1998

Interdisciplinary health professions education: an exploration of two programs

Ann M. Valentine
Iowa State University

INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each original is also photographed in one exposure and is included in reduced form at the back of the book.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.

UMI

A Bell & Howell Information Company
300 North Zeeb Road, Ann Arbor MI 48106-1346 USA
313/761-4700 800/521-0600

Interdisciplinary health professions education: An exploration of two programs

by

Ann M. Valentine

A dissertation submitted to the graduate faculty

in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Major: Education (Higher Education)

Major Professors: Larry H. Ebbers and Daniel C. Robinson

Iowa State University

Ames, Iowa

1998

Graduate College

Iowa State University

This is to certify that the Doctoral dissertation of

Ann M. Valentine

has met the dissertation requirements of Iowa State University

Signature was redacted for privacy.

Co-Major Professor

Signature was redacted for privacy.

Co-Major Professor

Signature was redacted for privacy.

For the Major Program

Signature was redacted for privacy.

For the Graduate College

TABLE OF CONTENTS

INTRODUCTION

> "I don't think comprehensively integrated health care exists. When we draw it back down to health professions education, we have to ask how we can expect integrated care systems when our health professions training programs aren't integrated. I think there's a big gap—a sort of cognitive dissonance that educators in the health professions haven't wrestled with very extensively. We need to move away from the model of Father Socrates as the preeminent educational figure and towards the point where the role model is a functioning, collaborative set of practitioners, practicing together and actually improving the management and care of the patient. That's a complicated logistical challenge involving professional trust. (Henri R. Manasse, Jr., Ph.D., Vice President for Health Sciences, The University of Iowa, personal communication, April 1996)

The worth of an educational program may be measured in substantial part by the contribution that the program makes to the workforce preparedness of its participants. In recent years, health professions educators have increasingly come to recognize that there is an incongruence of expectations between the educational experiences of their students and the workplace demands of employers who hire graduates of their programs (Erkel, Nivens and Kennedy, 1995). For the most part, health professions education remains unidisciplinary, while the expectations of health care delivery workplaces are increasingly focused on collaboration and its resultant efficiencies (Clark, 1994a; Lucente, Rea, Vorce, & Yancey, 1995). In order to more closely match the educational process with the expectations of the

workplace, progressive health professions programs are increasingly turning to interdisciplinary classroom and clinical experiences.

Healthy People 2000, a report developed by the U.S. Department of Health and Human Services, offers a vision for the health of the United States. This vision includes "...significant reductions in preventable death and disability, enhanced quality of life, and greatly reduced disparities in the health status" of various populations in United States society (U. S. Department of Health and Human Services, 1991, p. 1). The Healthy People 2000 report places striking responsibility for achieving these goals on the shoulders of health professions educators. It is these educators who must design curricula and educational processes that will equip health care practitioners to assist the American public in the integration of healthy practices into their daily lives.

Additionally, the report charges America's health professionals to reach beyond expert knowledge in the basic and clinical sciences and to become "life-long learners, excellent communicators, good team players, managers of scarce resources, health care visionaries, and community leaders. The day of the solo practitioner dealing with the patient in isolation from other professionals," according to the report, "is past" (U.S. Department of Health and Human Services, 1991, p. 87). These dynamic changes in health care delivery and attendant changes in public expectations demand careful evaluation of the effectiveness of health professions education in our nation.

Dr. Roger Bulger of the Association of Academic Health Centers has called upon the health professions to draw the era of turf-conscious professionalism to a close and to build in its stead a patient-centered and community-oriented ethic focusing on the health needs of a changing population (Bulger, 1994, p.1). In response to economic and demographic forces, the nature of the health professions workplace itself is changing. Because of workplace changes, the collective professional ethos for the health professions must also change. These powerful dynamics will require practitioners from all disciplines to work in interdisciplinary teams, to competently access health and information technologies, and to understand the multiple functions required for adequate health care provision (Pew Health Professions Commission, 1995).

Given these powerful changes that are already at work, we have reached a juncture at which a careful exploratory study of health professions education is warranted. This dissertation project is a multisite descriptive study of two programs which have been instituted to address the nation's changing health professions workforce needs. The Interdisciplinary Training Grant at the University of New Mexico, funded by an agency of the federal government, and the Integrated Health Professions Education Program at the University of Iowa, funded by the Iowa state legislature, have similar theoretical underpinnings and educational goals, but very different programmatic configurations. This project is exploratory and is intended to establish a deeper understanding of the program configurations,

effectiveness measurements, and potential extrapolations of these model programs to other institutions and to other local demographic circumstances. From this research process, theories have emerged through the application of a grounded theory approach to data analysis. Through these emergent theories, we may find best practices that will be useful to other institutions who seek to build interdisciplinary educational opportunities.

TRENDS IN INTERDISCIPLINARY EDUCATION AND PRACTICE

Introduction

The theoretical foundations for interdisciplinary health professions education were laid in the 1950's and 1960's in the United States (Erkel, Nivens, and Kennedy, 1995; Temkin-Greener, 1983). Huff and Garolla (1995) assert that the history of advocacy for interdisciplinary education can be traced back as far as 1951. Temkin-Greener notes that writers as early as 1955 held that the notion of "health care teams" had been touted so often that it was unquestionably assumed to be a valid construct, even though a precise definition of teamwork and team configuration remained obscure (1983). In spite of the intervening history of waxing and waning interest in interdisciplinary education, it is now clear to many health care stakeholders that the current interest is not only strong but is fortified through funding for projects, interdisciplinary applications in a variety of settings, and a developing research thrust with a growing body of literature. Funding initiatives through the Kellogg, Pew, Rockefeller, Robert Wood Johnson and other private foundations, along with federal and state funding initiatives such as those from the Bureau of Health Professions (Erkel et al., 1995; Temkin-Greener, 1983; Rosenthal, Bissonette, Holden, & Brunelle, 1989) indicate a collective national impetus towards integration of health professions education with a specific emphasis on interprofessional, inter-collegiate, and multi-disciplinary learning opportunities.

The debate in recent years about health care reform shocked the nation as we realized how significantly financial and quality-of-care issues loomed before us (Manasse, 1997). In 1992, the United States spent $817 billion, or 14% of its Gross National Product (GNP), on health care--more than the combined federal expenditures for national defense and education (Pare & Freed, 1995). Based on 1995 figures, the United States will likely have spent over $1 trillion in the health care sector of the economy (Vincenzino, 1995). In spite of paying this staggering health care bill, the United States still ranked below many industrialized nations in crude indicators of health outcomes such as infant mortality rates and life span (Pare & Freed, 1995). The relationship between expenditures and quality of outcomes remains elusive at best.

As a nation, the United States proceeded with pragmatic, market-based health care reform even in the absence of a Congressional mandate to do so because the public and our health care providers realized that rising costs were not necessarily contributing to higher quality of care. As the public began to raise their expectations, and financial constraints reduced the resources available to the health care industry, the *status quo* was subject to increasing scrutiny (Lucente, Rea, Vorce, and Yancey, 1995). Cost containment measures, changing scopes of practice, higher customer expectations, rapidly changing technology in health care and communications, and shortages of primary care providers are all among the factors which have sent shock waves through the health care professions (Lucente et al.,

1995). Workplace redesigns of the roles of health care providers, in response to these shock waves, have left graduates of health care training programs with a dissonance upon entering the workforce which has been aptly labeled "practice shock" (Ivey, Strauch Brown, Teske, and Silverman, 1988; Connelly, 1978, p. 192). States are reviewing their respective practice acts to seek a re-definition of role boundaries and public accountability (Osterweis, McLaughlin, Manasse, and Hopper, eds., 1996).

What philosophical foundation and theoretical framework can we build that will address the educational needs of health professions graduates for the current marketplace and for the demands of the next decade? How can we prepare these students for a rapidly changing workforce, meeting the needs of a changing work environment and the health care needs of a changing population?

Primarily, we must be concerned about inculcating the values of an interdisciplinary health care mode but with attention to the strengths of the individual professions (Manasse, 1997). Historically, the value system of our culture has been towards the "rugged individualism" of our colonial heritage. That heritage has been reflected and amplified in the entrenched socialization processes for the health care professions. Academic values emphasizing individualism, competition, and unidisciplinary thinking have been ingrained in our modes of educational delivery (Clark, 1994b; Lucente et al., 1995). In spite of the mounting evidence in support of integrated professional education experiences, our health

professions schools remain largely uni-disciplinary, to the detriment of the students, their careers, and their patients (Larson, 1995; Erkel et al., 1995; Howard, 1996; Clark, 1994b). Given changing health care needs, though, we must realign our values and educational programs. The graduates who enter practice with the knowledge and skills to work in a *team* setting with *team*-minded problem solving will provide true leadership in meeting the needs of their clients, their professional settings, and the broader health care system (Ivey et al., 1988).

First, establishing this new values base can begin by redirecting education to become learner-centered. By focusing the education on the student rather than the teacher, we know we can create more critically thinking persons who are better able to internalize, and therefore "own", those skills which will contribute to their ongoing successes (Savoie & Hughes, 1994). Through self-directed learning, integration of basic and clinical sciences, early introduction to community services, and a more flexible curriculum (Larson, 1995; Kaufman, Mennin, Waterman, Duban, Hansbarger, Silverblatt, Obenshain, Kantrowitz, Becker, Samet, and Weise, 1989; Clark, 1994b; Hoffman & Ritchie, 1997), we begin to open doors to a more responsive, and more responsible, provision of educational service to health professions students.

Second, in establishing a new values base, we must also direct concern towards teamwork education that is applicable and useful in real life practice. At Columbia University, for example, the commitment to educating for employability

is made clear because collegiality and teamwork values are of great importance in the work place. The rigidity resulting from unidisciplinary immersion alone creates employees who are shackled by conformity, conservatism, lack of innovation, and resistance to change (Ivey et al., 1988): hardly the formula for success in a changing marketplace.

Third, we can create useful applications of this value system of integration and community service by creating and maintaining community-based, non-hospital teaching sites (Richards & Henry, 1993) that involve all health professions students in concert with serving community needs. Single-discipline curriculum changes, while representing a step in the right direction, are insufficient unless accompanied by the "cross-fertilization between disciplines" described by Larson (1995). This interdisciplinary exchange allows the students to experience for themselves the rich knowledge and experiential contributions which each of the disciplines brings to complex issues (Peck, 1996). The impediments to true collaboration which traditional, uni-disciplinary thinking propagates through orderliness and separation (Erkel et al., 1995) can successfully be replaced with effective, efficient, and collegial teams in both educational and clinical practice settings (Hirokawa; Erkel et al., 1995; Kaufman et al., 1989; Scaletti, personal communication, June 11, 1996).

A common response, for example, to market upheaval and financial pressure is organizational downsizing, a phenomenon which has dramatically affected health

care organizations. According to Howard, more than 60% of downsizing efforts fail to meet the organization's financial expectations or to have the desired lasting impact because the downsizing focuses on the elimination of jobs without an attendant focus on the "re-engineering" of the work process (1996). However, well designed and integrated teams are a critical building block of effective organizational structures. Employers are increasingly realizing that team work is effective in practice, and that persons who leave educational institutions with team values and skills in place are desirable employees to recruit (Laatsch, Milson, and Zimmer, 1986; Erkel et al., 1995).

Redeployment of personnel into interdisciplinary teams is increasingly common as health care organizations restructure their work processes to deliver service with heightened efficiency and improved patient outcomes (Robertson & McDaniel, 1995). The continued stratification of the professions is, in fact, a major hindrance to quality patient care (Laatsch et al., 1986). Specific health care team applications which are successful in practice include case management and clinical path coordination (Boutron, King, Matula, and Niznik, 1995), serving as focal point mechanisms for drawing together the collective expertise of team members.

In addition to serving as an effective means of patient care, teamwork is an effective educational mode in and of itself according to Clark (1994a). Working together is an effective way to relate classroom education to clinical practice, allowing students the opportunity to validate "book" knowledge while sharpening

necessary skills (Wieczorek et al., 1976). The hallmarks of quality learning are evident in the results of the many pilot interdisciplinary educational projects appearing in the literature (Erkel et al., 1995; Zungolo, 1994; Clark, 1994a; Holland, Roberts, Van Stewart, and Wright, 1994; Peck, 1996; Robertson & McDaniel, 1995; Kaufman et al., 1989). The process of team development itself is an important form of learning because it is experiential, collaborative, and cooperative (Clark, 1994a). Team-based learning allows for the re-socialization of the individual into new team-based norms and role expectations (Clark, 1994a). These qualities which will be necessary for professional survival in the changing marketplace because:

- Team work is the only realistic way to manage health care practice in this era of knowledge explosion. No one individual can provide quality, comprehensive health care (Temkin-Greener, 1983). What we must do as educators is to develop a sense of community among practitioners and use the resulting synergy for the benefit of the patients. Health professionals must learn to appreciate the skills each discipline imparts (Laatsch et al., 1986; Larson, 1995; Peck, 1996), while allowing for confidence in individual skills. Since no one practitioner can know everything that patients may need, we can at least *know who will know.*
- Team work is the only realistic way to manage health care practice in a Total Quality Management society. Humans have a need for stability and support. Through team membership, employees feel the value of their own work and

understand their contribution to something larger than themselves (Howard, 1996). The well-managed organization of the future will fully understand the process of work within its structure, will support teams in the delivery of that work, and will re-design work accordingly (Pare & Freed, 1995; Lucente et al., 1995).

- The reality of teams in the health care workplace is here, and we must transform health professions education to meet that reality. Rapid advances in knowledge, increasing technology application, personnel shortages in some professions and in some geographic areas, and broadening concepts of health and illness are all serving as impetus to the profusion of interprofessional teams in health care workplaces (Temkin-Greener, 1983). To name but a few, innovative team designs at Boston Children's Hospital (Pare & Freed, 1995); Lehigh Valley Hospital in Allentown, Pennsylvania (Boutron et al., 1995); and Augusta (Virginia) Hospital Corporation (Lucente et al., 1995) report successful restructuring efforts which have increased efficiency and improved patient outcomes.

Unfortunately, much of what has heretofore been billed as interdisciplinary education is really only an aggregation of solo practice modality, with separate learning activities and/or therapeutic interventions (Erkel et al., 1995). Overcoming the barriers which have been constructed for many decades between the health professions (Zungolo, 1994) will take concentrated efforts, since the hierarchical

mechanisms inherent in traditional medical education, in particular, inhibit professionals' ability to access and collaborate with others (Weinholtz, 1991). As Richards and Henry assert, the "essence" of education in the health professions is the socialization through which one acquires the values and notions of one's professional self (1993). While we would not desire to sweep away all remnants of disciplinary socialization, we can strive for respectful appreciation of the appropriate and collaborative roles of *all* the disciplines. In fact, in treading this exciting new road, many faculty members involved in projects around the nation have discovered new professional friendships and collaborative relationships which they value themselves (Zungolo, 1994; Academic Nurse, 1993; Laatsch et al., 1986).

Examples of successful programs in clinical practice and education

A distillation of the many pilot models of interdisciplinary education in use across the country reveals many common threads, many innovations, and many successes (Manasse, 1997). In both clinical and educational settings across the country, including traditional academic settings and retraining programs in health care centers, the constraints which impeded creativity and change are being successfully challenged. In fact, it is often the hallmark of a successful project that the considerable inertia of the university setting is avoided through creative and highly flexible, pragmatic means (Manasse, 1997).

Innovative, co-disciplinary coursework is reflected in projects at Marquette University (Laatsch et al., 1986); Case Western Reserve University (Peck, 1996); Columbia University (Academic Nurse, 1993); and a joint project of Butler University and Indiana University School of Nursing (Robertson & McDaniel, 1995), among others. In these instances, courageous faculty members and administrators seized opportunities to create courses which invite the contributions of students from two or more disciplines. By joining each other in classroom settings, students at theses institutions are meeting each other not only as students, but also as future professional colleagues.

A particularly energetic nonprofit organization in Louisville, Kentucky, called LIFE SPAN includes educators, community leaders, and long-term care administrators. Among other activities, LIFE SPAN has developed an interdisciplinary team curriculum, the purpose of which is to provide students with theoretical and experiential educational training in such team practice components as team dynamics, assessment, problem solving, and patient care planning (Holland et al., 1994). Students from many area educational institutions and a wide variety of disciplines enhance their practices and improve their abilities in team interactions.

Community and cultural immersion are key components of programs created in South Carolina; New Mexico; and Norfolk, Virginia. By actually living and practicing in rural communities, students in South Carolina are discovering that the personal and professional challenges inherent in rural health care are more than

offset by rewards and opportunities (Erkel et al., 1995). Concerted efforts are made to introduce students to the concepts of interdisciplinary team building, rural health care issues, and transcultural sensitivities. In Norfolk, Virginia, students from Old Dominion University; Norfolk State University; Hampton University; and Eastern Virginia Medical School join together in a year-long, interdisciplinary elective course in a medically underserved inner-city neighborhood (Berger & Schaffer, 1986). In this program, students focus on family units and assess medical, emotional, interpersonal, social, and life-style problems in relation to the overall health of the families (Berger & Schaffer, 1986). By learning and practicing in community settings, students in these resourceful programs are utilizing the skills of the many disciplines which are represented on the teams. The University of Rhode Island emphasizes the need for team care in geronotological units with a non-residential community immersion program at long term care facilities. The Rhode Island program includes both an interdisciplinary didactic component on campus and a strong emphasis on community service projects for elder patients (Clark, 1994a).

An interdisciplinary program termed the Integrated Health Professions Education Program (IHPEP) was launched by The University of Iowa in 1995. IHPEP teams include students in the colleges of dentistry, medicine, nursing and pharmacy. After receiving seminar-style training in team dynamics, interpersonal communication, interprofessional communication and team-building skills, these

interdisciplinary student teams travel together to clinical sites in rural Iowa. The teams cooperatively assess patients and then create joint recommendations for quality patient care plans. The IHPEP strives to achieve a team-building approach to clinical applications, serving as a model for health care provision for underserved and general populations in Iowa because the students learn and work collaboratively in community clinical settings (Swanson, Taylor, Valentine, and McCarthy, 1998).

Many of these programs and others like them share the common thread of assimilation of communications technology in the team building process. Particularly for rural areas of the U.S., electronic means of communications enhances team building and ameliorates the personal and professional isolation so often associated with rural practice settings. In any team setting, the logistics of assembling all members of a team in one physical space can be prohibitive except with the aid of technology. Educational programs intent upon imparting true team building skills would be remiss if they did not help future professionals learn how readily this perplexing problem can be overcome through electronic means (Holland et al., 1994). Indeed, the leadership of the Midwest Rural Telemedicine Consortium, based in Des Moines, Iowa, reports that the lack of assimilation of the technology by the practitioners already in the field is their greatest frustration--the technology itself is at the ready to provide high speed, high quality, and immediately accessible communication and teleconsultation to those who will only

use it (Maakestad & Eastman, personal communication, April 1, 1996). As we will note later, the University of New Mexico's interdisciplinary program has energetically pursued computer-based means of communications with the support of its college of medicine and is strengthening its overall curriculum by having done so. Taylor (1994) assserts that institutional leaders should embrace the exploitation of distance learning technologies as a corollary to improving instruction itself.

