THE DEVELOPMENT OF INSTRUCTIONAL STRATEGIES

BY CLINICAL MEDICAL SCHOOL FACULTY

by

Lynn M. Kazemekas

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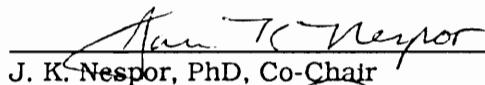
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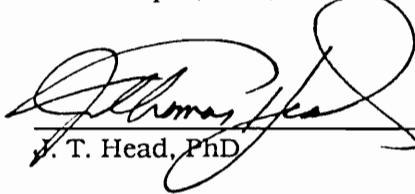## DOCTOR OF EDUCATION

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APPROVED:

_____
D. M. Moore, PhD, Co-Chair

_____
J. K. Nespor, PhD, Co-Chair

_____
J. K. Burton, PhD

_____
J. T. Head, PhD

_____
B.L. Fariss, MD

April, 1991
Blacksburg, Virginia

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CHAPTER I.

INTRODUCTION

Research on medical education has usually focused on the organization and administration of medical schools rather than the faculty and their instructional practices. This study addresses one of the gaps in our knowledge about medical education -- the instructional strategies and practices of clinical medical school faculty.

Clinical faculty work within complex academic health centers where they provide patient care, do research, and teach in clinical care areas rather than classrooms. They teach third and fourth year medical students, interns, and residents, by instructing them in medical and surgical patient care practices. A key component of those practices is the process of developing a differential diagnosis. Developing a differential diagnosis means evaluating the evidence surrounding the patient's unknown condition by using clinical reasoning skills to determine a diagnosis and appropriate treatment. Understanding the rationales faculty use to develop instruction for teaching these clinical skills, can add to existing knowledge about teacher cognitions and decision-making in instructional development.

Statement of the Problem

This study describes the instructional practices of selected clinical medical school faculty. The study does not attempt to evaluate clinical faculty's views nor their instructional practices. Instead, it addresses the following questions:

(1)   How do medical and surgical clinical faculty select and combine instructional methods and media in teaching clinical content?

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(2)   What influences clinical faculty use of a particular method or medium for clinical teaching?

Instructional methods are defined as systematic instructional techniques such as lecture and small group discussion. Media are instructional devices usually comprised of two components -- the hardware or machine and the software or program containing the teaching content. Examples of media used in medical education are the computer with laser disc and the slide projector with slides in a carousel.

Overview of the Study's Design

The data gathering techniques used in this study consisted of participant observation, interviewing, and collection of relevant documents and other artifacts. Descriptive research best supports the goals of discovering the clinical faculty's views about their clinical teaching roles and about how they design instructional strategies for teaching. In addition to learning about clinical faculty's views on teaching, the study examines the weekly schedule of a clinical faculty member. The purpose of including this schedule is to explore connections among the faculty's roles as teacher, clinician, researcher, and administrator. How faculty handle their multiple roles is related to how much time is available for all their activities, as well as what their beliefs and views are about these roles. As the study will show, time management is affected not only by personal choice, but also by factors outside the clinical faculty member's control. For unfamiliar medical and education terms used in the study see Appendix A. DEFINED TERMS, and for details of the research methodology see Appendix B. METHODOLOGY.

Two state-supported medical schools served as the settings of the study. In both schools the administrative curricular officer provided the medical school profiles

and assisted with faculty sampling selections. Since the research focused on clinical faculty members, only those persons in full-time clinical faculty positions were considered for participation. The criteria for selection of the two sample clinical faculty from each school were:

- one full-time clinical faculty member from general Internal Medicine at the rank of Associate Professor or higher, who has received at least one award of excellence for their clinical teaching from medical students.

- one full-time clinical faculty member from General Surgery at the rank of Associate Professor or higher, who has received at least one award of excellence for their clinical teaching from medical students.

