance, rivalry between the sexes, language groups in confrontation, radical forces clashing with the establishment, civil war, the constant threat of terrorism, bitter labor disputes, and the universal preoccupation with the spread of nuclear weapons and the environment” (Taylor & Moghaddam, 1994, p. 1).

Intergroup contact theory is relatively undeveloped compared to other social psychology fields. One of the potential explanations offered for this neglect, especially in the U.S., is “the ‘pervasive individualistic ideology’ . . . the North American belief in the sanctity and importance of the individual” (1994, p. 4) as opposed to group or societal issues.

Of importance to this discussion is the clarification of concepts of group or team and intragroup relations or intergroup relations. Team or group theorists study small groups usually with closed membership and their intragroup processes—productivity, leadership, social influence, and decision making. Intergroup theorists focus on

societally-based groups such as social classes, protest groups, ethnic or racial groups, labor organizations or movements, and their processes, such as prejudice, discrimination, or stereotyping (Taylor & Moghaddam, 1994).

Based on Allport's contact theory (Allport, 1954; Pettigrew & Tropp, 2006a) which posits that increased positive attitudes should result from equal-status interaction between rival or opposing groups, intergroup contact theory provides insights into the preconceptions participants bring to interprofessional experiences. It also offers (a) some insights into the issues arising when individuals from different racial, cultural, or professional groups interact and (b) a description of conditions found to be conducive to more positive attitudes (Hewstone & Brown, 1986; Pettigrew & Tropp, 2006a).

Taylor and Moghaddam (1994) provide a review of the leading theories and models which contribute to the field of intergroup relations. Elements pertinent to this study are as follows:

- From Freud, the idea that hostile feelings generated within a group are not directed at other members of the group, but rather outward toward other groups (Chapter Two).
- From studies in realistic conflict theory and gaming theory, there is significant evidence that, in general, people tend to be more competitive in the intergroup context than in the intragroup context. Also, there is evidence that superordinate goals, which have been linked to increased cooperation between groups may not be effective in certain situations, i.e., "where groups have comparable motivations in achieving superordinate goals, group distinctiveness would be threatened, and this would lead to greater intergroup differentiation and hostility" (p. 44).

- Central concepts of social identity theory are (a) social identity, “the knowledge that one belongs to certain groups and the value attached to group membership” (p. 78); (b) social comparison, “the means through which the individual obtains an assessment of his or her group’s social position and status” (p. 79); and (c) psychological group distinctiveness, “the desire of group members to effect an identity that is distinct from, and positive in comparison with, other groups” (p. 80).
- Equity theory looks at individual fairness and justice and has been extrapolated to advantaged and disadvantaged groups, relative benefit of one to the other, and issues in affirmative action and cultural bias (Chapter Five).
- Elements of the five-stage model of intergroup behavior include (a) intergroup relations based on attributed (inherited or ascribed) characteristics differentiating advantaged from disadvantaged, (b) evolution to cultural assumption that group membership is based on individual effort or ability, (c) a few of the most talented disadvantaged initiate efforts at upward social mobility, (d) by assimilation into the advantaged group, upwardly mobile individuals demonstrate possibilities within the system; their success weakens the disadvantaged group; those failing at upward mobility may begin organizing the disadvantaged group toward change; and (e) collective action by the disadvantaged group aimed at improving the group’s position relative to the advantaged group. Experiments based on this model focus on “tokenism,” a social strategy where a few talented members of a disadvantaged group move into advantaged positions while other members of their group are kept out (Chapter Seven).

- Stereotypes: They are (a) generalizations—“made about an ethnic group concerning a trait attribution, which is considered to be unjustified by an observer” (p. 160), (b) attributions—“how we make judgments about people, ourselves as well as others” (p. 166), and (c) discrimination—“behavior directed at a person on the basis of his or her category membership” (p. 171). All of these influence intergroup relations.
- Much of intergroup contact theory is based on “contact” between members of two groups when in reality there may be very little actual contact. One should consider (a) the illusion of contact, for instance, between blacks and whites who attend the same school but may actually have little contact with each other and (b) the quality of contact—generally the out-group contact tends to be considered more superficial and less important than in-group contact. Two psychological processes protect intergroup contacts from the negative aspects common to intergroup relations: (a) denial allows participants to ignore any sense of conflict and (b) dissociation of the individual from their group by personalizing the relationship rather than categorizing the individual (Chapter Nine).

In summary, Allport (1954) described four conditions necessary for positive intergroup outcomes: (a) equal status between the groups in the situation, (b) common goals, (c) no competition between the groups, and (d) authority sanction for the contact. Findings in the recent Pettigrew and Tropp meta-analysis (Pettigrew & Tropp, 2006a) of research on intergroup contact supported Allport’s four principles with the following additional findings: (a) greater intergroup contact is typically associated with less intergroup prejudice, (b) intergroup contact effects differ among members of minority

and majority status groups, and (c) intergroup contact effects typically generalize beyond participants in the immediate contact situation to the entire outgroup.

### *IPE and the Knowledge Creation Metaphor*

Particularly in view of the individualistic attitudes fostered by current health professional education processes (Institute of Medicine, 2003), access to and development of models and processes for working together to provide safe, high-quality, improvement-oriented care are critically important. The learning theories and resulting knowledge creation model described below (Paavola et al., 2004) offer a frame for conceptualizing both learning processes.

The knowledge creation metaphor proposed by Paavola, Lipponen and Hakkarainen (2004) integrates principles from the work of Nonaka and Takeuchi (1995), Engeström (2001; 2007), and Bereiter (1991) into a learning model which offers a very helpful frame for interprofessional practice and education. Skills at adaptation and learning are critical given the frequent changes in healthcare as a result of new disease entities, treatments, and care delivery system changes. Effective healthcare practice requires learning how to work with others and learning how to engage multiple sets of professional knowledge toward managing complex situations and solving problems. Interprofessional education provides opportunities to learn how professionals from other disciplines work and how to work together to solve learning and practice challenges.

Paavola et al., (2004) begin their case for the knowledge creation metaphor with a brief review of work by Sfard (1998) outlining the pervasive and dualistic *acquisition* and *participation* metaphors for learning. The acquisition metaphor likens learning to a process of filling a container—the mind—with knowledge which ultimately influences



beliefs, desires and behaviors; the participation metaphor describes learning as an enculturation process—learning is situated in an established community in which knowledge and skills are passed from old-timers to newcomers (Lave & Wenger, 1991). Sfard (1998) argues that both perspectives are needed, but Paavola et al., (2004) hold that while valuable, neither of these metaphors adequately accounts for or facilitates the development of all skills needed to foster innovation or creative problem solving.

*Nonaka and Takeuchi's Knowledge Creating Company*

The first of the three models contributing to the knowledge creation metaphor is Nonaka and Takeuchi's "knowledge creation model" (Nonaka & Takeuchi, 1995). Focused on harnessing individual know-how through an iterative process which converts tacit to explicit knowledge, the knowledge creation spiral mobilizes organizational resources, conditions, and management practices to contribute to discovery of new ways of working or new products. Using the knowledge sequestered in members of the organization and the support and knowledge resources of the operating structure, project teams explicate tacit knowledge, combine that knowledge with other explicit concepts to develop, as well as test and produce, new products. Though criticized by Engeström (2007) for lack of clarity on the process for goal-setting and problem identification, Nonaka and Takeuchi have nonetheless explicated useful categories that "do have some analytical power and validity even when applied to processes of innovative learning in singular team meetings" (Engeström, 1999, p. 387). The knowledge creation spiral consists of four stages as shown on Table 1.

Internal conditions which enable the spiral include organizational intent, redundancy, fluctuation, requisite variety, and autonomy (Nonaka & Takeuchi, 1995).

Paavola et al., (2004) indicate that the conditions of unrest which are described as motivators of knowledge creation in the next two models are not as evident in Nonaka and Takeuchi (1995), perhaps due to the Eastern enculturation of the authors. However, Nonaka and Takeuchi's (1995) descriptions of fluctuation (creative chaos), requisite variety (range of skills and abilities), and redundancy (overlapping information dissemination for cross-boundary sharing of ideas) indicate awareness of the sometimes

Table 1

*Nonaka and Takeuchi's Stages of Knowledge Creation*

<b>Stage/process</b>	<b>Purpose</b>
Socialization: Tacit to tacit	To enhance trust, cooperation, and communication among members of the group or project team
Externalization: Tacit to explicit	To externalize or put into communicable ideas the tacit knowledge of group members
Combination: Explicit to explicit	To facilitate combination of explicit ideas or knowledge toward development of new products or processes
Internalization: Explicit to tacit	To move the new processes into standard procedures

challenging and competitive circumstances surrounding initiation and evolution of new ideas and products. As an example, when an organization experiences a fluctuation and there is a resultant crisis or a breakdown of usual and customary routines and ways of thinking, “we have an opportunity to reconsider our fundamental thinking and perspective. . . . This ‘continuous’ process of questioning and reconsidering existing premises by individual members of the organization fosters organizational knowledge creation” (Nonaka and Takeuchi, 1995, p. 79). The individual vs. organizational contribution to knowledge creation is summarized by Nonaka and Takeuchi as follows:

Knowledge is created only by individuals. . . . [but] self-organizing teams . . . provide a shared context in which individuals can carry on a dialogue, which may involve considerable conflict and disagreement. . . . This kind of dynamic interaction facilitates the transformation of personal knowledge into organizational knowledge (1995, p. 13).

*Engeström's Expansive Learning*

Engeström's study of work teams and inventive learning cycles is based in Cultural-Historical Activity Theory (CHAT) or activity theory (AT) and expansive learning. CHAT's focal precept is that humans and human actions cannot be separated from or appreciated outside of their social and cultural environment (Paavola et al., 2004). Activity theory (AT) focuses on human interactions in collective settings as illustrated in Figure 4; the interactions of an IHC team are represented in Figure 5.

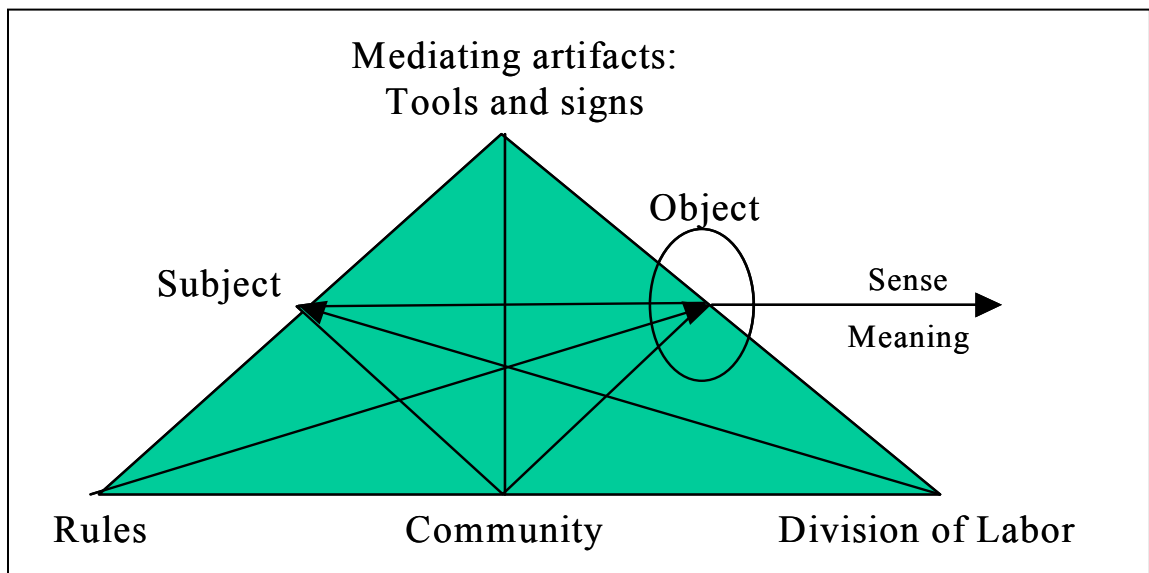


Figure 4: A single activity system adapted from Engeström (2007).

Engeström (2001) describes activity theory as a model of object-oriented, artifact-mediated action evolved from 1920s Russian psychological theory by Vygotsky, Leont'ev, and Luria. The early Russian theorists and their followers posited that work is mediated within a culture by tools and signs and that tasks requiring collective activity necessitated a division of labor which in turn fostered evolution of mental functions.

AT is comprised of several principles which constitute a conceptual system. These include object-orientedness, mediating artifacts, internal tensions, contradiction, and how humans interact with their environment, accumulate solutions to problems, and transmit that knowledge to others. Though descriptions of the principles vary from one generation or theorist to the next, they are effectively summarized by Engeström (2001) below:

1. The activity system: The prime unit of analysis in activity theory (AT) is the activity system—an object-oriented, artifact-mediated activity system with its web of relationships with other activity systems.
2. Multivoicedness: A variety of viewpoints, biases, cultures, and interests are always present in the activity system community.
3. Historicity: Time frames in most activity systems are long; systems take form and are transformed over long periods of time.
4. Stimulus for change: Change within an activity system is motivated by structural tension or other forms of contradiction which foster disequilibrium in and between systems.
5. Expansive transformation in activity systems evolves over long periods of time through questioning and criticism, identification of immediate and systemic contributors to the problem, reconceptualization, and finally to model building, assessment, and implementation.

Engeström's expansive learning theory is based on work team processes which lead to new processes or products. The seven stages in the expansive learning cycle are (a) parts of the work process engender questions and critical review, (b) the troublesome

part of the work process (activity system) is analyzed with an eye to historical and

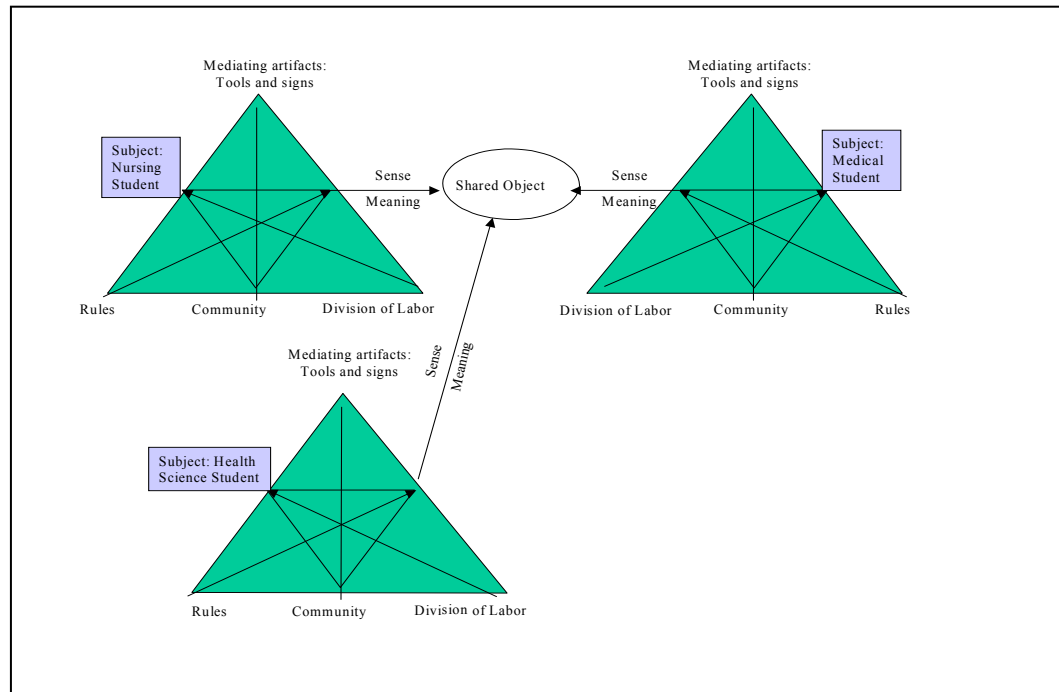


Figure 5: Adaptation of Engeström's (2007) model to show the complexity of relationships incumbent in an interdisciplinary student team.

systemic contributors to the problem, (c) participants develop a prototype designed to alleviate the problem, (d) testing and assessment of the prototype for benefits and limitations, (e) production and implementation of the new design, (f) review and evaluation of the trial implementation, and (g) consolidation and restructuring of involved activity systems around the new processes.

To help business or service organizations including healthcare systems uncover constraints, solve problems and improve quality in their current system by applying the expansive learning process, Engeström and colleagues (Engeström, Engeström, & Karkkainen, 1995; Engeström, Ahonen, & Virkkunen, 2000; Engeström, 2007) have developed:

an intervention method, called 'the boundary crossing laboratory [sic] or 'change laboratory'. . . . to guide the members of a workplace community to reflect on

their mutual activities with the help of researchers. It is based on an ethnographic approach to observing and recording a community's everyday activities. Advancement of knowledge is fundamentally dependent on changes in tools, methods, and active practices (Paavola et al., 2004, p. 560).

### *Bereiter's Model of Knowledge Building*

Bereiter (2002) has proposed that knowledge can be systematically constructed or created and shared among community members. Relating their ideas to Karl Popper's work, Bereiter and colleagues believe that conceptual artifacts, including such items as business plans, models, and theories, are the result of collaborative knowledge building. Popper's (1972) work defines three worlds, which encompass the (a) physical universe, (b) mental states, and (c) conceptual entities. Popper distinguishes between learning (part of mental states) and knowledge building which involves theories and ideas (part of conceptual states).

Healthcare professionals are persistently exhorted to be lifelong learners (Commission on Osteopathic College Accreditation, 2007). But in addition to learning aimed at changing or adding to their own mental cache—as in Popper's World 2 (1972), they need to be able, as participants in creative and expert communities, to add to the communal knowledge—“to create new knowledge and add the value of conceptual artifacts” (Paavola et al., 2004). Russell (2002) reports on a project where an interdisciplinary group of health professionals from four of five practice sites in a regional rehabilitation institute collaborated online, haltingly at first but with increasing efficacy, to build learning portfolios with a goal of becoming a knowledge-building community. Technological and socio-cognitive dynamics for four of Scardamalia's (2002) 12 principles-in-action (real

ideas/authentic problems, epistemic agency, improvable ideas, and embedded constructivist assessment) were identified as criteria for the knowledge building project. Though there is little evidence in the health professions culture of intentional collective knowledge building or reflection on practice, Russell's article documents increasingly sophisticated discussion among participants as they shared ideas of importance to practitioners and improved ideas or extended understanding—collectively built professional knowledge (Russell, 2002).

### *Concepts Common to All Three Models*

Paavola and colleagues propose the following commonalities among the three previously discussed knowledge-building theories as the principles of their knowledge creation metaphor:

1. Pursuit of newness: Knowledge creation is a transformative and developmental process that often occurs in repetitive cycles over long periods of time. According to Nonaka and Takeuchi (1995), learning or knowledge creation emphasizes construction of new understandings and ways of doing things as opposed to the Western epistemological tradition of emphasizing the “transmission of culturally given knowledge” (Sutter, 2001). It consists of expansive changes within activity systems to adapt to life and organizational changes (Engeström, 2001), and it involves going beyond current knowledge, expertise, and level of performance to adapt to new environmental and social conditions (Bereiter, 1991). All three provide definitions distinguishing between learning (focus of traditional education) and life- or practice-based knowledge creation in response to problems, new social or technological conditions, etc.

2. Mediating elements to avoid black/white dualism: All three theories have elements that help integrate or provide a common mediator for subject and object—the “Japanese way of thinking” (Nonaka & Takeuchi, 1995); mediating artifacts or tools in Engeström’s expansive learning (Engeström, 2001); and Bereiter’s invocation of Popper’s World 3 which focuses on conceptual as opposed to mental or physical realms. Fluctuations (Nonaka & Takeuchi, 1995), questioning (Engeström, 2001), and deliberate efforts to extend knowledge (Bereiter, 2002) are terms describing stimuli or motivations for learning or communal problem solving.
3. Viewing knowledge creation as a social process: All three theories clearly situate learning outside the individual mind; i.e., in workplaces, communities of practice, between not within people. Knowledge creating and social process are seen as inextricably intertwined. Lave and Wenger (1991) state that “in the U.S. today, much learning occurs in the form of some sort of apprenticeship, especially wherever high levels of knowledge and skill are in demand (e.g., medicine, law, the academy, professional sports, and the arts)” (p. 63). While Lave and Wenger’s work placed learning “squarely in the processes of co-participation, not in the heads of individuals” (p. 13), Eraut cautioned that numerous other factors, e.g., activity structure, distribution over time and space, social relations, and outcomes, influence perceptions about formal and nonformal communal learning must also be considered (Eraut, 2002, p. 5).
4. Emphasis on the role of the individual in knowledge creation: This element is most clearly described by Nonaka and Takeuchi (Nonaka & Takeuchi, 1995). In the tacit-to-tacit stage of knowledge creation, they note that knowledge is created by



individuals who are supported by their organization sharing their knowledge toward creating new processes and products; their work is then disseminated in the organization's knowledge network for further development and knowledge creation. The role of the individual is clearest in the questioning or problem identification stage of Engeström's (2001) work. Bereiter describes individual problem-solving efforts as alongside those of "fellow inquirers" (Bereiter, 2002).

5. Going beyond propositional and conceptual knowledge: Each theorist distinguishes between rule-based propositional knowledge and practice- or situation-embedded knowledge creation. Tacit knowledge is a critical, but frequently difficult to describe, component of all three theories,
6. Recognizing conceptualizations and conceptual artifacts as important: Moving newly created knowledge to a form in which it can be shared and used for further learning or knowledge creation is acknowledged by each theorist. Nonaka and Takeuchi speak of externalization of tacit knowledge, Engeström describes model construction, and Bereiter speaks of collaborative development and evaluation of conceptual artifacts.
7. Interaction around and through shared objects: All three theories propose strategies for fostering collaboration for the purpose of innovative sharing of activity objects. The strategy proposed by Engeström is mediating artifacts, including practices and activity systems. Nonaka and Takeuchi produce new products and processes, while Bereiter offers new conceptual artifacts as foci for current and future collaboration and concept/product development.

## Interprofessional Education: The Evidence

Most articles on IPE are more accurately described as project reports than as research. However, there is increasing pressure on educators to provide evidence that the investment of resources necessary for interprofessional education is worthwhile. Systematic reviews from reliable sources offer prudent practitioners a helpful alternative to sorting through and detecting trends in the annually increasing flow of relevant information. Below, I will describe the major IPE systematic reviews and their findings.

The focus of my research is in undergraduate medical education. The overview which follows includes systematic reviews and studies involving mostly pre-qualification (pre-licensure) participants. Given the fact that so much of medical education is situated learning where students are immersed in the multiple activity systems of the educational and practice environments, the integrated outcomes reported in this review provide insights valuable to learners and teachers—and to those who are both at the same time.

Emphasis within this review will be on the process and synthesis of findings from the pre-licensure studies selected for inclusion in the *Best Evidence Medical Education (BEME) Collaborative Report* (Hammick et al., 2007).

### *Systematic reviews: Import and Process*

“Systematic reviews provide a critical synthesis of empirical evidence relating to the effects of specific ‘interventions,’ a means to search and evaluate evidence in a comprehensive, systematic, and transparent fashion” (Barr et al., 2005, p. 41). The systematic review process begins with setting parameters for inclusion of papers and determination of sources for collection of relevant studies. Document search activity is followed by a preliminary sifting process to extract studies for initial consideration.

Abstraction and organization of data from the best papers provides the basis for reviewer evaluation and analysis. Final stages of such a review include organization of the selected data into manageable chunks suitable for identifying themes and generalizing outcomes. The results of four relevant reviews will be discussed below.

### *IPE Systematic Reviews: The Outcomes*

#### *The 2000 Cochrane Reviews*

In 2000, a report titled “*Interprofessional education: Effects on professional practice and healthcare outcomes* (review),” was registered by the Cochrane Collaboration (Zwarenstein et al., 2000). The Cochrane Collaboration is an international not-for-profit and independent organization, dedicated to making up-to-date, accurate information about the effects of healthcare readily available worldwide. It produces and disseminates systematic reviews of healthcare interventions and promotes the search for evidence in the form of clinical trials and other studies of interventions. The Cochrane Collaboration was founded in 1993 and named after the British epidemiologist, Archie Cochrane. The major product of the Collaboration is the *Cochrane Database of Systematic Reviews*, which is published quarterly as part of The Cochrane Library.

Inclusion in a Cochrane review is limited to randomized trials, controlled before-and-after studies, and interrupted time series of interventions. In the 2000 report “*Interprofessional education: Effects on professional practice and healthcare outcomes*,” authors reported that no current IPE studies met Cochrane criteria for inclusion (Zwarenstein et al., 2000). A related 2000 Cochrane review project titled “*Interventions to promote collaboration between nurses and doctors*” identified two studies for inclusion and reported that moderate gains in outcomes of importance to patients and

managers were achieved, but health status outcomes were not impacted (Zwarenstein & Bryant, 2000).

Several of the authors of the 2000 Cochrane IPE study formed the core group for a second major systematic review of the IPE literature. The Joint Evaluation Team (JET) used the skills and knowledge gained in the earlier review with an adapted set of criteria to prepare an updated review. The JET review was published in 2005 as the last of a three-volume book series on interprofessional education. Subsequently, it has undergone further peer review and is now registered with the BEME (Best Evidence Medical Education) Collaboration. Brief summaries of each review follow.

#### *The 2005 Joint Evaluation Team Review*

Free of the clinically-oriented restrictions of the Cochrane process, the research question for the 2005 review was reframed to read, "What types of IPE under what circumstances result in what types of outcome?" (Barr et al., 2005, p. 42). Inclusion criteria and definitions (see Table 2) were widened, and the number of electronic databases searched was increased. More research methodologies were accepted, including quantitative, qualitative, mixed methods, and action research designs. Search for and selection of studies was guided by pre-set parameters. In the 2005 study, the guiding questions were as follows: "Does this study describe interprofessional education as defined by us? and Has the education described in this study been evaluated?" (p. 44).

Searches of multiple years were conducted in four electronic databases—1996-2003 in Medline, 1982-2001 in CINAHL (Cumulative Index to Nursing & Allied Health Literature®), 1964-2001 in BEI (British Education Index), and 1990-2003 in ASSIA (Applied Social Sciences Index and Abstracts). Limiting their selection to peer-reviewed

papers, 10,495 abstracts were obtained; 884 papers retrieved; 353 studies qualified for inclusion; and based on methodological quality and quality of the information provided, 107 were judged as "higher quality studies."

Table 2

*Sample of IPE Study Criteria Expansion from 2000 to 2005 (Barr et al., 2005, p. 43)*

Cochrane (2000) IPE definition:	Joint Evaluation Team (2005) IPE definition:
The explicit creation of an opportunity for members (or trainees) of more than one social/health occupation to learn together.	Members (or students) of two or more professions associated with health or social care engaged in learning with, from, and about each other.