Examples of improved clinical outcomes and patient satisfaction levels can also be found as a direct result of interdisciplinary team care in the clinical setting. The Cardiovascular Program at Children's Hospital in Boston developed Clinical Practice Guidelines (CPG) through an interdisciplinary team which included physicians, nurses, respiratory therapists, social workers, and patient care coordinators. The first version of the CPG, a very clear product of interdisciplinary contributions to planning and care, reduced charges by 14.6% and decreased length of stay by 0.6 days (Pare & Freed, 1995). By revisiting the original plan, further changes were made to increase efficiency and patient benefits which decreased charges by an additional 5.6% and decreased the length of stay by an additional 0.8 days, bringing the hospital stay down to 4 days from 5.4 (Pare & Freed).

The use of clinical path—a definitive tool of collaborative care—in Lehigh Valley Hospital in Pennsylvania significantly reduced the length of stay for vascular patients. Before implementation of the clinical paths, the length of average stay was 13.7 days; in the first six months of application, the average length of stay

decreased to 8.7 days (Boutron et al., 1995). The interdisciplinary team also prepared educational materials to better prepare their patients for surgery. Between these materials and improved coordination of care, the patient satisfaction rating was raised to 92% (Boutron et al., 1995). The implementation of Hospital Based Managed Care—a multidisciplinary approach including CareMaps and nurse case managers—at the University of Iowa Hospitals and Clinics Division of Obstetrics and Gynecology not only allows for continuous improvement of care results, but also includes the most important member of the team in the improvement of care: the patient (Goode & Blegen, 1993).

Work redesign as the result of a hospital merger in Augusta, Virginia opened the door for innovation and change in work processes. Interdisciplinary patient care teams were created and staff received cross-training in a pilot unit of the newly merged hospital. Cross training efforts included didactic instruction, laboratory simulations, and actual clinical experience, and were taught by laboratory, physical therapy, respiratory therapy, IV therapy, and admitting office staff (Lucente et al., 1995). Analyzing length of stay data after implementation of the case management team concept revealed a decrease in length of stay by 17% (Lucente et al.). Importantly, 83% of the staff "also indicated that the team approach was the most positive aspect of the project (Lucente et al., p. 246)", and physician responses were remarkably positive.

The LIFE SPAN project in Kentucky, which we visited earlier, counts on community links for its success. But the community links did not create themselves--program leaders have invested in the establishment of linkages with community leaders and facilities and the investments did not stop there (Holland et al., 1994). Each and every elder patient who takes part in the program is given the designation "honorary adjunct LIFE SPAN faculty" in recognition of the vital contributions the patients make to the education of health professionals (Holland et al., p. 233). Thoughtful attention to details and the investment of significant time in cultivating positive relationships in the communities are substantial ways to create programs which can have long-lasting success.

The Department of Family Medicine at SUNY-Buffalo launched a community-oriented program in 1987 with the goal of providing high-quality primary care to two underserved rural populations; to enrich training opportunities for its students; and to seek its own financial viability. By all accounts, the program has "met and surpassed" its initial objectives (Rosenthal, Bissonette, Holden, and Brunelle, 1989) and a great deal of the credit goes to the investment made in community involvement in the design and delivery of the project. Early, consistent, and judicious consultation with community leadership in assessing and meeting community needs has been critical to allay resistance and establish in its stead positive working relationships. Programs with similarly strong commitments to community-orientation at the University of New Mexico and Eastern Virginia also

invest in faculty time in the community, and the resultant community support for educational programming is a great return. The significant attention paid to cultural competence at the University of New Mexico is perhaps reflective of the ethnic mix of the state but also exemplifies the strength of an holistic patient care orientation.

Fully and creatively financing interdisciplinary programs gives such innovations a priority and sends a signal of support to participating faculty. At the University of New Mexico, faculty members are asked to "circuit ride" to community sites to support educational efforts there (Kaufman et al., 1989). During the establishment of the SUNY-Buffalo community project sites described earlier, two faculty members spent about 20% of their time over an eight month period in establishing the new plan, while other faculty helped to staff the rural clinic. Administrative support in allowing faculty members the time needed to participate in such activities helps to finance new ventures. The University of New Mexico again stands out as a leader in flexibility and recognition of valuable innovations with a promotion and tenure plan to be discussed more fully later.

PROJECT METHODOLOGY

Introduction

An exploratory, collaborative research link was established between the Interdisciplinary Training Grant program at the University of New Mexico (UNM) and the Interdisciplinary Health Professions Education Program at the University of Iowa (UI) in 1995. The University of New Mexico program is a national leader in the application of problem-based learning; in the use of computer tutorials and technology learning applications for team-based learning; and in establishing solid community linkages for its programs. The University of Iowa program designed a conceptual framework for joint clinical experiences, including home visits as clinical sites, that has had powerful educational results.

It is also clear, as noted above, that significant educational barriers exist to the fuller implementation of interdisciplinary health professions education programs nation-wide. This dilemma is complex and compelling: how can we reduce barriers and provide effective health professions education that is responsive to the market place? It has also been established above that team effectiveness can be a crucial component in answering the economic effects of managed care while also providing high quality care. Have paradigms been created at these two universities which may be useful for other institutional settings in order to increase the effective use of educational resources in the U.S.?

Methodological notes: General project design

Glaser and Strauss used the term "unique constellation" to refer to the characteristics that make individual workplaces distinctive in character (1967, p. 122). The qualitative methodology employed in the construction of this project included concurrent data collection and analysis in order to produce a coherent and readable thick description (Geertz, 1973) of these two programs, exploring the "unique constellations" of factors that contributed to the design and deployment of the respective programs. As the data collection and analysis moved forward, themes emerged in the manner described by Glaser and Strauss' The Discovery of Grounded Theory: Strategies for Qualitative Research (1967).

The investigation has proceeded on many levels, since this project represents an educational dilemma of many dimensions. It has been necessary to "triage" the questions at hand to determine the foci of the investigation.

1. *Who needs the results of this investigation?* Primarily, the members of the Universities' faculty advisory committees, the deans of the participating colleges, and the administrators of the two Universities need to know how well their respective programs are living up to their objectives. In other words, the first groups of users for these data will be those internally involved in the programs' delivery and design. However, it would be fatuous to ignore the public interest in these two programs. For institutions that choose to build interdisciplinary

programs, this investigation seeks best practices and model approaches that may be replicable elsewhere.

2. *What exactly do we need to investigate?* It has been established above that the quality of health care delivery in this country will improve when members of the health professions disciplines learn to appreciate one another and understand the contributions each makes to quality patient care. Additionally, the funding agencies who support these two model programs seek to increase the number and mix of health professionals who practice in underserved areas. This investigation seeks indicators of success or failure of these two programs in meeting these major goal areas: health care team building and placement in underserved areas. For the states involved in these two projects, medically underserved areas are generally defined as those areas with sparser, rural populations. In some locales, however, underserved populations may be defined as those urban areas that experience a maldistribution of primary care providers.

3. *Is the data available anywhere else?* Data relevant to attitudinal disjunction among the health professions is abundant. However, it is not abundantly clear whether or not experiences such as those proposed by the design of these two programs serve to make positive attitudinal conjunction any more likely. Since these programs are relatively new, such data do not appear to exist yet in the literature. Neither does there appear to be abundant literature regarding the

effectiveness of such programs in the placement or retention of health professionals in underserved areas.

4. *How can the data best be gathered?* Gathering statistically significant data in these investigative areas is particularly difficult. One serious concern in the use of any quantitative measurement tool for these programs is that the research may be measuring the "ceiling effect". Because volunteering for these programs requires a high degree of commitment to the concept of interdisciplinary training, the participating students are very possibly already convinced of the need for teaming beyond what would be measurable in the general population of students. Another concern is that the volunteers for these projects have been relatively few in number so far, given the newness of the programs and the ability to serve only limited numbers of students in newer, developmental programs, thereby causing the *n* in applied statistical analysis to be quite small. Therefore, it is entirely possible that no measurement tool will yield statistically significant attitudinal changes until these programs are implemented across all health professions colleges. However, continued research in the realm of applicable measurement tools and the implementation of qualitative research techniques will yield immediately useful and rich research results. The importance of this project is therefore very clear: continued investigation is necessary to compare and analyze these programs and their effectiveness. Results of this investigation may well be precursory to additional quantitative or qualitative studies.

The project began in 1995 when I was assigned to manage the University of Iowa's interdisciplinary program. Having no experience in health professions education, I embarked on a literature review to examine trends in interdisciplinary health professions education. I encountered the UNM program and its director, Dr. Joseph Scaletti, establishing a learning expedition to support the effective use of the UI's resources in building its new program. I attempted to provide an appropriate feedback loop for the resources allocated to the program in order to concurrently and continuously improve the UI program through an exploratory, comparative evaluation of the UI program and the UNM program.

My personal involvement with the UI program began with a professional assignment for which I needed research in order to perform my assigned duties. It is acknowledged in qualitative research endeavors that overparticipation can lead to the phenomenon known as "going native" in which the original focus of the study is lost (Bogdan & Biklen, 1992). At the same time, a balance of research and participation efforts can generate strong and useful research hunches, leading to additional resources and contacts in the field (Bogdan & Biklen, 1992). Maintaining an appropriate balance has been the most significant challenge and weakness of this project. Without the immersion experience I had at the UI, I believe I would not have gained the entree necessary to have completed this project.

A qualitative, grounded theory design was used to explore and describe these two programs. This thickly descriptive, theory-generating study applied both

Glaserian (after Barney Glaser) and Straussian (after Anselm Strauss) grounded theory to the data (Glaser & Strauss, 1967; Strauss & Corbin, 1990) because it is an approach that facilitates analysis of the complexity and dynamics involved in the study subjects. Further, the late Anselm Strauss was a leading member of the editorial board of the international, interdisciplinary journal, Qualitative Health Research, in which the grounded theory approach is evident. Since the present study has applicability to health professions education, I chose to follow a methodology and research philosophy that has gained some measure of acceptance in the health professions realm through the work of Anselm Strauss, in particular.

Themes emerged from the data in the constant comparative process as explicit coding and analytic procedures continued. All field notes and transcripts were analyzed and coded to determine meaningful units of information. At the point that the data became saturated in any thematic area, additional data gathering was altered or ceased. Additionally, I tape recorded memoranda to myself as the analysis proceeded.

The key informants at both research loci signed informed consent forms, a sample of which is included in the Appendices. Human subject review at the University of Iowa resulted in an exemption under 46.101 (b) in accordance with paragraph 2; a copy of the signed Department of Health and Human Services Protection of Human Subjects form (OMB No. 0925-0637) is also appended.

During the process, I sought triangulation through participant observation, interviews both with groups and with individuals, and document analysis. Original data, including audio and video tapes, were secured in locked files until transcribed. After transcription, the original data were destroyed to protect confidentiality of student participants and patients to whom they may have referred in the interview process. Transcripts are secured in locked files at an educational institution. The specific research and analysis processes at each institution are as follows.

Research process at the UNM

I made three field site visits to UNM clinical and educational sites during 1996 and 1997. While much of the research was accomplished at the University's health sciences center on the main campus, additional trips to clinical sites in the state also yielded rich results. I kept field trip notes both in handwriting and by audio recording. Audio tapes were transcribed and the transcripts coded in columnar fashion on standard paper.

I engaged in personal interviews with a number of key informants employed at the University, including the program's director, Dr. Joseph Scaletti; faculty representatives on the program steering committee from the colleges of nursing, medicine, pharmacy, and allied health; professional support staff to the program; and the program's technology director. I was a participant observer with two

student teams and had interviews with other program personnel who chose to remain unidentified. I also had a personal interview with a UNM medical student and exchanged correspondence with her regarding the program and its community linkages. Confidentiality has been maintained for informants other than Dr. Scaletti. The program leaders at the UNM also opened their files of documents for my review, including case analyses, student surveys, placement data, and preceptor evaluations of student work. Program personnel assisted in procuring files and providing additional information as I needed.

Research at the UI

As noted, a concentration of my efforts at the University of Iowa was to design an ongoing program self-evaluation process for the interdisciplinary health professions pilot education program there. To this end, I held regular exit interviews with student teams who had participated in the program. The initial interview protocol was designed to answer questions regarding program delivery and was altered as the data in various areas became saturated. These interviews were electronically recorded and transcribed as described above. Initial interviews were videotaped, but the process was later changed to include only audiotape since the superior sound quality supported the transcription process. A matrix detailing the number and mix of students interviewed is attached in the Appendices.

I also regularly led meetings of the program's faculty advisory committee who helped to serve as debriefing assistants. Discussions with the group regarding the research both at the UI and at the UNM helped to direct the process. Meetings with the UI's central administrator for health sciences also helped to direct the research efforts and served as a debriefing mechanism. One-on-one interviews with a medical student at the UI and with a field preceptor provided additional depth. Greater detail regarding the evaluation design for each program is provided in later chapters.

Presentation of the research results

The research reporting process for this project reflects the grounded theory approach to data collection and analysis. Units of information which were by and large obtained through interviews (emic views) are presented in a mosaic, creating a macroethnographic view (Bodgan & Biklen, 1992) of these two programs. Major emergent themes from the data included visionary leadership, program configurations (including teaching and learning practices and evaluation techniques), student participation, and faculty and preceptor participation.

The balance of this dissertation focuses on the two cases at hand, then: the University of New Mexico interdisciplinary program and the University of Iowa program. From the research process, themes have emerged that could be precursory to a quantitative study or to further qualitative study. First, we turn

attention to the key individuals at each institution who have led the way in articulating the philosophical framework for their programs. Each program has had a visionary leader who sought to establish the concept of interdisciplinary education in practice. They are very different people at very different institutions, but each is an individual who is significantly committed to interdisciplinary health professions education. Subsequently the paper examines the program configuration at each institution, student participants, and preceptors and faculty.

VISIONARY LEADERSHIP

> In July of 1997, I was visiting with Dr. Andrew Scaletti of the University New Mexico's Interdisciplinary Health Professions Training Grant at the University's College of Medicine. Having heard that he is a native of the midwest, I asked Scaletti how he came to New Mexico and what had kept him there for more than twenty years. He turned and pointed to a building across the plaza at the health sciences center, saying: "Do you see that old building over there? When I first came here, it was a pop bottling plant. All of this here," spreading his arms across the center and its beautiful plaza, "was dry soil and tumbleweeds. They asked me if I wanted to come here to help build something, and I did." (Field notes, July 1996)

Dr. Joseph Scaletti: UNM visionary

The University of New Mexico's interdisciplinary training grant program has achieved many successes in its more than six years of operations. In my view, data gathered during this project indicates that a large measure of the success of the interdisciplinary program at the University of New Mexico School of Medicine (UNM-SOM) is attributable to the innovative leadership and institutional commitment of the University, the School of Medicine, and key individuals with creative vision and commitment. Particular attention is due to Dr. Joseph Scaletti, who is chief spokesperson for the program and its director.

Approximately fifteen years ago, the UNM-SOM began its foray into creative teaching-learning situations with the aid of a Robert Wood Johnson grant (Scaletti,

personal communication, May 1996). At that time, the School of Medicine sought to consolidate tutorial and didactic lecture processes for medical students with an emphasis on the problem-based learning method. This method, which is learner-centered and learner-directed, is an appropriate methodology for learners in the fields of nursing, pharmacy, and some of the allied health professions (Kaufman et al., 1989; Sobral, 1995; Higgins, 1994). By teaming together students from the professions of medicine, nursing, pharmacy, physical therapy, and respiratory therapy, the SOM sought to provide leadership in gaining a UNM Health Sciences Center-wide core of curriculum for primary care professions.

Although the state has yet to invest in the Interdisciplinary program at UNM, the program's leadership, including Dr. Scaletti, has been creative in leveraging the resources of several programs and community entities in building the strength and stability of the program. Since, according to Dr. Scaletti, the Dean of the School of Medicine is open to the concept of the program, innovations in leveraging funds have been well received. For example, the University is also the home of an Area Health Education Center (AHEC) grant, which is a federally-funded effort to gain cooperation between state entities (such as state Departments of Public Health) and educational institutions in meeting the health professions workforce needs of the state involved. Resources are routinely shared between the administration of the AHEC and the Interdisciplinary Health Professions Grant. This includes sharing

top administrators: the director of the AHEC is the Associate Director of the Interdisciplinary Health Professions Grant program and vice versa.

Scaletti is also creative in funding the necessary activities of the program. Preceptors provide the invaluable service of supervising and teaching students in the clinical sites, but do so without pay due to the "salesmanship" of Scaletti and the UNM's willingness to package a number of attractive no-cost or low-cost benefits. Preceptors at the field clinical sites are granted status as honorary adjunct faculty members of the UNM and are invited to list this status in their curriculum vitae. Additionally, field preceptors receive ticket discounts for University activities, library access, download access, and immediate response for continuing education seminars and computing support. Scaletti is frequently in contact with field preceptors and meets with them at their request (personal communication, June 11, 1996).

Scaletti also pursues the resources of the communities which are providing clinical sites for the program. By searching out low-cost housing options, recreational opportunities, meal donations, and other support for students, the program becomes more attractive and welcoming for students in the communities. The communities benefit through the opportunity to recruit and retain the future health care professionals whom they so badly need. Limited housing availability in some communities often results in offers from local professionals to board students, for example.

Scaletti emphasizes the interdisciplinary nature of the teams by stressing the importance and contributions made by team members other than physicians (personal communication, June 11, 1996). He notes, for example, the pragmatic role of social workers in determining key issues for the patients: if the patient has been debilitated for a long time, how long can this person afford to be away from work? Does this person have insurance? Case tutorials are designed to invite the contributions of many professions.

The design of individual case studies offer examples of the professional inclusiveness of the tutorial process. One case study, for instance, involves a person who has severely injured a ligament in the knee. By process and by case design, the students are urged towards consideration of social, economic, emotional, and therapeutic issues on behalf of their "paper patient." Scaletti is adamant that the case study sessions allow persons other than the medical and nursing students to shine. The tutorial case mentioned above involves an injured farmer; physical therapists and social workers contribute important perspectives by asking questions such as, "Does the farmer own the land? Does this farmer have health insurance? Does he or she have crop insurance?" These real life, daily living issues impact patient compliance with health care decisions and are keys to understanding holistic patient care.

Perhaps the most compelling distinction about Dr. Scaletti is his personal nature and dedication to pragmatic, high quality interdisciplinary education.

Scaletti fully commits his energy--and that of others--to achieving the goals of the program. As will be described later, this strength is also a weakness: Scaletti has been criticized by some faculty members on his steering committee for a single-minded pursuit of what they perceive to be a School of Medicine agenda, rather than an agenda constructed collaboratively. Additionally, questions of program growth outstripping the energy and time of its personnel have been raised (P.S., personal communication, June 11, 1996).

Dr. Henri Manasse: UI visionary

Dr. Henri Manasse holds a solid reputation as a health professions scholar and a higher education administrator. While Scaletti is a basic scientist who teaches in the UNM School of Medicine, Manasse served as Vice President for Health Sciences at the University of Iowa at the time that the Integrated Health Professions Education Program was begun. He committed financial resources to the administration of the program as well as personnel, space, and equipment through the Vice President's office--a controversial position based on his personal vision for interdisciplinary education.

In the edited version of his words, below, Manasse describes his vision for interdisciplinary health professions practice and education. He identifies the sources of his vision and the manner in which his philosophy was built through his own years of research, clinical practice, and education. The following quote was

taken from a personal interview with Henri Manasse on the University of Iowa campus, conducted in April 1996.