Faculty with these qualifications were nominated by administrators at the schools. They were then contacted by telephone and a follow-up letter to secure their participation. Each of the four participants allowed observation and note-taking of their patient care, teaching, administrative and research activities for seven or more consecutive days. Each provided time for both informal discussions as well as a formal pre-scheduled audiotaped interview. To protect the identity of the informants, pseudonyms are used for all persons providing information.

Significance of the Study

The research questions address two significant issues. The first relates to the selection and use of instructional methods and media. This study shows that clinical medical school faculty typically do not use instructional planning processes such as those described by Gagne and Briggs (1979), Wildman and Burton (1981) and other instructional designers. Instead, they select methods and media intuitively, carefully

monitoring the student's reactions to their instruction. The data show that they may also model their instructional styles after the physician-teachers who taught them. They tend to use instructional techniques that include the human element -- defined here as person-centered methods. Understanding how and why clinical faculty choose and use person-centered teaching methods, rather than media-driven methods, can help the medical school decision-makers allocate instructional resources more efficiently. As Townsend (1987, p.18) states, medical schools/colleges invest considerable resources on media selection and production. If clinical faculty do not use these devices, then it wastes resources to invest in them for clinical faculty use.

The second area of significance relates to what influences the faculty to use particular methods or media. The factor common to all clinical faculty in the study is the view that the immediate patient situation constitutes the instructional content and the patient care setting the instructional context. The study will show that:

- planning the specific instructional content is not always possible, since content has a direct relationship to patients being admitted with unknown diagnoses; and

- teaching within the context or instructional setting of the patient care unit has a direct impact on a faculty member's selection of instructional methods and media.

The content of instruction is context-driven and can range from carrying out direct patient care procedures to the selection of diagnostic tests, drug therapies, and other medical interventions. This means that instruction must focus on actual patient conditions, and methods and media must be immediately available to clinical faculty so that they can take advantage of the "teaching moment". However, since the first

priority is patient care, a teaching tool or technique that might interfere with the patient care process will not be used within this context.

Structure of the Dissertation

This is a five chapter dissertation, with the INTRODUCTION establishing the basis for a study of clinical medical school faculty instructional views and practices.

The next chapter, REVIEW OF LITERATURE discusses educational research, teacher characteristics, issues concerning instructional development, and medical education including changes in health care potentially affecting medical education. This information serves as a frame of reference to highlight issues involved in clinical medical education.

The third chapter, SETTING, provides a brief, general description of medical education, relevant details about each medical school's curriculum and admissions data, and a sample of a clinical faculty member's weekly schedule. Activities related to teaching, patient care, and position, such as research grant preparation and administrative paperwork are described to show time investment and the faculty member's need to interact with multiple interest groups. The study addresses clinical faculty time use in relation to these issues and the existing reward system.

The fourth chapter, FINDINGS, describes three commonly shared issues related to the clinical faculty's multiple roles: teaching the skills of differential diagnosis, the learning hierarchy in the medical apprenticeship system, and the impact of Diagnosis Related Groups on practice and education. The specific characteristics of each of the clinical faculty members are also described in this chapter.

The fifth and final chapter, DISCUSSION, synthesizes all of the findings, draws conclusions and suggests recommendations for further research.

The APPENDIX contains:

A. DEFINED TERMS, which is a glossary of medical and educational terms used in the study.

B. The METHODOLOGY, which provides details of the descriptive/ethnographic research approach.

C. CLINICAL FACULTY INTERVIEW SCHEDULE, a copy of the 50-item interview schedule.

D. The SITE PROFILE list of questions used during the interview of medical school administrators.

E. Each School of Medicine's CURRICULUM OUTLINE.

CHAPTER II.

LITERATURE REVIEW

The review of literature focuses upon findings of previous research and pertinent knowledge to describe what has been accomplished in areas related to the research problem. It highlights areas of strength in the research as well as areas needing further study in support of this study's research problem and the assumptions underlying the problem. These underlying statements of belief are that clinical medical school faculty:

- Have expertise as practicing physicians and share this expertise through teaching.
- Think about their teaching role and prepare their own instruction.
- Select and use instructional methods and media according to self-determined criteria.
- Function within a complex and changing environment as teachers of the medical discipline, as researchers, and as practitioners of medical care.