Handling of the data was facilitated by the careful development of abstraction worksheets and a code book to improve consistency. Abstracted data were coded and entered into statistical software. By the end of the data entry and analysis process, the authors found that the distribution of findings was stabilized, and new entries were not altering data patterns or adding to the insights gained. Characteristics of studies included in the 2005 review are summarized below:

- Over 50% of the studies were from the U.S.
- Nearly 55% of the projects were seven days or more in length; another 24% were two-seven days in length.
- Most studies were either hospital or community-based IPE—approximately 45% each.
- The most frequent IPE participants were doctors (89%) and nurses (82%).
- Approximately 80% of the studies reported in this review involved licensed or certified personnel in educational activities. Conversely, 20% of the studies reported involved pre-qualification or licensure participants.

*2005 Outcomes Organized by the Three Foci of IPE*

The three foci of studies summarized in the 2005 review were (a) preparing individuals for collaborative practice (47%), (b) cultivating collaborative team/group practice (12%), and (c) developing services and improving care (41%). With many of the 107 studies producing more than one outcome, there were 225 reported outcomes, of which 182 were positive, 28 were mixed, 14 neutral, and 1 negative. Table 3 summarizes the outcomes of the 107 studies.

Table 3

*Outcomes Reported From High-Quality Studies*

Level of outcome adapted from (Kirkpatrick, 1967)	Of the 107 studies, the number reporting outcomes in this category			
	Positive	Mixed	Neutral	Negative
1. Reaction	45	5		
2a. Attitudes / Perceptions	21	6	5	
2b. Knowledge / Skills	38	2		
3. Behavior	21	2	2	1
4a. Organizational practice	37	6	2	
4b. Patient benefit	20	7	5	
Total	182	28	14	1

*Limitations of the 2005 Review*

The authors cite the following as limitations of their review: (a) terminology remains inconsistent and thus some pertinent studies may have been missed despite a careful search; (b) due to research team member limitations to English and French languages, an English language bias is assumed though most search results were in English or French; (c) a complete exhaustive search was not possible with existing

resources; it is, however, the sense of the authors, based on prior experience, that not too much was missed; (d) because positive outcomes tend to be over reported, “our data set provides only a partial understanding of the problems associated with developing and delivering IPE” (Barr et al., 2005, p. 47); and (e) not all identified studies were abstracted. Abstraction of 65% (and preliminary review of the remainder) of the 346 studies identified all studies which fell in the high-quality studies group on which the reported outcomes are based.

While the authors provided extremely complete information on their process and outcomes, there still appears to be some potential for improvement in the report. For example, inclusion of a list of the 346 studies selected for consideration would enable replication or confirmation of the study or facilitate further analysis. Also, indications of which studies were included in which categories would be helpful for analysis of subsets of the data. For example, the research focus (individual preparation for collaboration, cultivating collaboration collectively as a group/team, or improving services and the quality of care) and pre-/post-qualification categories for each of the 107 high-quality studies would be most valuable.

#### *The 2007 BEME Review*

Evidence-based medicine has become an increasingly critical element of medical education over the past decade. The most frequently used definition of EBM is from Dr. David Sackett: EBM is "the conscientious, explicit and judicious use of current best evidence in making decisions about the care of the individual patient. It means integrating individual clinical expertise with the best available external clinical evidence from systematic research" (Sackett, 1996). As practitioners have become more discriminating

regarding their sources of clinical information, medical educators have begun to look for the best methods for helping students gain the knowledge, skills, and attitudes needed to be great physicians. Thus, the Best Evidence Medical Education—BEME for short—was born. The BEME Collaboration is housed in The Association for Medical Education in Europe (AMEE)—a worldwide organization with members in 90 countries on five continents. Members include educators, researchers, administrators, curriculum developers, and students in medicine and the healthcare professions. AMEE provides medical education conferences, produces the journal *Medical Teacher*, and is a founding member of the BEME Collaboration—a group of individual and institutional representatives working to help improve medical education. The BEME Collaboration’s aims are to share and disseminate information on best evidence medical education and to produce systematic reviews summarizing the latest findings in medical education research. To date the BEME Collaboration has published six reviews including the one summarized below.

As noted earlier, the BEME review of interprofessional education was based on the 2005 JET Review. There were some changes in the search strategy—most notably, hand-searching 2003-2005 issues of 21 journals, which had produced more than one higher quality article in the previous review—to assure identification of as many relevant studies as possible. The JET review included studies which achieved three of five points each for quality of the study and quality of the information provided in the report. For the BEME review, only studies with scores of four on both criteria were included. Similar to the JET review, the results were organized into three categories: presage, process, and product. While numerous contributors to the preparation for IPE were noted



in the 21 high-quality studies, those related to teacher and learner characteristics are most pertinent to my research project.

*Presage.*

Student satisfaction with IPE was most dependent on the quality of supervision (Ponzer et al., 2004). Issues to consider when planning for supervision are (a) many teachers don't feel ready to teach or facilitate in IPE situations (Reeves, 2000) and (b) some teachers working in IPE situations simply function in parallel fashion losing the opportunity to improve their IP working skills (Morison, Boohan, Jenkins, & Moutray, 2003) and to serve as positive IP role models for students (Reeves & Freeth, 2002).

Information on learner characteristics, such as beliefs, reasons for participating, and expectations, was included in most studies. Positive attitudes about IPE were noted in several studies (Carpenter, 1995; Kilminster et al., 2004; Tunstall-Pedoe, Rink, & Hilton, 2003), with Kilminster noting that older students with more health-related experience were more positive than younger, less experienced students. Issues related to scheduling and grading were noted in several studies (Cooke, Chew-Graham, Boggis, & Wakefield, 2003; Morison et al., 2003; Reeves, 2000). Pre-existing stereotyping and hierarchies were noted by several authors (Carpenter & Hewstone, 1996; Carpenter, 1995; Tunstall-Pedoe et al., 2003). From the study by Tunstall Pedoe, et al., (2003), nursing students characterized medical students as more academic, more arrogant, and less caring, and medical students described nursing and allied health students as less academic. This study concluded that "any notion that students arrive without preconceived ideas about other professions is misplaced" (p. 169).

### *Process.*

The importance of facilitation and teachers' insecurity about their skills was introduced above. Reflection (Mu, Chao, Jensen, & Royeen, 2004; Reeves & Freeth, 2002; Nash & Hoy, 1993) and team-building (Barber, Borders, Holland, & Roberts, 1997; Morey et al., 2002) activities for staff helped them build skills and confidence in their facilitation skills. The importance of ongoing support for facilitators to maintain their skills (Morey et al., 2002) and providing IP facilitation training and support to clinical staff (Reeves & Freeth, 2002) were both noted.

Learner choice, authenticity, and reflection were all cited as determinants of participant satisfaction. Most studies reported the opportunity for students to choose their level of participation, learning activities, or small-group partners. The only study to compare compulsory with voluntary participation in an IP course found no discernibly different outcomes (Kilminster et al., 2004).

In several studies, authenticity of the setting and activities contributed to positive outcomes (Cooke et al., 2003; Crutcher, Then, Edwards, Taylor, & Norton, 2004; Kilminster et al., 2004) (Kilminster et al., 2004) while team training was noted by others to be helpful (Cooke et al., 2003; Morey et al., 2002; Ketola, Sipila, Makela, & Klockars, 2000).

### *Product.*

Opportunities for teams to reflect informally or formally were documented in a number of studies (Barber et al., 1997; Cooke et al., 2003; Kilminster et al., 2004; Mu et al., 2004; Nash & Hoy, 1993; Ponzer et al., 2004; Reeves & Freeth, 2002; Cooke et al., 2003; Mu et al., 2004; Nash & Hoy, 1993; Ponzer et al., 2004; Reeves & Freeth, 2002;

Kilminster et al., 2004; Mu et al., 2004; Nash & Hoy, 1993; Ponzer et al., 2004; Reeves & Freeth, 2002). Table 4 shows a summary of outcomes from the BEME studies.

Summary findings from the BEME review pertinent to this study are as follows:

- Enabling competent and confident facilitation consistent with adult learning principles can be assured through staff development and is critical to successful IPE.
- Participants arrive at IPE with unique views, expectations, and experiences which interact with the IPE process in unique and complex ways.
- Authentic and customized activities improve the experience for participants.

IPE is more able to foster positive experiences around IPE knowledge and skills learning than around perceptions and attitudes toward professionals from other disciplines.

Table 4

*Outcomes of the Best Evidence Medical Education Systematic Review of Interdisciplinary Education*

	Outcomes	Positive	Neutral	Mixed	Not reported
1	Reaction	12	0	2	7
2A	Perceptions and attitudes	5	1	6	9
2B	Knowledge and skills	10	0	1	10
3	Behavior	5	0	1	15
4A	Service delivery	2	0	1	18
4B	Patient/client care	4	0	1	16

As a relative newcomer to the medical education landscape, IPE (when it is included) is introduced within the traditional curricular structure and culture of medical educational processes. As such, it is important to explore structure and culture to

understand IPE's potential impact on what Reeves (2000) terms the "traditional notions" that medical students bring with them to medical school. The salient question is, How does the medical school's formal and hidden curriculum and culture impact the potentiality for developing positive IP attitudes and values?

### Medical Education: Curriculum and Culture

While the previously discussed knowledge creation metaphor and its component theories provide a relevant framework for discussing medical education, most medical educators would describe their work in terms of the curriculum and content areas, lectures, tests, etc. There are new strategies making their way into medical education, but the traditional two-plus-two-plus-three curriculum model (two years of basic science classes, two years of clinical rotations, and multiple years of internship/residency training) is still by far the most common.

### *Medical Education: The Curriculum*

The term curriculum has its origins in the running/chariot tracks of Greece. It was literally a race course. In Latin, *curriculum* was a racing chariot; *currere* was to run (Smith, 2005). Observing medical students during their training process, one can certainly see the appropriateness of the race analogy.

In this chapter, curriculum is discussed in terms of its formal/published/taught and informal/hidden/caught aspects. As defined in Chapter One of this document, the formal/intentional curriculum includes lectures, labs, assigned readings, clerkships, preceptors' direct teaching, etc., while the informal/hidden curriculum includes those positive and negative activities of education which are not made explicit, including the behavior of peers, faculty, preceptors, and others, as well as institution- and profession-

specific reward systems, etc.

Several curriculum models contribute to an understanding of medical education.

Glatthorn (1987) offers a model based on six elements including:

- The recommended curriculum—recommendations from professional associations, reform commissions, and international agencies (p. 5).
- The written curriculum—state or district approved curriculum guidelines (p. 7).
- The supported curriculum—content and activities provided through allocated resources of the institution—time, personnel, etc. (p. 9).
- The taught curriculum—what a classroom visitor would see the teacher do (p.12).
- The tested curriculum—elements assessed in teacher- and district-made tests, as well as standardized tests (p. 13).
- The learned curriculum—“what the student understands, learns, and retains from both the intentional curriculum and the hidden curriculum” (p. 14).

Eisner (1985) adds the idea of the null curriculum (what is not taught) which

Stern (1996) illustrates as follows:

An example of the null curriculum is teaching about “alternative therapies” such as acupuncture or chiropractic. These subjects have been excluded from the medical school curriculum in the past, and physicians have been left to form their own opinions about these practices. It is therefore no surprise that left in the null curriculum, physicians have developed a negative opinion of such alternative practices: If they were worth knowing, they must certainly be worth teaching in medical school (p. 9).

Except in very rare instances, IPE seems to be relegated to the null curriculum in most institutions.

## *The Formal Curriculum*

Curriculum theory and practice came into use by educators (not policy makers) as a way of helping them think about their work before, during, and after interventions and as a way of enabling educators to make judgments about the impact and progress of their work. The formal medical education curriculum is based on and organized around goals and objectives promulgated by professional organizations. Below is a list of the core competencies mandated by the American Osteopathic Association Commission on Osteopathic College Accreditation for undergraduate osteopathic medical education.

1. Demonstrate basic knowledge of osteopathic philosophy and practice and osteopathic manipulative treatment;
2. Demonstrate medical knowledge through one or more of the following: passing of course tests, standardized tests of the National Board of Osteopathic Medical Examiners (NBOME), post-core rotation tests, research activities, presentations, and participation in directed reading programs and/or journal clubs; and/or other evidence-based medical activities;
3. Demonstrate interpersonal and communication skills with patients and other healthcare professionals;
4. Demonstrate knowledge of professional, ethical, legal, practice management, and public health issues applicable to medical practice.
5. Demonstrate “basic support skills,” as assessed by nationally standardized evaluations. (Commission on Osteopathic College Accreditation, 2007).

Core competencies have also been mandated for residency-level training. The graduate osteopathic medical education competency statements are elaborated through use of evaluation elements and lists of methods, outcomes, and demonstrations used to assess compliance by residents in the training program. Altogether, there are seven competencies, 18 elements, and 89 measures. To provide a bit more clarity regarding professional expectations related to interprofessional interaction, Table 5 shows

competency elements specifically related to interprofessional practice in italics under their related competency.

Table 5

*American Osteopathic Association Competencies for Graduate Medical Education (Gallagher et al., 2003)*

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The Seven Competencies

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- I. Osteopathic Philosophy and Osteopathic Manipulative Medicine: Residents are expected to demonstrate and apply knowledge of accepted standards in Osteopathic Manipulative Treatment (OMT) appropriate to their specialty. The educational goal is to train a skilled and competent osteopathic practitioner who remains dedicated to lifelong learning and to practice habits in osteopathic philosophy and manipulative medicine.
- 
- II. Medical knowledge: Residents are expected to demonstrate and apply knowledge of accepted standards of clinical medicine in their respective specialty area, remain current with new developments in medicine, and participate in lifelong learning activities including research.
- 
- III. Patient care: Residents must demonstrate the ability to effectively treat patients, provide medical care that incorporates the osteopathic philosophy, patient empathy, awareness of behavioral issues, the incorporation of preventive medicine, and health promotion.
- Provided healthcare services consistent with osteopathic philosophy, including preventative medicine and health promotion based on current scientific evidence.
    - *Demonstrated the ability to work with professionals from varied disciplines as a team to provide effective medical care to patients that address their diverse healthcare needs.*
- 
- IV. Interpersonal and communication skills: Residents are expected to demonstrate interpersonal and communication skills that enable them to *establish and maintain professional relationships* with patients, families, and other members of the healthcare team.
- *Exhibited effective listening, written, and oral communication skills in professional interactions* with patients, families, and other health professionals.
    - *Demonstrated respectful interactions with health practitioners, patients and families of patients.*
    - *Worked effectively with others as a member or leader of a healthcare team.*
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Table 5 (cont'd)

*American Osteopathic Association Competencies for Graduate Medical Education*  
(Gallagher et al., 2003)

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The Seven Competencies

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- V. Professionalism: Residents are expected to uphold the Osteopathic Oath in the conduct of their professional activities that promote advocacy of patient welfare, adherence to ethical principles, *collaboration with health professionals*, lifelong learning, and sensitivity to a diverse patient population. Residents should be cognizant of their own physical and mental health in order to effectively care for patients.
- 
- VI. Practice based learning and improvement: Residents must demonstrate the ability to critically evaluate their methods of clinical practice, integrate evidence based medicine into patient care, show an understanding of research methods, and improve patient care practices.
- 
- VII. Systems based practice: Residents are expected to demonstrate an understanding of healthcare delivery systems, provide effective and qualitative patient care within the system, and practice cost-effective medicine.
- Understands national and local healthcare delivery systems and how they affect patient care and professional practice.
    - *Demonstrates an increased understanding of his/her role as member of the healthcare team in the hospital, ambulatory clinic, and community.*
- 

*The Informal Curriculum*

Much of the popular literature about medical education has focused on the informal curriculum – the long hours, inhumane treatment, arrogant attending physicians, seemingly impossible expectations (Becker, Geer, Hughes, & Strauss, 1961; Bell, 2004; Coulehan & Williams, 2001; Hafferty & Franks, 1994; Shem, 1978; Stern, 1996). In many ways, the informal curriculum is more powerful than the formal curriculum



because it exerts mostly unexamined influence on the attitudes and values which ultimately drive graduates' behavior (Hafferty & Franks, 1994).

The idea of students learning things other than what is specifically prescribed in the formal curriculum was described by John Dewey (1938) in *Experience and Education* as “the 'collateral learning' of attitudes that occurs in schools, and that may well be of more long-range importance than the explicit school curriculum” (p. 48). Vic Kelly (1999) describes it as concepts/behaviors/attitudes that students learn “because of the way in which the work of the school is planned and organized but which are not in themselves overtly included in the planning or even in the consciousness of those responsible for the school arrangements” (Kelly, 1999, p. 8).

The informal curriculum includes the values, attitudes, beliefs, and related behaviors internalized by students outside the formal curriculum. Dreeben (1976) cited textbook biases, unobserved/taken-for-granted classroom interactions, unintended consequences of schooling, and prevailing social arrangements in which schooling takes place. For this study, Dreeben's “social arrangements” also include what Hafferty (1998) terms the informal medical education curriculum—what is learned from informal contacts with faculty and other role models. Specifically, Hafferty's informal curriculum is “an unscripted, predominantly ad hoc, and highly interpersonal form of teaching and learning that takes place among and between faculty and students” (p. 404).

When studying the informal curriculum, one finds a variety of terms: implicit, tacit, latent, and unwritten to name a few. Sometimes used interchangeably with the terms for informal curriculum one finds the term “hidden curriculum.” Most often, hidden curriculum learning is cast in a negative light (Smith, 2005), but it might more

appropriately be defined as the “activities of schooling of which the students are not overtly informed” (Stern, 1996, p. 7).

The term “hidden curriculum” was first used by Philip W. Jackson (1966) to describe those aspects of classroom activity which receive little or no attention from teachers (p. 353). Hafferty (1998) describes the hidden curriculum as a set of influences that function at the level of organizational structure and culture; its major areas include policy development, evaluation, resource allocation, and institutional slang (Hafferty, 1998, p. 404). Howe (2002) notes that the mismatch between stated educational goals and outcomes may be explained by unintended aspects of learning experiences endemic to the organizational environment. According to Hafferty and Franks (1994), the hidden curriculum is more concerned with replicating the culture of medicine and may be antithetical to the goals and content of formal courses.

Catherine Cornbleth (1990) believes that curriculum as practice must be studied within its setting or context particularly if it is to be understood/changed substantially. She describes curriculum as what actually happens in classrooms, i.e., "an ongoing social process comprised of the interactions of students, teachers, knowledge and milieu" (p. 5). If we become more tuned in to the hidden curriculum and plan for contextual learning (as opposed to focusing only on knowledge transmission and content-related objectives), then the informal/hidden curriculum has fewer unintended consequences.

If it is a challenge in classroom settings to be aware of hidden curriculum elements and to make explicit the contextual learning arrangements, then it is almost an impossibility to manage, much less control, the milieu of clinical medical education—

particularly for the decentralized (third- and fourth-year off-campus regional training sites) clinical training process of osteopathic medical education. How physicians eventually cooperate and collaborate with others to get the job of healthcare done is significantly impacted by the culture they absorb during their long period of training.

*Medical Education: The Culture and Socialization Process*

Descriptions of levels of culture are provided by Schein (1992) as a means of assessing functional patterns of an organization or group. The first level of culture he describes is visible artifacts. In medicine this could include professional artifacts as well as personal – such as the white coat, stethoscope, professional office, and doctor’s lounge and dining room in the hospital. The second level of culture is espoused values, rules, and behavioral norms – in medicine, the Hippocratic/osteopathic oath, specialty board requirements, and hospital rules and regulations for practice privileges. The third level of culture is basic underlying assumptions. For the medical profession, this would include the belief that the “social utility of their work demands respect. However, the duration, rigor, intensity, and abusiveness of today’s medical education also engender a sense of entitlement to high income, prestige, and social power” (Coulehan & Williams, 2001, p. 600).

Harter and Krone (2001) note that osteopathic education is “a context often ignored by both organizational and health communication scholars (§ 3).” They further observe that “the discourse of early medical socialization serves as a site of identity construction cultivating particular value sets (§ 3).” From situated learning theory, constructing an identity as one participates legitimately and peripherally in a community of practice is noticeably different from gaining membership in a social group through imitation or

internalization of group norms (Wenger, 1998, p. 280). While in activity theory, the systems involved in medical education may be quite large for the medical students, the object of their system is completion of requirements one course at a time.

The intensity and duration of the situated learning process known as osteopathic medical education shapes the values and behavior of the newcomer as he or she moves toward full participation in the practice community. Lave and Wenger observed that much of the learning process in a community of practice occurs in the relationship between the newcomers to the community and old timers (Lave & Wenger, 1991, p. 93). Because they are not yet ready to participate fully in the activities of the community, “learners may have a space of ‘benign community neglect’ in which to configure their own learning relations with other apprentices” (p. 93).

Harking back to Becker and Shem’s (Becker et al., 1961; Shem, 1978) accounts of the lives of medical students, Lave and Wenger’s cautionary note is of particular interest for this study. Lave and Wenger (1991) say that

conditions that place newcomers in . . . exhausting over-involvement in work . . . distort, partially or completely, the prospects for learning in practice . . . communities of practice may well develop interstitially and informally in coercive workplaces. What will be learned then will be the sociocultural practices of whatever informal community takes place in response to coercion (Orr in press). These practices shape and are shaped indirectly through resistance to the prescriptions of the ostensibly primary organizational form (Lave & Wenger, 1991, p. 64).

A description of some of the negative aspects of the medical education socialization environment was provided by Hershey Bell, MD, (2004) a faculty member at the Lake Erie College of Osteopathic Medicine in Erie, Pennsylvania, during a

presentation at the annual conference of the American Association of Colleges of Osteopathic Medicine (AACOM). He included some of the less attractive components and outcomes of the medical education culture as follows:

- Cooperation among/within students; covering for one another
- Tribalism
- Feelings of elitism and collegiality
- Sense of exclusivity
- Personal idealism (helping others) de-emphasized; professional idealism (desire for status and knowledge) emphasized
- Multiple choice questions downplay the reality of ambiguity/uncertainty
- Completion of courses/grades suggests end-points in learning
- Limited faculty cooperation for students to witness
- Core values of “doctoring” may not be the “core values of science” (Lester & Tritter, 2001)

#### *The Culture of Medicine – Allopathic and Osteopathic*

“To date, research on medical socialization has focused on mainstream western medicine, sometimes called “allopathic” medicine and practiced by MDs while neglecting other ideologies of health and healing that co-exist in our medical infrastructure and that are bound to influence socialization into the health professions” (Harter & Krone, 2001, ¶ 3). Allopathic medicine practitioners, known as MDs or doctors of medicine, are far more widely known than their osteopathic colleagues who are known as DOs. Developed in the late 1800s by Andrew Taylor Still, M.D., osteopathic medicine deviated from the prevalent allopathic beliefs and practices of the time—bleeding, purging, etc.—instead focusing on the ability of the appropriately aligned and cared for body to heal itself. Philosophical osteopathic medicine espouses a pervasive focus on holistic care and in addition to a medical education curriculum

consistent with allopathic medicine, also includes additional training in the diagnosis and treatment of health concerns through use of palpatory assessment and manipulative treatment processes. Both allopathic and osteopathic medicine have the same legal practice privileges and responsibilities.

In this study, I focused on the culture of osteopathic medical education in a single, rural, Midwestern osteopathic medical school. As the founding school of osteopathy, its culture and history are especially strong (McGovern & McGovern, 2003). Though the allopathic and osteopathic professions each have a strong and unique heritage, the descriptions of allopathic medical culture found in the popular and professional literature seem consistent with much of osteopathic medical education culture (Becker et al., 1961; Coulehan & Williams, 2001; Hafferty & Franks, 1994; Shem, 1978).

### *Values*

Values may be commonly understood as the positive (or negative) ideals, customs, institutions, etc., of a society for which people have a positive (or negative) regard. The effect of those explicit and especially the implicit values espoused or demonstrated in the socialization environment and teacher/preceptor role modeling (and even perhaps mentoring) is extremely strong (Benton, 1981). This statement from a report by the Association of American Medical Colleges (AAMC) illustrates the espoused values of medical education: “We believe that every physician should be caring, compassionate, and dedicated to patients – to keeping them well and to helping them when they are ill. Each should be committed to work, to learning, to science, and to serving the greater society. Ethical sensitivity and moral integrity, combined with

equanimity, humility, and self-knowledge, are quintessential qualities of all physicians” (Association of American Medical Colleges, 1984).

Illustrating what Wenger (1998) describes as the internalization of norms versus the construction of identities, Su, Goldstein, Suzuki, and Kim (1997) define professional socialization as “the process by which neophytes come to acquire, in patterned and selective fashion, the beliefs, attitudes, values, skills, knowledge, and ways of life established in the professional culture.” Merton et al., (1957) stated that “socialization designates the processes by which people selectively acquire the values, attitudes, interests, skills, and knowledge—in short, the culture—current in the groups of which they are, or seek to become, a member” (p. 287). In her dissertation titled *The Socialization of Medical Students in a Problem-Based Learning Environment*, Harpole-Bailey summarizes by saying that socialization

involves the mastery of social roles. Social interaction with those in positions of influence is necessary for socialization to transpire. To be socialized, one must assimilate into an established culture, be shaped into a role acceptable by the given group (Harpole-Bailey, 2001, p. 8).

Current health professions education processes are extremely discipline-centric (Institute of Medicine, 2003). Students learn only their own discipline and tend to assume the attitudes and practices of others more experienced in their discipline (Lave & Wenger, 1991). However, those others may not be particularly aware and knowledgeable of the roles and responsibilities of other professions or positively disposed toward interprofessional education and practice. Using the relationship between nurses and physicians as an example of how students develop attitudes about other professions, Benton (1981) found that relationships outside the formal course of study and the quality

of the nurse-doctor relationships observed in clinical environments were the most significant influences on medical student attitudes about nurses.

### *Mentoring*

The terms mentoring and role-modeling are sometimes used interchangeably. Though both focus on the relationship between (to use Lave and Wenger's terms) a newcomer and an old timer, there are significant differences. Mentoring is a chosen relationship in which an expert provides counsel, guidance, tutoring/coaching to a less experienced individual. Mentors are frequently described as guides who share their wisdom and insights as they accompany their protégé on a portion of his or her life's journey (Daloz, 1999). Cohen (1995) likens mentors to guides on the developmental journey of the learner by identifying the mentoring relationship as a transactional learning process that focuses "on collaborative participation and mutual critical thinking and reflection about the process, value, and results of jointly derived learning goals established for the [protégé]" (p. 14).

### *Role Modeling*

While mentoring relationships are certainly a part of medical education, the more pervasive influence on students is the everyday, unconscious role modeling of their teachers, clinical preceptors, and peers (Coulehan & Williams, 2001; Hafferty, 1998; Stern, 1996). A role model can be described as a person who sets examples for others—a standard or example for imitation or comparison. A positive role model demonstrates values and ways of thinking and acting that are considered positive in that role.