Dr. Manasse: Identifying gaps

I think the reductionist approach that we've taken in medicine has led us to the kind of problems we see today with respect to our credibility with the general public. I think the public generally assumes that their discreet problems will be taken care of very well by a highly specialized person. But if you were to ask the general public, "Are you being managed well from a global point of view?", most people wouldn't even know what it is that you're asking them.

When we as health professions educators look at it critically, we know that integrated health care doesn't happen. It's a profound experience to have a family physician who is very knowledgeable, and who really is as comprehensive as we all would like. It certainly isn't the common thread in health care. We talk about integrated health care systems but I don't think comprehensively integrated health care exists. When we draw it back down to health professions education, we have to ask how we can expect integrated care systems when our health professions training programs *aren't* integrated.

I don't see a lot of innovation in health professions education because the environments, particularly in research-based universities, don't look at education, educational experimentation or innovation as very high priorities. Consequently there are very few rewards for them. In fact, there are some negative consequences that arise from getting heavily involved in innovation early in an academic career because one has to get a laboratory going, get publications out, and so on. Many faculties, through their leadership--

including deans--don't value contributions to educational literature, or literature that might be a little bit out of the stream. Those of us who mentor young faculty have to advise them that there is a career risk in this kind of innovative programming. At the same time, there are very few health professionals that you talk to who aren't concerned about their own educational experiences and who will name major defects in those experiences.

My own development of a philosophy of interdisciplinary education comes from my own professional education as a pharmacist and from a reflection on several years of my early practice life in pharmacy. As I was in the midst of my undergraduate education in the 1960's, it first seemed clear to me that we were learning very little about *patients* and yet all of the pharmaceuticals that we were studying ultimately ended up *in* patients! Second, we knew very little about how the decisions were made about which pharmaceuticals to use, how to manage the patient on pharmaceuticals, and what the outcomes of intended therapeutic endpoints might be. I came to realize that these were issues that had to be developed collaboratively with the people who had the authority to prescribe, namely the physicians. Although there are other prescribers such as dentists or veterinarians, physicians are still the primary prescribers. I became increasingly frustrated with these major gaps in my educational program.

The frustration increased as I became enmeshed in the practice milieus as an apprentice. Patients would present their prescriptions and we pharmacists would be scratching our heads because we didn't have a good data base; we didn't have the skills to answer patients' questions. In fact, the professional ethos dictated that we *never* answer patient questions, but rather always direct the patients back to the doctor for their answers. I'd just gone through a five-year, very intensive academic program, only to tell the patient,

"Well, sorry, I can't tell you anything, you need to go back to your doctor." I saw my education as having identifiable deficits that left me unprepared for the professional role I had envisioned.

As a graduate student, I took a lot of courses in the applied social sciences and I began to understand patient behavior from a theoretical and conceptual point of view grounded in social psychology and in public health. It was clear to me that if the pharmacy profession was going to make any kind of gains to improve the quality of therapeutic care for patients using drugs, we'd have to think about a new model. I found camaraderie with students in medicine, nursing, and dentistry who'd also begun to think about these same kinds of things. We were not being socialized to behave effectively with other health professionals.

Later as a faculty member, I pursued the notion of interaction between learning styles, personality traits, and professional choices. Colleagues and I began to study the personality traits of nursing students, medical students, and pharmacy students. We learned that if we were to take a fingerprint, so to speak, of the personalities and behavioral traits of students attracted to the health professions, that they all attracted a different sort of person. We used the Meyers-Briggs and other standardized tests and it was fairly clear that pharmacy attracted persons who are not terribly extroverted, that tend to pay attention to details, and don't look at the bigger pictures. We determined that if in fact pharmacists were going to become team players and if they were going to be interactive and interprofessional, we were probably going to have to deal with this particular imprint question. In other words, interdisciplinary education was not just an administrative notion that I cooked up when I came to Iowa. This has been something I'd worked on for a long, long time.

Throughout my years as a dean at the University of Illinois, we continued talking about these issues. We were really asking, "How do we bring value to the ultimate decision-making, say by way of chemical therapy, where we can bring our knowledge to the table and improve care planning for the patients?" It became a major curriculum thrust and also a component in building a clinical faculty. We felt very strongly that we had to bring people on who could very effectively partner with physicians, and I underscore *partner*. We would not just become walking PDRs (Physician's Desk References), but rather become jointly focused on therapeutic care, therapeutic management, and role modeling.

As a dean, my responsibility was to work this out with the medical school dean and the medical department heads because their involvement was very critical. We were working fairly effectively with the nursing school at Illinois, and we shared our skills by teaching all of the nursing courses related to pharmaceuticals and therapeutics. We worked well with the nursing dean in an interdisciplinary effort.

I also think that a key piece of this is that we had very good leadership at the vice-chancellor level. We had a very open-minded physician as vice-chancellor of the University of Illinois. As deans, we used to put aside funding that would help stimulate interdisciplinary development. It was amazing how many faculty from other colleges all of a sudden found this to be a priority when the vice-chancellor put money on the table. In large measure, that is the philosophy behind my decision to allocate funding to the interdisciplinary project at Iowa directly from the vice president's office.

UNIVERSITY OF NEW MEXICO PROGRAM CONFIGURATION

Introduction

Each program can be described in terms of its program configuration and evaluation format. In addition, each of the programs exists within a framework that includes the culture of the institution, the demographics of the state, and the state's overall health care needs. As a rural state with a broadly dispersed population, New Mexico faces an ongoing shortage of health professionals who are willing to locate and stay in underserved parts of the state. In many instances, students are being educated at great cost to the state's taxpayers, only then to be recruited away by institutions elsewhere (Scaletti, personal communication, May 1996). One solution proposed by leadership at the University of the New Mexico's School of Medicine includes an immersion clinical experience for interdisciplinary teams of health professions students at rural clinical sites. By living in a rural community for six weeks and discovering for themselves the challenges and rewards of rural practice, the University hoped that students would be more likely to choose rural practice as an attractive career option. This research represents fieldwork observations, interviews, document searches, and literature review of the UNM-SOM interdisciplinary program at its central campus and clinical and community sites in three outlying communities.

Program goals and how they are met

Generally the program's goals are two-fold, although the two are very closely intertwined. One goal is that the program seeks to heighten interprofessional awareness such that wherever these student graduates go to commence their practices, they are aware of the strengths that other members of a health care team bring to the patients' benefit. The other, perhaps overriding goal, is to place and retain health care professionals in rural or other underserved areas. Population in the state tends to be widely dispersed outside of the one major metropolis and there is a significant problem in retaining primary care providers in rural areas. A problem facing the UNM is that the school is successful at recruiting native students into the program but many of the graduates are leaving the state to practice elsewhere. The Interdisciplinary Health Professions Training Grant program proposes a synergy by using team-based learning to heighten health care practice while also reducing the feelings of professional isolation often cited as a disincentive to rural practice (Scaletti, personal communication, May 1996).

The School of Medicine requires a clinical immersion experience of all medical students each summer and the interdisciplinary program is one option of many. Medical students had been reluctant to choose rural sites for immersion experiences, and subsequently for their professional practices, because of personal and professional isolation. Students who did choose rural sites took every opportunity to travel back to their homes, coming back every single weekend or

choosing only those sites that are within a commuting distance of the campus (Scaletti, personal communication, June 96). By not becoming immersed in their practice communities, students were not giving themselves the opportunity –nor was the community investing in the recruitment opportunity--to really become acquainted with the local subcultures or the people there. Scaletti and School of Medicine leadership saw the team notion as a way to reduce students' lonesomeness: if an interdisciplinary group of students from the University goes to the same site, then they will be more likely to socialize amongst themselves and to feel more at home.

The interdisciplinary program at the University of New Mexico uses the same problem-based learning methodology employed by the School of Medicine, using case studies and learner-centered involvement in the learning process (Kaufman, Mennin, Waterman, et al., 1989). During the fall semester of each year, the Interdisciplinary Health Professions Training Grant program recruits teams of students from its health sciences colleges and allied health programs as well as participants from the fields of social work, ministry, and psychology. The program is committed to involving any professional field of study from which students express an interest in participation, making for a very wide variety of disciplinary representation on many of the field teams. The program also allows students from other institutions in the state to participate such as Emergency Medical Technicians from another college. The focus is to promote problem-based learning, integrating

teams in that learning mode, and then integrating students into their assigned communities.

The program has also used this notion of integration to invest clinical site communities in the educational process by asking them, "What will you do to recruit and retain these people whose skills you need?" Communities are responding with offers of housing, food, support, and acculturation. An emphasis of the program is to retain the students in the state as professionals, so the communities make a strong commitment to helping the students to feel welcomed and appreciated. Communities are supported by the UNM with e-mail and other computer training, perquisites for preceptors, and a community coordinator for the program.

The role of the community coordinator, which Scaletti has affectionately labeled "den mother", is crucial. The rural coordinator is a den mother, counselor and coordinator all at once. These people work part-time for three or four months out of the year and get a lump-sum contract for $3-3.5 thousand for their efforts. The program does not pay field preceptors, but this role is viewed as one that ought to be paid. They may hire someone who has a health sciences background, but such training is not absolutely necessary. Scaletti notes that the rural coordinators must be persons who are sympathetic to the issues health care practitioners face in their careers and education.

Overall, the rural coordinator must be someone who can help the students to feel at home in the new community. Spouses and children often come along during the six-week immersion experience since family involvement is crucial to being truly integrated in the community. Rural coordinators help to situate the students as they find suitable housing, recreation opportunities, banking, a dentist, and other necessary services (Scaletti, June 1996).

Rural coordinators take their work seriously, usually preparing written materials for the students and helping to arrange activities for them. Cultural competence is an area in which the rural coordinators have been particularly effective. For example, the rural coordinator in an area with a significant Native American population has been thoughtful and creative in helping the program to build a strong component of cultural competence by arranging appropriate and inviting activities for student participants.

The state is home to a large number of Native American peoples and tribal lands with attendant implications for health care professionals in the state. As a component of the Interdisciplinary Health Professions Training Grant's community immersion experiences, students are introduced to tribal ways and issues. Cultural concerns such as the degree of eye contact, and even the degree of forthrightness with which a practitioner discusses the patient's own health conditions, varies by tribal group. Legal issues can also arise, for example, regarding sovereignty of tribal grounds (Scaletti, personal communication, June 1996). Health care

practitioners with responsibilities to report legal incidents and to deal with tribal ways need cultural sensitivity training in order to successfully do so.

The original clinical site for the UNM program is situated in an area of great socioeconomic contrast. Because the area is home to the harvest of natural gas and other fuels, there are some persons in the area who experience financial success and live in good comfort. However, the area is also the home of tribal lands and great economic hardship. Leadership of the UNM program recognized early on that cultural sensitivity would be crucial in gaining community support for the program, and also to support student success in the community. Therefore, each student team in the area is treated to a summer barbecue at the home of a local physician, and a woman from a local Native American nation speaks with the students about the importance of communications skills as they are practiced by tribal members.

Communities are finding great payoff in participating in the program, and not exclusively in the medical students as one might suppose (Scaletti, personal communication, June 1996). The multiplicity of professions taking part is the great community benefit, including dental hygienists, physical therapists, occupational therapists, and social workers. A key to this program is that Scaletti and others recognize what is an important aspect of interdisciplinary care: the program considers the whole person PLUS the context in which the person lives and works. "Whole person" includes physical health, occupation, emotional well-being, age, and gender. "Context" includes economics, family, culture, and home situation.

The health care team in this paradigm includes insurance, employment, home assistance, and resources (such drugs, wheelchair, air conditioning, and hypo-allergenic bedding).

The pragmatic nature of having social workers involved in the teams is again evident. These are the people who, in effect, "ground" the teams in the realities of everyday living for the patients. For example, in asking if the patient has been debilitated for a long time, teams may ask: "How long can this person afford to be away from work? Does this person have insurance?" These issues will affect the patients' compliance with health care prescriptions. The program is clearly designed to include the professions other than just medicine and nursing in finding solutions to the patients' problems (N.F., personal communication, June 1996).

Another key component in this multi-level learning design is the technology training and support offered to students and preceptors who take part in the program. Once students have been recruited and selected, generally in late October or early November, optional computer training is provided for the remainder of the fall semester. The UNM-SOM recently established a policy requiring computer ownership for all of its students (included as part of their financial aid package), but since other students at the University are not similarly required to own computers, there is a distinct disparity in computer skills amongst team members (T.G., personal communication, June 1996). The UNM-SOM is willing to dedicate resources to this skill building as a result of its overall commitment to innovation

and progress. Computer skills that are emphasized include e-mail and internet searching, with particular emphasis on the National Library of Medicine's *Grateful Med*. These computer skills represent an integral part of the success of the program in enticing students to consider rural practice since e-mail, internet resource searches, and other electronic communications links help to ease the professional isolation which is often cited by practitioners as a drawback to rural practice (Holland, Roberts, Van Stewart, & Wright, 1994). By providing these skills in a non-graded and supportive seminar atmosphere, the students are able to gain important workplace skills in a non-threatening way so that "technology anxiety" is reduced.

The School of Medicine's change of policy such that each of their students is required to own a computer has significantly impacted the interdisciplinary program and its ability to emphasize computer skills. The college committed resources to support a LAN (Local Area Network) independent of the University's decision making process in order to facilitate driving their curriculum to a more paperless level. At the time of my last visit, the college was running their LAN off of one computer, taking one person about a half a day a week to administer (T.G., personal communication, October 1996). Although they have not resolved all of the issues regarding a prescription of a particular unit (e.g., they recommend MacIntosh but they have a number of students with IBM-compatibles), the LAN is functional and progressive.

As noted, other health sciences schools do not require computer ownership. The consequent disparity in computer ability among the students on the interdisciplinary teams prompts the interdisciplinary program to offer tutorials to those who need it. The UNM-SOM LAN uses a particular software package for e-mail that is cost-effective and will run across IBM and MacIntosh capability. By teaching students to a greater comfort level with communications technology and on-line research services, the UNM bolsters the students' feelings of connectedness with each other, the University, and the cutting edge developments in their professions.

The program has also been working diligently to pilot desktop videoconferencing as a corollary to e-mail and group work. Not surprisingly, they are having some difficulty with the "last mile problem." In communications technology vernacular the "last mile" means a lack of connectivity to the desktop and does not necessarily reflect a particular distance. Program leadership has selected CU, See Me from Cornell University using POTS (Plain Old Telephone Service) lines as a cost-attractive option, but perhaps using a modified telephone service to accomplish a better audio than can be had through conventional CU, See Me. The demographics of the state are figuring into the problem such that T-1 lines there are limited. A computer technologist from the UNM-SOM is working on these issues.

Administrative leadership for the program, technology support, and curriculum leadership stem largely from the School of Medicine. Although a very collegial interdisciplinary faculty group meets year-round to support the program, there is still some dissension regarding the perceived heavy-handedness of the School of Medicine. One faculty member has expressed concern and frustration that the other colleges are being encouraged to follow the School of Medicine program rather than constructing the interdisciplinary program in a collaborative way (N.F., personal communication, June 1996).

The program is in fact administratively housed within the School of Medicine including job titles, telephone service, faculty assignments and staff support, lending clear recognition that the program is a valued, and semi-permanent part of the landscape. In very important ways, the School of Medicine's support for the program has been its lifeline and it seems likely that this issue will be successfully negotiated through the faculty group as a matter of time.

As an example of a related issue facing the faculty group, Medicine is starting to drive towards a core curriculum concept. This offers another point of dissension: what is the appropriate core? What should it--or shouldn't it--include? The School of Nursing faculty member specifically mentioned that practice modalities differ (personal communication, June 1996). Nursing is uncomfortable with the core curriculum concept proposed by Medicine, recommending that the core not be based so much on science and anatomy as on communications, ethics, and team

dynamics. Finding a commonly acceptable core will be a significant challenge for the group.

From January through March of each year, the students' teams meet on Friday afternoons from 2:00 until 5:00 (and sometimes beyond) to work together on case studies. Initial cases are developed by faculty members with students eventually taking over the development and presentation of cases with multidisciplinary interest. Students read through cases, identify issues about which they must learn in order to adequately serve the "patient", and exchange information about the various roles that their individual professions may play in the provision of health care to the "patient" at hand.

Students read through a thoroughly prepared case description which is generally based on an actual patient seen by one of the case's developers. During their first case discussion, members of the student team attempt to identify pertinent health, economic, and psychosocial issues that may be bearing on the patient's well-being. After identifying the issues that they deem to be relevant, the students discuss potential solutions and the learning issues that they will need to individually or collectively research in their discipline-specific areas of expertise. In subsequent seminar meetings, the results of the research are shared through presentation, discussion, and demonstrations.

The process of a case study generally lasts for two, three-hour sessions, but may well be extended for a third seminar session, dependent upon the complexity

of the case at hand and the depth of student research and interaction. The responsibility to identify key health and learning issues, and then to discover the answers, lies wholly with the students themselves, although there is faculty supervision of the discussion and its results. Each and every case is evaluated by the student teams along with the preceptor's contribution to the learning process. The merit of this evaluation step will be discussed at another point in this paper, but the stated goal is for the continued support of developing outstanding cases for study.

During April and May, students meet with preceptors at their rural clinical sites and attend workshops with the preceptors. These initial meetings are community events, including banquet dinners with state legislators, hospital CEOs, and community leaders as they welcome the students to their communities. Students are assisted in finding housing, child care, recreation, banking, and other services by the community coordinator who has been hired by the program. Students move to their clinical site communities in May, spending six weeks or more in clinical work with a local preceptor.

The interdisciplinary teams *do not* work together in the clinical settings, but continue meeting on Friday afternoons to discuss case studies that they develop from their community experiences. This lack of team collaboration in the clinical setting raises the very serious question as to whether the program is truly affecting interdisciplinary health care practice. The students are learning to work in parallel,

rather than truly working on efficient care of the same patient at the same time. While one might expect the awareness of other professionals' roles, training, and expertise to be greatly heightened by the classroom process as designed by the UNM-SOM, the lack in interdisciplinary patient contact is one point that appears to be a significant weakness in programmatic design.

In July of 1996, a tutorial team was discussing the case of a child born very prematurely and suffering from attendant respiratory distress and developmental delays. Although the team of students discussing the case included occupational therapy, speech pathology, physical therapy, nursing, medicine, and social work, only one of the team members had ever actually seen the child. The team, in fact, was meeting to discuss the case in the community hall just a very few miles from the child's home. Rather than meet together to physically assess the child and the home surroundings in which the child received care from a visiting nurse, the team was restricted to meeting in the classroom style prescribed by the program. When I asked the team about what benefit they felt they may have derived from assessing the child as a team, they remarked that a lack of opportunity to collaborate in assessment and treatment recommendation was a frustration for them. While the UNM program does configure exceptionally large teams--ten health care professionals in an examination setting at one time would indeed be likely to overwhelm any patient--the potential for subgroups of three to four members working together would provide a very strong educational opportunity. The

pragmatic application of the case study discussion would be enhanced greatly if members of the team had the same first-hand base of information regarding the patient. It is also likely that the learning process regarding the roles of the various members of the health care team would be greatly enhanced by the first -hand observation of the team members at work with the patient (M.F., personal communication, June 1996).

The UNM's success rate in placing student graduates of the program in rural practices is at 25-30%, good enough to satisfy their funding agencies (Scaletti, personal communication, May 1996). Currently, about 75 students per fiscal year take part in the program. Students from any institution--including local Emergency Medical Technicians in one community--are welcomed. Additionally, students from any discipline are welcomed with approval from their department chair.