Discussion of the research paradigm or model used for the study, although often appearing in the literature review, appears in Appendix B. METHODOLOGY and is only referenced here if needed to clarify a point of discussion.

The primary problem that this study addresses is the lack of research on the instructional practices of clinical medical school faculty, particularly how they select and combine their instructional methods and media, and what influences this selection process. One of the assumptions underlying this research problem, is the belief that clinical medical school faculty have expertise as practicing physicians and have entered teaching to share this expertise. As faculty members they think about their teaching

role as they prepare instructional strategies. Research on teaching in higher education shows however, that little has been done in studying what teachers think about during this instructional development process (e.g. Shulman, 1986; Clark & Solomon, 1986). Moreover, according to Townsend (1987), research on medical school faculty's cognitions and decision-making in instruction for medical education is almost non-existant (p. 19). Of the few studies of medical school faculty that do exist, one study's findings of preclinical faculty shows "little or no knowledge of past or current educational research even among those professors who thought such research to be valuable" (Nelson, Clayton and Moreno, 1990, p. 122). The study indicates that medical school faculty have access to educational research but choose not to use it for instructional decision-making because it "is without practical value". The researchers conclude that this medical school faculty belief, reflected throughout their data, "underscores the importance of studying how those teachers not using educational research make pedagogical decisions" (Nelson, Clayton and Moreno, 1990, p. 122).

The thinking processes and pedagogical decisions of clinical medical school faculty members are also important because their concepts and practices have influence beyond the specific teaching situation. As Shulman (1986) notes: "...the conceptions of subject matter that influence their [the teacher's] explanations, directions, and feedback [to students]," (p. 26) are important features of teaching. A clinical faculty member's conceptions of subject matter and instructional focus can influence a medical student's subsequent practice as a physician. It is fair to assume that clinical faculty do influence their students thus help shape health care practices through their instruction. It is therefore important to understand the faculty member's beliefs and thoughts about clinical content and how they develop their instructional

strategies. Educational researchers such as Shavelson (1983), have recognized the complexities of each profession -- education and medicine -- as he makes comparisons by saying, "teachers are rational professionals who, like other professionals such as physicians, make judgements and carry out decisions in an uncertain, complex environment ..." (Shulman, 1986, p.23). Clinical medical school faculty combine the complexities of both professions in one faculty group.

Although it is assumed that clinical medical school faculty chose to be in academic medicine for a reason such as sharing expertise, there is no research on this population of teachers that defines the most common reasons for choosing teaching. However, a review of research on teaching as work, presented in Feiman-Nemser and Floden (1986) provides a usable classification system for discussing satisfactions or rewards received from teaching:

> ...rewards are often classified as extrinsic or intrinsic rewards. Extrinsic rewards are the public benefits of high salary, short working hours, elevated status, and significant power. Intrinsic rewards, sometimes called psychic rewards or subjective rewards, are aspects of work that are valued by and visible to insiders only. ...Teachers vary in the importance they attach to both extrinsic and intrinsic rewards. Even the supposedly objective benefits of money and status are not valued equally by all teachers (p. 510).

Findings described by Feiman-Nemser and Floden (1986, pp. 510-511), suggest that the extrinsic and intrinsic rewards derived from a faculty member's teaching role are important in understanding their educational perspective. This personal reward information can benefit the clinical faculty member by heightening consciousness of pedagogical decisions. Clinical faculty members can learn if rewards or satisfactions

come from the teaching activities themselves, from knowing that students are learning, or are derived from some other aspect of their teaching role.