### *Professionalism*

Frequently in medical education, there is discussion of the professional role or professionalism. The American Board of Internal Medicine (ABIM) Professionalism Project summarizes important professionalism elements in two categories—fundamental principles and professional responsibilities. Fundamental principles include patient autonomy, social justice, and the primacy of patient welfare. Professional responsibilities include maintaining commitment to professional competence, honesty with patients, patient confidentiality, maintaining appropriate relations with patients, improving quality of care, improving access to care, a just distribution of finite resources, scientific knowledge, maintaining trust by managing conflicts of interest (Blank et al., 2003). While effective interprofessional relations are receiving increasing attention in the efforts toward improved patient safety, this important list of professional responsibilities is mute on the importance of learning to work well with others in the healthcare professions.

### Summary

In this chapter, I discussed the theories which provide the framework for this study, reviewed the literature related to interprofessional education, including findings from the more significant studies identified in three recent systematic reviews, and provided a brief summary of the dualistic (formal/hidden) curricular framework frequently noted in medical education and the related issues of values, role modeling, mentoring and professionalism. In the next chapter, I will present information on the methodology to be used in this study.

## CHAPTER THREE

### METHODS AND PROCEDURES

In Chapter One, I presented an overview of this research project which explored the attitudes about interprofessional (IP) education and practice held by osteopathic medical (OM) students working in IP teams. In Chapter Two, I presented a discussion of the theories selected as a frame for this study and reviewed the literature related to IP education, including findings from the more significant studies identified in three recent systematic reviews. Also discussed were the dualistic (formal/hidden) curriculum frequently noted in medical education, as well as the socialization process for medical students including issues around values, mentoring, role modeling, and professionalism.

In this chapter, I present a description of the research questions and the study design. Information on the research setting, procedures for data collection, management, and analysis will be followed by discussion of trustworthiness of the selected processes and discussion of the researcher's role.

#### Research Questions

The overarching focus of this study was, How and in what context do osteopathic medical students learn about IP practice? Specific research questions that guided the investigation were:

1. What beliefs do OM students bring to the interdisciplinary house calls (IHC) experience?
2. What are the expectations of OM students regarding:
  - a. Their role within the team?
  - b. The roles of other providers within the team?

3. What in the IHC experience did the OM students see as particularly powerful in shaping or influencing their view of interdisciplinary (ID) healthcare practice?
4. In what ways do students perceive that their practices and beliefs about ID practice have changed as a result of participation in the IHC program?

Inquiry focused specifically on how the OM students perceive the experience of IP team learning and working in a community-based, patient-focused activity. Student experiences with and attitudes about other health professions, as well as the process and outcomes of their collaboration, were explored to gain insight into how prior contact with other professions and formal and hidden OM curriculum contribute to their current knowledge and attitudes.

#### Design of the Study

The purpose of this observational case study was to explore the attitudes and beliefs that osteopathic medical students hold about IP team practice. As part of that process, I investigated the opportunities osteopathic medical students have to learn about IP team approaches to healthcare delivery, the influence of an IP teamwork experience on students' learning about IP practice, and their attitudes about interdisciplinary (ID) practice.

Four topics or questions (epistemology, theoretical perspective, methodology, and methods) were proposed by one authority as a guide for research proposal design (Crotty, 1998). Patton (2002) offers six (ontology, epistemology, methodology, what matters and why, questions to be asked, and method for personal engagement in the inquiry). Crotty and Patton's questions were used as a guide for the following discussion.

A subjectivist epistemological perspective informs this qualitative research project. Constructivist assumptions underlie the design of this inquiry which focused on the meaning osteopathic medical students construct out of their environment as it relates to the character of interactions between physicians and healthcare professionals from other disciplines. From this stance, my intent as a researcher was to gain a clear understanding of the meanings that students develop about this aspect of their learning.

An additional knowledge claim perspective continually reasserted itself during this project in the form of an advocacy/participatory position (Cresswell, 2003). Specifically, the advocacy position allows researchers to integrate into their research political agendas focused on helping marginalized peoples change their lives. This study hopes to positively influence medical educators' and students' understanding of the impact on patient safety of their attitudes toward and relationships with other healthcare providers.

To achieve the stated research goal, I applied naturalistic inquiry methods within a case study design. The methods used included focus group and individual interviews, observations, and document review. The case is comprised of osteopathic medical students from one school engaged in a community-based, geriatrics-focused learning activity involving IP teamwork.

While this study was conceived and designed as a qualitative study, it is combined with quantitative findings from a related study. Mixed methods research describes the pairing of quantitative and qualitative methodologies as a sequential explanatory design and notes that the later generated qualitative data assist in explaining and interpreting the findings of the quantitative study (Cresswell, 2003; Johnson & Onwuegbuzie, 2004). In

the quantitative study, survey data on ID practice attitudes and knowledge were collected from the OM classes of 2008 and 2009. A brief description of the quantitative methods is provided in this chapter and a summary of findings from that study will be included in the next chapter.

### The Setting

In the following paragraphs, I provide a brief overview of the Interdisciplinary House Calls (IHC) Program and a description of the two universities and three health professions programs that currently collaborate to make this learning opportunity available to students. The IHC Program is a subset of the House Calls (HC) Program required of all first- and second-year students at a Midwestern OM school as part of their longitudinal patient care skills course. As an introduction to patient interviewing and geriatric healthcare, each student must work with one or two other students to successfully complete four visits to a local elder volunteer and four follow-up debriefing sessions over a period of approximately 14 months.

Participation by nursing and health science students from a local state university enables implementation of this alternative activity as an ID option. The local university is a highly selective liberal arts school ranked as one of the best values in the U.S. for quality and cost. Both the nursing and health science programs are housed in the university's Human Potential and Performance academic division.

The four-year nursing education program leads to the degree of bachelor of science in nursing (BSN) and produces approximately 35 highly sought-after graduates each year. The curriculum is designed to prepare beginning practitioners of professional nursing who will provide safe, effective nursing care to patients and clients of all ages in

a variety of healthcare settings—hospital, home, and community. The program is approved by the State Board of Nursing and accredited by the Commission on Collegiate Nursing Education. Program objectives state that through their educational experience, graduates will be prepared to “collaborate with individuals from a variety of disciplines to improve client care and healthcare systems.” Nursing students volunteer for the Interdisciplinary House Calls activity during their third and fourth years of training. The number of IHC teams fielded annually is limited to 20 based on the estimated number of nursing students available to participate.

Health science students at the local university include health and exercise science program majors with the following areas of academic interest: pre-medical, pre-occupational therapy, pre-physician’s assistant, community health, worksite health, health administration, and public health. The bachelor of science curriculum is designed to prepare students to work as health promoters in municipal, county, state, and national health departments, voluntary health agencies, and HMOs (health maintenance organizations), as well as provide them with the curricular background necessary for graduate work in public health, health administration, occupational therapy, medicine, or physician's assistant (PA) programs.

A distinguishing feature of the health science program is its focus on accountability. The health science graduate is expected to demonstrate a high level of health knowledge and skills competency as demonstrated on the Certified Health Education Specialist (CHES) examination required of all students. Program requirements, based on the seven competencies of health educators, state that through their training, graduates are prepared to (a) promote cooperation and feedback among

health education program personnel and (b) formulate practical methods of cooperation and mutual engagement of health agencies and organizations. This four-year program leads to the degree of bachelor of science in health science and produces approximately 45 students each year who are prepared for the job market or graduate school.

Faculty from the three programs at the two schools are actively involved in planning and operation of the overall IHC program. They were co-designers of the initial program and currently participate in informal quarterly reviews and formal annual program evaluation. They recruit students from their programs, co-facilitate orientation and debriefing sessions, and contribute funds for the annual team orientation dinner.

Osteopathic medical (OM) students' selection for the interdisciplinary (ID) section of the HC Program is based on their affirmative response to an online survey in the fall of their first year. Program size is limited to 20 OM students from a class of approximately 170 based on the number of nursing students available. Both nursing and health science students also self-select for the program and receive academic credit or recognition for their participation.

Elders are recruited each year from the local community to serve as "patients" for the new student teams. Elders working with ID teams live in a senior apartment house located adjacent to the medical school university campus. Some of these volunteers have worked with teams for eight to ten years.

As noted earlier, the IHC Program consists of an orientation session, four elder visits, and four debriefing sessions. The orientation session provides an opportunity for each student to meet other members of their team and the other teams, review the goals and activities of the Program, and get a basic introduction to teamwork in healthcare

settings. The four debriefing sessions for ID teams are held separately from those for the uni-disciplinary medical student only (MSO) teams and in a site that is approximately equidistant from both university campuses. A House Calls Program Matrix and debriefing session materials are shown in Appendix A. Table 6 shows the entire IHC Program schedule within the frame of both universities' schedules. The reader should note that the two universities have different annual schedules—one using a quarter schedule and the other using a semester schedule. Team members experience different challenges completing their portion of the Program work based on course load, final exams, and school breaks. The shaded area in Table 6 shows the period of time and activities included in the qualitative portion of the study.

Table 6

*Overview of medical, nursing, health science, and Interdisciplinary House Calls Program schedules*

First- and second-year osteopathic medical school quarters	Fall '06	Winter '06/07	Spring '07	Summer '07	Fall '07	Winter '07/08	Spring '08	Summer '08
Nursing/health science semesters	Fall 2006		Spring 2007		Fall 2007		Spring 2008	
Orientation		January						
Visit		#1	#2		#3	#4		
Debriefing session		#1	#2		#3	#4		

Data Collection Procedures

Qualitative research designs are situated in the real world. Since the purpose of this study was to explore the attitudes of osteopathic medical students completing the House Calls Program as part of an ID team, data were collected in settings associated with the normal conduct of the Program. Sources of data for the qualitative portion of



this study were (a) observations, (b) focus group sessions and interviews, and (c) documents collected from multiple sources related to IP aspects of osteopathic medical education.

Focus group sessions and interviews were employed to (a) identify the broad range of issues involved in IP education, (b) clarify issues for discussion in individual interviews (Bogdan and Biklin, 1998), and (c) provide a base for determining areas of individual student change as the project evolved. Focus group sessions and interviews were conducted on the main campus in a small breakout room furnished and equipped as a distance education/telemedicine room in an area familiar and comfortable to the students. Open-ended questions were used to gather information in both the focus group sessions and interviews. Observations were as unobtrusive as possible and took place in real-world settings—at the orientation session in the community room of the senior housing site, at debriefing sessions held in a meeting room or classroom on the medical school campus, and in elder apartments during a team visit. As recommended in Patton (2002), the investigator's reports included all information that helped provide an understanding of what the participants experienced.

#### *Focus Group Sessions*

Baseline data were obtained through focus group sessions with students involved in the OM Class of 2010 IHC program. Noting that focus groups are useful for (a) bringing the researcher into the subjects' lives, (b) getting insights that will help direct individual interviews, and (c) cuing the researcher on language used by subjects (Bogdan & Biklin, 1998), the pre-program focus group sessions preceded the first interviews. The post-program focus group session occurred after the second set of individual interviews

which took place following the students' summer preceptorships. Due to their more social nature, focus groups often stimulate discussion that might not occur in individual interviews (1998). The post-program focus groups were conducted to take advantage of that characteristic and provided an opportunity for extended student reflection on their IP experience and related learning.

Focus groups can also provide safety for individuals in vulnerable situations (Patton, 2002). It is an atypical perspective for physicians to hold that they should be equal and mutually respectful colleagues in IP teams as opposed to automatic and absolute team leaders. Willingness to consider such a stance places a student physician in unfamiliar territory with few role models. The focus groups allowed students to share and reflect on such thoughts with other students.

All OM students in the IHC group were invited to participate in focus groups to enable the researcher to gain a better understanding of (a) student experience with IP teamwork, (b) how and when students observed physicians in IP interactions, and (c) the students' resulting attitudes about physician interactions with individuals from other disciplines. Questions formulated to guide the pre- and post-program focus group sessions are shown in Appendix B.

#### *Individual Interviews*

“The logic and power of purposeful sampling derive from the emphasis on in-depth understanding” (Patton, 2002). Selecting information-rich cases for study affords the researcher the best avenue for gaining a solid understanding of the problem and the research question (Cresswell, 2003). Most important to each student's selection for participation in an individual interview was their potential ability to provide in-depth

information from one of two perspectives. The first group was chosen because of (a) their prior experience in healthcare and ability to comment on interactions between physicians and healthcare providers from other disciplines, (b) their perceptions of IP working, (c) how they came to hold the beliefs they have about IP work, and (d) their experience with working in IP teams to complete House Calls Program assignments. The second group was chosen because of their lack of real world healthcare work experience and their anticipated subsequent ability to observe with “fresh eyes” and comment on what they had seen and how they developed their understanding of ID teamwork.

Selection of Class of 2010 house calls student interviewees was based on their responses to queries on a demographics survey and information shared in interactions with the researcher. Criteria for selection included (a) experienced/not experienced, (b) gender, (c) age, (d) undergraduate fields of study, (e) pre-med school socializing experiences into the medical profession, etc. Individual semi-structured interviews with selected students from the IP group were held after the first elder visit and after the summer preceptorship to examine in more depth issues related to their IP house calls, informal interactions with colleagues, and findings emerging from the focus group sessions and interviews. (See interview guides, Appendix B.)

#### *Number, Duration and Location of Interviews*

Table 7 below provides an overview and general timetable of interviews and observations. Initial focus groups were conducted in the winter quarter of the 2006/07 school year. Using purposive sampling, eight Class of 2010 participants from the IP teams were selected for interviews. Interviews were held on campus, scheduled for one hour or less, and arranged for minimal interference with student academic schedules.

Table 7

*Overview and General Timetable of Interviews and Observations*

Informant Group ↓	Participants and number of contacts		Timing of focus group sessions, elder visits/review sessions, and interviews				
	Number of students	Number of contacts	Pre-study focus groups	Elder visit #1 Winter 06/07	Elder visit #2 Spring 07	Post-preceptorship interview Summer '07	Post-study focus groups Fall '07
First-year ID HC students (focus groups)	Up to 20	2	X				X
First-year ID HC students (interviews)	8	2		X		X	
Observation at orientation				X	X		
Observation at elder interview				X	X		
Observation at debriefings		2		X	X		
Open response surveys		2		X	X		

*Interview Protocol, Recording, and Confidentiality*

An interview guide with open-ended questions was used to ensure that the focus and topics were consistent for each subject. As the interviewer, I had the flexibility to explore and clarify issues as needed within the conversation. Careful preparation and identification of topical areas allowed efficient use of time for the subjects and the interviewer. The topics to be explored were shared with subjects ahead of time (Patton, 2002). To improve or assure credibility and consistency, interview summaries were returned to subjects for confirmation or clarification of intent.

All interviews were audiotaped and transcribed with the subjects' permission. Confidentiality was protected by using only an ID number for transcripts of each subject's interview. No project-related stress or risk was foreseen for participants; however, given their academic load, time was always an issue.

### *Document Collection*

Document collection and review allows triangulation of findings. Documentation of professional and curricular imperatives for IP teamwork was reviewed in national and international resources with priority given to professional and academic perspectives. Globally and locally recommended, written, and tested curricula were reviewed to identify and describe content related to IP learning and work. Global recommendations for allopathic and osteopathic medical education were reviewed, including publications and reports from the World Health Organization, the Society for Teachers of Family Medicine (STFM), the American Osteopathic Association (AOA), and American Association of Colleges of Osteopathic Medicine (AACOM).

Review of local curriculum guidelines for recommendations and content related to IP teamwork included the OM first- and second-year curricula, course exams, and the college handbook.

### *Observations*

In addition to focus group sessions, individual interviews, and document analysis, observations of IHC activities were conducted in several settings. Field notes on these observations were generated and maintained.

The first setting was the orientation session where students were observed as they participated in their first interactions with other members of their team and the other IP

teams. Second, the researcher observed an actual house call visit. Finally, students were observed during debriefing sessions. Observations in both the actual interviews and the debriefings were aimed to increase validity since participants' descriptions of their behavior can differ from how they actually behave (Strong, 2001). Observations were made in the settings normally used for the IHC Program, which include (a) a meeting room at the senior apartment complex for the initial orientation session, (b) a meeting room on the medical school campus for the debriefings (a room change for the first debriefing session was dictated by heating system failure in the building normally used for all debriefing sessions), and (c) elder apartments to directly observe team interaction during a visit.

Additional insights were sought from other faculty in the IHC Program. Further information on the outcomes of the program was gleaned from prior participants in the interprofessional program. The field or observational notes also reflect daily direct observation and experience.

#### Data Management Procedures

Field notes/memoing were used to document relevant encounters and observations, as well as to document a chain of evidence. Additionally, those notes provided an audit trail of the researcher's processes, questions, and reflections related to the research process. Files were established to organize and safeguard tapes and transcripts of interviews, memos, observational notes, letters, and coding sheets accumulated during the research. These files were carefully updated and maintained throughout the research project and helped establish the credibility of the study. Audiotapes of the interviews were transcribed by a skilled and experienced medical

transcriptionist cognizant of confidentiality issues and guidelines; transcripts were read back for assurance of accuracy. All project records were kept in a secure location.

### Analytic Procedures

Analysis was ongoing and simultaneous with data collection. Open coding was the first stage of analysis followed by axial coding. Broad themes were developed from categories identified through the coding process (Cresswell, 2003). Methodological and data source triangulation facilitated analysis of themes within and across the data.

Open coding “is the interpretive process by which data are broken down analytically” (Corbin & Strauss, 1990). Similarities and differences in the data were identified by comparing events, actions, and interactions against each other. Conceptual labels were assigned. Generative and comparative questions that emerged from the data guided subsequent field work. The constant comparisons and questioning helped identify, confront, and manage subjectivity and bias.

Axial coding began as categories and subcategories evolved. Subcategories frequently consist of “conditions, context, strategies (action/interaction), and consequences” (Corbin & Strauss, 1990). Potential relationships identified during coding were confirmed against incoming data. Single incidents were evaluated as verifiable hypotheses; some were false or variations of a hypothesis. Diagramming was helpful in organizing concepts and categories. N VIVO® qualitative research software was used to facilitate the coding process.

### Trustworthiness

Prior to the start of the project, approval was requested and received from the Institutional Review Boards (IRBs) of the osteopathic school and the University of Missouri to do interviews with human subjects.

Consistency of findings, applicability, and truth value are criteria for trustworthiness of findings from any study, regardless of design or methods. In contrast to the objectivity, internal and external validity, and reliability of quantitative paradigms, qualitative studies look at “credibility, transferability, dependability and confirmability” of the data and its analysis (Lincoln & Guba, 1985).

Prolonged engagement and persistent observation are techniques for enhancing the credibility of a study (Cresswell, 2003; Patton, 2002). This researcher has been immersed in the osteopathic medical education culture for 19 years and involved with the IHC Program for over five years. Observations in the orientation session, debriefings, and observations of team visits complemented open-ended interviews with key student informants and informal contact with students to enhance credibility.

Bogdan and Bicklin prefer that researchers not use the word triangulation but rather describe the processes used for “assuring verification of the facts” (1998). Accordingly, to assure verification of data in this study, I used multiple data collection techniques—observations, focus group and individual interview transcripts, and document review.

Member checking and peer debriefing were also used to enhance credibility (Cresswell, 2003). Member checking involved having student participants periodically review data for accuracy and coding for themes and interpretations (Cresswell, 2003). Debriefing by an experienced researcher and independent coding to assess congruence with the researcher-developed coding were also employed.

The above strategies speak to the internal validity of the study. The researcher’s role in external validity or generalizability issues is to assure clear descriptions and



documentation of methods and analysis so that readers may determine generalizability to their situation. Excerpts from interviews and documents and informant vignettes using the subjects' own words can provide the "thick description" needed for reader purposes (Cresswell, 2003).

Dependability is established by careful maintenance of records of raw data, such as field notes, interview and focus group transcripts, developmental notes from data analysis, and the coding process. A notebook was maintained for this purpose and is available for viewing as needed for replication of the study. The use of multiple methods and data sources enhanced objectivity or confirmability.

#### The Researcher

Qualitative research is interpretive research according to Cresswell (2003). The researcher is the instrument of research. Qualitative researchers are expected to share information about their past experiences and current connections to the subject and participants to clarify their biases, values, and personal interests (Cresswell, 2003). Characteristics of researchers who perform effectively as research instruments include empathy, strong interviewing skills, creativity, interest in listening, intelligence, and familiarity with qualitative methods and the subject under investigation (Guba & Lincoln, 1981).

When undertaking qualitative research, especially at a familiar site, one must review his/her ability to be effective as a researcher in the setting, including biases and preconceptions. As previously mentioned, I have been a staff and faculty member at the osteopathic medical school in this study for 19 years—sufficient time in the study environment to allow a thorough understanding of the culture. I have clinical

background as a nurse, education and experience as an adult educator, and work experience in multiple health-related and educational settings in the past. As coordinator for the study school's ID programs, including the HC and IHC programs, I do have a bias towards their success. It was important to maintain consciousness of these sources of bias and assure that the informants' experiences and discourse were accurately and sensitively reflected in the study in spite of my biases.

#### Quantitative Data

Pre- and post-data from the osteopathic medical Classes of 2008 and 2009 were gathered to assess the evolution of attitudes about teamwork in students participating in single (MSO) or interdisciplinary (ID) house call teams. During their first two years of medical school, all OM students visit with a community elder four times as part of a small team and participate in review or debriefing sessions after each visit. Pre-test surveys were administered in a classroom session where the program orientation was delivered; post-test surveys were administered as part of the final debriefing session.

The attitude scale chosen for this assessment—Attitudes Toward Health Care Teams Scale (ATHCTS)—was developed through efforts of the Veterans Administration and Geriatric Interdisciplinary Team Training initiative funded by the John A. Hartford Foundation (Heinemann, Schmitt, Farrell, & Brallier, 1999; Hyer, Fairchild, Abraham, Mezey, & Fulmer, 2000). Though there are other ID attitude measurement tools described in the literature (Cooper, Spencer-Dawe, & McLean, 2005; Heinemann & Zeiss, 2002; Hind et al., 2003; Horsburgh, Lamdin, & Williamson, 2001; Mackay, 2004; Mitchell, McCrorie, & Sedgwick, 2004; Parsell & Bligh, 1999; Rudland & Mires, 2005), this tool was selected because it is an integrated part of the curriculum guiding our suite

of geriatrics-focused IP activities. Further, it has been the subject of ongoing team-related attitudes research (Leipzig et al., 2002; Fulmer et al., 2005).

The construct validity of the 21-item ATHCTS scale was initially demonstrated by Heinemann et al., (1999) with a mixed sample of clinicians from multiple disciplines in multiple sites. It was reaffirmed by Hyer et al., (2000), using data from medical, nursing, allied health, social work, and pharmacy students. Respondents score each item on a 6-point Likert-type scale ranging from strongly agree to strongly disagree. To ease scoring, nine negatively stated items are reverse coded to link high scores with highly positive/team normative attitudes.

The ATHCTS is designed to “capture changes in students [*sic*] attitudes towards healthcare teams . . .” (Hyer et al., 2000) and enable comparison of attitudes of individuals from different health professions regarding other professions, team processes, and outcomes of teamwork-focused educational programs. The version of the ATHCTS used in this study is composed of three sub-scales, including 11 items related to team value, 5 items related to team efficiency, and 5 items related to shared leadership. Researchers favoring the 21-question/3-scale version of the tool indicate that it allows educators to focus training more precisely on specific dimensions of ID teamwork skills and knowledge (Hyer et al., 2000) and that feedback on three aspects of teamwork—as opposed to the two aspects identified in the two-factor solution (Heinemann et al., 1999)—provides a richer framework for conversation about critical aspects of ID teamwork (Leipzig et al., 2002).

Also administered with the ATHCTS survey, the 17-item, interpersonal skills self-report Team Skills Scale (TSS) allows respondents to assess their level of

proficiency at representing their own discipline in the care planning process, engaging quiet or uninvolved members of the group, communicating concisely, and managing disagreement or conflict. Using a 5-point Likert-type scale with answers ranging from poor to excellent, respondents also reflect evaluation of their abilities to recognize problems in team functioning and assist with strategies to improve team processes (Heinemann & Zeiss, 2002). A copy of the questions from the ATHCTS and the TSS is included in Appendix B.

### Summary

In this chapter I have described the design and qualitative and quantitative methods that were used in this research project. Detailed accounts of the setting in which the research took place, participants, data collection procedures—including focus group sessions, individual interviews, observations, and document collection--were provided. Data management and analytic procedures, trustworthiness, and desirable characteristics of the qualitative researcher were also discussed. Information on quantitative data collection and survey instruments was also provided. In the next chapter, I will describe my findings.

## CHAPTER FOUR

### FINDINGS

#### Introduction

In Chapter One, I presented an overview of this case study. In Chapter Two, I presented a discussion of the theories selected as a frame for this study and reviewed the literature related to interprofessional/interdisciplinary (IP/ID) education. Also discussed were the dualistic (formal/hidden) medical education curriculum and the pertinent aspects of the socialization process for medical students.

In Chapter Three, I described the methods for this mixed methods study. In this chapter, I present the findings from this study which explores the attitudes about IP education and practice held by osteopathic medical (OM) students working in IP teams.

The overarching focus of this study was, How and in what context do OM students learn about IP practice? Specific research questions that guided the investigation were:

1. What beliefs do OM students bring to the interdisciplinary house calls (IHC) experience?
2. What are the expectations of OM students regarding:
  - Their role within the team?
  - The roles of other providers within the team?
3. What in the IHC experience did the OM students see as particularly powerful in shaping or influencing their view of ID healthcare practice?
4. In what ways do students perceive that their practices and beliefs about ID practice have changed as a result of participation in the IHC program?

The purpose of this observational case study was to explore the attitudes and beliefs that osteopathic medical students hold about IP team practice. The study followed a cohort of OM students through an orientation session, two elder visits, and two review sessions associated with an elder house call program, as well as a two-week summer preceptorship program. Student experiences were explored to gain insight into how prior contact with other professions and formal and hidden OM curriculum contribute to their current knowledge and attitudes. The study design included the following qualitative methods: focus groups, interviews, and document review. Quantitative methods included checklists and surveys. Findings are reported below.

### Qualitative Findings

#### *Study participants*

All students participating in the focus groups or individual interviews were volunteers in the ID section of the House Calls Program. Of the 16 students who took part in the study—15 participated in the focus group sessions and 11 participated in the interviews. Gender distribution of the focus group sample was ten males and five females. Age range in the focus groups was from 22 years of age to 27 with the average age of 25. Eleven students, including four females and seven males, participated in the interviews. Age range of interview participants was from 21 to 26 years of age with an average age of 24.5. One student was observed in a patient interview.