Scaletti does not get involved at all in granting academic credit except to encourage what he calls "rigid faculty" to allow students to negotiate credit for the tutorials, gaining seminar credit or partial credit in some courses for what they are learning by participating in the program. One step that the program takes in this regard is to bring recalcitrant faculty members to the tutorial sessions to help them understand how vigorous and organized the process is. The program builds learning communities in the tutorial sessions, strengthened by the students' awareness of problem-based learning methodology in other classes. Meanwhile, the faculty group is also teaching other faculty and investing them in the process.

Evaluation component: UNM

The UNM-SOM established an ambitious evaluation program for its Interdisciplinary Health Professions Training Grant during the first year of operations. The evaluations have been conducted at a multitude of junctures and by a wide variety of program stakeholders including students, managers, professors, and preceptors. Both formative and summative evaluations have been attempted from the beginning of the program; some of this incongruence is attributable to variance in operational definitions used for the terms "summative" and "formative" by UNM-SOM personnel.

The evaluation system described by the UNM-SOM program in a document dated Spring, 1995 outlines the many evaluation instruments already in use and also those which were under development at that time (Evaluation System). The program defined formative evaluations as those "(u)sed to gather feedback on the teaching/learning process and related activities. Assessment of group dynamics, faculty input, materials & resources made available to students. Primarily qualitative data." This category includes five evaluation junctures, including evaluation of the tutorial sessions; evaluation by the tutor facilitator; use of tutor/facilitator "anecdotals"; evaluation of the tutor/facilitator orientation workshop; and the preceptor/facilitator orientation workshop.

Summative evaluations were defined as those "(u)sed to measure outcomes relating student gains in confidence levels, teamwork abilities and the positive

effects of Interdisciplinary education. Rural training effects and computer usage are measured. Consists of both quantitative and qualitative data." The two instruments comprising this category include a student pretest/posttest survey and a preceptorship/computer survey.

Longitudinal evaluations are defined in an intuitively clear fashion. The project attempts to track graduates of the program and to measure some longer term effects of the program's participation in community recruitment. An alumni survey, preceptor survey, and employer survey complete this category. Evaluation instruments in development at the time of this study included a demographic analysis of participants and nonparticipants, a longitudinal analysis survey, and a preceptor/community response to the program assessment. The first chronological juncture of evaluations for student participant is the pretest attitudinal survey. The survey instrument was designed to measure student perceptions of interprofessional roles, expectations, and confidence levels. In Section A of the measurement instrument, students are asked to rate the potential contributions of five health professions and allied health professions to team care, using a Likert scale ranging from 0 to 4. Specific discipline practices for pharmacists, physical therapists, physicians, respiratory therapists, and family nurse practitioners are rated on the questions which vary by professions, disallowing any comparisons between professions. The questions are designed to address the traditional perceptions of discipline-specific practice, rather than assessing potentially team-

specific behaviors. As an example, the questions asked regarding pharmacists are as follows:

1. How often do pharmacists counsel patients concerning compliance with drug therapy?

2. How often do pharmacists evaluate therapy for proper indication for use?

3. How often do pharmacists evaluate dosages of prescriptions they dispense?

4. How often do pharmacists discuss therapy with prescribers?

5. How often do pharmacists provide drug information to other health care providers?

Section B of the instrument measures student confidence levels in such skill areas as team communications, case-based problem solving, and interdisciplinary team care. Section C of the instrument addresses student perceptions of the usefulness of consultation with other professions and the amount and kind of education necessary for licensure in the five disciplines listed. An apparent oddity in the design of the instrument is that the program involves as many as ten disciplines per team and clinical site, meaning that the instrument ignores many of the professions that the students will encounter during their program experiences. The only discernible explanation for this oversight is that the instrument was designed for the first year of operations and has not been updated since that time. Sadly, the instrument has not been updated at least in part because the data being

generated by the evaluation effort in general receives very little attention (M. F., personal communication, June 1996; R.G., personal communication, June 1996).

Students are also asked to fill out a questionnaire at the conclusion of each case study, generally every two to three weeks, for the duration of the entire experience. The Problem (Case) Evaluation Form is used both on and off campus, and has been in the same form since the program's inception. The following questions are asked of all students team members in response to each case discussed:

1. Did this problem contain any errors? (i.e. incorrect data, missing data, obsolete procedures, spelling errors, etc.) Please indicate corrections, be as specific as possible.

2. How did this problem work in your group? (Led to appropriate learning? Led to frustration? Some good and some bad points?) Please indicate corrections.

3. Did your group identify or use any UNIQUE resources for this problem? (Articles, books, audio visual materials). Please list those that you feel would significantly benefit others using this case.

4. Did this problem invoke multidisciplinary issues? List specific learning issues related to your discipline. Did this problem invoke issues related to a rural practice?

5. Please list additional issues in your discipline that would be appropriate for this case/problem. (UNM Problem (Case) Evaluation Form).

Responses to these surveys are aggregated by program personnel according to site, case number, and date. Although aggregating the data provides for an overall picture of the responses received, it does not allow for tracking the "tone" of any individual's responses. Individual responses are housed in the program offices, though, and are available for review. Examining individual response forms evidences clearly that many students are not filling out the forms completely, often skipping questions entirely.

During a field trip to a clinical site in June, 1996, it became imminently clear that neither students nor preceptors take these particular evaluations very seriously, at least in that particular setting. The case discussion regarding a premature baby, described in part above, was concluding. The discussion had been intensive and well researched with obvious indications that participants had felt a community responsibility to their "patient" and to their respective disciplines. However, the subject of the evaluations was treated with satirical play, with the preceptor allowing only three minutes at the end of a three-hour discussion session for completing the forms. Those who were not finished in the allotted time would miss the ride back to the central campus (a three hour drive through the mountains) or risk one of the preceptors missing a critical meeting with his Dean. A better solution might be a de-briefing/interview session at the end of the rotation supplemented by a diary or log book for students to keep during the clinical experiences.

Although the program appears to be collecting and housing an impressive array of data, the value of data obtained under such conditions is questionable. Additionally, the students continue to evaluate some cases which have been in the program's delivery now for more than six years. Since these data receive little or no attention from program leaders or participants (N.F., personal communication, June 1996; R.G., personal communication, June 1996) this particular survey may well be a good candidate for elimination or at least very significant reduction in frequency. A questionnaire which is currently administered at the end of the program in order to evaluate the preceptorship/program experience could potentially be re-formatted to include some general questions on the case/problem solving format. By then also combining a streamlined posttest survey *cum* program evaluation with an exit interview, many survey instruments could be eliminated in favor of higher quality information.

UNIVERSITY OF IOWA PROGRAM CONFIGURATION

Introduction

The University of Iowa's Integrated Health Professions Education Program is a state-funded strategy aimed at integrating the education of health professions students to encourage them to work cooperatively as practitioners in underserved areas. In 1994, the state legislature financed the University's proposal to build this new educational approach. The collaboration of the University's health sciences colleges is crucial to the delivery of the program, aimed at assuring that underserved and general populations in the state receive necessary primary care services.

The office of the governor and the state legislature had expressed concern about the needs of the medically underserved in the state (generally the most rural portions of the state). Additionally, there was a need for more primary health care providers to balance a perceived disproportionate supply of specialists and subspecialists. The University leadership, particularly Dr. Manasse, addressed policy leaders' concerns by offering a comprehensive initiative emphasizing primary care fields in the general curricula, bolstering the teaching and clinical outreach provided by the university to rural communities, and training for health care students to work together in teams. As part of its overall strategic plan, Manasse's office sought to integrate health professions education and create

collaborative atmosphere between the units of the center (Manasse, personal communication, September 1995).

The pilot program began in the spring of 1995 and was administered through the Office of the Vice President for Health Sciences. This research is written to describe the program as it existed until mid-1997; the future of the program is uncertain given the administrative changes at the University since the resignation of Dr. Manasse to pursue other opportunities. One informant has reported that no student teams have been configured since the summer of 1997 and that the program is using its funding for other purposes such as faculty mini-grants for interdisciplinary projects (P.S., April 1998). While many members of the faculty steering committee are faithful to the concept of the program, they find it difficult to continue without clear administrative or professional support (P.G., personal communication, September 1997). Still, the University's new administrator for health professions has expressed a commitment to keeping the program active and may be able to pursue arrangement of muti-collegiate teams in the future (K.C., personal communication, September 1997).

Program goals and how they are met

To support the philosophy of an integrated health sciences center, the program recruited graduate level students representing the Colleges of Dentistry, Medicine, Nursing, and Pharmacy. In addition to team-oriented training and

classroom case studies, the program students travel to a rural medical clinic to assess patients and create treatment recommendations for them under the tutelage of licensed care providers. Since the original pilot team, the program expanded in size and scope to include more clinical sites and many more teams.

During September 1995, the faculty committee for the UI program spent considerable effort at recruiting student participants and at creating a vigorous and useful course of study for the program. The faculty committed themselves to providing a short, intensive, and invigorating experience as the avenue by which to expand student enrollments. Rotations are offered year-round and are completed in roughly three and one-half weeks. Rotations include both classroom seminar sessions and *in situ* clinical experiences.

The rotations include a series of seminar sessions held on campus and designed to "jump start" the team building process while also supporting the students' technology skills. The focus of seminar activities is the clinical experiences the teams will share, enabling students to explore with each other and with a team of faculty members the basic elements of team building for a new interdisciplinary health care paradigm. The seminars emphasize interpersonal group relationships, dynamics, and learning. Components of the seminars include the following:

1. Faculty-prepared Case Study
2. Role Reversal Exercise: "Walk a Mile in My Shoes"
3. Team Communications Participatory Lecture

4. Orientation to Rural Practice: Games and Discussion

5. Health Sciences Scavenger Hunt

6. Health Sciences Library/Internet Orientation

7. Mock Telehealth Consultation (Under Development)

The case study used in the first seminar session is one prepared by a faculty member and is based on an actual patient seen at the University family practice clinic. The student clinical teams are assembled and spend time reviewing the case, discussing its implications, and creating initial treatment recommendations for the patient. The students are encouraged to assess one another's expertise on the issues presented in the case and begin processing the various types and levels of information being generated. Although the case study used in the UI program does not approach the vigor of that used in the New Mexico program, this exercise is a reasonable introduction to group assessment and discussion. While it should not be held out to be a true problem-based learning experience, the case study exercise assists the students in learning to depend on one another and to feel confident about their own expertise (C.E., personal communication, September 1995).

During the seminars, time is also devoted to a role reversal exercise which assigns a health professions faculty member and a student from that discipline to make a presentation about a profession other than their own. For example, after making an inventory of their own stock of knowledge, a nursing student and nursing instructor would make a presentation about dentistry. Each presentation

consists of the student/faculty team attempting to answer questions such as: "What are this profession's education requirements?" "What does this profession do in patient evaluation?" "How does this profession get licensed?" "What contributions do these professionals make to team health care?" The practical use of this exercise is to enable the students to begin to understand the intricacies involved in many aspects of each of the health professions represented on their clinical teams regarding education, licensure, scope of practice, and continuing education requirements.

Upon volunteering to enter the program, students are given a package of information containing summary information about the program, several articles, and a book about the development and implementation of team-oriented health care. The course text, *Interprofessional Care and Collaborative Practice* (Casto & Julia, 1994), was team authored by a diverse range of health care and social services specialists. The text offers usable articulations of team based care and case studies. These readings offer the students a broad-based understanding of the basics of a team approach to health care in preparation for their own team clinical experiences.

A participatory lecture regarding team dynamics and communication gives the students the opportunity to begin forming functional teams while still on the University campus and in the safety net of the seminar setting. Additionally, a physician with experience in rural settings has designed games and other active learning opportunities for the students to become acculturated to the state's rural

subcultures. By taking part in these activities in their clinical teams, the students begin to forge the trust relationships that they will need in the clinics.

The Health Sciences Scavenger Hunt is an activity based on the childhood game that requires the "hunters" to be inventive, imaginative, and resourceful in order to find the items on their list. The stated objective is that "students will learn to access various technology-based, community, and human resources for the provision of primary health care in underserved areas (University of Iowa Health Sciences Scavenger Hunt)." Students are asked to "assess the community" in which they will be taking their clinical experiences by locating such services as the nearest Red Cross, Visiting Nurse's Association, Planned Parenthood, and Congregate Meals, among others. Students also use the Internet to locate persons, articles, and homepages that may be of use to them in their clinical sites. Finally, the Scavenger Hunt assigns a mini-case study involving a drug that is quite new to the market and which would not be found in printed resources such as the Physician's Desk Reference, further encouraging the use of on-line resources. The exercise is designed to provide a catalyst for team building while also acquainting the student teams with the rural communities in which they will be working.

The program had acquired a number of Apple Media Conference stations with QuickTime communications hardware in an effort to begin simulated consultations on line. The Midwest Rural Telemedicine Consortium, headquartered in Des Moines, Iowa, offered to assist with mock teleconsultations for the students

and expressed an interest in an ongoing relationship with program leadership (Maakestad and Eastman, personal communication, 1996). The technology would enable students in the field to consult with university professoriate on the campus, to request assistance with patient records, or to perform on-line research in the field clinical settings.

In addition to team-oriented training and classroom case studies, the students travel to a medical clinic to assess patients and create treatment recommendations for them under the supervision of licensed care providers. During an average rotation, students spend three business days seeing patients as a team. The days are spread out during the three-week rotation and may occur before all of the seminar sessions have been conducted.

When in the clinical setting, the team first spends time with the patient's chart, then jointly assesses the patient through examination and interviewing. The team then immediately meets in conference to decide on joint recommendations for the patient's treatment. Through this process of discussion and exchange, the students are learning a great deal about the expertise that other members of the team contribute and they are also finding a new sense of confidence in the expertise they themselves can offer (Nellie, personal communication, August 1996).

Since these are students rather than licensed professionals, their recommendations must be given to the care provider who is legally responsible for the patient at hand. When the students encounter questions, they are encouraged

to use electronic resources to seek the answers as a team rather than relying on the field preceptor, but the support of a well-qualified preceptor is both educationally and professionally necessary. Unlike the UNM model, these student teams work together with one preceptor in the field. Dentists, physician's assistants, physicians, and pharmacists have all served as successful field preceptors for interdisciplinary student teams in a variety of clinical settings.

Thus far, clinical settings have included long term care facilities, family practice clinics, indigent care clinics, and home visits. In fact, home visits have been especially powerful learning sites for the student teams. *Nancy* describes a home visit she attended during an August 1996 rotation:

> This is an example of how things don't always translate from the hospital to the home setting. We saw a guy who had a lot of bed ulcers and ulcers on his heels due to diabetes. He had been sent home from the hospital with " rookie boots" that are wool and go all the way up the thigh. These boots are very occlusive, but this guy lives in a trailer and his air conditioning isn't very efficient, so it's hot and sweaty in there. The heat is contradictory to having the ulcers heal, and the discomfort means that he's less likely to be compliant in wearing the boots. A couple of us on the team are backpackers and we suggested that he wear polypropylene backpacking socks with lower, Styrofoam boots to protect his heels. We couldn't imagine how he could stand to be in his house and wear those big woolly stockings they had given him, and I'm sure they hadn't thought about that in the hospital.
>
> This was really self-directed learning: we didn't have a preceptor looking over our shoulder, so we had to take responsibility and help these

patients. It was really heartening to hear the medical student on our team mention that he hadn't realized how the situation of the patient would change in their home environment. In the hospital, conditions can be controlled, but we have to be concerned about safety and health in a different way when we're in the home environment. We saw one lady who had a prosthetic left eye and who had compromised vision in her other eye. We walked around the house and noticed that she had a lot of throw rugs with the corners curled up—we were concerned about fall precautions. She couldn't see the corners where her carpets were turned up, and she had some peripheral neuropathy due to diabetes so she couldn't feel real well with her feet, either. We noticed that she had a phone with large numbers but it was placed outside of her range of vision. Those are concerns that we might not have ever addressed if we only saw her in a clinical setting.

Another team was escorted to a home visit by a local preceptor to visit a woman they considered to be "intellectually challenged." *Kimberly* describes a situation that is a case study dream, but a living human nightmare:

I knew this was going to be an interesting day as soon as we got into this neighborhood. Peggy, our preceptor, had been to this place before, and she told us to be careful to lock our doors because it's a questionable area. She told us we'd be fine as long as everyone knew we were with her.

We went into the bedroom where this lady was and there were cockroaches running across the bed. She is so obese that she can't get through the bedroom door; it's pretty incredible. The lady was so obese that we couldn't find her kneecaps to do a reflex check and there were skin infections inside the rolls of fat. The odor and filth were tough to deal with—I was thankful that someone had left a box of latex gloves there. She is so

> obese that she doesn't even have any clothes and they just have her wrapped in a sheet. She can't get through the bedroom door but people are still bringing her the food. The family takes care of her and they use her benefits checks to take care of expenses. We had some questions about that. We talked to Peggy about considering abuse charges and how to go about reporting it (August 1996).

Evaluation component: UI program

Measuring how the Integrated Health Professions Education Program has delivered on its programmatic goals so far presents a challenging combination of educational research components. The program is subject to "the external demand for accountability and the internal drive for program improvement" (Hanson & Price, 1992) that one would expect of any University program. The evaluation of the Interdisciplinary program is inextricably entwined with the overall performance indicators which are expected of the University as a whole, and particularly the new concept of a collaborative, multi-collegiate center for health sciences.

Given the complexities of assessing the program, more than one form of assessment is necessary. Of primary importance to all methods used to assess the success of the Interdisciplinary program is the evaluation and improvement of student learning and performance in a team-based setting. The program is still in relative infancy and has not yet fully developed a student learning assessment tool in concert with this new learning paradigm. The University of New Mexico program, discussed previously, has much to offer in this regard and has established

some measurement indicators for student performance in the team-based, learner-centered mode.

The University of Iowa's assessment has focused thus far on measuring affective changes in student attitudes rather than on achievement of cognitive changes. According to the literature, the disjunction of professional roles and attitudes amongst health care professionals is a major impediment to effective teamwork and therefore the conjunction of roles and attitudes is a major focus of the Integrated Health Professions Education Program initiative. Regardless of the team configuration in question, the literature clearly indicates a disjunction of attitudes among the professionals engaged in team care delivery. The disjunction appears to rest on role perceptions and misperceptions, with attendant discrepancies in the expectations various team members have for themselves and others. According to Temkin-Greener, "this discrepancy is expressed in *structural* terms, i.e. the allocation of roles and status, as well as in *normative* terms, i.e. the different values and norms" (1983) of the involved professions. That the discrepancy exists is no wonder, given that most health care professionals have not been trained together, have not had common curricular experiences, and have not been trained to work in teams (Benson and Ducanis, 1995).

Because the program requires ongoing assessment and improvement, a multi-faceted evaluation plan was instituted in the fall of 1995 and spring of 1996. Goals of the program have included the establishment of a commitment to

multidisciplinary work and the enhancement of the students' understanding of the roles and individual scope of practice for a range of health professions. Therefore, an evaluation tool was created by myself, in conjunction with an evaluation specialist at the University, for the measurement of attitudinal changes in student participants. This tool is designed to assess whether changes occur in the way students perceive other health care professionals' training and expertise in patient treatment. Preliminary results lack force due to the small number of student participants in each team rotation. In the mean time, additional research into the possible refinement of the measurement tool continued for many months.