For instance, drawing from the general research on teaching, Plihal (1982) found that teachers who get substantial rewards from seeing the effects of their instruction get relatively little reward from the process of teacher-student interaction, and vice versa. These feelings of reward from the teaching role were directly related to the organization of instruction. Teachers found the student learning most rewarding where learning goals were defined and students worked alone. Where learning goals were broad and group activities dominated, teachers found the process, rather than the outcome, most rewarding (Feiman-Nemser and Floden, 1986, p. 511). Research that identifies rewards from teaching may lead to improved understanding of clinical faculty and their practices.

Although clinical faculty have expertise as physicians, a review of the medical education literature indicates that medical school faculty typically enter their teaching career without formal preparation in pedagogy (e.g. Jason and Westberg (1982), Dinham and Stritter (1986), Geme (1986), Irby (1986), Mangione (1986), and Bland et al (1988)). However, it can be assumed that they use some type of theoretical approach to teaching and defining medical content. As noted by Moore (1982):

> Lack of time alone would require that a selection should be made from the...knowledge available. Moreover, the normative sense of education requires that what is taught should be worth learning, capable of improving the person who learns (p. 53).

The general theory of education developed by Moore (1982) provides an empirical base against which clinical faculty's theoretical approach to teaching can be described.

Moore's educational theory begins with an assumption about an end, the notion of an educated person (p. 30), and includes two defined models -- the mechanistic model and the organic model -- which "spring from radically different assumptions or presuppositions about the nature of man" (p. 36). Moore points out that the mechanistic model can be seen in the educational approach of James Mill and B.F. Skinner, whereas the organic model is exemplified by Rousseau and Dewey. Although neither model gives a complete view of education, each provides a perspective based on empirical evidence (Moore, 1982, 36-37). A brief description of elements in each of the two models are:

(a) The mechanistic... sees education as a transaction between teacher and pupil ...[where] the teacher is an authority, a repository of knowledge, an expert....The teacher has little to learn from the pupil... 'free' or 'unstructured' activity is to be deprecated, especially that involving pupils with one another....The teacher's role is thus primarily didactic and regulatory in [shaping] the right sort of [pupil] behavior.

(b) the organic... [emphasizes the] pupil's need to develop his [or her] own methods of working and acquiring knowledge and skill. The teacher may still be regarded as an authority, but the role... is that of a supervisor or consultant. [The student develops] an accurate picture of reality... by exploration,... and by insight, through dealing with concrete reality... Education is a process of discovery... [with] here-and-now problems to be solved (Moore, 1982, pp. 74-76).

The theoretical approach to teaching that emerges from this study's research of clinical faculty is described in terms of Moore's general theory of education in Chapter V. DISCUSSION.

Another of the assumptions underlying the research problem is that clinical medical school faculty select instructional methods and media according to presently unknown, self-determined criteria. Even though medical schools invest considerable resources on media selection and production, little is known about medical school faculty's criteria for selecting and using particular instructional media and methods (Townsend, 1987, p. 18). And, since instruction in clinical care settings is different from the typical classroom setting, what these particular faculty members determine to be useful criteria may be different from those used by other teachers. Since the goal of medical education is to prepare competent practicing physicians, the clinical faculty member's instructional criteria must reflect the whole of professional practice.

For example, the socializing of medical students into practicing professionals is an expectation of the clinical faculty member's role in the educational process (e.g. Irby (1986), Dinham and Stritter (1986)). The clinical faculty member is to instruct and help produce individuals capable of providing safe clinical care, whether in medical or surgical areas (e.g. Barrows (1986), Mangione (1986)).

Before clinical faculty instruct the medical student, the student typically completes the pre-clinical basic science studies in the first two years of the medical school curriculum, then begins clinical studies in the third and fourth year. According to Schoen (1982, p. 28), medical educators base this curricular division on the belief that the teaching of scientific principles should precede the development of skills in their application. However, this traditional division between the elements of

professional knowledge and reflected in the medical school curriculum may be changing. As Barrows (1986) states, in discussing the philosophy of medical education, and reflecting upon the competencies expected of newly graduated physicians:

>...the principal purpose of medical education is to prepare students for careers as clinicians in medicine. Since the medical school product is a clinician, then it seems more appropriate to consider the scope of clinical education as including the entire curriculum (p. 23).