Table 8 shows the gender and age distributions for the students volunteering for the ID house calls option and completing the demographics questionnaire for the 2008, 2009, and 2010 osteopathic medical classes. Table 9 follows with the demographic

characteristics for the students from the class of 2010 who participated in the qualitative portion of this study.

Table 8

*Interdisciplinary House Calls Participant Comparison Demographics*

Anticipated Graduation Date	Number providing data	Male	Female	Age Range	Average Age
2008	17/20	10	7	22-26	23.8
2009	18/20	10	8	20-34	24.9
2010	19/20	13	6	21-27	24.8

Table 9

*Interdisciplinary House Calls Qualitative Study Participant Demographics*

Class of 2010	Male	Female	Age Range	Average Age
Focus Groups (15 total)	10	5	22-27	25
Interviews (11 total)	7	4	21-26	24.5

The first focus group sessions were held in early February 2007; the first interviews were held in March; second interviews were held in late July, early August; and the final focus group sessions were held in September. Focus groups and interviews were recorded, transcribed, and analyzed.

Focus group and interview participants' undergraduate fields of study included biology, biochemistry, biomedical engineering, cell biology, clinical laboratory science, English, Middle East studies, physiology and developmental biology, and psychology. Three participants also had graduate degrees in public health or biomedical sciences. Several participants have family members who are involved in healthcare as physicians, nurses, respiratory therapists, etc.

All of the participants had some prior experience with the provider-side of healthcare. Their roles ranged from a public health internship in Central America to volunteering with a hospice program to several years of full-time work as a nursing assistant, medical technologist, or pharmacy technician. Others reported various lengths of involvement as emergency medical technicians (EMTs), coordinator of volunteers at a hospital, social work aide, emergency department scribe, orderly, and nursing home or medical office receptionist.

A few students had some prior training—some formal, most informal—related to ID interactions among healthcare providers. Participant 19 indicated that “in Texas before you could be an EMT, you had to spend time in the hospital, just learning how the hospital worked and how you transfer patient care and so on before I started working on an ambulance.” From Participant 5, “With the hospice group that I worked with, they had a training session—one or two that we went to, and they provided some information on the groups we would be working with and people we would be interacting with and would be part of the hospice team.” Participant 8 noted that “I have an MPH, and there were some classes that touched on [teamwork].” And, according to Participant 17, “In [my] medical science program, we had a lot of the initial training and teamwork building sort of courses.” Participant 15 had completed a formal course in interdisciplinary studies as part of her undergraduate clinical laboratory science degree program.

Analysis of the transcripts yielded four themes – (a) student responses to the IHC Program, (b) student beliefs about physicians, (c) student beliefs about other health professionals, and (d) student beliefs about ID teamwork.



## *Theme 1:*

### *The Interdisciplinary House Calls Program*

All osteopathic medical students at this case study school must complete the House Calls (HC) program; up to 20 students may volunteer for the interdisciplinary (ID) option. Student reasons for selecting the ID option for the HC Program are discussed below. The first focus group session in this research study was conducted after students were selected for the program but before the orientation and first elder visit. The first interviews were conducted after the orientation session and first elder visit. The second interviews and second focus group session were conducted after both the second house calls visit and the summer preceptorship. Discussion of Theme 1 includes (a) student reasons for selecting the ID option, (b) student reflections on program activities, and (c) expectations of learning from the ID option.

#### *Self-selection for Interdisciplinary House Calls*

Participants 16 and 18 spoke for several students who indicated that their initial expression of interest in the IHC Program was at least partially unstudied. Participant 16 said, “I think at the beginning of the year I wanted to sign up for anything.” Participant 18 said, “When I signed up, I wasn’t really aware of the whole interdisciplinary team aspect to this.” However, one student (Participant 6) expressed deliberate involvement from the beginning when he said, “When I saw the survey and I chose . . . to be a part of this . . .” Students ultimately committed to the program for a variety of more substantive reasons including the following:

*Expectation of future benefit.*

Students expect the IHC experience to benefit them in the future. Participant 19 shared his motivation for volunteering: “My goal when I came here was to do everything I can to become the best doctor I can.” Participants 5 and 11 expressed more specifically their recognition of career-long interaction with other healthcare providers. Participant 5 indicated, “I am interested in going into family practice, and I know that [interdisciplinary interaction] is going to be a part of it.” Participant 11 said, “I think it will help me with my interactions in the future in working with people in the healthcare environment . . . just the way people interact with each other I think is really important.”

*Desire for diversity of interactions.*

Some students indicated that they find interactions with non-medical individuals refreshing and helpful in achieving diversity of views; thus, they seek out opportunities for interaction with non-physician/non-medical student individuals. Participant 6 said, “I thought it would just be more interesting to do house calls and be involved with other students from other areas rather than just the same students from here.” Participant 18 used somewhat stronger language when she said, “I just knew I wanted to work with some community members rather than colleagues, fellow students, because I wanted to work with other people outside, just want to work with other people. . . . That is what drove me into it.” Participant 11 added the element of learning from the nursing and health science students to her rationale for participation: “I am excited to see what I can learn from these other people . . . I am also excited because they are offering sort of an independence away from my peers and to be able to work with these other people. . . .”

Students indicated that a sense of isolation encouraged their participation in the IHC option and that feeling of isolation is described in a variety of ways by several students. The descriptions seemed to reflect their intense involvement in their studies and the resulting limited contact with individuals outside their peer group. In the interviews, two students used the term “the bubble” to explain their feelings of separation from what might be termed normal society. Participant 9 said, “. . . it is good to talk with other people outside the bubble.” Participant 11 elaborated on the concept and some potential implications:

Well, I think medical students tend to congregate with one another, so you have a whole medical . . . student [only] team . . . and they don’t get the practice of communicating with people outside of medical school. It is sad to say it, but true, I am kind of like in a little bubble here, I feel like. And so, . . . some of my friends who . . . don’t go outside of the bubble, they had problems in their preceptorship—they had problems with their communication in the preceptorship, so that was kind of interesting to see that.

*Recognition of the importance of communication with other professionals.*

Participants indicated that communication is a key to effective ID interactions and efforts to improve patient safety. Referring to her experience in an undergraduate course on IP working, Participant 15 noted that

I learned about . . . how important it is to be able to communicate with everyone, and I think it is a good skill to keep up and . . . to teach other

people that . . . you can talk to a doctor, we are people, and I want you to tell me what is going on.

Participant 14 emphasized the experiential perspective, stating that “I used to work as a social worker, and I worked with doctors, and I saw how important it was for there to be good communication with the mental health people and the physicians.”

Referring to his pre-medical school experience as an EMT, Participant 19 said, “I am interested in . . . communication with the physician and everyone else in allied health; and you would think it is so obvious that [communication] is important, but you would be surprised at how often it is not done well.”

*Assessment of their own skills at working with others.*

Students reported taking responsibility for assessing and monitoring personal communication and leadership skills. This effort was highlighted in Participant 16’s comment: “I think it is good for me to take a look at my own communication skills . . . how I communicate with others and my leadership style and just to be aware.”

Participant 3 indicated that “this seemed like it might provide me with an atmosphere of working with others and getting used to [the fact] that it is not all about the doctor—there is more to healthcare than the physician.”

*Intention to avoid negative behaviors.*

Most students had at least one story about negative physician behavior. More than one student reported that as a pre-matriculant to medical school they were urged by colleagues to avoid mistreating other healthcare personnel in the future—nurses, in particular. Participant 2 reported that “when all the nurses knew that I was going to medical school, I spent those few months getting a lot of advice [about] how to treat

nurses later on. Participant 3 said, “I have always got in the back of my mind a friend of mine who is an RN. She said that whatever I do, don’t be one of those jerky doctors that are jerks to nurses and stuff.”

### *Reflections on Program Activities*

In the first portion of this section, the orientation session is described. Overviews of the review sessions are also presented.

#### *Orientation session.*

Students enter the orientation site displaying a mix of anxiety and anticipation. The Interdisciplinary House Calls (IHC) orientation session is held at the senior housing site where most of the elders participating in the program live. Faculty members from each of the participating programs take part in the orientation session so students see a familiar face as they arrive. Each student signs in, picks up his/her program manual, and finds his/her seat. Picture 1 shows the community center set up for an orientation session.

Team/table assignments, completion of paperwork, geriatrics-related and teamwork-focused get-acquainted activities and sharing a meal promote interaction and enhance comfort. Seating is assigned by team, and students complete paperwork while they wait for the rest of their team to arrive. The noise level varies as groups who know each other enter, split apart to sit at their assigned tables, and then begin getting acquainted with assigned team members.

As paperwork nears completion, students begin talking with each other in earnest. At that point, and throughout dinner, the noise level is quite high as students chat about team and geriatrics concepts, their school experiences, program requirements, families,

and pre-matriculation lives. Once all students have arrived and completed their demographic and attitude survey forms, a buffet dinner service begins. The formal orientation follows dinner.



*Picture 1:* Orientation site at community center in senior apartment complex

A patient safety video included in the orientation helped students make the connection between teamwork and patient safety. Underlining the importance of teamwork in healthcare, the video shows a woman whose husband and son had both suffered catastrophic damage due to medical errors recounting her experiences with the healthcare system. As the video played, students became increasingly quiet. OM students' reactions to the video were requested at the first interview four-to-six weeks later. Through the video, students seem to have made the connection between teamwork and patient safety. Participant 10 confessed, "I really, to be honest, don't remember a

whole lot else in orientation, but I remember that. I thought [the video] was pretty important, and it is something I probably won't forget. Participant 11 declared, "And that video I think was probably the most effective I had seen or witnessed about working with the other professions in the medical field." Participant 9 said, "I remember being disappointed to hear just how bad things could get through miscommunication and some of the failures of medicine. I remember thinking I don't want to contribute to any stories like that. I hope that it can end here." Participant 16 stated: "I thought it was pretty moving . . . (long pause) I am not really sure what I want to say about it. . . . I think I felt really just bad." More discomfortingly, Participant 13 noted, "Everybody knows . . . someone that has had an experience . . . not to that extent, but something very similar to that. And it is hard to see that it got carried to that extent." Participant 2 was frustrated by the video because it didn't deconstruct the incident. ". . . but if I am looking at it to teach me why teamwork is so important, I can see that it is an effective video. . . . I can really see that is important because it was the team that failed." As Participant 13 summarized,

. . . if at any point, any one of these physicians or whatever staff was involved would have caught just one little thing, it might not have progressed to that level; and it is hard to place blame on any one particular person, which makes it even more of a frustrating process.

Participants appreciated inclusion of and insights from older students (IHC alums) in the orientation session. Third- and fourth-year OM students who are former participants in the IHC program participated as faculty in the orientation session and review sessions for the first and second elder visits. At the orientation, the older medical

students teamed with nursing, health science, and OM school faculty to present information on 1) contents and process of the program overall, 2) how to complete the first elder visit, and 3) applications of the IHC program in clinical settings.

Study participants' also expressed appreciation for the opportunity to gain more information about program activities and having time to get acquainted with their teammates. Participant 13: "I know that for me and some of the other med students, we didn't know what to expect at all [from the program]. As far as orientation went, I think everything was great and well-needed prior to our first visit with our elder." Consistent with many of the evaluation form responses and discussion in the review session, Participant 16 shared his sense of the orientation experience:

I think it was really helpful to have to come in and just have the time, just socialization, you know . . . we found a common ground with classes . . . having lots to do, and then being ready for this. I think it was good that we got that chance to get to know each other before we . . . needed to divvy up the tasks and things like that. . . . Some people thought it was long; I thought it was good to . . . meet everybody . . . and go right up and get the first [visit] out of the way. . . [we came] in not knowing anybody and . . . by the time we left we were chummy. . . . It would have been different if we [had] to call each other and say hey. . . .

Upon completion of the orientation session, the teams finalize plans for their first visit and go to their elder's apartment to complete the first interview. Following that interview, teams may determine assignments for the written report or make other plans for follow-up and preparation for the review session.



*Review sessions.*

IHC review sessions are normally held in a large classroom in a university building approximately two blocks from the main campus of the medical school and two blocks from the main campus of the other participating university. Review sessions are held two nights in a row at 5 or 6 p.m. Teams can attend either of the two sessions depending on their schedules. Tables are arranged to provide three seating areas with team table assignments indicated by name cards on the tables. Since health science students each work with more than one team, seating is arranged to allow their teams to sit together. Picture 2 shows the classroom traditionally used for review sessions.

Due to a heating unit malfunction, the first review session for the Class of 2010 was held in a different and smaller room on the main campus of the medical school. While generally the process was the same, there was some sense of dislocation and confusion which probably resulted from the last-minute location change.



*Picture 2:* An early arrival at the classroom where post-elder-visit review sessions are held.

As students entered the room, they were told to look for their name/teammates names on one of the tables. In general, individuals quickly found their team's assigned table and chatted with others who were on their team or other teams assigned to the same table. At the first review session, one medical student who had missed the orientation session sat with another medical student rather than with his team. Other med students sat with their teammates, checked first visit report materials, looked at the evening's agenda, and visited with others. At the second review session, there was an even greater sense of comfort evident in the students' arriving in the room, looking for their seats and teammates, and preparing to report. Facilitators are utilized to (a) assure inclusion of all participants, even those who are quiet or preoccupied and (b) get them involved in the discussion. Content of the review session includes reports from each team on findings from their elder visit, review of content for the next visit, and time to "huddle" to plan their approach for the next visit. Additional content includes information about the disciplines involved in the program, and completion of teamwork debriefing surveys which remind them of key elements of good teamwork.

Students found that communicating with teammates and their elder to schedule visits was one of the most challenging components of ID collaboration. They agreed with Participant 9 regarding challenges related to elder visits: "Getting everybody together at the same time with three different schedules—that was rough!"

As an example of this, during the second round of interviews which occurred after the second house call and summer preceptorship, Participant 8 related this experience with scheduling the team for their second house call:

What I tried last time was scheduling it and then nobody responded, but they went. I tried to find out if they were still planning to go because it had been like a month since we scheduled it and nobody got back to me so I assumed they weren't going, so I didn't go. They went, and they were like well we scheduled it, so we don't know what happened to you. They just didn't respond when I tried to confirm it. I don't want to say it was anybody's fault really, but like in a professional setting, it isn't acceptable, you have to communicate better than that.

When asked about their sense of the difference between the ID and MSO (medical student only) experience, ID students indicated that they believed they were getting more value for their effort than the MSO students. Comparing her experience in the IHC program with the MSO students' experience, Participant 15 hypothesized that

I don't think they are thinking of [House Calls] as a huge training event. It's just something to remind them why they're [in medical school] . . . but I . . . think they're missing out on the training of how to really do [team-based healthcare]. I feel like I get that training of how to really do [teamwork] and I feel like I get the reminder of why I'm here because I still get to go see my patient, so I'm glad I signed up for it. I feel like I get a better, more rounded [experience].

Participant 14 commented, "It's good to get out and see some patients, real life patients, that aren't simulated. . . . I think it's good to align a doctor . . . a nurse, and a health science person to see how they do things. I think it's beneficial."

Students recognized the importance of regular communication with elders and teammates. During the second focus group session, students reflected on the IHC in general and were anticipating their third elder visit. Several participants remarked on the long gap between the second and third visits. They all agreed with Participant 8 when she said, “. . . it has been a long time between visits, and I am worried that [my elder] won't remember me;” and with Participant 5 when he said, “I think it would be beneficial to [make an additional visit to] really get a little bit more of a rapport with the other people we are working with and also with the elder.” Participant 8 summarized for the group saying, “I think the program has been a good general exposure for everybody . . . a good experience.”

#### *Want to Learn From the Interdisciplinary House Calls (IHC) Program*

Student responses to this topic are grouped into four major categories which tend to mirror their reasons for selecting the ID option. Response categories include a desire to practice leading a team, gaining more knowledge about other disciplines, getting feedback on their communication and interaction skills, and avoiding inflated opinions of themselves.

##### *Leading a team.*

Several students were particularly interested in practicing the team leadership role. Participant 8 described her expectations in relation to this traditional role: “. . . when you are actually the doctor, you are the leader by default, so I think it is good to start now learning how to fill that role.” Participant 17 introduced the concept of timing of IP training in her comments:

The really good thing about this program . . . [is we] get experience in working in the setting where we . . . are going to be “sort of in charge” of maybe say an entire group, but it would be teamwork . . . it is important that we learn how to work with them now rather than later when we are used to working with our peers.

*Learning about other disciplines.*

While some students focused on the team leadership role, others spoke of gaining better knowledge/appreciation of the contributions of other disciplines. Participant 16 said, “I want to learn how different disciplines approach patient care.” And Participant 15 outlined her objectives in this arena as follows:

I think it will be good to have learned different roles too, like what, you know, what is the nurse going to do when she goes in there? What is she going to know, what should you ask her or him about what is going on, what other healthcare providers, you know, what is their role that they do in relation to a physician? What is a physician’s exact role within the whole team?

*Feedback on own performance.*

Some students indicated an interest in feedback about their own role/performance. For instance, Participant 16 said, “Taking it personally, you know, if there is [*sic*] miscommunication or breakdowns where I failed in the process, then what do I need to do to make myself a better communicator in the future.” Participant 2 supported this opportunity, stating: “I like what [was] said about getting the feedback. . . . It would be nice to get that feedback from them and to learn . . . more about myself.” Participant 14 elaborated here:

I think it would be beneficial to see through the eyes of others, like nurses and PAs and respiratory therapists, etc. See through their eyes the role of doctors, how doctors can help them and how they can help doctors, and like we have been talking about how we can communicate better, how we can deliver better quality of healthcare . . . .

*Avoiding inflated self-assessments.*

Some students expressed the desire to start activities now that will hopefully help them avoid inflated opinions of themselves. Participant 3 expressed this concern as follows:

I think that any opportunity we have to work with others is just a learning experience and hopefully a good experience. I hope that [this experience] will . . . help me to be somebody that doesn't put myself on a higher level than who I work with.

Participant 12 emphasized the importance of appreciating all professions' contributions to patient care. "I just feel like no matter what profession you are in, you always have a lot to add to not only healthcare, but to . . . society."

*Theme 2:*

*Student Physicians' Views of Physicians*

At the time of the first focus group, elder visit, and review session, medical students had experienced no curriculum-based patient contact, clinical experience, or formal opportunity in medical school to work with students from other health professions. By the time of the second interviews and the second and final focus group

session, students had experienced another elder visit, review session, and their two-week summer preceptorship.

Three primary topics are included in this theme: physician roles, physician status, and cognitive dissonance. Physician roles are discussed first. Based on student comments, these roles include role model, team leader, teacher, user of tools, and atmospheric influence. Additional roles important for physicians if they are to be most effective in improving patient safety and the quality of healthcare are team member and learner.

### *Physician Roles*

Students expressed eagerness to begin exploring and practicing what they understood as physician roles. Focus group and interview questions stimulated discussion about critical, but less visible physician roles such as learner and team member which will be discussed at the end of the Physician Roles section.

#### *Physician as role model.*

Student stories introduced two larger-than-life models of physicians—the physician as steadfast community caretaker and as alpha figure. Participant 14 spent a small part of his summer clinical experience with an “older physician who had been practicing for 30 years or something, and he was an example of someone that had stayed true to medicine and the compassionate sense and that was awesome.” This picture of a physician was the more potent because the student had worked in a residency clinic where some of the young physicians in training were more focused on “getting rid of patients than helping them.” According to the student, working with this older physician allowed him, “. . . to see a doctor that had served in Kansas City his whole life and had

served this indigent realm of people and to see him still caring about patients. . . .” The student was really moved when he saw “patients come give [the older doctor] hugs because they loved him because he had been their doctor for so long and had done such a good job.”

Two students related encountering what they perceived to be alpha characters on their first day in the preceptorship—a time when their anxiety and anticipation are at full tilt. Participant 11 described her feelings the first day with her primary preceptor on a U.S. Public Health Service summer internship preceding her summer preceptorship: “I was terrified to work with him the first day.” She described him as, “very, very tough. He would pimp me with questions multiple times, and he was really scary until you get to know him.” Continuing, she reported, he let her, “get in there and do stuff, and he let me see his patients by myself eventually, once I proved myself . . . .” Participant 18 shared her experience: “The first day I was with one of the tough guys on the [ER] floor.” She explained that “He asked a lot of tough questions, leading questions, just to see if I could figure out what to do next, how to think through the process and diagnosing.” She continued, “I just felt really incompetent, just overwhelmed with so many things . . . I learned but [it] doesn’t really stick with you unless you actually see it or see it again and again.

*Physician as team leader.*

Several students stated at the outset of the program that practicing for the team leader role was their goal for involvement in the IHC program. Participant 2 sounded fairly traditional when he said, “Now that I am going to work towards being the physician, the one giving most of the orders . . . .” Participant 15 framed the leader role



more within the team context: “the doctor is kind of the coach or the leader of the team, but it is still a team.” After the summer preceptorship, students’ descriptions seemed more reality-based. Participant 15 noted that “The doctor was always the leader . . . everyone else was so busy with what they were doing, that . . . they [didn’t have] the time to take over . . . leadership.” When asked to define leadership, this student said, “The person who in the end calls the shots; who if you have a question . . . that’s who you ask.”

Expanding the role of leadership beyond the direct patient care team, two students provided these examples. Recalling an incident where a surgery was cancelled due to inappropriate lab work preparation, Participant 15 commented on the positive response of the surgeon. “We did have one doctor who came down after a bad experience and asked us how things worked and what needed to be done, and after that, all his surgeries went much better.” Participant 11 described her preceptor as follows: “He joked and he kids [the staff] all the time. I think if he doesn’t give you a hard time, you better watch out; that means he doesn’t like you.” Clearly though, this physician was in charge administratively and clinically because “. . . nobody gets hired onto that staff unless [my preceptor] approved of it. . . . He is good; he knows that he is a good doctor.”

*Physician as teacher.*

Students made numerous references to the physician as teacher. Participant 15 noted that “it is easy to see the physician as the teacher because when we start talking, it sounds teachery because well it is how this process works and that is how you can understand it.” Participant 6 told of a physician who corrected the student’s chart work. The student reported that when discussing it later, the physician said, “‘It’s all out of love.’ It was a nice way to really care about my education, my development.” Participant

2 judged that “the better physicians . . . would always be teaching the nurses, and . . . it benefited the doctors as well because then the nurses weren’t so dependent upon them.”

*Physician as user of tools.*

This concept emerged from student use of the terms “my nurse” or “your nurse” – as in “my nurse will take care of this function,” or “you won’t do that, your nurse will handle that responsibility.” We talked about this terminology in the second focus group; however, the idea of the physician as his or her own first tool was never brought up. (The tool concept will be discussed further as part of Theme 3.)

During the first focus group, Participant 2 described his experience with what he considered the better physicians in a neonatal intensive care unit. “[They] were very involved in . . . what the nurse . . . the respiratory therapist . . . the x-ray tech [were] doing . . . knew [their] strengths and weaknesses . . . so . . . [in] a special situation . . . the physician would know” who best to assign to the patient. Participant 16 expressed a desire to hear directly from nurses: “Hey, you know, this is how we want to be treated; this is how to treat your nurses, and how to give positive feedback . . . how you [can] get the best [from] your team, the best healthcare overall for your patients.”

*Physician as mood setter/atmospheric influence.*

Students expressed the belief that physicians are key players when it comes to influencing the mood in healthcare settings. Participant 8 summarized her belief: “I think it is just the doctor who really sets the mood.” Students shared examples of positive and negative interactions they had observed or experienced between physicians and other health professionals—frequently nurses.

Ways that physicians positively influenced the clinical environment were described by some students. Participant 6 noted that some of the emergency department physicians he had observed asked nurses what they thought and included them in the discussion of cases. “I think the nurses enjoyed that. Instead of just working and doing, they actually got to, you know, think about the case and you know give their opinion to the doctor.” Participant 12 noted when working as an orderly in surgery, he became friends with the anesthesiologists who were there all the time. “It was really easy to do what they asked you to do. It was a better teamwork type of atmosphere when they were like that.”

Students indicated that in their experience most physicians are kind and good to work with most of the time, but the students also reported having experienced negative environments as a result of physician behavior. Reports ranged from dreading the arrival of a physician they know “will raise his voice a lot and will yell at them,” as reported by Participant 6, to watching the effect of a negative encounter, “[watching] some of the not-so-nice docs be very mean to the nurses and . . . how literally a bad attitude would . . . come down the line” as described by Participant 2.

Beyond experiencing a physician-generated negative work atmosphere, most study participants have observed or encountered negative physician temperament. Students’ accounts of negative encounters have consistently involved physicians and non-physician staff. As an example, Participant 12 had worked as an operating room orderly. On a really busy day, this student entered an operating room believing it was time to transport the patient to the recovery room:

But the surgery had not begun yet, and so everything was still sterile and I began to bring in the bed and the surgeon was right there and, you know, had a little fit. I guess he had the right to in some ways; so I received his little fit and learned my lesson. . . . Afterwards, just the way I felt about that surgeon, I just thought he was kind of a jerk and a lot of people did too, but that is how I felt about the man.

Some discussion with the students focused on where negative experiences are most likely to occur. Students differed on their impressions of how place influences interactions. One student posited that negative incidents were probably more common in hospital settings; another gave an example of the persistent conditions that create stress in a clinic setting. Whatever the location, all reported negative incidents involved physicians and non-physician staff; there were no accounts of negative interactions between physicians.

One student did describe an amicable difference of opinion between an ER physician and a local attending physician. Participant 13 supplied this account of physician disagreement in the emergency room. Talking about patients admitted to ER who had primary physicians nearby, Participant 13 reported that until patients were transferred to the primary physician or a specialist, the ER physician was in charge. Even when there was disagreement on care, “ultimately the decision came down to the ER physician because it was their patient at that time.” And even though one of the referral physicians might be, “a cardiologist, and . . . know what this MI is all about, [the cardiologist said] you [ER docs] have a protocol that is written up, and I approved it, so we are going to follow the protocol.”

*Physician as learner.*

Despite the professional emphasis on lifelong learning for physicians (Commission on Osteopathic College Accreditation, 2007), teasing out students' understandings of where physicians are learners in the patient care team proved to be a challenge. Clearly individuals from other health disciplines help students learn during and after medical school. Participant 9 cited the vena puncture lab as an example: "We did have a lot of nurses teaching us there. I thought that was a great use of their experience . . . [the school] went right to the source." Participant 15, a former clinical laboratory technician, related her role in training resident physicians: "Our pathologist . . . [told the residents], 'Go with [this clinical laboratory technician] today, she will teach you what you need to know.' And they would."