Another clear component of the program's stated goals is the ability of the students to work together in a team setting. Videotaping the student teams in action allowed for another important evaluation opportunity. A noted an expert in the field of teamwork and communication studies at the University of Iowa was awarded a substantial portion of his contract to assess the students in their team skills and measure their improvements from the beginning of their rotation experiences to the end.

A third component of the evaluation format designed to help complete a clearer picture of the program's effectiveness has been accomplished through exit interviews conducted by myself at the conclusion of each team's clinical rotation assignment. Students who had completed a rotation were interviewed in order to further hone program delivery, but also to gauge the effectiveness of the program in

attitudinal adjustments and perceptions of rural health care practice in a more personal and in-depth fashion than can be accomplished through the use of a written instrument. Exit interviews were first used during the fall 1995 semester when all veterans of the program were invited to participate in the first interview session.

Overall, these students come to appreciate each other's skills in a new way in a very short period of time working together. They have identified some themes that they think contributed to their team effectiveness:

- Respect for the other professions. "None of us came even close to stepping out of our bounds, and we discussed everything through."
- Patient-centered care. "We had a short time to work and nobody was trying to prove anything professionally. We were focused on the patients."
- Professional, goal-oriented focus. "Good team interaction means everybody leaves their ego at home."
- Self-confidence and participation. "The key is bouncing ideas off each other, and everybody took part."
- Team work resocialization. "We had equal power and respect."

The long-term questions, of course, have yet to be answered. Will these students be more likely to practice in teams? Will they use their newfound understanding of the other professions to support their practices in underserved areas because they will feel comfortable in accessing other professionals and

referring patients to them in appropriate circumstances? We will approach some of these questions in a subsequent chapter addressing the students in the UI program.

UNIVERSITY OF NEW MEXICO STUDENTS

Introduction

Encountering each of the health professions means encountering a subculture that is different from others in American society. With health professions come vocabularies, attitudes, and mores particular to their disciplines. Teaching these distinct professions to work together is a challenge facing higher education today, and is both a reflection of, and answer to, changing attitudes towards health care provision. Clients of health care professionals (a term often preferred over "patients" these days) are increasingly demanding health care in a coordinated, collaborative mode (Swanson, Taylor, Valentine, and McCarthy, 1998). The hierarchical traditions of medical school are under siege by consumers who need and want physicians who can be more than technically competent; we want physicians who *care*. Indeed, the hierarchy of caring is also being challenged by consumers who are learning to pay for what they need--which may often be the services of a coordinated team or a mid-level provider rather than the more expensive solution of a physician.

When Howard Becker and others wrote Boys in White: Student Culture in Medical School (1992), they described a male dominated, constrictive and largely inhumane institution. Lately, the standards at some medical schools have been veering towards a more collegial and egalitarian framework that embraces

interprofessional collaboration and a real sense of service to the client. In this sort of nouveau medical school at the University of New Mexico, I met *Beth.*

Beth is a nontraditional medical student in a nontraditional medical school. She is a thirty-five year-old mother with a thirteen year-old son. Beth originally prepared herself to serve the public health as a nurse, receiving a baccalaureate degree. When nursing was not able to provide the personal and professional satisfaction she craved, Beth sought something more. After some personal searching, she decided on medical school and then sought a school that would prepare her for the challenges of family practice:

> When I was researching on schools to go to, and was looking at all the schools listed in numerical order of where they fit, and discovered the way that they rate schools is by the number of research dollars that they get in—in most lists—now, I went on, because I knew I was interested in family practice. I said, "OK, let's see...what are the top ten family practice programs, rated by schools, rated by residents who are rating the schools, and going by that." (personal communication, June 1996)

Beth ultimately chose the University of New Mexico because it is a smaller, but highly rated, family practice-oriented medical school with a highly innovative and successful interdisciplinary training program. Beth recognizes that having been a practicing nurse is beneficial to her as she develops her skills as a physician. She brings to medical school an holistic attitude towards clients and their personal circumstances:

> In our discussion group last week, we were discussing the fact that there are not home visits for med students at any point in time during any of their rotations. And the one necessity that there really should be. And you know, so many times, a patient comes to us and we think of them as they're here, they're going to do everything we tell them to do. And one of my classmates brought up the notion that the patients have really asked us into their circle—they are asking us for suggestions, but sometimes the patients don't do what we want them to do. One of the first things we had talked about last year was competency: How do you recognize when a patient is competent or not competent for decisions? We kind of came to the decision that we view the patients as competent and if they disagree with us or don't want to do the treatment that we recommend, then we question their competence and whether they really understand what we are saying. We do this, and maybe we don't have the right to do it that way (personal communication, June 1996)

Beth chose medical school because she wants to make a difference in people's lives and in the vitality of her community, and because she found that nursing didn't provide the kind of connectedness and challenge Beth desires. As an educator working in health professions education, I often encountered a feeling of distance from the programs I administered. Building a vocabulary relevant to the health professions took a significant amount of time, but it also allowed me entree into the process of educating the people who care for human health.

Because of this entree, I was able to encounter Beth in the first place. I had traveled to her university after researching the program in which she is enrolled. I

visited a clinical site where Beth was taking part in a team discussion with students and preceptors from a wide range of health and allied health professions. In her small town, I encountered Beth and her colleagues in a case study discussion while they met at the only facility available: the local town hall. Her town has no clinical setting big enough to hold the student team.

I sat by Beth in the town council room largely by chance. We sat at a large square of tables on which various team members passed around the assorted snacks they had brought along. Although the group was large and very friendly, Beth took the most interest in my research project. She is a soft-spoken, gentle, and caring woman. In this instance, Beth's nature as a woman is important to the research product. As a woman with determination coupled with quiet style, she is an exciting representation of some of the *right* things that are going on in modern medicine.

In these personal characteristics, Beth reflects the prototypical behavior of a nurse. She exhibits the traditionally feminine behaviors of caring and gentle nurturance. By contrast, she represents a very nontraditional kind of physician. Unlike the physicians-in-training depicted in Boys in White, Beth is much more concerned about her roles as mother, community member, church member, and role model for others than she is her role as a physician. Since Beth is an articulate spokesperson for her profession, her program, and her life, I chose to let her voice—the research intersection of her gracious words and my interpretation of them—

speak. Here, Beth describes her philosophy of health care and the circumstances that brought her to medical school.

Beth: Just become a doctor

I am a second-year medical student at the University of New Mexico.

My thirteen year-old son and I live in a small community and I commute to campus every day except on the Friday afternoons when my team is meeting for our discussions. I just stay in town at my clinical preceptor's office until we all meet at the town hall for our case study session. Ann rode out with the rest of my team and I met them there at 2:00 on a warm desert afternoon.

The case we were discussing is a little boy who was born very prematurely. He lives outside of town; the team drove right past his family's farm house on their way to the town hall, but they have never stopped to see him. He is almost a year and a half old now. Because of his respiratory problems at birth--very common for a preemie--he has had a tracheotomy tube placed in his throat and he is behind in his developmental landmarks. The team includes respiratory therapy, physical therapy, social work, medicine, nursing, pharmacy, occupational therapy, and faculty members from each of those professions plus the community coordinator. When Ann sat with us, the room was packed.

The respiratory therapist on our team had done research on the process of maintaining a trache tube and brought a video for us to watch. I had researched developmental milestones so that we could better assess where this little boy should be in terms of his developmental age, not just his chronological age. The nurse on our team had been assigned to the little boy's house on a clinical rotation. She was very angry because the public

health nurse assigned to the little boy had taped his monitor onto his little finger too tightly--because he's so little, the monitor was bothering him and he would pull it off. The public health nurse got exasperated with having to replace the monitor all the time so she taped the thing on so tightly that he almost lost the finger because of the constriction. We discussed whether we ought to turn in the public health nurse for malpractice, but the Mom was so angry that she had already demanded a different nurse be assigned to the case. She is a teenage mother and this is her second child, but she loves him and she is a good Mom. She's dealing with all of this really well--we shouldn't jump to conclusions about her because of her age or her financial need.

People think that because we live in this little town and it's so poor that we don't deserve to be treated with dignity. I live here because I wanted a place where I could raise my son. This is *my* community, too. I want people in medicine and all of the health professions to understand that poor people are still people. Some of my own classmates don't understand that and I have to *tell* them. They were talking one day about not wanting to accept the kind of people as patients who are on Medicaid, and I had to say, "Look here, now, I am on Medicaid so that I can support my son while I'm in school, and so do you think less of me?" They just don't think. *They just don't get it.* When I hear people talk about Medicaid recipients in derogatory terms, I say something about it.

Still, this community and this educational program are important to me. When I was searching for a medical school, I knew that I would need a place where I could raise my son for four years, and maybe even longer. I visited this school, and I knew I couldn't live in a bigger city. I wanted to practice in a rural area, so I wanted to live outside the city and commute. I have to admit that when I first visited here, I thought it was a dirty,

dumpy little town. The town roads are paved, but all of the country roads except for two and a half miles in this county are dirt roads—over four hundred miles of dirt roads. There is a lot of poverty here, and a lot of working poor.

When we have someone with a medical emergency, we have to think carefully about how to transport the patient into the city—across the mountains. If we call a Life Guard air ambulance, these people aren't likely to be able to pay for it. No one in the county emergency department is certified to put in an IV because they don't want to give up their Saturdays in order to take the classes. Usually we just put them in a car and tell them to drive like hell to the city and we'll call the hospital to let them know that someone's coming.

Still, I'd rather have my son going to school here than in the city. More businesses are coming to town and things are sprucing up a bit. The state softball tournament is held here, and everyone pitches in to help provide food and get the fields ready. The state soccer tournament is coming here this fall because our town has done such a good job with the softball tournament. I do worry that there isn't much to do in town, though. We really need an indoor swimming pool, but where would the town get the money? Gangs are creeping into town from the city, so a new principal was brought in to help deal with that.

I grew up in Colorado, but in a very rural part of the state, not close to Denver. This kind of isolated area is familiar to me, and it works for me to live here. I might like to stay here after I finish medical school. They could use a general practitioner here.

A lot of my classmates here went to high school, went to college, went to medical school, and never had to deal with a tough life situation. But some of us have. One of my classmates grew up in the eastern part of the

state in a very small town. Now, she's just at five feet tall, maybe five feet two--she's not very big. The big emphasis at her school was that "girls just get married." They do not offer college-level, college-bound courses to the female students there. When she asked about it--she wanted to take chemistry--the counselor said she's too short for chemistry. She insisted on it because she knew she was college bound! She said, "Well, why not? I'm tall enough to see over the lab tables!" But there are high school counselors and teachers who are still out there *doing* that to young women.

As I went into nursing, I went in with the idea that I could do anything else with a bachelor's degree that I wanted to do, so I decided to go for a bachelor's degree. I discovered as I was working that I was asking more questions, wanting to know what were the underlying things that were going on, and wanting to deal with people outside of the hospital--away from the acute situation. I looked at being a nurse practitioner, but that job varies substantially from state to state. What you can do in one state you'd better not be caught dead doing in another state. Although I didn't necessarily want to move, I didn't want a job that I'd have to look at in certain states to find employment.

The physician's assistant program didn't interest me at all, and I finally decided to just *go for it*. I remembered my Dad in junior high when I said I wanted to become a nurse, and he said, "Just become a doctor." When I made the decision to go to medical school, I thought, *I wish he were alive today: "See, I told you, just become a doctor."* It has been a long road, and I wish he could see it happening.

Because of my son, we have become involved in baseball in town, involved with the school, and with a little church out here. It is different to be a medical student with a kid. Medical school is so pervasive--some of my classmates eat, breathe, and sleep medical school. While school is important

to me, it is not my primary life. Yes, I want to be a physician, but not at the expense of my child. He and I try to do other things, too.

I'm older than most of my classmates, and those who do eat, breathe, and sleep school are young. They haven't ever done anything else but go to school. One of my thoughts is, how can we as physicians ask our patients to cut back on their stressful jobs if we're not willing to set the example for them? My whole life is an example. I am the first one in my family to earn a bachelor's degree, and I want my son to have a Mom around who lives a good life, too.

UNIVERSITY OF IOWA STUDENT TEAMS

Introduction

I had the opportunity to interview the University of Iowa teams of students at the end of each rotation commencing in the fall of 1995. Since some of the program participants are students in off-campus programming, some interviews were held via telecommunications technology. Other interviews were held in conference rooms on the University campus. Interviews were electronically recorded either by video or audio tape. Audio tape recording became my preferred method since the superior sound quality allowed for easier transcription.

Tell me about your team

Use of the communications technology setting and/or tape recording is clearly not a hindrance to the communication process during our interviews. Given that these students have worked together in a clinical setting for several days over the course of three and one-half weeks, they were comfortable with each other; they were comfortable with me as an interviewer after having spent an entire afternoon with me exploring the didactic component which we delivered to each rotation. Generally, the interview sessions started with a grand tour question: "Will you tell me about your team?" Here is a sampling of participants from an August, 1996 rotation.

Lindsey is a BSN (Bachelor of Science in Nursing) student in an off-campus program. She is a Nursing Case Manager, and her professional expertise is often clear:

> We (the nurses) ask a lot more questions about psychosocial issues than the residents do. We ask more questions than you might expect in a normal acute care visit--but I think the patients and their families feel like they're getting a lot for their money because of all that attention. We asked how much training the residents are getting in cost management, for example, and they assured us it was quite a bit, but I don't see it.

Deanna is a BSN student in an off-campus program and is a Gerontological Nurse Practitioner. She noted that additional membership on the team might have been helpful:

> You know, we saw a little boy who was quite obese, and it would have been really nice to have had a dietitian there. I usually work with older patients, and then we're trying to work on weight gain, not a weight loss. We needed a different expertise.

Christa is a dental student at the central campus. Of those attending this interview session, she was the only one who is not a practicing professional who is returning to school for an advanced degree. She was particularly disappointed that no medical students had taken part in the rotation, expressing a feeling that became common among program participants:

> Dental students haven't been med students' favorite people. You know, there's this kind of thinking that if you can't get into med school, then you go to dental school. I didn't really want to show them up or anything, but I wanted to be educated by them and to educate them some, too.

Sandra is a Gerontological Nurse Practitioner with a hospice near the central campus and is seeking an advanced degree. She described her team clinical experience by stating that:

> There was a real focus on the patient at hand—you wanted to do the best for this person. We saw one lady who is 83 years old, and the pins in her hip had slipped. She needed surgery, but in the rural hospital she can't get fitted in for surgery for weeks. When you're 83, that's a significant chunk of time to be lost.

LeeAnn is a young professional pharmacist who has returned to the University for an advanced degree, and who is already used to practicing in a collaborative climate. She referred to teamwork by noting:

> That's the way I am. If I didn't have a team climate, I think I'd cry! I just draw people in: what can I get from this person, and what can I get from that person.

Nellie is a nursing student who was married during the course of her rotation. Nellie kept a journal during her rotation and found parallels between the team dynamics of the team and the blending of two families into a cohesive, working unit.

Nurses are clearly a focal point in the team dynamics. Christa was impressed with the level of compassion she witnessed from the nurse on her team:

> I learned that they are invaluable in terms of looking at the whole patient. We came up with tons more recommendations than I thought we would. There's just this kind of a bond between the nurse and the patient that I don't think any other health profession can get; it's almost like they're talking to a relative. The kind of caring they demonstrate—you can't put a price on that.

In addition to the issue of caring, nurses also bring a perspective to the team which is not found in the other professions. Lindsey described an infant who was suffering from a rash around his mouth, for which the resident physician had been diagnosing a bacterial or fungal cause. According to Lindsey:

> We just asked, being nurses, what kind of nipple the baby was using. We thought he just had a latex allergy and they needed a different kind of nipple. I think the resident (physician) really appreciated that question.

Dentistry plays a particularly important role for geriatric patients, as Sandra noted. Seemingly minor procedures, such as properly fitting a patient's dentures, can have ripple effects which impact nutrition, social interaction, and general health. LeeAnn was also quick to point out that oral hygiene is a "big issue" with gerontology patients, and Christa's expertise was so useful that she "didn't know what we'd have done without her." Nellie described an elder Parkinson's patient who exhibited tremors in her face and a reluctance to eat:

> Our dental student looked in her mouth and found that her mouth was so dry that his instruments stuck to her flesh. One of the teeth that holds her partial plate in place was missing and so she wasn't wearing it because the nursing home staff thought it was just too much work to properly use the adhesive and put her partial in. She was embarrassed to eat, she had been losing weight, and her overall health was in jeopardy because of her dental problems. We really worked as a team, holding the flashlight for our dental student to work, taking notes as she called out her findings, and helping her with the instruments. It was really eye opening for all of us.

Drug misadventures have been identified by student team members, including discovery of one woman who was suffering from poorly controlled high blood pressure due to inadequate dosages of medications. Team members are impressed with the abilities of pharmacists to adequately explain to parents of young children the reason for *not* prescribing medication in all cases of illness. While attending physicians were being sensitive to not prescribe drugs for a child sick with a viral infection, which would have been ineffective and unnecessarily costly, it was the pharmaceutical student on an rotation who was able to explain the theory well enough to satisfy distraught parents.

For the most part, the teams have felt remarkably cohesive and successful, given the short amount of time they were able to spend together in the field clinics. They shared leadership of the team depending upon the expertise needed for the issue at hand, they shared mutual respect, and they shared responsibility for the

outcomes of their team activities. One major component that was missing, though, was that there were no medical students on many of the teams.

Sandra was particularly vocal in expressing her displeasure at the fact that no one from the medical college had been willing to take part in the team training activities. As a practicing hospice nurse, Sandra often encounters many other health professionals who share the goal of pain management for terminal patients:

> It's always the physicians who are the blockers in pain management. I was terribly disappointed that none of them saw fit to take part (in this rotation). I volunteered for this because I really thought that medicine needs to learn to work with the rest of us. It was like, "Other than that, Mrs. Lincoln, how did you like the show?" for me. You could have 25 different disciplines in the room and we'd all get along, but when you add the one that has traditionally had more power, and has much less training in team work, that's when the trouble starts.

The cost-consciousness which is being imposed upon all of the health professions by managed care is already permeating the thinking of the teams' recommendations in a positive fashion. While they doubt that medical students are getting much training in cost containment, Sandra stated that "you can't really separate (cost containment) out from your thinking any more." To this end of stopping health care intervention when appropriate, Christa described a patient who was best served by a reduced level of care:

> We saw an older lady yesterday who was really gung-ho to get better. She had broken her ankle and is trying to get mobile again. She was

definitely, definitely open to us as a team. But she attached a real stigma to being in a wheelchair. Suffocating her with help might just make that worse. This is a good example of a time to back off.

Although few medical students have taken part in the Integrated Health Professions Education Program, *Megan* is a notable exception. I had the opportunity to interview her one-on-one after she had completed a rotation and subsequently matched at her team's clinical site for a residency. Megan shared her thoughts about her clinical site, the program rotation, and her team mates.

Megan: A changed-my-life experience

I was a student in the family practice senior rotation at the University's College of Medicine when I did the Integrated Health Professions project. The only thing about it that was unpleasant was that the Monday night seminar session was three hours long and I didn't find out I was invited to participate until about 2:00 in the afternoon. I ended up bringing my baby along to the session because that was the only way I could attend.