This changing perspective of medical education may eventually effect widespread change in the curriculum design and instruction. However, at present clinical faculty are expected to design third and fourth year clinical studies or clerkships for medical students using "the theory-based practice of an apprenticeship" (Dinham and Stritter, 1986, p. 953) and transform students into professional practitioners. This is where clinical faculty's direct patient care activities intertwine with their teaching activities in developing instructional strategies and selecting methods and media. Also, this is where teaching the skills of differential diagnosis become critically important. As Irby (1986) says:

>The challenge of clinical teaching is to transform novice medical students into practicing physicians. The transformation process is designed to help students learn how to collect data, interpret and synthesize findings, evaluate critically the effect of actions taken, perform procedures skillfully, and relate to patients in an ethical and caring manner (p. 35).

Clinical medical school faculty must focus on context as well as content. Stevens (1982, p. 2) points out that teachers of clinical practice disciplines must not focus predominantly on content elements to the point of neglect of practice processes in

the context of direct patient care. In teaching clinical practice skills to medical students, clinical faculty must also combine the practitioner role with the teacher role. This is not easy, as it is difficult to separate the technical competence of diagnosis from management or use of health resources, while role modeling teaching skills -- usually in the presence of a patient.

Deciding which criteria to use when selecting instructional methods and media is difficult both in light of the clinical setting and in terms of existing pedagogical knowledge. As noted by Reiser and Gagne (1982, p.499), educators have been concerned about choosing the appropriate methods and media to deliver an instructional message -- for well over half a century. Although "characteristics of learners, setting, and task are identified as factors to be given primary consideration in [methods and] media selection" (p. 499), the faculty member's point-of-view or opinion about selection and use is emerging as another factor to be considered.

For instance, instructional technology researchers such as Clark and Solomon (1986) suggest that:

> In the future, researchers might ask not only how and why a medium operates in instruction and learning, but also why it should be used at all. The final ethical [proper use] question raised by the history of media use in teaching is the pattern of its use by educators (p. 475).

Clark and Solomon (1986) tend to reinforce the notion that the faculty member's opinion of what constitutes instructional methods and media effectiveness is important. And they imply that the issue of educational effectiveness and appropriate use of methods and media is an unresolved issue throughout education. For example, instructional research commonly using an experimental, single variable design to

compare specific instructional methods and media as to effectiveness in meeting predefined objectives, generally has shown no statistically significant differences, (e.g., Clark, 1983; McKeachie, 1986).

However, other instructional researchers seem to believe that research design is not the issue, but that effectiveness relates to a relationship between method/medium capabilities and what the faculty member wishes to accomplish in the educational objective(s). For example, Reiser and Gagne (1983) in their work with instructional design say that "for a given instructional outcome, for a given group of learners, various media may differ in terms of the instructional effectiveness" (p.7).

Going a step further, a more recent review of research on media use in teaching by Clark and Solomon (1986), says that:

> past research on media has shown quite clearly that no medium enhances learning more than any other medium regardless of learning task, learner traits, symbolic elements, curriculum content or setting. ... Generally it appears that media do not affect learning in and of themselves. Rather, some particular qualities of media may affect particular cognitions that are relevant for the learning of the knowledge or skill required by the students with specific aptitude levels when learning some tasks. These cognitive effects are not necessarily unique to one or another medium or attribute of a medium. The same cognitive effect may often be obtained by other means, which suggests a measure of 'functional equivalence'. This implies that there may be 'families' of functionally equivalent but nominally different instructional presentation forms (p. 474).

A review of existing educational and instructional technology research shows that the presently unknown criteria used by clinical faculty to select instructional

methods and media may add new knowledge or be reflected in the existing research literature.