Later, when exploring this concept in the interviews and final focus group, Participant 5 responded to this query as might be expected: "I guess I just don't foresee a lot of doctors saying, 'okay, nurse, teach me about such and such.'" However, other students supported the concept that learning from other health professionals was occurring. After noting that physicians usually sound "teachery" when they are giving information, Participant 15 described an example of a nurse's presentation style and content: "It is like, 'Oh, Mr. Smith, likes to do this . . . on . . . weekends, and we hope . . . we can help him . . . because he needs [his arm.]' And it doesn't sound like they are teaching you, but they are." From Participant 8: "Nurses generally . . . stay in the area [where] they grew up, so they are going to know the culture . . . understand people . . . and . . . know why [the local people] do what they do. . . . They are going have a lot to offer." A final critical element, closely tied to patient safety, was offered by Participant

15. She believes that “a lot of times, though, the nurse is a patient advocate, and that is something the physician can really learn from them.”

Participant 16 believed that physicians must maintain “. . . the attitude of always learning and always being open and willing to learn . . . [because] there are a lot more resources that we aren’t aware of out there and . . . I have to be very proactive [in] . . . seeking them out.”

*Physician as team member.*

Students were very tuned into the physician’s role as team leader but were less aware that other healthcare providers share leadership at times. Comments below from the first focus group session affirm students’ recognition of the importance of other professionals who can enhance the quality of care for the patient. Participants 12, 14, and 15 said: “I think it is just important to realize . . . that [the physician is] not the only one that can care for a patient”; “I think [it is beneficial] if a doctor will . . . see [the] interdisciplinary person as more of an equal . . . consider . . . them an asset, [with] information that is valuable”; and “it is . . . a team, and when you are playing in a sport, everyone works together and you are on a team.”

Later in the program, students shared more concrete examples of teamwork and shared or transferred responsibility. Participant 16 reported on a physician-nurse practitioner (NP) relationship: “Like right in the middle of [seeing patients, we would get a call from the nurse practitioner] and [the doctor] would get a presentation from [the NP] and then say, “yeah, I think you are right on or [the doctor would] give . . . advice on it.”

Participant 16 also noted his summer preceptor’s role as facilitator for the hospital’s patient care team. “She was like the [medical] staff appointed something or

other, so she met with the nurses on the floor . . . . once per week.” The student summarized the purpose of these meetings as “they talk about patients that they are going to discharge and if they have any problems with any of the doctors, so [managing issues related to] problem patients and problem doctors really is what it boiled down to.”

### *Physician Status, Pride, and Privilege*

In spite of statements supporting democratic interactions with other healthcare providers, students communicate an expectation of a reward and special status at the end of their long, expensive educational process. They are aware that they are being educated far beyond the level attained by most of the population and that their advanced education (or enculturation to medicine) makes it difficult at times to fully appreciate others.

Participant 19 commented on the social and educational background of physicians. His concern was communication with patients, but his comment has broader application in ID interactions and quality of care/patient safety. Noting that the average reading level in the U.S. is 7th grade, he stated that “all of my family is college educated, and I don’t know of anybody who reads at [the 7<sup>th</sup> grade] level, and it is part of just where I come from.” He further notes that “a lot of doctors tend to be children of doctors, and so forth, so their micro-environment has a higher education level [than] . . . the general population.”

The comments and story below introduce the students’ observations about physician pride, privilege, or arrogance. Whether real or perceived, these student observations capture impressions that are found in venues as disparate as situation comedy and the academic literature on medical education.

*Physician pride.*

Several students shared the observation that physician pride is strong and could lead to unwise actions. In the first focus group Participant 5 stated that “I think with some physicians, pride is a huge issue, and you get second-guessed, and you may know you are wrong, but you still go forward because you are not willing to admit that you are wrong.” Participant 8 further noted that “Sometimes [physicians] will make a decision, and they will know that they are wrong and if somebody actually points it out, it can guilt them into doing the right thing.” While the preceding comments indicated some imperviousness to external opinion, Participant 8 noted that physicians “do act differently with different people—more professional with people they think could actually affect what they do.”

*Physician privilege.*

Students told of having unsanctioned access to healthcare experiences. Participant 5 told of an incident where he was invited to watch a surgery. The student (whose brother is a podiatrist) indicated that “the head of [my brother’s] group was totally fine with [me watching].” There was no clear indication in the discussion whether the patient’s permission or clearance from the surgical facility had been secured. Understanding that in surgery, “you have to write down everyone who was in the room during the surgery,” the student reports that the nurse “who was recording this was kind of wondering what I was doing in there and approached me about it.” The student’s brother intervened: “Don’t worry about it, he is here, and you know everyone has got to get in there sometime and be able to see a surgery.” And then the attending physician silenced the nurse saying: “Don’t worry about it; it is taken care of.” The point of the



student's story could be the impertinence of the nurse for questioning the physician's inclusion of the student in the surgical experience or the physician's ignoring hospital policy and procedure for personal purpose.

### *Cognitive Dissonance*

Students' descriptions of IP interactions illustrate a discrepancy between how they think physicians should be and what they see. Though they are surprisingly honest about some of the behaviors they have encountered, some of their comments demonstrate their efforts to make sense of or integrate their cognitive models.

One of the most vivid descriptions of the disconnect between expectations and reality came from an international student. During her summer preceptorship, she encountered several unexpected healthcare roles or professions. Initially, she was very surprised to discover that "where I was, the nurses actually are the [unit] directors." She noted with further surprise that "the nurses are like the chief in a lot of places, and I think even the whole hospital, the chief person is the nurse." She commented that she "heard people, not saying nasty things, but just kind of implying their unhappiness . . . because the hospital is run by a lot of nurses." Regarding physician reflections on nurse management, "a few physicians I have seen or talked to expressed their thoughts on that, and they were not always positive thoughts."

Later in her preceptorship, she was able to observe a surgery. When she entered the surgery area, "there was a really big guy [estimated to be about 6'5"] just sitting there, and he had the cap on and everything, and I assumed he was a surgeon because he looked so dominant." At the time, she recalled thinking, "You know he seemed very nice because he was helping me, and I thought 'why would a surgeon care about me, you

know, because a surgeon has this kind of attitude.” Once in surgery, she learned from the female surgeon and male circulating nurse that “the big guy was actually a nurse, who is in charge of the OR, and they called him “Big George,” and I was surprised because I thought he was a surgeon.”

The military also has a hierarchy that was unexpected by some students. In traditional patient care team situations, physicians are the ultimate authority. Participant 9 talked about the administrative hierarchies that are found in military healthcare settings, such as the medical unit where he served. “There is a lot of interaction between physicians and dentists and nurses; [but] it is . . . different than the hospital environment [because, at times] you will have physicians taking orders from nurses.” He added that “. . . there is some specific training on how it works and who calls the shots.”

Students noticed the social distance between physicians and other health care providers. As Participant 2 noted late in the program, “medicine has a reputation of actually separating physicians from the rest of [healthcare]. I think in a way it is almost expected of us . . . I think the interdisciplinary experience is good to just keep . . . us open minded now.”

Several students told of their challenges as non-physician healthcare personnel trying to effectively negotiate, especially the interpersonal side of the ID playing field. Student remarks on these challenges include those below by Participant 8:

There is somewhat of a disconnect between the physician and the staff. . . . The nurses, they want to be friendly and joke and be part of the team, but at the same time at the end of the day, the doctor is the boss, and you don’t want him to think

less of you, like maybe you are not professional enough and the doctor wants to maintain the professionalism and the leadership role.

Two students commented on the change of perceptions encountered when others learned of their intention to go to medical school. The first student's comment focuses more on social interaction. From Participant 3: "There is all this hoop-la about being the physician, a doctor, and you know, whenever you tell someone you are going to medical school, you get a way different response than somebody who is going to be a graphic designer." Participant 14 discussed how his interactions with a physician changed when the physician learned that the student had been accepted into medical school. "Once the physician found out I was accepted to medical school, his whole outlook towards me changed dramatically, and he respected what I had to say. . . . I think physicians could do better in that point." The student explained that to him, the physician's change of attitude represented the "kind of arrogance or pride doctors have," and that by generally ignoring non-physician staff members, the physician may be missing out on valuable information.

### *Theme 3:*

#### *Student Physicians' Views of Other Health Professionals*

Based on student discussions in the focus group sessions and interviews, students have consciously and unconsciously constructed their understandings of who health professionals are and what they do from several sources. Students' initial impressions of other providers are frequently derived from media or literature. More substantive understandings may have been secured through direct contact with health professionals in their family or circle of friends and acquaintances. Their most vivid impressions come from work experience in healthcare settings. Medical students' more common sources of

information about other health professionals—especially nurses—are from non-clinical contacts and students’ observations of physicians interactions with other providers (Benton, 1981).

Sources of images of healthcare providers will be discussed first in this section. Discussion of non-physicians as tools and the relative value of health professionals will follow.

#### *Sources of Images of Other Healthcare Providers*

Images of healthcare professionals are widespread in our society. Images carried by students and acquired from media, family and friends, and work experiences in healthcare will be discussed in this section.

##### *Media.*

Television was cited by two students in the first focus group as a source of healthcare provider images. Each of the shows mentioned seems to emphasize and contribute to stereotypes of health professions. Participant 18 offered this reflection on a popular television situation comedy *Scrubs*: “. . . in the media a lot of medical shows . . . tend to portray the nurses like [in] *Scrubs* . . . as . . . someone to step on a lot.” One of the current medical dramas occasioned this comment by Participant 15: “I think it is hysterical. There is no one else in the hospital except . . . the doctors. . . . They go do the lab. . . . They do all the stuff the nurses would do. . . . They are respiratory therapists; they know how to do everything.”

##### *Family, friends, and acquaintances.*

For several students, family members have contributed to their understandings of and experiences with the non-physician healthcare professional. Though we didn’t

specifically discuss family and friends as career counselors, mentors, or role models, students provided several examples in the first focus group and more emerged in the interviews. Students' stories demonstrate the access and perspectives available to them through ties to health professionals. Participant 17, whose father is a doctor, worked as a receptionist in a clinic and "got to do a lot more, I think, than I was [formally trained] to." Participant 15 related that she is reframing her view of nurses. "My older sister is a nurse, and she is kind of in your face, so I kind of had that representation; so I would like to get rid of that representation" of nurses.

*Prior work experience.*

Students involved in this study have worked in a variety of roles, such as emergency medical technician, pharmacy technician, emergency room physician's scribe, medical assistant, army medic, hospital orderly, certified nursing assistant, medical technologist, clinic receptionist, and social work aide. They have worked in settings ranging from the clinical laboratory of a hospital to a psychosocial rehabilitation unit to a physician's clinic, a nursing home, and a military medical unit for timeframes of up to six years.

While students consistently noted that most physicians were good people and nice to work with, those who have worked in healthcare as non-physicians have consistently recalled the negative interaction(s) they have observed or experienced. The possibility that as part of the hidden curriculum, these experiences are teaching OM students how to interact with other providers is cause for reflection—particularly in view of the recognition that positive physician interactions with other staff are critical to improving quality of care and patient safety.

As noted in the previous section, for the most part, the observed or experienced negative incidents have been between a physician and a staff person of lower rank or status. Participant 15, a former medical technologist, noted: “Having worked in a hospital for a while, to hear about [experiences of] people who worked on the floor, and, you know, it is just not, say the lab, who has issues with the doctor, it is everyone.”

### *Working With Nurses*

Although none of the study participants were academically trained nurses, several had been trained on the job to perform a variety of nursing functions. These students had worked in roles ranging from clinic assistant to orderly to certified nursing assistant to military medic. Nurses were cited by students as serving in the capacity of local cultural expert, patient advocate, and on less pleasant occasions as a reality check for physicians.

Usually of lower rank or title organizationally, nurses sometimes were credited by students with helping maintain a more psychologically safe work environment for other workers. Participant 8 reported that on occasion, she saw nurses confront physicians when “the doctors just get on a dictator rampage and out of line, and I have seen nurses stand up to them, put them back in their place.”

The story that follows provides a good example of when intervention has been appropriate. Noting that he had never before seen “a physician and a nurse at odds,” Participant 9 told of his experience as an emergency department volunteer. As a volunteer, his assignment was to clean rooms between patients. One can guess that it was a slow evening in the emergency department because the ER physician had reportedly straightened up a patient room shortly before this incident started.

The physician “had been yelling at a wide variety of people for the entire evening,” but was not “angry with anyone in particular.” Not knowing of the physician’s earlier cleaning efforts and noticing that there was trash in the waste basket and less-than-hospital corners on the gurney, Participant 9 cleaned a room and, as a result, offended and finally ignited the physician.

“... a passing nurse overheard the exchange and basically explained to the physician that I was a volunteer and [the physician] shouldn’t be hassling people who are giving their time for free.” Quickly, the physician’s attention shifted from the volunteer to the nurse, “which turned into an argument between the physician and then two nurses, and pretty soon the physician versus every nurse on the floor.” Summarizing, Participant 9 was “really surprised and a little bit disappointed that it could actually get to that point. I remember walking out of there thinking that when I am a doctor, I don’t ever want to [be part of] anything like that.”

#### *Gaining Understanding of Nurses’ Work*

For some study participants, working with student nurses in the House Calls Program was their first opportunity to really consider what nurses know and do. OM students generally were positively impressed with the skills and knowledge of the nursing students on their teams. At the first elder visit review session, OM students commented as follows: Participant 10 noted in his interview that “I was kind of humbled and also surprised to know that [the nurses] know way more clinical stuff than we do.” Stating that while the nursing student on his team, “hit the clinical stuff,” he focused on interviewing and “the intellectual thinking,” though he added that “she was probably way ahead of me on that, too, but she didn’t say it.” Participant 6 reported that “I didn’t know

very much and those nurses really knew exactly what to do there.” An additional impression was shared: “I think also I was really surprised how outgoing those other students were; they really wanted to jump in and do something. They did a great job. I was really impressed.”

For some OM students with more healthcare experience, the positive regard for nursing student skills was not quite as evident. In fact, for one team, the nursing student’s efforts to get acquainted and determine the OM student’s skills and past experience seemed to annoy the medical student. Surprisingly, the annoyed OM student was the one with the most nursing related experience. Participant 8 reported as follows: “The nursing student was surprised to know that I knew how to take vitals.” Their conversation continued with the nursing student “asking me if I was at the hospital yet and did I know how to take vitals. I [told her I] was a medical assistant for six years and have my master’s and she kind of shut up.”

*Learning by observing during summer preceptorship/clinical rotations.*

OM students can be expected to have challenges learning the principles of effective IP practice from just their medical student clinical rotations and observations of IP interactions. Based on students’ reports of their summer clinical preceptorships, their interactions with nurses and other health professionals varied widely. After their second elder visit and summer preceptorship, reports from students describing their observations of the work of other healthcare providers yielded a variety of responses about nurses.

Some students learned little about the work of nurses and other health care providers during their summer preceptorship. Participant 6 reported that as he understood it, the nurses “brought the patients back from the waiting room; I think they



did the vital signs.” Once the patient had been seen by the physician, “if there were any other procedures that the doctor did not do, then I imagine the nurses went back in there. I’m not really sure on that.” Participant 2 reported that “you had your nurses, but you hardly saw them; it was almost like the chart just magically appeared on the door. You went to see the patient and then you filled out the discharge thing.” He also noted that “my interaction with the other health professionals was handing the discharge sheet to the nurse and that was it. I was actually surprised how little interaction there was with the nurses.” Finally, he reported that he thought nurses *must have been the ones* who “educated the patient on everything we were going to do” because he and the resident didn’t.

Other students were in settings during their summer preceptorship where effective IP relationships and positive patient care outcomes were demonstrated. Participant 6 provided an example of good communication and teamwork from his summer preceptorship:

You would see the physician and the nurse [asking] back and forth, what do you think about this drug? Or yeah, let’s try that and let’s do this, and the last time I did it on that, it did this. Okay let’s try something else. So it was a really collaborative effort. I guess I just saw it so much, it is hard to say one specific incident, but like with every patient that came through, it was that way.

*Evolution of student attitudes about nurses and other providers.*

OM student attitudes about nurses and other health care providers are not fixed. Though only the first half of the IHC program has been included in this study, OM students’ attitudes have already moved from (a) speaking with open admiration for the

skills and abilities of the nursing students to (b) reporting widely varying understandings of what nurses do in clinical settings to (c) expressing a high level of concern that other health care providers/nurses will act in ways that will expose them as physicians to legal liability. Just prior to the final focus group, students had completed their unit of medical jurisprudence. During the final focus group, in contrast to their earlier more sympathetic comments, Participants 12 and 2 seemed to reflect the group members' concerns when they stated "it should be a team effort, but at the end, if it is the physician's patient . . . something is going to happen to and he will get all the blame and the nurse won't get any blame . . ." and "I don't want [my nurse] going off and doing something that is going to throw me into court."

*Managing errors.*

Students' comments reflect conflicting beliefs about how medical errors are/should be handled. This final pair of student observations shows a marked contrast of attitudes and experience. The first anecdote illustrates attitudes learned by students when working as non-physician healthcare providers. In a discussion of what happens when a physician makes an error, Participant 8 said, "It depends on the physician . . . some . . . will deny, some . . . will shift the blame, some . . . will own up and say, 'hey I am sorry.'" When the student was questioned about how that plays out when a patient is involved, Participant 8 stated that she believes that "If you are the nurse, you basically expect you are going to get blamed because the doctor doesn't want to take responsibility."

In contrast, Participant 18 reported an incident with a considerably different twist. A female patient in an emergency room was tested and told she was

pregnant. Discovering that she had previously had a tubal ligation and rechecking with the clinical lab at the hospital, an error resulting from switched urine samples was discovered. “The nurse and technician came [to the patient] and said ‘it was all our fault and not the physician.’ Yeah a physician should maybe double check . . . but the other healthcare disciplines actually took accountability . . . apologized to the patient.” Having already explained to the patient how she could be pregnant in spite of her prior tubal ligation, the physician was not pleased to have to explain to the patient that she was not pregnant. But he too took responsibility for the situation and apologized to the patient.

#### *Working With Other Healthcare Professionals*

Students have seen positive and negative impacts of physician interactions with other healthcare providers. Again, thinking broadly about patient safety and high-quality care, Participant 15 stressed the importance of interactions and communication with all staff including the housekeeper and the transporter. Otherwise, “Who knows what could happen!” Participant 2, who had worked in a neonatal intensive care unit, observed that “I would see the physicians interact with respiratory therapists [and] nurses; and it was very interesting how that interaction would take place sometimes; you know there were good docs, there were bad docs.” That is consistent with recollections by Participant 12 of the special stresses of healthcare settings, such as surgery. “Sometimes the doctors [were] a little high strung . . . wanting to do . . . right, [having] a lot of energy and feelings inside; . . . Sometimes it was understandable; most times it wasn’t understandable for a physician to be angry at someone.”

### *Non-physicians as Tools*

Most students who had worked in healthcare prior to matriculation expressed the belief that they could have been more help to physicians had they been allowed. The language of Participant 15 was consistent with this researcher's experience in healthcare. "The residents who were doctors . . . understood that we were a valuable asset, and they should utilize us." Participant 2 stated, "I would see good physicians . . . really work with the team; they would be good educators." Of no small consequence, improving the skills of team members "in turn benefited [the physicians] because . . . the more a physician educates his nurses, the less the physician has to be awakened at 2 a.m. . . ."

Participant 14 related that "it seemed that those psychiatrists that would ask a mental health worker questions about the patient were able to plan and provide better care." And finally, Participant 16 wanted to hear directly from nurses how to "get the best out of [the nurses on] your team—the best healthcare overall for your patients."

When students referred to other health care providers including nurses, there is usage denoting either cultural norms or a sense of control of other healthcare providers. By the time of the final focus group, I had noted that students were frequently using the term "my nurse" or "your nurse." For example, Participant 3 reported that "every nurse I have ever talked to and . . . told . . . that I was going to be a doctor has . . . said make sure you treat your nurses well . . . I am guessing that they say that because a lot of doctors don't." When I asked students about this possessive terminology in the second focus group, they looked at each other quickly and shared "nervous" laughter, exchanging looks full of sudden awareness of the possible interpretation of their words.

One initial student response to my inquiry indicated that the “my nurse/your nurse” terminology grew out of a concern for the privacy of their nursing team member and was reinforced by a sense that this usage was perhaps cultural. According to Participant 8, “Working in the clinic, that is what I have heard, you know the nurses talk about, oh you know . . . like, ‘who is your doc today?’ or ‘who is your nurse today?’” However, Participant 5 admitted: “Well, I guess you could take it to the idea of entitlement, ownership.”

*Relative value of healthcare providers*

Students acknowledge and seem to accept the status differences among healthcare providers. In the first focus group, references were more focused on mutual respect. At that time, Participant 3 said,

Society holds physicians at this level [the student held his hand up in the air indicating a high level] . . . I don’t know if [that high level of value] is appropriate. . . [because], [other health care providers] have just as much to bring to the table and they . . . will have an . . . approach that might be different than what I will have, and that will be worth listening to.

In the second focus group, participants stated their recognition of the, at times, unfair reality that the social status of physicians is higher than that of most other professions in healthcare. According to Participant 14, “Whatever [physicians] are doing is [seen as] more important because they have the higher degree; they have the training and the status.”

*Theme 4:*  
*Student Physicians' Beliefs and Knowledge about*  
*Interdisciplinary Practice and Patient Safety*

In this section, I will discuss findings from student focus groups and interviews related to their beliefs and knowledge about (a) the impact of ID practice on patient care and safety, (b) the importance of communication in teamwork, (c) the barriers to teamwork, (d) the timing of ID experiences, and (e) the contributions of the students' medical education to their understandings and knowledge. A brief discussion of how they see themselves in the future will conclude this section.

Some students expressed a desire to start now to learn to work effectively with other health professionals and to maintain a sense of proportion about themselves and their relationships with others. Participant 17 was representative of several students with the following comments: "I think it is important that we learn how to work with [other health professions] now rather than later when we are used to working with our peers." She added that in the future OM students will be "working with other folks who may not have gone through medical school and maybe not know the jargon." And she noted that "it is important to know that not everyone is a doctor in the healthcare setting and that everyone is just as helpful, even without that degree."

*Impact of Interdisciplinary Relationships on Patient Care and Safety*

Initially, students had little if any sense of the connection between interprofessional relations and the quality of care or patient safety. Most of the study participants had little prior exposure to the concepts and literature on IP teamwork or patient safety. Student comments in the first focus group reflected limited prior thought about the connection between ID interactions, quality of care, and patient safety.

However, when asked to think about the relationship, Participant 19 offered this observation in the first focus group: “You really learn how knowing people and knowing how to communicate with them and kind of having that professional relationship really helped benefit your patients.” He further noted that “you are not always going to like everyone you work with, but you still have to build a relationship with them and kind of work at a level that is constructive.”

In the first interview, Participant 10 noted that “it seemed like the [doctors] that did treat [the nurses and other staff] with more respect either learned more or got more out of the situation.” Participant 16 summarized, “I think when it comes to accomplishing the ultimate goal of providing good healthcare, I don’t think there is any substitute for [a functioning team].” He continued, “. . . despite how good any member of that team is, I think it comes out in the weakest link.”

Summer preceptorships offered students a variety of models for IP interactions with visible consequences in quality of care or patient outcomes. Below are paragraphs describing examples of poor IP interactions followed by descriptions of positive interactions.

Post summer preceptorship comments revealing troubled or unsafe ID relationships and poor patient-related outcomes included the following observation from Participant 9: “I think the physician didn’t want to deal with the patient at all and the nursing home didn’t want to deal with him either and so they were kind of fighting with each other.” Participant 14 told a story about a patient suffering ulcerating lesions on multiple parts of his body as a result of failure of at least three health professionals to communicate well with each other or the patient. “Neither . . . the nurse or the

pharmacist or the ER physician caught that [the guy was allergic to sulfa drugs] and this guy ended up having these lesions which can actually kill you.”

Student comments revealing effective relationships included this remark from Participant 13: “There was a lot of interaction between the nurses and the physicians.” He explained that “if there was something said that wasn’t understood or if it was something that maybe the nurse knew a little bit more about, maybe questions about dosing . . . or a particular medication, [the] doctor could shoot that off the nursing staff [for confirmation or alternatives].” Participant 15 noted that in her summer clinical site “every call is noted down in the chart, and the nurses take the calls and then have the doctor just read over it quickly and sign off on it or say they want more information.” She summarized the overall patient care process at the clinic: “The [nursing and other] staff worked so well the patients felt that they were given the care they needed, even if they could only sit with the doctor for five minutes.”

### *Discourse of Medicine*

Learning the language and slang of medicine and observing its impact is a large part of the early medical education process. During the first focus group, most students agreed on the foreignness of this new language and its potential for separating them from others. Several commented on the challenges of this new discourse in their old lives. Participant 15 related that she was “noticing already that it is hard . . . to talk to people” now that she was in medical school. She indicated that she didn’t “know what to say. I use these huge words, and you think about it, you know, you talk about things bifurcating, and no one knows what that means.” She believed that “it is hard to integrate someone back in when they have had that much education,” and that already she was



starting “to feel kind of separate from the rest of society.” Participant 2 related a recent conversation with his wife: “Five minutes into it and she stops me and says, ‘You realize I don’t understand a thing you are saying?’” After asking what was unclear, he continued, “I thought I was explaining things in very simple terms, and she asked me what the word ‘secrete’ meant.”

Implications of this new language in the healthcare arena were addressed by several students. The impact of medical discourse on patient interactions was discussed by Participant 18. She volunteered in a children’s hospital that had an advocate program for parents of patients “because a lot of time physicians speak on this [indicated with hand gestures a high] level and then parents on this [low level] . . . [The peer liaisons] are not physicians, but I guess they are trained to kind of communicate between the parents and the doctors.”

Students have increased appreciation for the importance of communication and teamwork in the provision of safe, high-quality patient care. When students were queried, communication and teamwork were consistently cited as critical to effective, high-quality, safe patient care.

#### *Barriers to Teamwork*

According to Participant 6, healthcare providers “obviously need a very good sense of teamwork to provide . . . safe and high-quality patient care. That is something that I have overlooked in the past and not really brought to the forefront of my mind.” He continued, “If you had asked me a couple of years ago, that probably would not have been on my response list, but now I can definitely see why that . . . has to be one of the top ones.” His reason for teamwork being top of the chart was “because it’s not just the

doctor seeing the patients, but there is a whole slew of workers that are managing these patients' situations.”

Three types of barriers emerged from conversations in the first focus groups: (a) organizational/administrative/systemic issues, (b) stresses of medical education, and (c) malpractice or legal issues. An additional barrier in the form of traditional health professions education and practice culture was discussed in Themes 2 and 3.