Still, I was surprised that I liked the clinical site community as well as I did. I hadn't thought of it as a place that I'd like to live, but I applied for a residency there because it was kind of my insurance policy; I wanted to apply some places where I knew I'd be able to get in. It has surprised me quite a bit, but I have really liked the people there.

I really had very positive interactions with the preceptor there and also with their librarian, *Jeane*. Jeane brought a laptop computer to the nursing home where we were evaluating patents. She showed us how to access different kinds of information that we needed about drugs and the

particular health problems that our patient had. The interactions were all very positive, and the program influenced my decision to match there in that way. I had heard good things about the program from another student who took part there.

I also discovered that I was going to *like* evaluating geriatric patients. I thought, "Many problems and many medications and what can you really do in one afternoon for someone like that?" It turned out that we could do a lot as a team as far as evaluating the patients' health care and making some suggestions. I feel that we were able to make some suggestions that would really positively effect their health care.

Because of this experience, I am definitely, *definitely* more disposed towards a collaborative care setting. My team was a bit small. We had a pharmacy student, a dental student, and myself. We weren't able to have a nursing student and we thought it would have contributed greatly to have one. We imagined everything we didn't know was because we didn't have a nurse!

I was very impressed with the pharmacy student. On subsequent rotations I have felt free to ask the pharmacy students that I encounter all kinds of questions, and to call on pharmacists here at UI Hospitals or at the other local hospital, when there was a question that I couldn't answer. I feel more comfortable in taking their suggestions and understand more about how they calculate dosages and what kinds of indicators they watch and follow in patients. That was a totally wonderful and changed-my-life type of experience. I went from thinking that I'll never know enough about drugs to thinking that at least I know when I'm in over my head and when to call a pharmacist for help. It was really wonderful.

I had sort of considered dentistry and medicine to not really overlap, and I don't know why. Maybe I thought that you just go to the dentist for

your teeth, and that's it, but I have changed my ideas about how these two professions interact. One interesting thing I learned is that often, when people go to their physician for a prophylactic antibiotic, the physicians are not prescribing the ones that the dentists would prefer the patients have. Dentists are of course better acquainted with normal oral flora, and I asked, then, how we are to know which antibiotic to prescribe. Our dental student said, "Call a dentist." Well, of course that's the best idea! She emphasized that she'd rather be consulted ahead of time. I also learned that often, dentists are the patients' first contact with the health care system and dentists have holistic knowledge about health so that they can detect additional health care needs and make appropriate referrals.

I even discovered that the carpooling worked out fine. I was sure it was going to be awful, but my team made it seem like a much shorter trip than it actually is. We spent the time getting to know each other, which made our team clinicals "click". This program was good for me.

UNIVERSITY OF NEW MEXICO PRECEPTORS AND FACULTY

Introduction

Year-round, the UNM faculty group views Friday afternoons as belonging to the interdisciplinary program. Faculty at the University meet weekly to discuss the grant initiative and its progress. The program has benefited them directly, due in some part to the flexibility of the University in calculating promotion and tenure activities, but the commitment is much deeper and much more meaningful than promotion and tenure would suggest. It is clear that UNM faculty take part in the Interdisciplinary Health Professions Training Grant program because they are committed to its ideals, because they enjoy the participation of the students and the changes in students that they are able to help shape, and because they themselves have become a functional team. The program reimburses faculty mileage and other expenses for participation in program activities, but otherwise does not purchase any faculty release time for participation. On the other hand, UNM faculty have capitalized on the program's rich potential as a research, publication, and presentation source over the course of the last several years.

I met with the interdisciplinary team at UNM and asked them, "What keeps you energized, to keep on going in this program?" These faculty are going into their seventh year of programming and they are still very enthused about it, exhibiting an energy and commitment that is unmistakable. A contributing factor to

their level of commitment is the support and flexibility offered by the University in recognizing innovation in its promotion and tenure scheme.

Faculty involvement and support

Promotion and tenure portfolios in the UNM-SOM are designed by the individual faculty people. Faculty create their own portfolios, filling out forms to document how much time they have spent on various areas of professional emphasis. This recent innovation has been the implementation of "Relative Value Units" in calculating contributions to promotion and tenure portfolios with a mathematical formula that helps to determine salary based on productivity. Relative Value Units, or RVUs, are means by which the services of teaching, clinical service, administration, and research can be combined into a successful promotion formula. Additionally, there is some speculation that faculty members will be able to "swap" RVUs of one kind in exchange for service of another kind: a faculty member who is most interested in teaching, for example, may be able to exchange research units with another faculty member who is so inclined. Faculty participation in the Interdisciplinary Health Professions Training Grant tutorials and field seminars does apparently contribute to promotion and tenure portfolios, but to how great an extent this activity is formally valued in still unclear (M.F., personal communication, June 1996).

This formulation is another example of an institution willing to think creatively and make adaptations that will serve the institution and its needs as well as the needs of the students and faculty. Through the RVU system, the UNM recognizes the cycles in a faculty person's career: there are times when we want to emphasize the establishment of the research enterprise and there are other times when we want to emphasize the teaching or service aspects. This kind of formulation also allows for administrative flexibility in maximizing the strengths--and minimizing the weaknesses--in faculty performance without necessarily penalizing anyone.

Deans at the UNM health sciences colleges haven't necessarily become directly involved with the interdisciplinary program, but have at least stayed notably out of the obstructionist mode (M.F., personal communication, June 1996). The UNM has built a cadre of faculty people who believe in this program and are energized by the students. One UNM-SOM faculty member confessed that he had been told that he has to do 50% of his time as clinical practice, after which he tutors and takes part in this program. He said that he's willing to give up some of the tutoring that is an important part of his promotion and tenure folder and invest in the interdisciplinary program, knowing that the amount of weight this will be given is uncertain, because he gets so much out of these students and their positive attitude (M.F., personal communication, June 1996).

Overall, the UNM faculty group exudes a positive, energized commitment to the interdisciplinary program, in spite of disagreements they may have with its administration or configuration. The UNM faculty group see themselves as being part of the clinical preceptorship team with enough commitment to drive to the clinical sites and assist in the preceptorship of students there. In this way, the UNM faculty are partnering with the communities and the preceptors there to enhance the integration of the clinical and classroom experiences.

The faculty members essentially ride a circuit so that each time there is going to be a tutorial session at a clinical site, at least one faculty member drives from the central campus to the site. Commutes to the clinical sites range from about one hour to nearly six hours through the mountainous terrain that is characteristic of the southwest. These trips are required once a week for eight weeks during the summer. The commitment to driving extends to include an Associate Dean in the College of Medicine who often takes turns driving to a clinical site that is more than 5 1/2 hours' commute away from central campus.

The willingness to circuit ride, even including an Associate Dean in the College of Medicine, connotes the extraordinary commitment these faculty make not only to the program, but also their commitment to each other as a team. These are people who are committed to working together to advance their goals on behalf of the citizens of their state, but they are also resourceful enough to find ways to make it pay off in terms of promotion and tenure. The impact of the UNM faculty's team

commitment is clearly stated in this edited excerpt from my October, 1996 field notes:

> However, they also said that part of the neat thing is the ritual that goes along with the traveling--the ritual of the dance. They have sort of settled into a ritual that goes along with each trip and so they were naming off some of their stops: when you go to Clinic Town A, you stop at one restaurant for breakfast, another for lunch, and on the way back you stop at yet another one. They were talking about these rituals that are part of THEIR team building. They obviously are a good team. They talked about being a collegial, cordial group, and working together. Even when there are disagreements among them, it often has to do with their professional turf. They recognize that and then they let it go and they're still able to work together.

The faculty are extraordinarily supportive, but it is not fair to say that there are no snags in the fabric. The College of Nursing representative for the interdisciplinary group has noted that the faculty circuit riding is taxing them (personal communication, June 1996). For example, her contract in the College of Nursing is a nine month academic year contract, so she is *volunteering* for the summer tutorials at outlying clinical sites. She also expresses some frustration with Medicine's dominance of the program, along with other curricular and philosophical differences that go beyond this program.

There are also some concerns with potential burnout of faculty and support professionals as Scaletti and program leadership develop new community clinical

sites. When the program started, one community area provided the only clinical sites for the first three years of operations. Now the program has expanded geographically to include five widely dispersed sites, but with no additional professional support. Scaletti is adamant that levels of service be maintained for all community clinical sites and for all students enrolled in the program; to do so without additional help may lead to a serious level of dissension. Developing at an appropriate pace is a significant issue for any program of this type and will require balanced judgment and intuition.

UNIVERSITY OF IOWA FACULTY AND PRECEPTORS

Introduction

During the course of my employment at the University of Iowa, I had many opportunities to talk with *Peggy*, a licensed nurse and physician's assistant who served as field preceptor for many of the student teams. Unlike the UNM program, the UI sends mixed teams to the field clinical sites to work with a single, licensed health care practitioner. For the most part, these field preceptors are reimbursed for their clinical time (a practice which has been of questionable benefit--please see Appendix A). Working with the field preceptors, the teams prepare their recommendations for treatment which are then given to the licensed caregiver of record.

Peggy has deeply held feelings for the program, the students, and the rural communities she serves. Peggy was instrumental in building the early successes of the program, largely because she is a thoughtful preceptor who teaches students in a pragmatic, gentle way. Peggy is uninvolved in promotion and tenure although she often expressed her delight in working with students on a pay-per-visit basis. Her talent with students was evidenced by their frequent comments of thankfulness for her knowledge and her down-to-earth ways. Peggy enjoys helping students to discover rural culture and its challenges on their own.

I asked Peggy to tape record some of her stories about the teams and the impact they had on their patients. Peggy's recordings belie her personality: she often spoke to me as a teacher, taking time to explain terminology and processes with which she assumed I was unfamiliar (and rightly so). Here, I share some of her experiences and reflections regarding the clinical impact the teams have and their ability to create synergistic patient care plans.

Peggy: UI team preceptor

> One of the things I had wanted to be sure that the legislators understand is that this program is in a process of, number one, introducing the program into the communities and number two, providing the local agencies with a level of understanding of how we're doing what we're doing and how it can positively impact them and their patients. Doing that with the initial group of patients was something that was very important.
>
> *Margaret* essentially had come to the long term care facility "by her own choice, with coercion." She was very reluctant to move to the long term care facility but due to the number of falls she had had at home, Margaret's physician did not feel that continuing in her home environment was going to give her the safety support that was going to give her a healthier life.
>
> Margaret has acute scoliosis and for whatever reason it had not been repaired. Now she is 77 years old and she's got a number of osteoparitic changes including some compression fractures. She's on an iron supplement and one of the things that our pharmacy student wanted us to be aware of is that if you give an iron supplement with orange juice, it can enhance the absorption of iron by the body. Any citrus juice would work, but orange

juice is sweet enough that it covers the nasty taste of the iron supplement and it gets the job done, so that was one of our team's recommendations. Another recommendation we made was that all calcium and potassium supplements be taken with meals because food can enhance the absorption of those supplements. As a result of the recommendations of just those three things, calcium, potassium and iron, the director of the long term care facility was so excited about ways that she could improve the quality of the medication for the patients that she changed all of the delivery times for every patient in the facility. Their potassium and calcium supplements are now given at meal times only, and she ordered gallons of orange juice so that would be something that's given with iron to all the residents. Not only did Margaret benefit from the recommendations, but all of the residents in the long term care facility benefited.

Margaret and her late husband had never had any children, so Margaret doesn't have any children to rely on for assistance. Since the husband died six or seven years ago, Margaret had gotten a dog to help deal with the senses of loss and the loneliness that she was experiencing. Now that she was looking at going into the long term care facility, she felt she needed to have the dog put to sleep. Margaret had come to the long term care facility about a year ago and our nursing student, *Cheryl*, asked her if she had adjusted to being there. Poor Margaret just burst into tears, and Cheryl was beside herself--she felt like she had opened a can of worms or Pandora's Box.

Cheryl and the rest of the team ran through the grief and depression scale. When they got back to our conference room, we were able to score Margaret on the scale and identified that she had a significant amount of depression. The team recommended that Margaret be given an evaluation for

grief, and we looked for resources we could come up with that would meet her needs.

It became quite complicated due to some personality conflicts among agency personnel and some confusion about who could provide what services for Margaret. However, the team knew that resources were available because they scoured the listing of county services. We were able to facilitate this woman actually receiving grief counseling and starting to work through some of her grief issues.

The difficult part of this is that we make recommendations and then we don't have good follow-through with the care providers. That eventually became a source of frustration for Margaret because apparently no one else went to talk to her about these recommendations despite the fact that we had left a list and had sent a letter to the provider. I did go back and talk with her about the recommendations and she does feel as though she's receiving some help in regards to her grief issues.

Generally our teams only see a couple of patients a day. That's not a very efficient method, and I think it's one of the things that frustrates students. They'd like to have more vigorous days. I can tell you, though, that we wouldn't get as thorough a chart evaluation if we just quickly skimmed through. We pick up things that have been missing for a while and I look for vigor by being thorough. There are pros and cons to both approaches, and we may not have hit on the optimal schedule for our students yet, but I do know that we are taking the opportunity to dig deeper with these patients.

A good example of that opportunity to dig deeper is the conversation our team had about *Phil*. This is a gentleman who is 74 years old. Phil has an order on the chart that he may have three beers per week, which is not an unusual practice in a long term care facility.

Phil's order permits him to have three beers per week, and there's also a note on the chart in the history that this gentleman has a history of substance abuse. In fact he had received and completed treatment for that substance abuse. This gave the team an opportunity to talk about substance abuse in the elderly. We looked at the general aspect of substance abuse and the fact that left to their own devices and living independently alcoholics generally will substitute alcohol for food. Consequently their nutritional status isn't very good and their drinking can easily get out of control. As they continue to drink and not eat they end up having memory problems and other problems that plague their independent living situation. In a controlled environment like this long term care facility, we can observe that the residents are limited to a specific number with a specific frequency. Is it in fact going to be problematic as it would be if Phil didn't have those controls in place?

We were able to have a very nice discussion about the pros and cons of providing alcohol for Phil given these considerations. It brought out some remarkable feelings from younger individuals and the thought of whether older people drink, and then what's the role we have as health care providers in a long term care facility. They shared thoughts regarding aging and the use of alcoholic beverages. Since these residents are aging, then is it not OK for them to have a drink or two if they'd like? On the other hand, we have a resident who's trying to maintain sobriety and is in an elderly age frame and so we might want to keep alcohol away from them in any form.

The situation became even more complicated when the team noticed that one of the other medications that this gentleman was on is Thorazine. We had the very clear impression that the reason he was on it was for inhibition of libido. We went through the old medical records to find any instances where he had episodes of inappropriate behavior. We were able to

find that even though he is wheelchair dependent, he has been able to wander in and out of other residents' rooms and has been touching other residents inappropriately, and this is how the facility sought to manage Phil's behavior. Since he's been on this medication he had not had any episodes of inappropriate behavior. We were also able to turn this into a discussion regarding feelings about sexuality in a long term care facility and the comfort level that individuals might have with the rooms being set up as they are. Are there requirements or regulations that prohibit conjugal visits, or just exactly how is that handled? We went through the residents' guidebook and looked at all of the information that the residents receive to see if there was anything addressing any of that.

We also talked about two of the residents in the long term care facility, neither of whom our team had seen, but who had recently had a wedding ceremony. They were living in the same room on the wing, but were in twin beds on opposite walls. This really provided a quite lively discussion about team members' feelings about sex, and what we think about sex and the elderly, and sexuality of individuals. What rights do individual residents have and what rights and what responsibilities does the facility have? It was a very interesting discussion regarding these issues.

We really tried to look at the whole spectrum of sexuality and look at instances where long term care facility residents had been abused by health care providers or where residents themselves had sexually abused other residents. There may be residents who have been brought to the facility having been sexually abused by family/family of choice individuals who have taken advantage of them. Our discussion brought up quite a bit of information about the aspects of sexuality. There really is not a lot of literature specifically identifying the sexuality issues regarding long term care facility individuals, regarding geriatrics. Clearly there is the assumption

that there isn't going to be any of "that" going on in a long term care facility or in a hospital, and yet with experience it tells us that that's not true. I don't think we solved any of the world's great issues with this very lively discussion but we certainly brought up a lot of questions and that was a big plus.

I like to use a teaching tool that I call the "Dream Team". The "Dream Team" is the ideal gathering of all the agencies and all of the professions that would be helpful for that patient at that time. We assess the patient and then I ask the student team who the members of their "Dream Team" would be for that patient. We periodically assess how we might change the members of the "Dream Team" as we progress with our research and formulate our recommendations. We see how the team is doing and try to figure out if we need to add players or if there are players that could be dropped. It has been a helpful technique and one that the students remember.

Bernie is an 83 year old gentleman with a very interesting history, and Bernie is someone who has definitely needed his family to be a part of his "Dream Team". He is a hospice patient who is on the long term care facility wing because he has cancer. It's a stable, slow growing cancer, but Bernie's health care provider has certified that he has less than six months to live. Certification was done greater than two years ago, so he was a little off the mark there, but this certification qualifies Bernie for Hospice care.

Bernie had been married for 40-50 years when he had a stroke. His wife had cared for him diligently, just taking care of him, taking care of the house, the cooking and the cleaning. Then suddenly one day she died of a heart attack. By mutual decision between Bernie and his children, he moved from his home into this long term care facility.

When you talk to Bernie, you quickly discover that he's quite bright and able to articulate well, but you just get the sense that this is a very sad

gentleman. The team administered the depression scale for him and his score was indicative of a severe depression. The team really felt Bernie's depression was complicated by a tremendous amount of unresolved grief regarding the loss of his own personal image of being a vibrant individual. His grief was also further deepened by the guilt he felt and feels over the loss of his wife. He feels very responsible for her death, feeling that his illness caused her to have to work very hard to care for him.

So the team noticed that we've got a couple of things going on here and both of them are clearly very long-standing. It is particularly difficult when hospice has been involved in care and there has not been any counseling provided. Part of it seems to be the attitude that, "Well, he's going to die anyway." Well, Bernie was supposed to have died in six months. That's some of the ground rules for hospice involvement: if a person has less than six months to live, then he or she is qualified. It's always hard to second guess when death is going to come knocking, but obviously the state of Bernie's cancer is quite stable and he has not shown any signs that death is imminent.

Given Bernie's physical stability, the team recommended that we use an anti-depressant agent for him. After evaluating each of the agents, the team felt that Zoloft would be the antidepressant that would be most beneficial to Bernie, so that is the recommendation that was made. Additionally, the recommendation is that Hospice should bring in their own grief counselor and have her evaluate the extent of this gentleman's grief and the areas that are encompassed by his grief. Then we also recommended some changes in his dietary intake. We wanted to recommend changes for Bernie that would contribute to a higher quality of life for him and for the family that loves him.

Faculty and preceptor involvement

While the UNM faculty are rewarded for program participation through the RVU promotion and tenure design, UI faculty are rewarded for participation in an indirect fashion. Money from the program's funding is released to the respective collegiate Dean each academic year in support for the time each faculty member donated to the program steering committee. An award letter explaining the monetary donation to the college is sent to the Deans, specifically mentioning the faculty member and describing the importance of the program. Apparently the funding release does not constitute a workload release for the faculty member, and the amount of the donation is determined by the program's administrators rather than through negotiation with the Deans.