*Organizational/administrative/systemic issues.*

Students' accounts of patient care activities highlight organizational, administrative, and systemic issues that facilitate or discourage effective teamwork. As an example of the organizational issues which challenge ID efforts, Participant 2 commented on the discipline-specific personnel silos in hospitals as a cause for the breakdown of communication among healthcare professionals. He observed that “. . . most of these examples tend to be hospital institution based. I think that the breakdown . . . occurs because of the administration, and just how it is set up.” Elaborating, he noted that “the physicians are their own group, the nurses are their own group, the hospital support staff is their own group, and then they are all working together.”

Two students provided contrasting pictures of the physical organization of work in their respective clinical sites during the summer preceptorship. Participant 6 said that before or after seeing a patient, the doctor “would go to the nurse's station where she had her computer, and they would collaborate on the patients that they were seeing and on the workload that they had for the day.” In addition, they would discuss plans for the day and “maybe old patients that they had seen prior, several days before, and that they needed to follow up on or call. They would basically meet at the nurse's station and

discuss those cases.” As related earlier, Participant 2 described a much different organizational process in his site: “It was very, very isolated from other support staff . . . . I was actually surprised how little interaction there was with the nurses.”

A final story in this section describes interprofessional challenges created by introduction of an admirable program initiated by ER physicians. In his first interview, Participant 6 reported on a “scribe” program developed by a group of emergency physicians for students interested in medicine. The scribe’s responsibility was to assist physicians with filling out ER patient records. The scribes completed a group orientation session and worked several shifts with an experienced scribe before working shifts alone.

In response to researcher questions about the development of the program and coordination with non-physician staff in the ER, Participant 6 indicated that “to his knowledge, there had been no involvement of or coordination with nursing or other ER personnel in the development process.”

The student reported that in the scribes’ meetings, “we usually had a doctor there to supervise the meeting, [provide direction] to the meeting, and they would sometimes . . . . talk about our relationship with the nurses.” The intent, according to Participant 6, was “to make sure that we are working well with [the nurses] and not getting in their way. . . . So working with them was an issue that was discussed, but there was no formal training on how to go about that.” The student noted that “the nurses [had] their own meeting . . . and then they would voice their complaints there and then we would hear about them in our meeting.”

The student also reported that, as scribes, “we kind of felt like we were treated preferentially by the physicians because we worked a lot more closely with them, and we

were allowed into the doctors' office and the doctors' lounge." Later in our conversation, the student noted that "it almost felt like the scribes and the nurses were, you know, on opposite teams. You know it was . . . more contentious than it was cooperative at times."

*Stresses of medical education.*

Students believe that the stresses of medical education interfere with good IP relations. In many respects, medical education and training has a likeness to boot camp—that lasts at least seven years (Becker et al., 1961; Shem, 1978). Participant 2 was most passionate on this topic. He believed that in the quest "to be the best doctor you can be," you encounter the reality of "just how the system is set up: you take tests, you fail tests, you work harder, you take tests, you fail tests, you work harder, and you are constantly trying to get higher and higher scores." In spite of students' efforts, "the classes just consistently get harder, so there is really no overcoming medical school. It is always just living through medical school, so you know four years of that can really suck the sympathy and humanity out of you." Participant 15 added that "I also think because you work so hard to make yourself perfect, you expect perfection out of everyone else. Like, well I worked for four years."

*Malpractice or legal issues.*

The third barrier noted by students early and ongoing in the study was liability concerns. Students hear about liability issues in health care from their first days of medical education; in fact, students reported having heard a lecture by the school's Dean during orientation week that spoke to these issues and that they believed might have been intended to scare them. Concerns about legal liabilities of patient care are communicated early to students and significantly influence their thinking and interaction with providers

from other disciplines. Part of this concern relates to students' impression that society expects them to be perfect. Participant 3 said, "I feel like a lot of physicians are held to a standard . . . an unfair standard, as far as what their competency and how many mistakes they are allowed and how perfect they are supposed to be." Participant 5 noted that ". . . society expects us as doctors to be perfect, and I think you know other healthcare people have some of the same expectations."

By the time of the second focus group, students had completed their medical jurisprudence unit taught by an attorney who is also a physician. Participant 12 said, "Whenever we think of the physician and the whole team role, it is always the physician who will get the blame if anything goes wrong." He continued, "It should be a team effort, but at the end if it is the physician's patient, he will get all the blame." Participant 2 suggested that in view of "how our society is set up today," a physician must realize that she/he is the one "responsible for training [the nurse] and making sure she is good."

#### *Timing of Interdisciplinary Experiences*

Students expressed a consistent preference for ID experiences early in their medical education. The literature on interdisciplinary preparation presents evidence supporting both early (Barr et al., 2005) and later (Wahlström, Sanden, & Hammar, 1997) training and experience with some educators recommending a longitudinal curriculum of IP development (Freeth, Hammick, Reeves, Koppel, & Barr, 2005). A couple of students remarked that interdisciplinary experience later in the curriculum allows each individual to bring more of their own discipline's expertise to the table. Participant 15, who had completed an undergraduate course in ID healthcare teamwork, said "Well, [if] the point of interdisciplinary is to show everyone what everyone else can do, it should be later."

Comparing the medical education timeline with nursing and many allied health timelines, she concluded that “I think it is better to start kind of early with the med students.” In her second interview, she added that it is best to start “early and continue through to late . . . because the medical profession has a very big danger of becoming clickish.”

Students were consistently supportive of starting exposure to principles and practice of ID teamwork earlier because (from Participant 11) it helps promote a sense of being “in it together.” He elaborated, “We are in this thing together; we want to get [to] the same objective, same goal; we just are going to have different roles.” He further notes that working together early is better than learning individual professions, “and then at the very end, we are like, okay, now let’s work together. So I personally think it is an advantage. I think we’ll be more comfortable. I think we will be more ourselves with the other disciplines.”

#### *Medical Education Contributions to Interdisciplinary Learning*

Students see very little information or practice related to interdisciplinary interactions in their curriculum. When asked about the presence in the medical school curriculum of information or skills training related to ID/IP practice, most students initially indicated that to their recollection, there was little to no opportunity to hear about ID theory much less opportunity to practice ID skills. With some additional thought, a few related activities were identified. Relevant student responses generally fell into one of three categories—those that promote positive ID attitudes or practice, those that mitigate against effective ID interactions, and those that relate to teamwork in general.

*Activities that teach, model, and promote positive ID teamwork attitudes or practice.*

Students did find a few examples of medical education activities in the school's curriculum that demonstrated/taught positive ID practice. Participant 2 noted that there was "a very good interdisciplinary kind of experience last week with the [interdisciplinary team presentation on the] Footprints Program . . . . I thought that was a very good example. That was kind of an extracurricular thing that was mandatory." Participant 11 noted the opportunity for students to attend a diversity teleconference "where some doctors from over the nation" discussed the populations they served and "the professionals that they work with, including social workers, . . . psychologists, . . . psychiatrists." According to Participant 13, however, "Without doing this aspect [interdisciplinary house calls] of the curriculum, there isn't really any education going on with integrating other healthcare disciplines."

*Activities that contribute to positive attitudes about other health professions disciplines or models or offer instruction or practice at teamwork.*

Students increased their appreciation of the value of diversity through working with individuals from other cultures and disciplines. Acceptance of diversity is an important element of successful teamwork. Participant 15 noted that her appreciation for diverse cultures has deepened due to her experience working with three male students in her anatomy lab team. Noting that the male students practice a different religion than she does, she states that the team working in the lab has helped her open up more "to working with people of that religion, so it is good . . . to be less biased with people . . . we all work together and we build a team, and these are guys I would probably have not talked to otherwise." Participant 13 suggested their pathology course for inclusion in this list.

Several of the pathology labs require multiple types of collaboration and team and group work. Participant 9 cited vena puncture lab as an example of a curricular activity that models respect for and positive attitudes toward other disciplines.

Participant 15 related that her summer preceptor “mentioned multiple times how important the staff was, and he said that’s something they don’t teach you there.”

Participant 6 noted that the summer preceptorship allowed him to watch “good examples . . . the physicians that had [a] really good way [that] they worked with other people.

That is definitely something that I want to emulate when I go into practice.” Though the emphasis is on medical science topics, Participant 15 indicated that she believed it was good that in the Complete DOctor course “we have an RN or two who have master’s degrees who come and teach us things. . . . But when they come in, they are teaching us the same things the doctors are teaching us.”

*Activities that mitigate against effective learning of attitudes or skills in teamwork or interdisciplinary practice.*

Some medical education activities which could provide opportunities for practicing teamwork don’t because of grading issues. Due, in part, to the necessity for preparing students for professional exams and to assure each student’s competency, several topics or activities must be conducted in such a way that they mitigate against positive experience or attitudes toward ID teamwork. Participant 2 cited the guidelines for the human patient simulator (HPS) lab encounters which do not allow students “to work with any [other] students in the same room; so you go in with a group and . . . you are not supposed to work as a team.” Similarly, “the way the Complete DOctor course



works out right now, we are doing [everything in skills labs] ourselves. We are taught that we are the whole show or when we do our standardized patient encounters.”

Participant 2 identified two major deterrents to teamwork. First, students are “taught in our recent *juris prudencia* class . . . that we are the ones that are responsible, so it could just be our education that is biasing us, I guess.” A further deterrent to teamwork is competitiveness for grades. “Our school’s curriculum currently uses a letter-based grade, actually more a percentage-based grade. I think that is horrible for medical school. It instantly drives competitiveness. Our class also has class rankings; that also drives competitiveness.”

#### *Reflections of Self in the Future*

Students do take time occasionally to look beyond today’s lab session and tomorrow’s test to picture what their life will be like in the future. At various points in this research project, students shared thoughts that clearly spoke to who they hope to be or to not be as they move into their professional careers. Unfortunately, due to space limitations, only a few of the more representative of these will be shared.

Early on, Participant 19 said, “I can imagine when I go through four years of medical school, I am going to feel pretty special. . . . I hope during medical school there is a lot more that sort of keeps my humanity alive, that I am just not a healing machine of some sort you know—[that] I am able to talk to people, I am able to relate to people.”

Participant 14 gained a special appreciation for the work of nurses as a result of his summer preceptorship. “Quite frankly, I will have more respect for nurses seeing all the stuff they have to do for patients and all the muck and stuff they have to wade through to take care of these people that in some instances can’t take care of themselves.”

After the orientation, first house call, and first review session, Participant 16 said, “I really have developed just a sense of what it feels like to be on a team.” He contrasts that with “the way school kind of points you, it is like okay, I am going to get out there and I am going to get a job and it is just going to be just me doing my thing.” But the reality is that “it is going to be me and a whole bunch of others. That is kind of exciting to think about. Like I said before, when you have a team and help, it’s so much better, the delivery of healthcare.”

During the second interview, Participant 14 expressed the hope that “we are changing that stereotype of doctors belittling nurses and looking down upon them and doctors thinking they know everything and acting accordingly.” He summarized, “I think it’s absolutely beneficial to get us now before we are indoctrinated and ingrained into the system that already exists.”

## Quantitative Findings

### *Study Participants*

Pre- and post-data from two classes of osteopathic medical (OM) students (the Classes of 2008 and 2009) were gathered to assess the evolution of attitudes about teamwork in students participating in single (MSO) or interdisciplinary (ID) house calls teams. Table 10 shows the distribution of returned surveys from pre- and post-administration to both classes including both MSO and ID team members.

Table 10

*Returned Participant Surveys by OM Class Year*

	Class of 2008		Class of 2009	
	One test (pre or post)	Sets (pre/post)	One test (pre or post)	Sets (pre/post)
Medical-student-only (MSO) team members	38	102	43	106
Interdisciplinary (ID) team members only	2	18	3	17

As described in Chapter Three, all OM students visit with a community elder four times as part of a small team and participate in review or debriefing sessions after each visit during their first two years of medical school. Pre-test surveys were administered in a classroom session where the program orientation was delivered; post-test surveys were administered as part of the final debriefing session.

### *Study Instruments*

The attitude scales chosen for this assessment—the Attitudes Toward Health Care Teams Scales (ATHCTS)—were developed through efforts of the Veterans Administration and Geriatric Interdisciplinary Team Training initiative funded by the John A. Hartford Foundation (Heinemann et al., 1999; Hyer et al., 2000). The version of

the ATHCTS used in this study is composed of three sub-scales including 11 items related to team value, 5 items related to team efficiency, and 5 items related to shared leadership. The 17-question Team Skills Scale was also administered to students to gain self-assessment information on their teamwork skills before and after the House Calls program. A copy of the questions from the ATHCTS and TSS is included in Appendix B. Table 11 shows a summary of findings; individual scales are discussed below.

Table 11

*Summary of Findings from Administration of the Attitudes Toward Health Care Teams and Team Skills Scales*

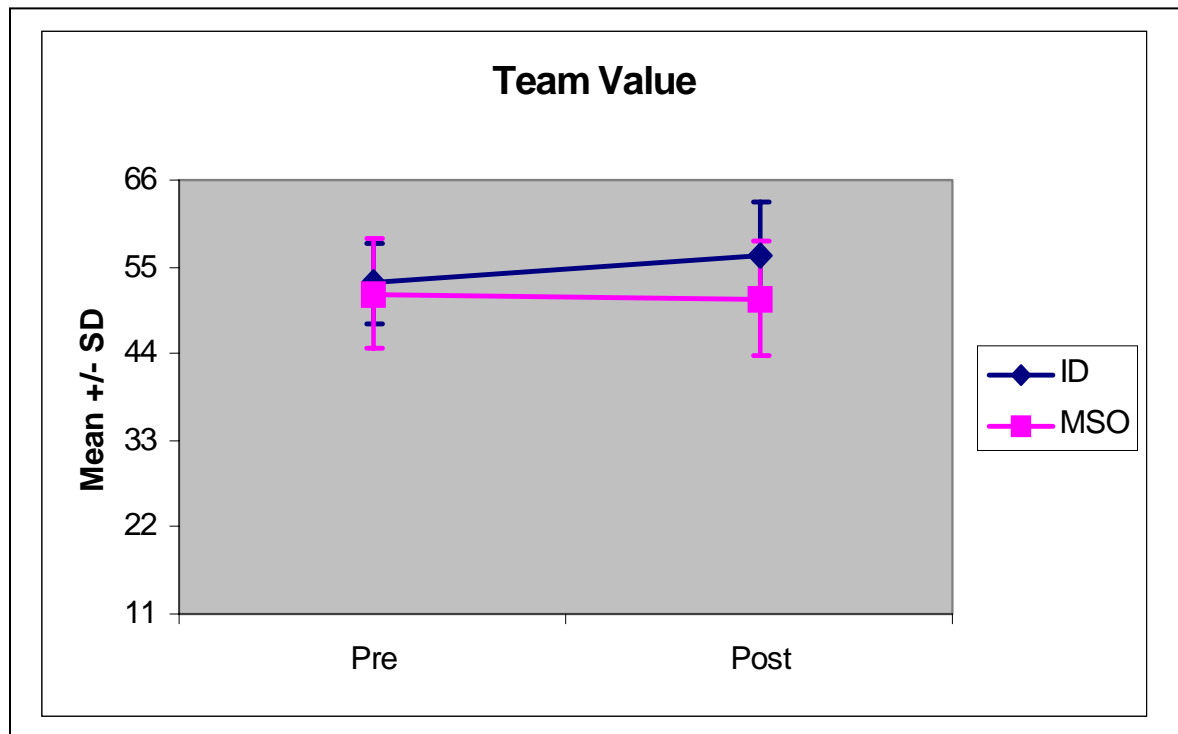
	Team Value	Team Efficiency	Shared Leadership	Team Skills
Is there statistically significant group/time interaction?	Yes	Yes	No	Yes
Are the two groups statistically different at pre-test?	No	No	Yes*	Yes
Are the two groups statistically different at post-test?	Yes	Yes	Yes*	Yes
Is there a change in ID group from pre- to post-test?	Yes	Yes	Yes <sup>+</sup>	Yes
Is there a change in MSO group from pre- to post-test?	No	Yes	Yes <sup>+</sup>	Yes
	* Main effect for group		<sup>+</sup> Main effect for time	

Data for this study were analyzed for variance using SAS General Linear Model (GLM) procedure. Significant interaction between group membership (MSO or ID) and time (pre or post) of test administration for three of the four scales was demonstrated.

*Team Value/Quality of Care Scale*

The team value scale—originally labeled quality of care (Heinemann et al., 1999)—focuses on skills needed to improve patient care, i.e., achieving consensus around identification of patient needs, development of an interdisciplinary care plan, and delivery of patient-focused care. Graph 1 shows results on the Team Value scale.

In this study, follow-up comparisons to clarify the group-time interaction for items related to team value showed that while no statistically significant difference existed between the MSO and ID groups at the time of pre-test; there was a statistically significant difference between groups at post-test. The MSO group did not change



Graph 1: Team Value / Quality of Care Scale Classes of 2008 and 2009

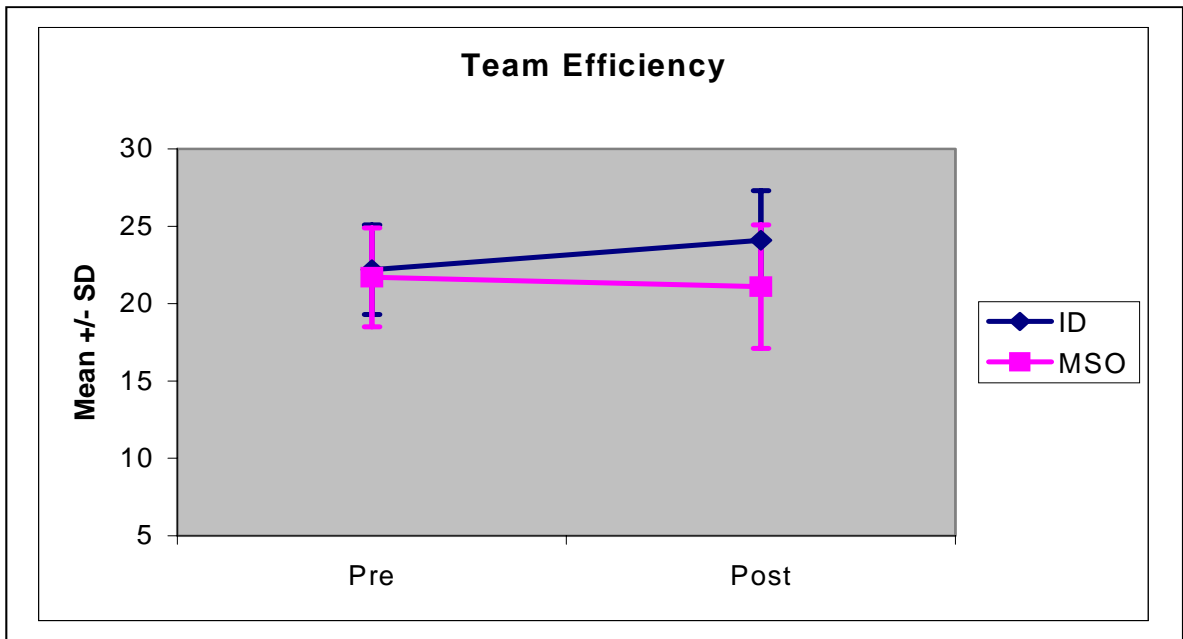
significantly from pre- to post-test, but a significant increase in scores was observed in the ID group. Discussion with students yielded the following explanation of these results:

- Students viewing the data said they expected to see a difference between the MSO and ID groups at pre-test. Specifically, they indicated that they assumed that the ID students would be more (or the MSO students less) favorable toward teamwork as a contributor to quality of care. Clearly, that was not the case.

- The apparent lack of appreciation of the value of teamwork in the Medical Student Only (MSO) teams may be explained by:
  - Presence of competition for grades between and among medical students
  - General independence of medical students (contraindicated by pre-test results)
  - Similarity of backgrounds and training of medical students at this point in their education reduced the variety of skills, knowledge, and perspectives available to the MSO teams. (As Participant 17 suggested about the MSO team members, “If one is confused, . . . then they are probably all confused” and there is no one to pick up the slack.)
  
- Given the participation of MSO students in both campus-based team activities required in the curriculum and especially the summer preceptorships, focus group participants were surprised that their participation had little to no effect on MSO scores in this factor. According to Participant 8, “It just looks like the interdisciplinaries were exposed to a team, and the med students were exposed to each other, so they didn’t really change.” Participant 3 expressed concern that
  - . . . it is kind of scary to think that we might be producing students that don’t think that there is value in working in a team because if you think that you are going to do it on your own then I just see . . . like lawsuit signs all over the place so I mean I can see it maybe at the beginning, but if it did not improve after preceptorship, . . . something is defunct.

*Team Efficiency/Costs-Benefits of Team Care Scale*

The team efficiency scale—originally labeled attitudes towards costs/benefits of team care (Heinemann et al., 1999)—focuses on criticisms of team processes including use of jargon, inefficient meetings, and inclusion of information extraneous to the care planning process. Graph 2 shows results of pre and post testing related to team efficiency.



*Graph 2: Team Efficiency/Costs-Benefits of Team Care Scale Classes of 2008 and 2009*

Follow-up comparisons to clarify the group-time interaction for items related to team efficiency in this study showed that, while, again, no statistically significant difference existed between the MSO and ID groups at the time of pre-test, there was a statistically significant difference between groups at post-test. In this factor, too, a significant increase occurred in ID group scores from pre- to post-test; and a statistically significant, but probably not meaningful, decrease occurred in MSO scores.

In response to these findings, students hypothesized the following:

- You would expect MSO teams to be more efficient because members already knew each other.
- Varying ID member skills, schedules, etc., allow team members to help each other and be helped as the team members' workloads shift; while MSO team members have nearly identical workload and stress patterns.
- In order to have missed all the evidence of teamwork, MSO team members must have spent their preceptorships following only their physician preceptor. In addition to the time spent with their physician preceptor, course guidelines encourage students to spend time with a range of people who help deliver healthcare including front desk, lab, insurance, and other clerical staff, as well as office nursing staff, hospital, and community agency personnel.
- Because MSO team members were sharing the same role and have basically the same skills, they probably had less rewarding "meetings."

Looking at the graphs representing the first two factors, Participant 15 said, ". . . to me it is the same. . . people who were exposed to this interdisciplinary, you know, not only get to give better care, but their job is easier as well.

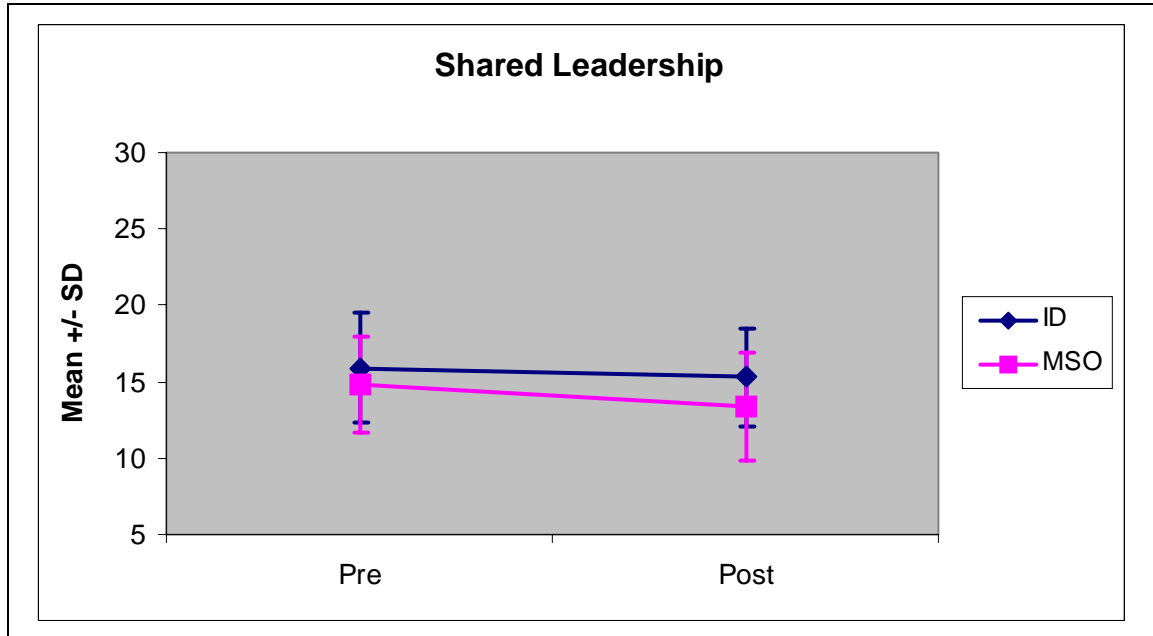
#### *Shared Leadership/Physician Centrality Scale*

Physicians' attitudes are particularly critical due to their authority and established role in the healthcare system (Heinemann et al., 1999). The shared leadership scale—originally labeled physician centrality by Heinemann (1999)—focuses on the physician's role in team leadership and the dynamics of team process around mutual accountability. Noting concepts from social exchange theory, Heinemann (2002) posits that physicians might be expected to be more negative about teamwork if they view it as potentially



increasing the status of other team members while decreasing their own status and independence of practice. Graph 3 shows results on shared leadership scale.

Consistent with findings from Heinemann (Heinemann et al., 1999) and Hyer (Hyer et al., 2000), Leipzig (Leipzig et al., 2002) found that though most students involved in her study (second-year medical residents, advance practice nurses, and MSW



Graph 3: Shared Leadership/Physician Centrality Scale Classes of 2008 and 2009

students) agreed that collaboration and teamwork benefits patients and is worth the time required, medical resident scores were consistently lower than the other two disciplines, and the differences in scores were most pronounced around physician centrality or shared leadership of the care process.

On shared leadership, no significant group/time interaction was indicated by the MSO and ID team scores. Unlike on the first two scales, a significant difference did exist between the two groups at the time of pre-test, and for both, a statistically significant negative change in attitude about shared leadership occurred—on this five-item scale.

Specifically, the mean for the ID group decreased by 0.5. The mean for the MSO group decreased 1.5.

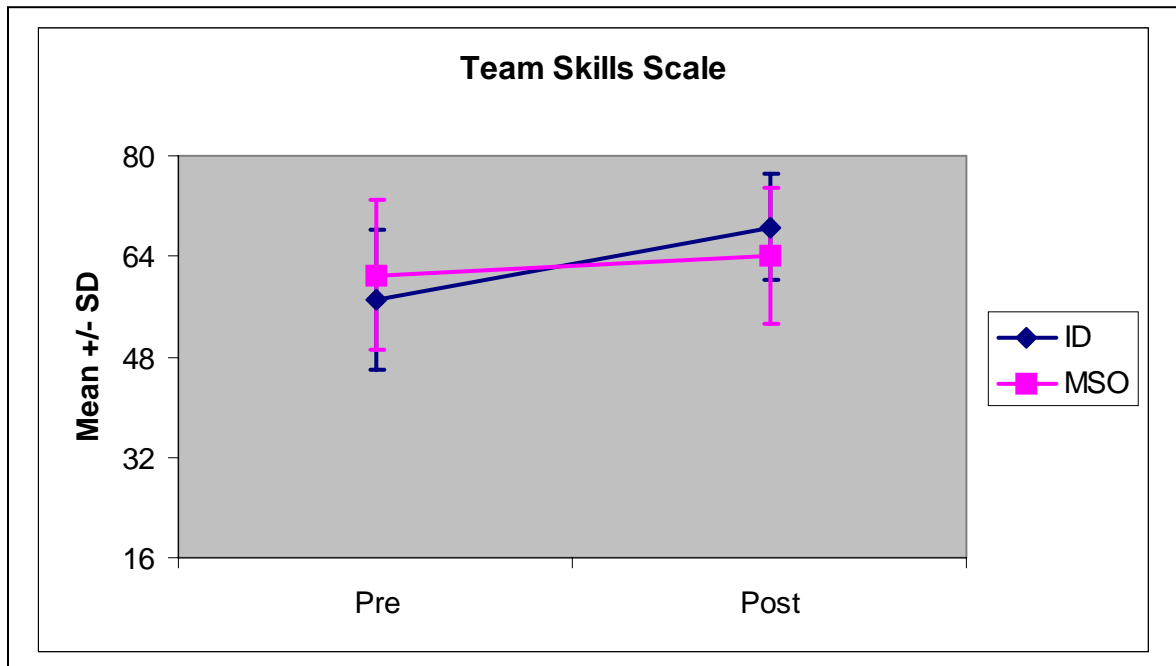
Student reflections on results from this scale involved concerns about malpractice and liability issues. Also surfacing were finance and income issues. Reflections are reported here in the students' words. Participant 2 noted that "what we were taught in our recent jurisprudence class was that we are the ones that are responsible, so it could just be our education that is biasing us, I guess." Participant 12 added "it is always the physician who will get the blame if anything goes wrong. It is always the physician who will get sued . . . and the nurse won't get any blame."

- Participant 2: If I am the one that has to pay the malpractice insurance and I am the one that is going to be pulled into court for something that my nurse does, then I should be put in charge of that situation because, you know, I don't want her going off and doing something that is going to throw me into court. . . . I am the one that is responsible for training her and making sure she is good, but that is how our society is set up today, though. The physician gets all the blame.
- Participant 9: It is interesting that there was no real [statistically significant] difference between the two groups . . . maybe because there weren't very many major decisions that had to be made; there was no real event that tested whose leadership is better.
- Participant 13: I think [the fact] that they are not [statistically] significant gives you even more results in the fact that there is something outside of this [IHC] program that is leading us to believe that; and whether that is social commentary or that is

what we are learning in class specifically or whatever, I think that is truly a reflection of [influences external to the IHC program].

### *Team Skills Scale*

The final scale—the Team Skills Scale (TSS)—focuses on team members’ perceived abilities to function effectively in a team situation. Graph 4 shows results from the Team Skills Scale.



*Graph 4: Team Skills Scale Classes of 2008 and 2009*

This scale also shows significant interaction between group and time. A statistically significant increase occurred from pre-test to post-test in the scores of both the ID and MSO groups. Unlike on the previous three scales, the MSO and ID groups differed significantly at pre-test. Even more interesting, the ID group started out with less positive self-assessments of their skills at ID teamwork.

Summaries of student reflections on this scale are organized around comments related to the pre-test and then the post-test. Regarding the difference between the two

groups at pre-test, focus group participants asked whether the students knew at the time of survey administration whether they were assigned to the ID group or not. That knowledge cannot be verified, but the students probably did know by testing time whether they would be on an ID or MSO team.

Participant 3 hypothesized that MSO team members might respond on the survey more confidently about their skills because they had a sense of the skills of other OM students and anticipated having the relatively familiar experience of working with classmates. Conversely, ID team members might not feel as confident about their teamwork skills as they anticipated working with nursing and health science students with whose training and experience they were unfamiliar. Participant 15 indicated that some ID students may have really assessed their teamwork skills and determined that they needed development through this ID option.

Regarding post-test differences, scores of both MSO and ID students showed statistically significant positive change. MSO students' self-assessment scores on teamwork skills were not as great as the ID students' scores but seemed to reflect a positive teamwork experience within the MSO teams. The greater improvement in the ID team scores was thought by students to be the result of a successful teamwork experience leading to increased confidence about their skills at the end of the program.

### Summary

In this chapter, I presented findings from qualitative and quantitative research activities. Qualitative findings coded into four themes: (a) the Interdisciplinary House Calls Program, (b) student physician's views of physicians, (c) student physicians' views of other health professionals, and (d) student physicians' beliefs and knowledge about

interdisciplinary practice and patient safety. Quantitative findings from pre- and post-test administration of the ATHCTS demonstrated a statistically significant increase in positive attitudes about the value and efficiency of interdisciplinary teamwork and self-assessment of teamwork skills in students participating in the Interdisciplinary House Calls Program. Discussion and implications of these findings will be presented in Chapter Five.

CHAPTER FIVE  
DISCUSSION, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS  
FOR FURTHER STUDY

In this chapter findings presented in Chapter Four are discussed followed by presentation of conclusions organized around the research questions. The final sections of this chapter contains implications related to practice and recommendations for future research.

Introduction

The purpose of this case study was to explore how and in what context osteopathic medical (OM) students learn about interprofessional (IP) practice. A mixed method study design was used. Qualitative methods were used to gather student reflections about their experiences in the Class of 2010 Interdisciplinary House Calls (IHC) Program. Through use of a survey, pre-program and post-program quantitative data related to attitudes about interdisciplinary (ID) practice were collected from the two preceding osteopathic medicine cohorts—the classes of 2008 and 2009.

Specific research questions that guided the investigation were (a) What beliefs do OM students bring to the IHC experience, (b) What are the expectations of OM students regarding their role within the team and the roles of other providers within the team, (c) What in the IHC experience did the OM students see as particularly powerful in shaping or influencing their view of ID healthcare practice, and (d) In what ways do students perceive that their practices and beliefs about ID practice have changed as a result of participation in the IHC program?

Inquiry focused specifically on how the OM students perceive the experience of interprofessional team learning and working in a community-based, patient-focused activity. Student experiences with and attitudes about other health professions, as well as the process and outcomes of their collaboration, were explored to gain insight into how students' prior contact with other professions and formal and hidden OM curriculum contribute to their current knowledge and attitudes. Intergroup Contact Theory and Paavola et al.'s Knowledge Creation Metaphor provided the theoretical lens for the study.

Qualitative data included transcripts of the focus group sessions and interviews and field notes from review sessions. Participants in the qualitative portion of the study included 16 osteopathic medical students. Ten of the 16 students participating in the qualitative portion of the study participated in both the focus groups and the interviews. Gender distribution of the sample included 11 males and 5 females. The average age of the class of 2010 at matriculation was 25. This is consistent with the qualitative study participants whose age range was from 21 to 27 years of age with an average age of 24.8.

Survey instruments were completed by 329 students as part of the quantitative portion of the study. Participants included 160 students from the class of 2008 and 169 students from the class of 2009. Twenty students from each class volunteered for the IHC program and were assigned to work with a nursing student and a health science/education student from the local state university. The remaining 140 students from the class of 2008 and 149 from the class of 2009 were assigned to medical-student-only (MSO) teams consisting of two or three medical students.

## Discussion

A brief discussion of findings organized by research questions is presented below. Qualitative findings were presented in four participant-derived themes: (a) student physicians' reflections on the IHC Program (b) student physicians' views of physicians, (c) student physicians' views of other health professionals, and (d) student physicians' beliefs and knowledge about interdisciplinary practice. Clinical context for student reflections included two elder visits and a two-week summer preceptorship that occurred during the study period. Students had the opportunity to observe and interact with patients and providers during both clinical activities. In the IHC Program, students were expected to work with their respective teams to prepare a written summary of their elder visit and to participate with their teams in the review session after each visit. Participants provided a sense of the impact of these activities on their thinking and attitudes through the focus group discussions and interviews.

Quantitative findings were presented in four categories consistent with the organization of the survey instrument used. Survey scales included Team Value/Quality of Care, Team Efficiency/Attitudes Toward Costs-Benefits, Shared Leadership/Physician Centrality, and Team Skills Scale. Student reflections on the quantitative data were included in Chapter Four.

### Research Question 1.

What Beliefs Do Osteopathic Medical (OM) Students Bring  
to the Interdisciplinary House Calls Experience?

Incoming osteopathic medical students bring with them a number of beliefs and attitudes constructed from media, family, social, and workplace experiences. Research has shown that these beliefs and attitudes are firmly in place and will change more slowly



than behaviors (Horsburgh et al., 2006; Rudland & Mires, 2005). In this section, I will discuss beliefs and attitudes of incoming osteopathic medical students and their expectations for learning in the IHC program.

#### *Incoming OM Students' Beliefs and Attitudes About ID Teamwork*

Osteopathic medical students are enthusiastic and caring individuals. Frequently, they seem to be interested in anything and everything, and they express a determination to make the most of life in general and medical school in particular. Given their enthusiasm and energy at matriculation, it is not surprising that several of the students in this study indicated that at the beginning of school, they put their name on the list because they wanted to “sign up for anything” that looked like it might help them be better physicians.

Their selection of the IHC option could be interpreted as an effort to set themselves apart from the rest of the class and to be viewed as being more democratic and open to shared working with others. For some students, the intention to be democratic and sharing is probably genuine, but for others, the IHC Program is seen as an opportunity to begin practicing the traditional physician role.

#### *Expectations for Learning in the IHC Program*

Some students in the IHC program expressed a belief that working with individuals from other disciplines would help them develop new understandings of effective ways of working together. Other students expressed a desire to avoid becoming physicians in the traditional hierarchical model. Others' efforts at learning better interdisciplinary teamwork skills may be a good example of one of the principles of the Knowledge Creation Metaphor (Paavola et al., 2004) that working with others can

surface tacit knowledge which can then be shared with the rest of the community. Much of the process of the IHC program encourages student-to-student communication in conjunction with faculty facilitation and is described in the Knowledge Creation Metaphor as “innovative sharing of activity objects.” Shared objects in this case may be the elder patient or the program itself.

Some students stated that their motivation for participating in the IHC program was to interact with individuals from outside their medical school circle. Students spoke of a desire for diversity of interactions – an opportunity to interact with others outside their circle of medical student peers. Even as early as the first focus group discussions with the students, they seemed to have some longing for life away from their medical school lives. This opportunity to complete a school requirement and be with community people allowed them to escape what they termed “the bubble” of medical school.

The concept of the bubble seems to speak to one of the numerous criticisms of health professions education—the silo approach to education of each of the disciplines—leveled in the Institute of Medicine reports (2000, 2001, 2003, and 2004). The bubble concept also explains how the individual health professions lose touch with each other and begin to rely on stereotypes. Ultimately they become groups needing intergroup contact to establish communication and build more positive relationships.

Students, particularly those with healthcare experience, spoke to the importance of communication among health professionals—especially between physicians and other providers. The students evidenced some appreciation that they had some responsibility for assuring the quality of their communication skills. Several students had been cautioned by friends and former colleagues to guard against becoming a physician who is

difficult to work with. Two students noted in particular that they had been warned to “be nice to your nurses.” Nurse-physician interactions seem to be more visible and commonly noticed than those between any other of the health professions.

Students also spoke about how they gained their knowledge about other disciplines. They discussed the media-generated images of providers, images held by their families and friends, and images garnered through prior work experiences. While the students recognized that these images were not always the best ways to learn about other healthcare professionals, a sense did emerge that those images of others and of physicians were in the students’ minds and were not easily erased. Especially interesting were those images expressed by one student whose brothers are physicians and another student whose sister is a nurse. The words of the physician brother were invoked on a couple of occasions as “my brother, the physician, says . . . ,” which seemed to represent ultimate authority to other students in the group. The student with the nurse sister noted that the sister was somewhat of an in-your-face type, and the student wanted to reframe her concept of a nurse away from that image.

Although numerous stories about the bad behavior of physicians surfaced, a sense of the authority for or inevitability/privilege of this behavior seemed to permeate student responses. Whitehead (2007) notes that “clinical settings can be frenetic and chaotic. While doctors are often extremely busy, being rushed and overextended adds to their sense of self-importance, limiting interest in interaction.” The physician’s sense of being rushed is likely a contributor to frustrations that are expressed in negative interprofessional interactions.

Students who had seen or born the brunt of this negative behavior expressed one of two reactions. One student spoke of changing the culture of healthcare. Other students communicated a desire to avoid such behavior in their own future, but nonetheless appeared to accept that such behavior is just part of the package—and perhaps not within the purview of non-physician others to change.

#### Research Question 2a.

#### What Are the Expectations of OM Students Regarding Their Role Within the Team?

In focus group and interview discussions, students described their anticipated roles in teams. These roles include (a) team leader, (b) role model for younger practitioners or students, (c) teacher, (d) user of tools, and (e) mood setter or atmospheric influence. Additionally, at times physicians can also expect to be learners and team members. Students described some of the enhanced status and privileges of physicians they had observed including access to situations and resources not available to others. They further noted the seeming societal/institutional permission granted to physicians to behave in otherwise socially unacceptable ways—especially in their attitudes and behavior toward non-physician staff.

Student responses on the shared leadership scale of the ATHCTS indicated little willingness to see traditional physician roles adjusted. One of the most interesting student reflections was the relationship of this scale to the other three, which seem to be supportive of collaborative teamwork. The shared leadership scale relates to physician status, authority, and position of leadership. Whitehead notes that because the total amount of status is fixed and any redistribution of status to other healthcare providers will necessarily reduce the status of physicians, it is highly unlikely to see changes without

the support of physicians. Further, status is heavily dependent on other people's minds (in this case, patients' minds), which to date are according physicians top status. Finally, because physicians are trained to take on the responsibility of their roles in spite of the uncertainties with which they deal daily, they "eventually feel the legitimacy of their decision-making power" (Whitehead, 2007, p. 1012).

#### Research Question 2b.

#### What Are the Expectations of OM Students Regarding the Roles of Other Providers Within the Team?

OM student views of other healthcare providers are acquired from media, family, and prior work experiences. From their former experiences working with physicians, they expected non-physicians to be treated respectfully and included as legitimate contributors to the patient care process. Students' discussions revealed limited understanding of the roles, responsibilities, and daily work of providers from other disciplines. Student attitudes about other providers are not fixed: there was significant variation in expressed attitudes during the project period ranging from very positive initially to cautious of potential liability exposure late in the project. This caution leads to reduced interest/willingness to engage in truly effective teamwork.

Activity theory—one of the three components of the Knowledge Creation Metaphor—can help capture and organize some of the influences that play into healthcare providers' relationships with each other. As noted in Chapter Two, activity theory holds that all persons or entities working with a patient or program are "sharing an object" (Engeström, 2007). Sometimes OM students seemed to have already internalized the assumption that the object (patient) to be shared was theirs exclusively.

Findings from the quantitative portion of the study indicate that (a) students entering the osteopathic medical school have a generally positive attitude about teamwork as a means of assuring high-quality patient care, (b) they realize the effort and collaboration that is required for effective teamwork, and (c) they have some confidence in their teamwork skills. For students in the IHC option, these attitudes are more positive at the end of the program. IHC student responses are in contrast with those of the students on MSO teams. Post-test scales measuring MSO student attitudes toward the value and efficiency of teamwork and their self-assessment of teamwork skills were lower than those of ID students. The differences were statistically significant. Discussion of results from the quantitative portion of the study led students in the final focus group sessions to posit that curricular influences were negatively biasing student attitudes about other healthcare professionals and their potential contributions to the team.

### Research Question 3:

What in the IHC Experience Did the OM Students See as Particularly Powerful in Shaping or Influencing Their View of ID Healthcare Practice?

Many of the concepts discussed in this section relate not only to the immediate educational experience of the students but also to future patient safety issues. Students pointed to the patient safety video used in the orientation session as providing a very powerful message about the relationship between teamwork and patient safety. When they entered the program, students spoke to the importance of communication and their desire to improve their communication skills as part of the teamwork package. This video, for many of them, underlined the consequences of poor communication and

ineffective teamwork. With all that medical students have going on in their lives, having robust aids like this video to carry the messages becomes important.

While students appreciated the presence of the academic faculty in the orientation and review sessions, OM study participants expressed appreciation for the concrete (“been there; done that”) program instructions provided by the more advanced medical students who helped conduct the orientation. Participants were also extremely attentive to the messages conveyed by these students about their belief in the importance of ID skills and principles.

Having the opportunity to get acquainted in a relaxed atmosphere before having to divide the tasks to be completed in the first interview promoted sharing and identification of individual resources available to the team. Successfully completing the first elder visit that evening also built some sense of accomplishment and success in the team that seems important to future team function.

Seeing the competence and comfort of the nursing and health science students as they worked with the elders—particularly at the first visit—was a powerful experience for most of the medical students. OM students have minimal exposure to patient interactions during their first quarter—mostly consisting of patient simulations and role-play opportunities. Especially for those study participants with limited or no previous patient care experience, the House Calls patient contact was their first genuine patient contact as a medical student. Several OM students commented that the first elder visit was much easier for them because of the ease with which the nursing and health science students interacted with the patient.

Discussions of the relative value of introducing ID experiences early or later in the curriculum yielded consistent support for early and continuing experiences in the curriculum. Even students with some bias that discipline-specific competence was important to a successful ID team experience agreed that the IHC experience was appropriate and well-timed and should be followed with further training and application opportunities.

A final powerful influence from the IHC program was the experience of managing communications among student team members and the patient. The challenges associated with setting up and accomplishing appointments came from students, their school and personal schedules, and elder schedules and memories. As a result of the scheduling challenges, students became increasingly aware of the importance of redundancy and double-checking.

#### Research Question 4.

In What Ways Do Students Perceive That Their Practices and Beliefs About ID Practice Have Changed as a Result of Participation in the IHC Program?

By the middle of their first year of school, many OM students are ready to explore the role of healthcare team leader. The experience of working with students representing two other disciplines reshaped OM students' picture of the skills and abilities of those disciplines and the potential for cooperative interdisciplinary working in the future. Inclusion of the two-week summer preceptorship as an additional lens through which to view interactions between physicians and other health professionals added to the richness of their understanding of the how teams work and how their IHC experiences would be applied to the real world of healthcare.



The students' experience of learning about other disciplines through working with students from those disciplines on a focused project built more positive attitudes about the other disciplines and the resources they may offer to patients. Some of the students were especially aware that many resources were not well understood or used by physicians most of the time. Those students shared strategies with the rest of the group for learning about and accessing those ancillary resources. With some resignation, the students noted that the formal medical education curriculum and coursework will likely not include interdisciplinary theory or much information on other disciplines.

Students clearly understood the lesson of the importance of communication. In the second interviews, when they were asked what skills and knowledge were needed in order to provide high-quality and safe patient care, most mentioned communication near the top of their lists. Many said communication was the most important.

From the quantitative data, a sense of understanding emerges that teamwork is something that must be attended to and nurtured. The evidence indicates that students know skills exist that make teamworking more efficient and effective.

### Conclusions

The following section summarizes the conclusions drawn from the study organized around the research questions.

1. What beliefs do OM students bring to the IHC experience?
  - Students bring to the IHC Program images of healthcare providers and their interactions with each other as cobbled together from the media, family and friends, and personal experience in work settings.

- Students have some expectation of privilege and status, recognize the negative aspects of some physicians' behavior, express a desire to avoid such in the future, and express appreciation for contributions of other healthcare providers.
- Students bring a reasonably positive attitude about the contributions of teamwork to the quality of patient care and a recognition that teamwork requires effort. Most of these students see themselves as possessing many of the skills necessary for teamwork.
- The students are not disposed toward shared leadership although they do talk of delegation of duties and sharing of responsibilities for tasks to be accomplished.

2a. What are the expectations of OM students regarding their role on the team?

- The physician's role was consistently described as that of team leader, thinker, decider, and delegator of tasks and resources.
- Some students saw education of other providers as a physician's responsibility. Whether the students saw that as a ground-up process, site specific adaptation, or ongoing development was not clear, but the implication seemed to be that others (particularly nurses) did not know their jobs without being taught by the physician.
- The summer clinical preceptorship allowed students to learn more about other professions and observe different models of interaction among physicians and other healthcare personnel.

2b. What are the expectations of OM students regarding the roles of other providers within the team?

- From their former non-physician work roles, they expect other providers to be respected. As physicians, they expect to be in charge of the healthcare team.
  - Students did not express surprise to see women as physicians, but some students did express surprise to see men as nurses. There was consistent reference to physicians as he and nurses as she.
3. What in the IHC experience did the OM students see as particularly powerful in shaping or influencing their view of ID healthcare practice?
- Students spoke of being powerfully affected by the patient safety video shown at the orientation. Some students related the patient experience described in the video to their own family situation; other students linked the video's message to the quality challenges existing in the healthcare system they are preparing to enter. Either way, the video's story was disconcerting for most of them.
  - Having more advanced medical students talk with them at the orientation session was an important affirmation that learning about teamwork and patient safety through the IHC Program is important.
  - Actually seeing the nursing students and health science students interact with patients was an educational experience for most of the medical students. Medical students noted the spontaneity of interactions and competence at physical and functional patient assessment of the other students.
  - Students supported the idea that early ID experiences were helpful in promoting positive working relationships among the disciplines.
4. In what ways do students perceive that their practices and beliefs about ID practice have changed as a result of participation in the IHC program?

- Medical students are more aware of the competence of nurses and health educators and the resources available through them.
- The communication necessary to accomplish teamwork was more real; the diversity of skills and perspectives available through the interdisciplinary team seems to at least balance the challenges of arranging schedules.
- Students are developing an appreciation for the different styles of charting and patient interaction used by the different disciplines.
- Students communicated a better understanding and greater appreciation of the relationship between IP teamwork, quality of care, and patient safety.
- Attitudes toward team value, team efficiency, and team skills increased over the course of the program in the OM Classes of 2008 and 2009.

#### Implications for Future Interdisciplinary Education Programming in Medical Education

Many educators and researchers have written about how to implement successful interprofessional training activities. The Interdisciplinary House Calls Program and this research project have highlighted several important considerations for those planning such programs.

1. Emphasize effective teamwork and de-emphasize issues around status and leadership.

Medical students are consistently challenged to deal with the status and medicolegal issues related to shared leadership. Abandon the dualistic view of status/leadership currently in practice (physicians have it, others don't so much). Focus on working together to find solutions to patient care problems or system problems. Whitehead (2007) speaks of a continuum of collaboration focused on problem solving and

- emphasizing accuracy, frequency, and timeliness of communication; and defines critical attributes for successful interdisciplinary collaboration including shared goals, shared knowledge, and mutual respect.
2. Find, cultivate, and nurture a robust ID faculty. Assure representation from each participating discipline; program alumni can be a valuable resource.
  3. Find creative ways to “schedule” ID activities outside the traditional classroom hours and stick scrupulously to times schedules.
  4. Maintenance and enhancement of students’ generally positive pre-matriculation attitudes about teamwork in general and the idea of interdisciplinary teamwork in particular requires effort. Even with positive efforts, there will likely be dampening effects from the formal and hidden medical school curriculum.
  5. Educators can profitably use Intergroup Contact Theory, Activity Theory, and the Knowledge Creation Metaphor to guide program design. Principles from Intergroup Contact Theory (Allport, 1954; Pettigrew & Tropp, 2006b; Taylor & Moghaddam, 1994; Allport, 1954) and a Knowledge Creation Metaphor (Paavola et al., 2004) provided a framework for guiding students’ reflections. IHC students’ experienced a sanctioned activity where all the disciplines were considered equal, a clear task assignment existed, and no competition occurred within or between groups. These conditions were consistent with principles of intergroup contact theory. Consistent with the knowledge creation metaphor, students found the mediating elements and shared objects of the program to be helpful as they learned about their project and each other (Paavola et al., 2004).

## Recommendations for Further Studies

Future investigation might proceed in any of several directions. As with most research, when one answers some questions, one raises numerous others. The following areas of inquiry could yield valuable information for educators and practitioners.

- Regular follow-up with the participants of this study could allow the researcher to determine how participants' attitudes and beliefs shift as they progress through their training and enter practice.
- Exploring the interdisciplinary practice attitudes and behaviors of campus- and community-based physician faculty, as well as non-physician faculty, could identify their areas of influence on the hidden and formal curricula.
- Conducting similar explorations of the experiences of (a) OM students on medical student only (MSO) teams and (b) nursing and health science/education students on the IHC teams would also provide valuable insights for each program.
- Continuing investigation of "curriculum proof" schedule alternatives for getting students from multiple disciplines to work together could help identify potential and recommended alternatives.
- Exploration of the impact of training in interdisciplinary teamworking skills with greater emphasis on behavior rather than attitudes has promise. Further exploration of this highly volatile area is recommended.
- Exploration of students' experiences as patients or family/friends of patients might shed light on the impact of those experiences on their attitudes and beliefs about interdisciplinary practice.

- The role of gender in interdisciplinary education—especially the character and impact of the dual interactions of gender and status—should be explored starting with a meta-analysis of the research literature. Consideration of “women’s ways of knowing and telling” should be included in the study.
- Physician intervention on behalf of other healthcare providers in altercations between physicians and other staff should be studied.
- Replication of this study in other osteopathic programs and in allopathic programs could yield instructive outcomes and inform future program initiatives to improve interprofessional interactions and patient safety.