Field preceptors other than University faculty are paid on an hourly basis in recompense for lost clinical revenues. Peggy, as a field preceptor, is remunerated on a contractual basis with her clinical employer, who releases her to work with the student teams. As a part of the contract with Peggy's employer, it is her responsibility to select clients for the teams to see and to obtain their permission to take part in an educational activity.

DISCUSSION AND OPPORTUNITIES

Introduction

What the Healthy People 2000 report aims for is the integration of healthy lifestyles and behaviors that individual people inculcate throughout their life spans. Through a review of literature, we have established that interdisciplinary health professions practice can have a measurable, positive impact on health care outcomes. Positive impacts include both improved care and more efficient use of human resources. However, interdisciplinary health professions education challenges a culture of uni-disciplinary immersion which has existed for decades. Encouraging the growth of interdisciplinary education demands a new world view, challenging how it is that we view the interface between academe and the workplace.

The present study explored two interdisciplinary health professions programs using a grounded theory, constant comparison approach in an effort to define emergent themes in programmatic strengths and weaknesses. Emergent major themes included visionary leadership, program configuration, student participation, and faculty and preceptor roles.

Visionary leadership

Both programs needed the initial impetus of a visionary leader who was willing to garner resources and begin establishment of interdisciplinary opportunities. In Scaletti's case, the program has relied on administration that was sympathetic or at least apathetic (M.F., personal communication, June 1996). In Manasse's case, *he* was the sympathetic administrator as well as the program sponsor. The University of New Mexico has patiently supported Scaletti and the UNM-SOM program, perhaps due in part to the notion that federal funding has been forthcoming. The University of Iowa program has been set back since Manasse's absence and, as noted above, its future path is still unclear.

Because of acceptance on the part of the School of Medicine, the New Mexico program appears to have moved from programming periphery to a central part of the School's offerings. Leadership for the UNM interdisciplinary program has come from the School of Medicine itself, a point which has been both a strength and a source of dissension. While the program will need to resolve some of the issues related to Medicine's leadership, the UNM appears to be well along the road towards health care integration philosophically. The UNM may need to consider integration of leadership roles as the program continues to mature. Curricular issues and issues relating to program growth can be resolved through continued negotiation and leadership discussion.

Program configuration

We have seen from the literature that teams must *emerge* from the process of meeting together in regular, goal-oriented sessions so that true collaborative relationships can be built (Ivey et al., 1988; Clark, 1994b). The hands-on, team patient assessments and care planning activities in which the students in the UI program take part offer students opportunities to see the multiple disciplines at work, to interact, and to build team clinical skills in a powerful way that case presentation methods alone simply cannot match. By seeing patients together in a community setting, students can pull together *for themselves* the cognitive and affective skills which will enhance their future team endeavors.

The power of the UNM model rests in the world view that it espouses and nourishes for the students and faculty who participate. The program reflects a holistic world view that honors the whole person plus the context in which the person lives, including economics, family, culture, home situation, and the physical condition. This holistic view is applied not only to the patients who become the basis for case studies but also to the students who take part in the community immersion experience. The health care team is cultivated to include considerations for the real-life issues faced by the patients such as insurance, employment, home assistance, and resources needed versus resources available (drugs, wheelchair, air conditioning, or hypo-allergenic bedding).

The UI program provides this holistic view with its home visits for clinical experiences. In the home setting, the whole person plus the context equals a new level of understanding and caring. Nellie, a nursing student described earlier, notes how important it was for her team to make clinical visits in a home setting;

> This time we made a home visit to a 66-year-old insulin-dependent diabetic who had always lived with his mother. He had a foot ulcer that wasn't healing adequately, and learning disabilities. When we arrived at the farm house after getting a basic idea of his history and past care, we were all instantly struck with the poignancy of seeing clients in their own setting rather than in the clinical setting. For example, this client's mother is 89 years old, and quite slow moving, with poor eyesight and hearing. She didn't accompany him to his doctor visits, yet at home it was clear how much impact she had on her son's health. It was apparent to all of us that this mother still had a marked influence on this man's health, including cooking for him and managing his daily habits. We recommended a social worker to become involved with the family immediately to help them prepare for the son's care when his mother would no longer be able to help.
>
> I believe nurses and pharmacists are more aware of how health treatments are translated by the clients in their home settings. Our home visits had quite an impact. Doctors prescribe care in the hospital or clinical setting, but they can have little opportunity to understand how the client will actually implement the care at home. Our medical student learned to ask future clients exactly *how* they would cook the right food, measure their insulin, and check their blood glucose, for example. Our dental student learned that clients may be more likely to be honest about their dental hygiene in their own homes. The basic lack of self-care of this client, as

evidenced by his dirty clothes and unclean smell, indicated that oral hygiene was not a high priority.

The addition of the social work perspective to the student and faculty teams would enhance the confidence of both groups in dealing with such issues, thereby greatly enriching the students' interdisciplinary experiences. Nellie's notation of the team's recommendation for a social worker to become involved is typical of UI team recommendations.

It has also been noted that the evaluation processes for these two programs are significantly different. The UNM has implemented a comprehensive set of measurements taken at many junctures during and after program participation. While the amount of data generated by this process is massive, much of the data appears to be of little pragmatic value and is kept in storage in raw form. The UNM may consider streamlining this process in an effort to gather high quality information from student participants and from faculty preceptors while avoiding testing fatigue. Of the measurements taken by the UNM program, the study regarding interprofessional confidence may show the most promise, but needs to be updated to include the many professions that now take part in UNM teams.

In contrast, the UI project uses a qualitative interview session when students exit the program. This exit interview process yields a rich bank of data that support a clear understanding of the team building process and the students' clinical experiences. The attitudinal survey administered by the UI program is of

questionable value, but could easily be replaced by the interprofessional confidence scale created by the UNM. It would appear that a cooperative effort in the realm of program evaluation would be a benefit to both programs, improving their use of resources while at the same time greatly increasing the utility of the data gathered.

The New Mexico program, certainly the senior program in terms of years of existence, has kept longitudinal data relative to student placement in underserved communities. To this point, New Mexico has been successful enough at placing graduates in underserved communities to satisfy its funding agencies. The Iowa program will need to institute a longitudinal tracking system in order to account for long-term success or weakness in placing graduates in underserved areas. It appears that neither program has done tracking to determine the likelihood that its graduates take part in, or seek out, team-based clinical practices.

Additionally, we can ask in whose hand the evaluation process should rest. At the University of New Mexico, for example, the process is administered by individual faculty members and data analysis is largely accomplished by a volunteer from a local health care placement agency (R.G., May 1996). While this volunteer has expertise in statistical analysis, he is neither a health professional nor an educator. At the University of Iowa, much of the evaluation process was administered and analyzed by a professional support person with educational expertise. Clearly, the assessing student team recommendations and health care plans must be accomplished by licensed health care providers. It would also seem

clear that assessment of the educational processes themselves would be best accomplished by persons with strong educational backgrounds. Therefore, each institution would strengthen its evaluation processes by clearly delineating the purpose for each activity and the professional responsibility for carrying out each activity.

Students

Many student participants in the Iowa program noted the lack of medical students on the teams. Progress in recruiting more medical students will take additional commitment from the College of Medicine leadership at Iowa. By contrast, New Mexico leadership has noted that the addition of the interdisciplinary program to the roster of clinical opportunities has been an answer to recruiting problems in order to get medical students to choose outlying clinical sites (Scaletti, personal communication, May 1996). Similarly, UNM leadership notes that the interdisciplinary program alleviates lonesomeness on the part of medical students who elect outlying clinical sites, thereby enhancing their own recruitment efforts for serving areas outside of metropolitan areas. UNM-SOM leaders were finding that students did not want to choose rotations in outlying sites. Students were prone to take every opportunity to come back home, coming back every single weekend or choosing very close clinical sites so that they could drive back and forth every night. By so doing, these medical students avoided the kind of community immersion that

has since served the UNM well in placing student graduates in rural areas (Scaletti, personal communication, May 1996).

In fact, these are identical issues to those noted by leaders in the UI College of Medicine concerning clinical opportunities at outlying sites (B. N., personal communication, April 1996) but without an attendant willingness to consider innovative mechanisms by which the goals could be accomplished jointly. Recognition of these critical, but "soft", issues in serving communities is not currently negotiated well with the UI College of Medicine. Program leadership will have to overcome this issue in order to fully invest College of Medicine interest in the program.

As an example, the UI program could use the case study method in a more thorough-going manner. The one case study being used in the seminars has become tiring for the faculty members (M. K., personal communication, May 1996), likely because they are driving too much of the process. The students aren't able to identify what it is that they don't know because they are not attuned to the case study method and because they are not expected to become independent learners. Perhaps the case is too well written and detail should be taken out. Generally there is not a high enough expectation that the students will own the process and prepare for the seminars. Continued negotiation for academic credit for participation in the program will heighten the stakes, providing the potential for students to have the incentive to come to the seminars well prepared.

Faculty and preceptors

Creating interdisciplinary opportunities for education requires adaptability, creativity, and collaboration between colleges (team skills themselves). In order to sustain the programs and their positive community relationships, ongoing faculty support is obviously requisite. Like students, faculty can learn the personal and professional satisfactions of team collaboration, but they need support and incentives to do so.

The UNM faculty group members concern themselves deeply with cultivating the buy-in of the communities. The are particularly emphatic regarding the importance of having the communities support the program and the students both financially and emotionally. Through a dynamic set of factors and influences, the UNM interdisciplinary program has moved from the periphery of offerings to general acceptance. Faculty critics of the program and its leadership are critical because they want a greater stake in leadership, not because they desire the program's demise.

The level of faculty support for interdisciplinary programming at the UI is more difficult to gauge. Certainly the data is thinner in this respect and less telling, at least because the UNM program is more mature. This represents an opportunity for additional study. The dynamics of leadership at the UI differed substantially from those at the UNM, which has likely had a lasting impact on the progress towards interdisciplinary integration. Manasse attempted to use financial

incentives to encourage interdisciplinary programming, a model which he had seen in successful implementation at another institution. A deeper study of the dynamics of power and cooperation at these two institutions, perhaps in comparison to leadership issues at other institutions, would be useful.

Additionally, the UI hosted a national conference on interdisciplinary health professions education on its campus in the spring of 1997. Guests from the University of New Mexico, as well as Dr. Roger Bulger (president of the Association of Academic Health Centers) were in attendance and delivered presentations. The open faculty dialogues at events such as the UI conference contribute to the growth of interdisciplinary education as institutions share best practices and explore each others' programmatic strengths and weaknesses.

Opportunities

Budgetary issues have not been addressed in this study. Leaders at both institutions expressed reservation about discussions of the financial particulars for each program, but a cost-effectiveness study of these and similar programs is an opportunity for additional study. A cost-effectiveness study represents another complicated set of factors, including the overall effectiveness of learning in a team-based, collaborative mode. Effectiveness measures to be considered might be long-term placement and retention in underserved communities; placement and

retention in team-based clinical practice; and use of communications technology in clinical practice.

A cost-effectiveness study at New Mexico is further complicated by the cross-leveraging of funds with other programs, although that appears to be one mechanism by which the program was able to move from periphery to central offerings. By negotiating with other programs and sharing leadership, the UNM-SOM supplemented its funding for interdisciplinary programs and increased others' investment in the program's success. A study involving many other interdisciplinary models may reveal other successful funding designs as well.

A revisit to both programs in five to ten years would be useful in answering some of the major questions that remain. For example, the continuing role of visionary leaders; the role of continuing faculty leadership; and the negotiation of curricular input at both institutions would be interesting themes to revisit. Critics at UNM want a greater stake, for example. In subsequent years, would we find that they have achieved a workable solution to curricular issues? Might we find that they have achieved a sustainable level of growth and faculty participation?

The role of, and remuneration or reward for faculty participation, are significant issues that both institutions are still working on. Again, data is thinner with UI program because of its younger nature and UNM innovations in this area are under way. A subsequent study would determine if there are indicators that the new promotion and tenure design has been effective.

Summation

Barriers to successful integrated health professions education projects commonly cited include administration, curriculum development, evaluation, facilities, and budget (Wieczorek et al., 1976). How have these programs overcome some of these barriers? It is the premise of this exploratory project that the two programs each have unique and valuable exemplary components which can and should be extrapolated. Among these exemplary components, evident from preliminary investigation, are the following:

- The community and cultural immersion in which students take part at the University of New Mexico is a strength in meeting the goals of placement and retention of health care practitioners in underserved areas. Additionally, the exposure to the knowledge systems of a very wide variety of disciplines, including medicine, nursing, dental hygiene, pharmacy, physical therapy, occupational therapy, respiratory therapy, social work, speech pathology and audiology, medical laboratory technician, emergency medical technician, and any others who ask to participate, is an effective tool in the reduction of attitudinal disjunction among the involved professions. The University of New Mexico program also has established strong community linkages and community support for its clinical sites.
- The hands-on clinical experiences accomplished by the University of Iowa program provide very high quality learning in a team-based environment.

While many programs nation-wide provide tutorial-based learning opportunities, the strengths of interdisciplinary clinical experiences are great. In addition, these clinical visits enhance the cultural competence of the teams, particularly when home visits are included as clinical sites.

- The University of Iowa, the younger of the two programs, nonetheless has some early successes of note, including the immersion of students in team-based clinical applications. Student teams are not only learning together in a classroom setting, but are learning experientially through clinical collaboration. Early evidence indicates that this is a very effective method. Additionally, the evaluation format at the University of Iowa includes some notable strengths, such as the exit interview process and the expert evaluation of team-building skills. These combined strengths appear to meet the goals of teaching health professions students the skills necessary to function in team settings.
- Both programs have invested in telecommunications teaching and computing equipment. It appears that through telecommunications and computer skills, students can reduce isolation and feel professional and personal support even in underserved areas of both states.
- Creative, flexible approaches to faculty input have been instituted at the University of New Mexico to allow for continued positive growth. The question becomes a matter of balance: how can we support interdisciplinary efforts and manage vigorous growth while avoiding faculty burnout?

APPENDIX A: ADDITIONAL METHODOLOGICAL NOTES

Additional notes: Visionaries

I first contacted Dr. Scaletti in 1995 in hopes of meeting with him to learn more about their program and its operations. He allowed an open and supportive relationship with many of the key persons in their program and facilitated meetings with them many times. However, the UNM faculty and leaders balance their willingness to share with a keen sense of the research value of their program. These people energetically seek publications and presentation opportunities--a key to their success. Because the UNM rewards faculty for these activities (discussed more fully above), they gain faculty support and participation.

The UNM is also immersed in the problem-based learning concept, which they helped to launch nation-wide. The great driving value of this mode of learning is that the students internalize--OWN--the learning process. Because problem-based learning is infused throughout the health professions curricula, students are accustomed to it and expect to take part fully in their learning processes. The success of this mode of learning on standardized tests has been well documented and the early commitment of the School of Medicine is now paying off in big ways. This approach builds learning communities with mutual obligations for students to provide high quality input, investing them in their professional responsibilities early in their educational careers. Problem-based, community-immersed, and

team-based experiences are the epitome of learning how to learn and represent the lifelong learning skills which are so highly valued in the workplace. Essentially the UNM leadership, represented by Dr. Scaletti, has come to the conclusion that if you expect a lot from your students you are going to get it. Program leaders expect a great commitment from the students who take part; they have that luxury because the School of Medicine Dean supports the community immersion experience notion and does not obstruct the interdisciplinary program.

Additional notes: Beth

I have visited the Health Sciences Center where Beth studies three times over the course of the last two years. Beth has expressed a sincere interest in supporting my understanding of her educational and personal pathways. She later initiated correspondence with me, and we exchanged ideas about educational programs for health sciences professionals in rural settings. She has sent me copies of her own academic work, including a community assessment she wrote for her own small town.

Because I do not have credentials as a health professional, I came to rely on Beth's perspectives on many issues. She has become a key in my process of constant comparison and has undoubtedly influenced the course of analysis and subsequent research for me both at New Mexico and Iowa interdisciplinary health professions education programs. While it is true that she represents something of a

convenience sample, the use of key informants to check emerging ideas and themes is encouraged by Bogdan & Biklen (1992).

Additional notes: Peggy and UI faculty

Peggy's influence on the UI program extended into the formal classroom sessions during the early months of program construction. She often drove to the UI campus from her community in order to meet the students with whom she would be working and to deliver a piece on cultural competence in the rural setting. During the later months of the program, her on-campus teaching piece was replaced by a clinical faculty member from the College of Medicine.

As noted earlier, the off-campus preceptors have been reimbursed for their clinical time spent with UI teams. This method of procuring field assistance has been of questionable merit, causing dissension between the program and the College of Medicine. The College of Medicine has a long-standing policy that field preceptors are not paid for their time, a policy that is also supported by the UNM-SOM (Scaletti, personal communication, May 1996). According to Scaletti, the UNM has had superior success in granting perquisites to field preceptors that do not include monetary rewards and he strongly favors more creative ways to entice field preceptors into supporting the program.

The Iowa on-campus faculty group rarely (if ever) travels to the off-campus clinical sites. During the very early negotiating stages a key faculty member and an

Associate Vice President traveled to clinical sites to arrange for the clinical experiences, but travel to the clinical sites is neither expected nor encouraged for other faculty members. The communication between the clinical preceptors and the on-campus faculty members is either very limited or non-existent. A notable exception is the recent integration of teams with the university's College of Dentistry's mobile unit, which travels to local long term care facilities to provide free services to residents. In these instances, the mobile unit becomes the field clinical site; teams traveling with the unit are precepted by the dentist who is directing the unit's activities. Another recent addition to the clinical sites available to the teams has been the local community's free medical clinic for uninsured persons.

APPENDIX B: PROTECTION OF HUMAN SUBJECTS CERTIFICATION

OMB No. 0925-0637

DEPARTMENT OF HEALTH AND HUMAN SERVICES

PROTECTION OF HUMAN SUBJECTS ASSURANCE/CERTIFICATION/DECLARATION

☐ ORIGINAL ☐ FOLLOWUP ☐ EXEMPTION (previously undesignated)

☐ GRANT ☐ CONTRACT ☐ FELLOW ☐ OTHER

☒ New ☐ Competing continuation ☐ Noncompeting continuation ☐ Supplemental

APPLICATION IDENTIFICATION NO. *(if known)*

POLICY: A research activity involving human subjects that is not exempt from HHS regulations may not be funded unless an Institutional Review Board (IRB) has reviewed and approved the activity in accordance with Section 474 of the Public Health Service Act as implemented by Title 45, Part 46 of the Code of Federal Regulations (45 CFR 46—as revised). The applicant institution must submit certification of IRB approval to HHS unless the applicant institution has designated a specific exemption under Section 46.101(b) which applies to the proposed research activity. Institutions with an assurance of compliance on file with HHS which covers the proposed activity should submit certification of IRB review and approval with each application. (In exceptional cases, certification may be accepted up to 60 days after the receipt date for which the application is submitted.) In the case of institutions which do not have an assurance of compliance on file with HHS covering the proposed activity, certification of IRB review and approval must be submitted within 30 days of the receipt of a written request from HHS for certification.

1 TITLE OF APPLICATION OR ACTIVITY

Integrated Health Professions Education Case Study

2. PRINCIPAL INVESTIGATOR, PROGRAM DIRECTOR, OR FELLOW

Ann M. Valentine, M.P.A.