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# **APPENDIX A**

## **HOUSE CALLS PROGRAM MATERIALS:**

### **1. Program Matrix**

### **2. Orientation Session Agenda**

### **3. Debriefing Materials**

- **Facilitator Prep Guide**
  - **Session Agenda**
- **Brief and Debrief Checklist**

HOUSE CALLS CURRICULUM MATRIX

	Visit 1	Visit 2	Visit 3	Visit 4
KCOM Quarter	2	3	5	6
Visit Theme	<b>The Patient's Story</b>	<b>Assessment and Education: Prevention and Health Care System Access</b>	<b>Assessment and Education: Cultural, Social, and Spiritual Issues</b>	<b>Reciprocal Education/ Evaluation and Closure</b>
Interview	<p><b>General Patient History</b></p> <ol style="list-style-type: none"> <li>1. Tell me about your self ( this may include family, work, education, hobbies, travel, etc)</li> <li>2. Living situation (alone, w/ family, spouse) Who can help them at home if they are ill? Transportation (to health care facilities and in general) Are they socially in touch? (family friends, activities)</li> <li>3. Past Medical History (medical conditions the patient may be seen for on a regular basis or significant past medical events), i.e., Asthma, Myocardial Infarction, etc.</li> <li>4. List all medications (including over-the-counter medications, vitamins, and herbals)</li> <li>5. Do they have a regular physician? (primary care) Do they have other physicians?</li> <li>6. Do they have concerns regarding their health care?</li> <li>7. Safety concerns (security, household areas, i.e., steps, bathrooms) Has the patient adopted other safety strategies (falls, travel, swallowing, walking, etc.)? Fall prevention (Is this person's living environment safe? If not, why not?) (see 1-7)</li> <li>8. What are their strengths as they interact with the health care system? What strategies do they use to get the attention/services they need?</li> <li>9. What sustains them in difficult times? Is there a spiritual or belief system/ religious community that serves as a support system for them?</li> <li>10. Are there skills they want to develop to improve their outcomes in the health care system?</li> </ol>	<p><b>Functional Assessment</b></p> <ol style="list-style-type: none"> <li>1. Any recent change in patient's: <ol style="list-style-type: none"> <li>a. health status;</li> <li>b. medications; and</li> <li>c. functional or safety issues?</li> </ol> </li> <li>2. Has the patient been active in preventive care? <ol style="list-style-type: none"> <li>a. Yearly exams</li> <li>b. Healthy diet/supplements</li> <li>c. Screening exams, e.g. osteoporosis; colonoscopy and rectal exams, mammography</li> </ol> </li> <li>3. Has the patient utilized the health care system for acute care (illness related)?</li> <li>4. Are they concerned about the cost of their health care?.</li> <li>5. Does the patient have any vision difficulties.</li> <li>6. Does the patient have any hearing difficulties</li> <li>7. What are some expectations/ qualities they look for in a physician when establishing care?</li> <li>8. Any questions related to the unique health concerns of your patient</li> </ol>	<p><b>Psychosocial Assessment</b></p> <ol style="list-style-type: none"> <li>1. Any recent change in patient's: <ol style="list-style-type: none"> <li>a. health status;</li> <li>b. medications; and</li> <li>c. functional or safety issues?</li> </ol> </li> <li>2. Any change in or elaboration on available family and friends (relation to patient)</li> <li>3. What role does religion, faith, spirituality play in your life? Are they a person of faith? What tradition?</li> <li>4. How does spirituality affect the patient's attitude toward their health and aging? Do they belong to a religious community and how does that impact them in time of crisis?</li> <li>5. How does religion/spirituality impact their doctor/patient relationship? Has your patient or your patient's physician directly asked about their spirituality? If so, how did they respond? If they haven't been asked by their physician, do they want to be asked?</li> <li>6. Any questions related to the unique health concerns of your patient</li> </ol>	<p><b>Wellness Plan and Closure</b></p> <ol style="list-style-type: none"> <li>1. Any recent change in patient's: <ol style="list-style-type: none"> <li>a. health status;</li> <li>b. medications; and</li> <li>c. functional or safety issues?</li> </ol> </li> <li>2. What cultural or social influences affect your patient's health care decisions?</li> <li>3. What influences in your patient's upbringing may have affected their perception of the health care system and their health?</li> <li>4. Any questions related to the unique health concerns of your patient</li> <li>5. Health /wellness plan presentation by students</li> <li>6. Suggestions for improvement of "bedside manner" by elders</li> </ol> <p>Time for discussion with elder about student plans for future education, etc.</p>
Physical Exam	Vital Signs (BP,P,R) Heart and Lung sounds	Vital Signs (BP,P,R) Heart and Lung sounds HEENT Peripheral vascular exam	Vital Signs (BP,P,R) Heart and Lung sounds	Vital Signs (BP,P,R) Heart and Lung sounds

Education/ Wellness		Report on plans for assessment based on findings from initial conversation	Report of findings from 2nd visit. Education and wellness recommendations based on findings from second visit.	Report of findings from 3rd visit. Education and wellness recommendations based on findings from previous visits.
Required Assessment Tools		Katz ADL and/or Lawton-Brody IADL and/or Get-up and Go Nutrition Assessment	Mini-Mental Status Exam Geriatric Depression Scale HOPE or FICA (Faith and belief importance community address in care spiritual assessments)	
Optional Assessment Tools		Speech and Hearing Screen Drivers 55+ Self rating form Assessing Flexibility in Elderly Screen Vision Assessment	Duke-UNC Functional Social Support Questionnaire Holmes-Rahe Social Readjustment Scale	
Debriefing	<ul style="list-style-type: none"> <li>⇒ Student teams share highlights of patients' story with other teams</li> <li>⇒ Faculty provide an overview on administration of required assessment tools: <ul style="list-style-type: none"> <li>○ Katz ADL</li> <li>○ Lawton-Brody IADL</li> <li>○ Get-up and Go</li> <li>○ Nutrition Assessment</li> </ul> </li> <li>⇒ Faculty provide an overview on administration of optional assessment tools: <ul style="list-style-type: none"> <li>○ Speech and Hearing Screen</li> <li>○ Drivers 55+ Self rating form</li> <li>○ Assessing Flexibility in Elderly Screen</li> <li>○ Vision Assessment</li> </ul> </li> <li>⇒ Have teams discuss and develop assessment plan for their patient. Have several teams share plan and faculty provide guidance on appropriateness of selections.</li> <li>⇒ Have other teams talk about how they will share their assessment plan with their elder in visit 2.</li> <li>⇒ Collect reports on Visit 1.</li> </ul>	<ul style="list-style-type: none"> <li>⇒ Share new facets of patients' story with other teams including Visit 2 assessment results</li> <li>⇒ Faculty provide an overview on administration of required assessment tools: <ul style="list-style-type: none"> <li>○ Mini-Mental Status Exam</li> <li>○ Geriatric Depression Scale</li> <li>○ HOPE</li> <li>○ FICA</li> </ul> </li> <li>⇒ Faculty provide an overview on administration of optional assessment tools: <ul style="list-style-type: none"> <li>○ Duke-UNC Functional Social Support Questionnaire</li> <li>○ Holmes-Rahe Social Readjustment Scale</li> </ul> </li> <li>⇒ Have teams discuss and develop assessment plan for their 3<sup>rd</sup> visit.</li> <li>⇒ Have several teams share plan and faculty provide guidance on appropriateness of selections.</li> <li>⇒ Collect reports on Visit 2.</li> </ul>	<ul style="list-style-type: none"> <li>⇒ Share new/additional findings in patients' story with other teams including Visit 3 assessment results.</li> <li>⇒ Faculty provide an overview on: <ul style="list-style-type: none"> <li>○ wellness plan elements</li> <li>○ criteria for recommendations from elders for student improvement</li> </ul> </li> <li>⇒ Student teams identify/outline key points for wellness plan to be presented to patient in 4<sup>th</sup> visit</li> <li>⇒ Have several teams share plan and rationale for recommendations. Faculty provide guidance on appropriateness of selections.</li> </ul>	<ul style="list-style-type: none"> <li>⇒ Share highlights of patients' story with other teams including any additional assessment results</li> <li>⇒ Report on team findings shared with elder</li> <li>⇒ Report on elder suggestions for team improvement</li> <li>⇒ House Calls Program evaluation</li> </ul>

Education/ Wellness		Report on plans for assessment based on findings from initial conversation	Report of findings from 2nd visit. Education and wellness recommendations based on findings from second visit.	Report of findings from 3rd visit. Education and wellness recommendations based on findings from previous visits.
Required Assessment Tools		Katz ADL and/or Lawton-Brody IADL and/or Get-up and Go Nutrition Assessment	Mini-Mental Status Exam Geriatric Depression Scale HOPE or FICA (Faith and belief importance community address in care spiritual assessments)	
Optional Assessment Tools		Speech and Hearing Screen Drivers 55+ Self rating form Assessing Flexibility in Elderly Screen Vision Assessment	Duke-UNC Functional Social Support Questionnaire Holmes-Rahe Social Readjustment Scale	
Debriefing	<ul style="list-style-type: none"> <li>⇒ Student teams share highlights of patients' story with other teams</li> <li>⇒ Faculty provide an overview on administration of required assessment tools: <ul style="list-style-type: none"> <li>○ Katz ADL</li> <li>○ Lawton-Brody IADL</li> <li>○ Get-up and Go</li> <li>○ Nutrition Assessment</li> </ul> </li> <li>⇒ Faculty provide an overview on administration of optional assessment tools: <ul style="list-style-type: none"> <li>○ Speech and Hearing Screen</li> <li>○ Drivers 55+ Self rating form</li> <li>○ Assessing Flexibility in Elderly Screen</li> <li>○ Vision Assessment</li> </ul> </li> <li>⇒ Have teams discuss and develop assessment plan for their patient. Have several teams share plan and faculty provide guidance on appropriateness of selections.</li> <li>⇒ Have other teams talk about how they will share their assessment plan with their elder in visit 2.</li> <li>⇒ Collect reports on Visit 1.</li> </ul>	<ul style="list-style-type: none"> <li>⇒ Share new facets of patients' story with other teams including Visit 2 assessment results</li> <li>⇒ Faculty provide an overview on administration of required assessment tools: <ul style="list-style-type: none"> <li>○ Mini-Mental Status Exam</li> <li>○ Geriatric Depression Scale</li> <li>○ HOPE</li> <li>○ FICA</li> </ul> </li> <li>⇒ Faculty provide an overview on administration of optional assessment tools: <ul style="list-style-type: none"> <li>○ Duke-UNC Functional Social Support Questionnaire</li> <li>○ Holmes-Rahe Social Readjustment Scale</li> </ul> </li> <li>⇒ Have teams discuss and develop assessment plan for their 3<sup>rd</sup> visit.</li> <li>⇒ Have several teams share plan and faculty provide guidance on appropriateness of selections.</li> <li>⇒ Collect reports on Visit 2.</li> </ul>	<ul style="list-style-type: none"> <li>⇒ Share new/additional findings in patients' story with other teams including Visit 3 assessment results.</li> <li>⇒ Faculty provide an overview on: <ul style="list-style-type: none"> <li>○ wellness plan elements</li> <li>○ criteria for recommendations from elders for student improvement</li> </ul> </li> <li>⇒ Student teams identify/outline key points for wellness plan to be presented to patient in 4<sup>th</sup> visit</li> <li>⇒ Have several teams share plan and rationale for recommendations. Faculty provide guidance on appropriateness of selections.</li> </ul>	<ul style="list-style-type: none"> <li>⇒ Share highlights of patients' story with other teams including any additional assessment results</li> <li>⇒ Report on team findings shared with elder</li> <li>⇒ Report on elder suggestions for team improvement</li> <li>⇒ House Calls Program evaluation</li> </ul>

• **Debriefing Materials: Facilitator Prep Guide**

**Class of 2010 House Calls**  
(Interdisciplinary House Calls Teams)

Several of you have asked about the debriefing sessions to be held on Monday or Tuesday of next week. Teams will be scheduled 3 or 4 to a group – an outline for the session is shown in the box below.

Please be prepared:

1. Each team will present a report on their patient based on the information gathered in the first visit. Each team report and questions from others in the group should take no more than 5 minutes.
2. The group (of teams) will discuss assessment instruments in Visit 2 materials)

Please bring with you to the session:

3. Your House Calls manual (Please review all materials for visit 2 prior to this debriefing session.)
4. A written summary of your team’s first patient interview. (Use the question guide in your manual. A single copy per group is fine; just be sure all names are on the form.
5. A copy of the report form left with your elder.

Debriefing Session Outline	<p>Student teams share highlights of patient’s story with other teams (20 minutes)</p> <p>Review administration of required assessment tools: (5 minutes)</p> <ul style="list-style-type: none"> <li>• Katz ADL</li> <li>• Lawton Brody IADL</li> <li>• Get-up and Go</li> <li>• Nutrition Assessment</li> </ul> <p>Review administration of optional assessment tools: 7 minutes</p> <ul style="list-style-type: none"> <li>• Speech and hearing screen</li> <li>• Drivers 55+ self rating form</li> <li>• Assessing flexibility in elderly screen</li> <li>• Vision Assessment</li> </ul> <p>Teams huddle and discuss/develop an assessment plan for their patient. (5 minutes)</p> <p>Teams share plans with group and faculty provide guidance on appropriateness of assessment selections. (2 minutes each)</p> <p>Collect reports on Visit 1.</p>
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## Facilitator Prep Session

4:30 pm -- January 19 or 20, 2007

- I. **Introductions and Overview**
  - a. **House Calls Matrix**
  - b. Student forms (Interview/Report Guide, Elder Report Form)
- II. Review session agenda
  - a. Goal of session (Debrief visit 1 and prepare for visit 2)
  - b. Information already sent to students (see back of page)
- III. Review of Orientation Session
  - a. Were there elements of the orientation session that you found helpful to getting your team started? If so, please describe.
  - b. Are there elements that we should add or change to better prepare you for your initial team meeting?
- IV. Review of Visit #1 (15 minutes)
  - a. 3-4 minutes per team to present patient summary
  - b. Reinforce importance of non-medical information in the overall “patient story”
- V. Facilitate brief review of interdisciplinary interactions:
  - a. From your first “patient visit,” if there were challenges to working with students from other disciplines, please describe?
  - b. If you perceived any advantage to working with students from other disciplines, please describe.
- VI. Preparing for Visit #2
  - a. Facilitate a brief review of **required assessment tools** (The nutrition assessment is required for all; must administer at least one of the other three – ADL, IADL, Get-up and Go. It may be helpful to ask one of the teams which of the required tools would be best for their patient and why.) (5 minutes)
  - b. Facilitate a brief review of **optional assessment tools** (You may want to ask a different team which tools optional tools would be best for their patient and why.) (7 minutes)
  - c. (Note in manual: box in top right hand corner that indicates Required or Optional)
  - d. Have teams “huddle” and determine which tools they think they should use with their patient next visit and why. (5 minutes)
  - e. Have each team share their plan and rationale briefly; facilitate discussion. ( 2 minutes)
  - f. As a team, how do you plan to prepare for your next patient visit?
  - g. Remind the teams that a copy of each assessment used needs to be turned in with the visit #2 report.
- VII. Paperwork!
  - a. **Have each team turn in 1 summary sheet (narrative summary or a copy of pages 15 and 16 in the manual) with team member names on it.**
  - b. **If they have a copy of the patient report form with visit date, vital signs, etc., ask them to provide a copy to the AHEC office.**

• *Debriefing Materials: Brief and Debrief Checklist*

HOUSE CALLS TEAM EFFECTIVENESS **BRIEF** CHECKLIST  
SURVEY AND REFLECTIONS (Revised)

Please rate your team’s interactions on the criteria below:

		Low/ Poor				High/ Good
		1	2	3	4	5
1.	Who is on the team? Comments:					
2.	All members understand and agree upon goals? Comments:					
3.	Roles and responsibilities are understood? Comments:					
4.	What is our plan of care? Comments:					
5.	Staff and provider’s availability throughout the shift? Comments:					
6.	Workload among team members? Comments:					
7.	Availability of resources? Comments:					
8.	How is teamwork modeled in this program?					
9.	How does what you are experiencing in this program align with your discipline-specific coursework?					

Adapted from TeamSTEPPS: Strategies and Tools to Enhance Performance and Patient Safety. Agency for Healthcare Research and Quality, AHRQ Publication No. 06-0020-3

**HOUSE CALLS TEAM EFFECTIVENESS DEBRIEF CHECKLIST**  
**SURVEY AND REFLECTIONS (Revised)**

Please rate your team's interactions on the criteria below:

		Low/ Poor				High/ Good
		1	2	3	4	5
1.	Communications clear? Comments:					
2.	Roles and responsibilities understood? Comments:					
3.	Situation awareness maintained? Comments:					
4.	Workload distribution equitable? Comments:					
5.	Were errors made or avoided? Availability of resources? Comments:					
6.	Task assistance requested or offered? Comments:					
7.	What went well, what should change, what could improve? Comments:					
8.	How is teamwork modeled in this program?					
9.	How does what you are experiencing in this program align with your discipline-specific coursework?					

Adapted from TeamSTEPPS: Strategies and Tools to Enhance Performance and Patient Safety. Agency for Healthcare Research and Quality, AHRQ Publication No. 06-0020-3



# **APPENDIX B**

## **Research Materials**

- **Demographics Form**
- **Focus Group Questions**
- **Interview Questions**
- **Attitudes Toward Health Care Teams  
and Team Skills Scales**

## Participant Information

**Instructions:** Please complete the following 6 items to describe yourself and your background.

**I. Gender:**  female     male (check one)

**II. Age in Years:** \_\_\_\_\_ (write a number in the blank)

**III. Ethnicity:** (place a check in the box left of the single best response in the list below)

- |  |  |
|--|--|
| <input type="checkbox"/> African American / Black      | <input type="checkbox"/> Asian / Asian American            |
| <input type="checkbox"/> Hispanic / Latina/o           | <input type="checkbox"/> Native American / American Indian |
| <input type="checkbox"/> Mixed Ethnicity               | <input type="checkbox"/> White, non-Hispanic               |
| <input type="checkbox"/> Other (please specify: _____) |  |

**IV. College Degrees Earned** (write NONE in the first blank if none earned)

Degree (e.g., BS, MA)	Major Field (e.g., biology, nursing, psychology)
1.	
2.	
3.	

**V. Prior Work Experience in *Health Care Fields*** (write NONE in the first blank if no experience)

Job Title (e.g., nurse, pharmacist)	Number of Years Worked	Did the job include regular service... to adults 65+ years old?	on interdisciplinary teams? <sup>1</sup>
1.		yes / no	yes / no
2.		yes / no	yes / no
3.		yes / no	yes / no

<sup>1</sup> An interdisciplinary team involves thorough, systematic collaboration of several different health care professions (e.g., medicine, nursing, social work, psychology) for treatment planning and delivery.

**VI. Please rate the extent of your interaction with elders** (age 65+) outside of an employment context (e.g., with grandparents, neighbors, as a nursing home volunteer). Circle one rating on the following scale:

- |                   |             |                    |                 |                 |
|-------------------|-------------|--------------------|-----------------|-----------------|
| 0 =               | 1 =         | 2 =                | 3 =             | 4 =             |
| none/almost never | rare/yearly | occasional/monthly | frequent/weekly | extensive/daily |

## INDIVIDUAL SUBJECT INTERVIEWS

### First Interview

Like to take a few minutes to review issues from the focus group and see if there are any additional observations you'd like to make related to the content we discussed then.

1. Prior to medical school, what health care related experiences did you have interacting with professionals from other health disciplines?
  - What disciplines were represented?
  - What was the setting for the interaction?
  
2. Characterize/describe the interprofessional interaction(s) you observed or participated in that was/were the most meaningful for you.
  - What thoughts/feelings were expressed by the involved individuals?
  - What were your perceptions/feelings about the individuals?
  - What did you learn from those interactions about working with other professions?
  
3. Describe any prior formal preparation you have had for interprofessional teamwork in health care.
  - How did you get involved in the training?
  - Describe the training experience (content, methods, other participants, interactions)
  - In general, what were your perceptions/feelings (during the training? after the training?)
  - How did others in your circle of friends/colleagues/mentors see your involvement in interprofessional training?
    - Was there anyone who encouraged you?
    - Was there anyone who discouraged you?
  
4. What opportunities have you had to observe physicians interacting with other health professionals?
  - In what setting did the observation occur? (type of setting, professions involved, work related, other)
  - How would you characterize the relationships generally in observed situations?
    - What perceptions/feelings were expressed by workers about co-workers?
    - What perceptions/feelings were expressed by physicians about co-workers/other professionals?
  - What did you learn there about how physicians work or interact with other professionals?
  - What were your perceptions/feelings after you left that site?
  
5. What was your impression of the impact of those interactions on the delivery of health care?

6. Based on those observations, what did you learn there about how physicians work or interact with other professionals?
  - How did your learning align with what you are taught in class here?
  - How did it align with what you see practiced here?
7. Describe your team's first House Call visit. Tell me about your group's debriefing experience. Were there any surprises?
8. Some educators believe that early interprofessional experiences are best; others believe that later in the professional education trajectory is better. What are your thoughts? What advantages and/ disadvantages do you see?
9. Intergroup Contact Theory holds that within certain constraints, getting to know and/or working with individuals from other groups leads to more positive attitudes toward the group as a whole. Have you had experiences that are illustrative of this idea? Does it have application in this program so far for you?
10. What are some of the skills and attitudes you think you and other health care providers will need in order to provide safe and high quality patient care?
11. How do you think the medical education process is contributing to your developing those skills and attitudes? Or not?
12. What do you hope to learn from your participation in the Interprofessional House Calls Program?

## **Second interview:**

1. Since our last interview, describe any/a significant experience you have had interacting with professionals from other health disciplines.
  - What was the nature of the interaction? (professions involved, work-related, social, the setting, preparation, feelings/perceptions, other)
  - How would you characterize the interprofessional interactions you observed or participated in?
    - What thoughts/feelings were expressed by the involved individuals?
    - What were your perceptions/feelings about the individuals?
  - What did you learn from those interactions about working with other professions?
  - What were your perceptions/feelings after you left that situation?
2. What opportunities have you had to observe physicians interacting with other health professionals?
  - In what setting did the observation occur? (type of setting, professions involved, work related, other)
  - How would you characterize the relationships generally in observed situations?
    - What perceptions/feelings were expressed by workers about co-workers?
    - What perceptions/feelings were expressed by physicians about co-workers/other professionals?
  - What were your perceptions/feelings after you left that site?
3. What was your impression of the impact of those interactions on the delivery of health care?
4. Based on those observations, what did you learn there about how physicians work or interact with other professionals?
  - How did your learning align with what you are taught in class here?
  - How did it align with what you see practiced here?
5. Describe any learnings to date from your participation in the Interprofessional House Calls Program?

Adapted Questions:

1. How did your first House Call and debriefing experience go? Were there any surprises?
2. Some educators believe that early interprofessional experiences are best; others believe that later in the professional education trajectory is better. What are your thoughts? What advantages and/ disadvantages to you see?
3. Intergroup Contact Theory holds that within certain constraints, getting to know and/or working with individuals from other groups leads to more positive attitudes toward the group as a whole. Have you had experiences that are illustrative of this idea? Does it have application in this program so far for you?
4. What are some of the skills and attitudes needed by health care professionals to provide safe and high quality patient care?
5. How does the medical education process contribute to development of those skills and attitudes? Or not?
6. What do you hope to learn from your participation in the Interprofessional House Calls Program?

## QUESTIONS TO GUIDE FOCUS GROUP SESSIONS

### **Pre program focus session:**

Introductions of participants: How did you decide to volunteer for the Interprofessional House Calls Program? Have you had any formal preparation for interprofessional teamwork in health care? If so, please describe.

Prior to medical school, what experiences did you have working with professionals from other health disciplines?

What opportunities did you have to observe physicians interacting with other health professionals?

Can you give an example of a positive interaction? A negative interaction?

How do those interactions align with your professional learning to date?

What was your impression of the impact of those interactions on the delivery of health care?

What do you hope to learn from your participation in the Interprofessional House Calls Program?

### **Post program focus session:**

What opportunities have you had to observe or experience interprofessional practice since we last talked?

What opportunities did you have to observe physicians interacting with other health professionals?

Can you give an example of a positive interaction? A negative interaction?

How do those interactions align with your professional learning to date?

What was your impression of the impact of those interactions on the delivery of health care?

Describe any learning about interprofessional teamwork that you acquired from the Interprofessional House Calls Program?

Discuss any effect you think this learning will have on your future practice.

## ***Attitudes Toward Health Care Teams Scale***

<p>Factor 1: Team value</p> <ol style="list-style-type: none"> <li>1. The team approach permits health professionals to meet the needs of family caregivers as well as patients.</li> <li>2. Working on teams keeps most health professionals enthusiastic and interested in their jobs.</li> <li>3. Health professionals working on teams are more responsive than others to emotional and financial needs of patients</li> <li>4. The team approach makes the delivery of care more efficient</li> <li>5. Patients receiving team care are more likely than other patients to be treated as whole persons</li> <li>6. Hospital patients who receive team care are better prepared for discharge than other patients</li> <li>7. Having to report observations to the team helps team members better understand the work of other health professionals</li> <li>8. The give and take among team members help them to make better patient care decisions</li> <li>9. The team approach improves the quality of care to patients</li> <li>10. Developing a patient care plan with other team members avoids errors in delivering care</li> <li>11. Team meetings foster communication among team members from different disciplines</li> </ol>	<p>Factor 3: Shared leadership</p> <ol style="list-style-type: none"> <li>1. Physicians have the right to alter patient care plans developed by the team</li> <li>2. A team's primary purpose is to assist physicians in achieving treatment goals for the patient</li> <li>3. The physician has the ultimate legal responsibility for decisions made by the team</li> <li>4. The physician should not always have the final word in decisions made by healthcare teams</li> <li>5. Physicians are natural team leaders</li> </ol>
<p>Factor 2: Team efficiency</p> <ol style="list-style-type: none"> <li>1. When developing interdisciplinary patient care plans, much time is wasted translating jargon from other disciplines</li> <li>2. Developing an interdisciplinary patient care plan is excessively time consuming</li> <li>3. In most instances, the time required for team meetings could be better spent in other ways</li> <li>4. Working on teams unnecessarily complicates things most of the time</li> <li>5. Patients are less satisfied with their care when it is provided by a team</li> </ol>	<h3 style="text-align: center;"><i><b>Team Skills Survey</b></i></h3> <ol style="list-style-type: none"> <li>1. Function effectively in an interdisciplinary team</li> <li>2. Treat geriatric team members as colleagues</li> <li>3. Identify contributions to patient care that different disciplines can offer</li> <li>4. Apply your knowledge of geriatric principles for the care of older persons in a team care setting</li> <li>5. Ensure that patient/family preferences/goals are considered when developing the team's care plan</li> <li>6. Handle disagreements effectively</li> <li>7. Strengthen cooperation among disciplines</li> <li>8. Carry out responsibilities specific to your discipline's role on a team</li> <li>9. Address clinical issues succinctly in interdisciplinary meetings</li> <li>10. Participate actively at team meetings</li> <li>11. Develop an interdisciplinary care plan</li> <li>12. Adjust your care to support the team goals</li> <li>13. Develop intervention strategies that help patients attain goals</li> <li>14. Raise appropriate issues at team meetings</li> <li>15. Recognize when the team is not functioning well</li> <li>16. Intervene effectively to improve team functioning</li> <li>17. Help draw out team members who are not participating actively in meetings</li> </ol>



## VITA

Janet A. Head French grew up in Oklahoma and completed her undergraduate, nursing, and masters degrees there. Her work in Oklahoma included psychological testing and counseling, emergency medical services, and nursing. Since moving to Missouri, she has been involved in health professions workforce development through the Area Health Education Centers program. Medical education has played an increasingly important role in her professional life as she has become involved in geriatrics and interdisciplinary practice education.

Janet has been active in state and national health organizations, church, and civic activities. She has two children, two granddaughters, and lives with her husband in northern rural Missouri.