3. FOOD AND DRUG ADMINISTRATION REQUIRED INFORMATION *(see reverse side)*

4 HHS ASSURANCE STATUS

☒ This institution has an approved assurance of compliance on file with HHS which covers this activity.

M1080 Assurance identification number 03XM IRB identification number

☐ No assurance of compliance which applies to this activity has been established with HHS, but the applicant institution will provide written assurance of compliance and certification of IRB review and approval in accordance with 45 CFR 46 upon request.

5. CERTIFICATION OF IRB REVIEW OR DECLARATION OF EXEMPTION

☒ This activity has been reviewed and approved by an IRB in accordance with the requirements of 45 CFR 46, including its relevant Subparts. This certification fulfills, when applicable, requirements for certifying FDA status for each investigational new drug or device. *(See reverse side of this form.)*

2/26/97 Date of IRB review and approval. *(If approval is pending, write "pending." Follow-up certification is required.)*
(month/day/year)

☐ Full Board Review ☒ Expedited Review

Chairman, IRB 03XM (Committee C)

☐ This activity contains multiple projects, some of which have not been reviewed. The IRB has granted approval on condition that all projects covered by 45 CFR 46 will be reviewed and approved before they are initiated and that it receives further certification *(Form HHS 596)* will be submitted.

☒ Human subjects are involved, but this activity qualifies for exemption under 46.101(b) in accordance with paragraph 2 *(insert paragraph number of exemption in 46.101(b), 1 through 5)*, but the institution did not designate that exemption on the application.

6. Each official signing below certifies that the information provided on this form is correct and that each institution assumes responsibility for assuring required future reviews, approvals, and submissions of certification.

APPLICANT INSTITUTION	COOPERATING INSTITUTION
NAME, ADDRESS, AND TELEPHONE NO.	NAME, ADDRESS, AND TELEPHONE NO.
NAME AND TITLE OF OFFICIAL *(print or type)*	NAME AND TITLE OF OFFICIAL *(print or type)*
SIGNATURE OF OFFICIAL LISTED ABOVE *(and date)* 3/7/97	SIGNATURE OF OFFICIAL LISTED ABOVE *(and date)*

HHS 596 (Rev 1/82) *(If additional space is needed, please use reverse side under "Notes.")*

3. FOOD AND DRUG ADMINISTRATION REQUIRED INFORMATION *(From front side)*

According to 45 CFR 46.121, if an application is made to HHS requiring certification and involving use of an investigational new drug or device, additional information is required. In addition, according to 21 CFR 312.1(a)(2), 30 days must elapse between date of receipt by FDA of Form FD-1571 and use of the drug, unless the 30 day delay period is waived by FDA.

3a. INVESTIGATIONAL NEW DRUG EXEMPTION *(If more than one is involved, list others below under NOTES)*

SPONSOR NAME

DRUG NAME

DATE OF END OF 30-DAY EXPIRATION OR WAIVER	NUMBER ISSUED

3b. INVESTIGATIONAL DEVICE EXEMPTION:

SPONSOR NAME

DEVICE NAME

Unless notified otherwise by FDA, under 21 CFR 812.2(b) (ii) a sponsor is deemed to have an approved IDE if: (1) the IRB has agreed with the sponsor that the device is a nonsignificant risk device; and (2) the IRB has approved the study. *(Check applicable box.)*

— The IRB agrees with the sponsor that this device is a nonsignificant risk device.

OR

— The IDE application was submitted to FDA on *(date)* _____. Number issued _____.

NOTES.

Next scheduled review: _____ Annual

_____ Other: Frequency This is exempt from further review.

MEMORANDUM

Date: March 3, 1997

To: Ann M. Valentine

From:

Re: 9701020C
[Committee Review Number(s)]

Human subjects procedures in your research project have been approved. Based upon the information you supplied to the U of I review committee, the pertinent note about your signed approval form is checked below.

XXX

_____ No external funds are involved in the support of this project. The original copy of the approval form is retained in the Division of Sponsored Programs. The enclosed copy is for your file. **This protocol is exempt from further review per paragraph 2 of 45CFR 46.**

_____ This approval is for an application to an agency outside the University. The original copy of the approval form has been sent to the address shown on the enclosed copy which is for your file.

_____ The Public Health Service will assign this project to a review committee in 2 to 3 weeks. We will send your approval form to the Executive Secretary when we learn the assignment. No central office at PHS will accept or transmit this form. If you receive the assignment, please call me. The enclosed duplicate is for your file.

_____ Your approval form is enclosed for you to include in your correspondence with the sponsoring agency. A duplicate is also enclosed for your file.

_____ Outside sponsorship for this project was indicated on your human subjects review application. A contract/grant proposal, attached to a University of Iowa Proposal Summary ("routing") form must be sent to our office. Please phone me at 5-2123. The original of your approval form and a copy are enclosed for your correspondence and your file.

If this memo indicates an incorrect assumption about your project, please let me know.

Your attention is drawn to the need for reporting promptly to the review committee: 1) adverse reactions or other unanticipated problems involving risks to subjects or others; 2) changes in the research activity; 3) new information which may show that the risks in your study are not justified; 4) change in project director's relationship to the research; and 5) all correspondence from the sponsoring agency about human subjects use in your grant or contract.

APPENDIX C: INFORMED CONSENT SAMPLE FORM

I, _____, hereby certify that I am of
(print your name)
full age and have every right to contract in my own name, and hereby consent that the still or motion images and audio recordings taken of me by representatives of ˙ may be used for educational, instructional, or research purposes and copies may be distributed without payment of consideration to me. The images may also be used for publication, broadcast, or promotion of The University of Iowa Health Sciences Center or its programs. I hereby irrevocably release The University of Iowa Health Sciences Center and any publisher of the above described materials from any and all claims I may at any time have arising out of, or related to, the publication of such materials.

In compliance with the Iowa Fair Information Practice Act, The University of Iowa requests this information for the purpose of gaining your permission to use your picture and/or your voice in this project.

Signed:_____

Home Address:_____

_____

Telephone:_____

Witness:_____

Date:_____

APPENDIX D: NUMBER AND MIX OF STUDENT TEAM INTERVIEW SUBJECTS AT UNIVERSITY OF IOWA

Term	Rotation	Teams/membership
Fall 1995	I	1: D, M, N, P 2: D, M, P
Fall 1995	II	1: D, M, N, P 2: D, M, N, P
Spring 1996	I	1: D, D, N, P 2: D, N, N, P
Spring 1996	II	1: D, N, P 2: N, N, P
Spring 1996	III	1: D, P 2: D, P
Summer 1996	I	1: D, M, P 2: D, M, N, P
Fall 1996	I	1: D, M, N, P 2: D, M, P
Fall 1996	II	1: D, M, N, P 2: D, M, N, P
Fall 1996	III	1: D, M, N, P 2: M, N, P
Spring 1997	I	1: D, N, P 2: D, M, N, P
Spring 1997	II	1: D, N, P 2: M, N, P

Key: D (Dentistry); M (Medicine); N (Nursing); P (Pharmacy)

WORKS CITED

Becker, H.S., Geer, B., Hughes, E.C., & Strauss, A. (1992, 4th ed.). Boys in white: Student culture in medical school. The University of Chicago Press: Chicago.

Benson, L., & Ducanis, A. (1995, July/August). Nurses' perceptions of their role and role conflicts. Rehabilitation Nursing, 20, 204-211.

Berger, A., & Schaffer, S. (1986, September). An interdisciplinary continuity-of-care experience for preclinical medical students. Journal of Medical Education, 61, 771-773.

Bogdan, R., & Biklen, S.K. (1992). Qualitative research for education: An introduction to theory and methods. Needham Heights, MA: Allyn and Bacon.

Boutron, K.A., King, J., Matula, P., & Niznik, C.H. (1995, June). Clinical path coordinator: Pulling it all together. Journal of Vascular Nursing, 13, 2: 50-54.

Bulger, R. (1994, June 8-9). Health professions education in a changing environment. In E. Meyer Bobby (Ed.), Making the team work: Proceedings of the 2nd Congress of Health Professions Educators. Washington, D.C.: Association of Academic Health Centers.

Clark, P.G. (1994a). Learning of interdisciplinary gerontological teams: Instructional concepts and methods. Educational Gerontology, 20, 349-364.

Clark, P.G. (1994b). Social, professional, and educational values on the interdisciplinary team: Implications for gerontological and geriatric education. Educational Gerontology, 20, 35-51.

Connelly, T. (1978). Basic organizational considerations for interdisciplinary education development in the health sciences. Journal of Allied Health, 274-280.

Erkel, E.A., Nivens, A.S., & Kennedy, E. (1995, November). Intensive immersion of nursing students in rural interdisciplinary care. Journal of Nursing Education, 34, 8: 359-365.

Geertz, C. (1973). Thick description: Towards an interpretive theory of culture. In The interpretation of cultures. NY: Basic Books, Inc.

Glaser, B.G., & Strauss, A.L. (1967). The discovery of grounded theory. Hawthorne, N.Y.: Aldine.

Goode, C.J., & Blegen, M.A. (1993, September). Developing a CareMap for patients with a cesarean birth: A multidisciplinary process. Journal of Perinatal & Neonatal Nursing, 7, 2: 40-49.

Hanson, G.R., & Price, B.R. (1992). Academic program review. In Whitley, M.A., Porter, J.D., and Fenske, R.H. (Eds.). The primer for institutional research. Tallahassee, FL: Association for Institutional Research.

Higgins, L. (1994). Integrating background nursing experience and study at the postgraduate level: An application of problem based learning. Higher Education Research and Development, 13, 1: 23-33.

Hirokawa, R.Y. (unpublished). Identification and validation of factors affecting the performance of interdisciplinary teams in the delivery of primary healthcare. Application for The University of Iowa faculty scholar award.

Hoffman, B., & Ritchie, D. (1997, March). Using multimedia to overcome the problems with problem-based learning. Instructional Science, 25, 2: 97-115.

Holland, B.E., Roberts, K. T., Van Stewart, A., & Wright, J.C. (1994). LIFE SPAN geriatric interdisciplinary curriculum for preparing future health care professionals. Educational Gerontology, 20, 231-239.

Howard, J. (1996, May). Can teams survive downsizing? Quality Digest, 18, 22-26.

Huff, F., & Garolla, G. (1995, Fall). Potential patterns. Journal of Allied Health, 359-365.

Ivey, S.L., Strauch Brown, K., Teske, Y., & Silverman, D. (1988, August). A model for teaching about interdisciplinary practice in health care settings. Journal of Allied Health, 189-195.

Kaufman, A., Mennin, S., Waterman, R., Duban, S., Hansbarger, C., Silverblatt, H., Obenshain, S.S., Kantrowitz, M., Becker, T., Samet, J., & Wiese, W. (1989, June). The New Mexico experiment: Educational innovation and institutional change. Academic Medicine, 64, 285-294.

Laatsch, L.J., Milson, L., & Zimmer, S. (1986, February). Use of interdisciplinary education to foster familiarization among health professionals. Journal of Allied Health, 33-42.

Larson, E.L. (1995). New rules for the game: Interdisciplinary education for health professionals. Nursing Outlook, 43, 4: 180-185.

Lucente, B., Rea, M.R., Vorce, S.H., & Yancey, T. (1995, July/August). Redesigning care delivery in the community hospital. Nursing Economics, 13, 4: 242-247.

Manasse, H.R. (1997, February). The University of Iowa Paradigm for health team education. U.S. Pharmacist.

Office of the Vice President for Health Sciences, The University of Iowa. (1995, July-September). Integrated health professions education program progress report. Iowa City, IA: The University of Iowa.

Osterweis, M, McLaughlin, C.J., Manasse, H.R., & Hopper, C.L. (Eds.). (1996). The U.S. health workforce: Power, politics, and policy. Washington, D.C.: Association of Academic Health Centers.

Pare, D.S., & Freed, M.D. (1995, June). Nursing Clinics of North America, 30, 2: 183-196.

Peck, P. (1996, March 21). Medical, nursing students are sharing classrooms. Family Practice News, 73.

Pew Health Professions Commission. (1995, December). Critical challenges: revitalizing the health professions for the twenty-first century. (Third report). San Francisco: Pew Health Professions Commission.

Richards, R.W., & Henry, R.C. (1993, August). Community partnerships: Educational linkages to increase the number of primary care practitioners. Academic Medicine, 68, 8: 594-596.

Robertson, K.E., & McDaniel, A.M. (1995, Summer). Interdisciplinary professional education: A collaborative clinical teaching project. American Journal of Pharmaceutical Education, 59, 131-136.

Rosenthal, T.C., Bissonette, R., Holden, D.M., & Brunelle, T. (1989, April). A university rural teaching practice: A model for collaboration in rural health care. The Journal of Rural Health, 5,: 103-112.

Savoie, J.M., & Hughes, A.S. (1994, November). Problem-based learning as classroom solution. Educational Leadership, 52, 3: 54-57.

Sobral, D.T. (1995, January). The problem-based learning approach as an enhancement factor of personal meaningfulness of learning. Higher Education, 29, 1: 93-101.

Strauss, A.L., & Corbin, J. (1990). The basics of qualitative research: Grounded theory procedures and techniques. Newbury Park, CA: Sage.

Swanson, E.A., Taylor, C.M., Valentine, A.M., and McCarthy, A.M. (1998, March/April). Integrated health professions education program seminar sessions. Nurse Educator, 23, 2: 18-21.

Taylor, J.C. (1994, July). Technology, distance education and the tyranny of proximity. Higher Education Management, 6,2: 179-190.

Temkin-Greener, H. (1983). Interprofessional perspectives on teamwork in health care: A case study. Health and Society, 61, 641-655.

Tresolini, C.P., & Shugars, D.A. (1994, March). An integrated health care model in medical education: Interviews with faculty and administrators. Academic Medicine, 69, 3: 231-236.

Uniting the two cultures of health care. (1993, Fall). Academic Nurse, 23-25.

U.S. Department of Health and Human Services, Public Health Service. (1991). Healthy people 2000: National health promotion and disease prevention objectives. (DHHS Publication no. [PHS] 91-50213). Washington, D.C.: U.S. Government Printing Office.

Von Maanon, J. (1988). Tales of the field. Chicago: University of Chicago Press.

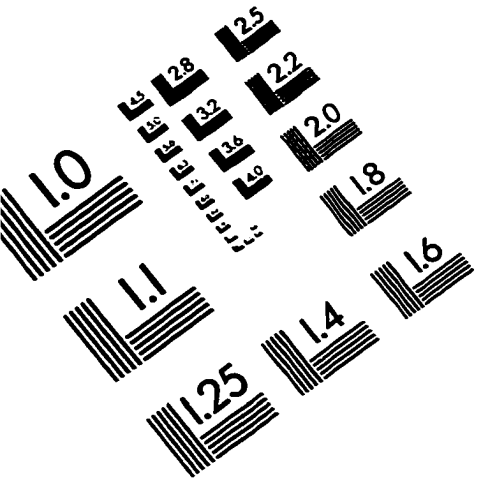
Vincenzino, J. V. (1995, January-March). Health care costs: Market forces and reform. Statistical Bulletin, Metropolitan Insurance Companies, 76, 1: 29-35.

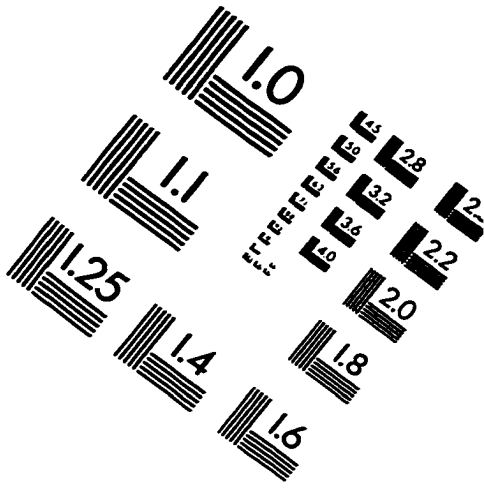
Weinholtz, D. (1991, May). The socialization of physicians during attending rounds: A study of team learning among medical students. Qualitative Health Research, 1, 152-177.

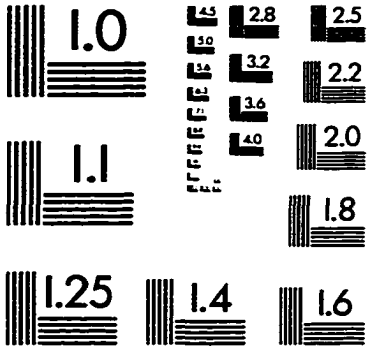
Wieczorek, R.R., Pennington, E.A., & Fields, S.K. (1976). Interdisciplinary education: A model for the resocialization of faculty. Nursing Forum, 15, 3: 224-237.

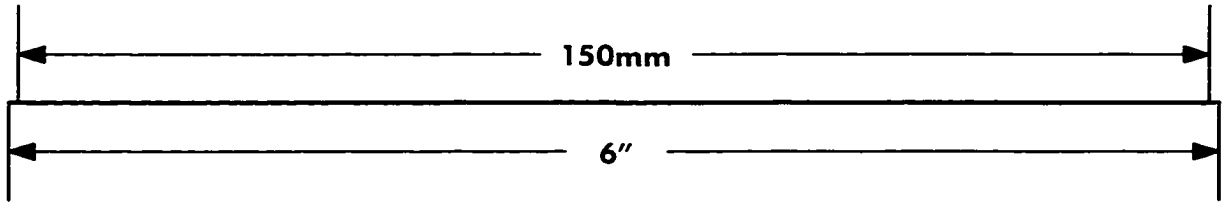
Zungolo, E. (1994, June). Interdisciplinary education in primary care: The challenge. Nursing and Health Care, 16, 6: 288-292.

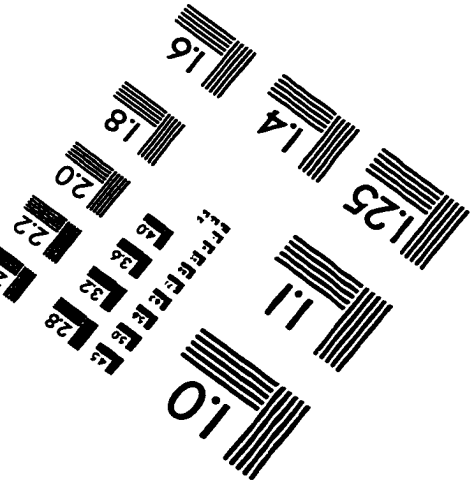
IMAGE EVALUATION
TEST TARGET (QA-3)

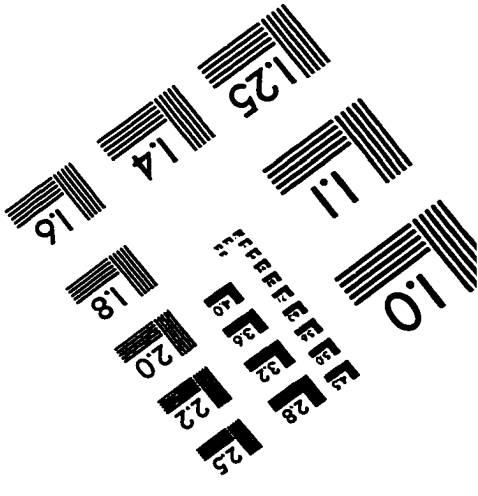












APPLIED IMAGE, Inc
1653 East Main Street
Rochester, NY 14609 USA
Phone: 716/482-0300
Fax: 716/288-5989