Another assumption underlying this study's research problem, states that clinical medical school faculty function within a complex environment as clinical teachers, researchers, and practitioners of medical care. This complex environment is presently going through changes, particularly in the delivery of patient care services. There is growing concern about how these changes are affecting medical education, particularly education during the clinical phase (e.g. Foreman, 1986; Buchanan, 1986; Swanson, 1986; Wharton, 1987; Stemler, 1987), as it is accepted teaching practice to include the provision of direct patient care as part of the medical students' education. This teaching practice as well as other education-related expenditures can affect the cost of the patient's care. As Foreman (1986) points out: "teaching hospitals are, on average, much more expensive than others [such as community hospitals] even after making adjustments..." (p. 17). If cost of patient care in teaching hospitals as opposed to non-teaching hospitals becomes an issue, then clinical faculty's theoretical approach to teaching and instructional choices may be examined in light of these costs.

Edwards, Kissling, Pauche and Marier (1980) point to an aspect of the health care delivery/medical education interface that is presently affecting medical school clinical faculty. Their research shows that "medical schools are becoming dependent on faculty members generating more revenue through patient care...this dependence will allow faculty members less time to teach" (p. 967).

According to Blacklow, Veloski and Robeson (1988, p. 41)), long established methods of clinical teaching are being re-examined. Clinical sites of instruction and

allocation of medical school resources may also be affected by the changes in health care delivery as Petersdorf (1988) states:

Cost containment will require that we try new teaching sites, particularly in the office, in the ambulatory care center, in the day care operating room, and in the chronic disease hospital or hospice. More importantly, we need to find a way to pay for education in these new sites, perhaps by allocating medical school resources not along departmental lines but along lines of educational function (p. 90).

An underlying issue related to concerns about medical education and the changes in our health delivery system, is the decreased contact between patients and the medical students, interns, and residents who care for them. As Buchanan (1986) notes:

It is easy to be nostalgic about the days when the patient's stay was sufficiently long to permit meaningful interpersonal interaction with a house staff member [intern or resident] who had the time and the motivation to know their patients as individuals. But nostalgia will not reverse the current direction of change. To the extent that this vanishing interaction generated diagnostic insights or therapeutic opportunities, the patient is now worse off. And from the point of view of the student and the resident, there is the deprivation of perhaps the most rewarding aspect of practicing medicine - the privilege of a unique, exquisitely intimate yet chaste relationship with another human being (p. 103).

This concern about the interaction between the patient and their physician also relates to the public views of health care and medical education. In fact, persons both within medical education circles and outside in the general public seem to believe that medical

education is in the public domain. This belief is reflected in statements made in **The Chronicle of Higher Education** article by Evangelauf (1986) indicating that what is taught in medical schools/colleges should reflect the public's health/illness needs. In the Evangelauf (1986) article, Petersdorf, a medical educator, states, "medical schools have earned no better than a C in their efforts to meet the challenges of a changing health care environment..." (p. 1). A health consumer, Evangelauf says "medical schools have failed to adapt their programs to society's changing needs..." (p.22).

The physician's traditions and the educator's traditions merge in this complex academic health delivery setting. It can be assumed that change in one tradition may need to occur first before the need for change in the other is recognized. Buchanan (1986), in discussing the impacts of change, draws from the historical account of Ebert (1986) who comments that changes in medical education and training emerge as "sequelae to structural and social systemic change", and says that "absent these kinds of forces, faculties rarely effect significant change in the curriculum" (Buchanan, 1986, p. 105). For clinical faculty to recognize that a need for change may exist, they need adequate data descriptive of present practice in medicine and in education. The usefulness of the data for clinical faculty members' and medical school administrators' educational decision-making can only be determined by the faculty and administrators themselves. As pointed out by Nelson, Clayton and Moreno (1990), "the utility of educational research is in sensitizing practitioners to conditions that they might consider" (p. 126).

Summary

In summary, the review of literature focuses on relevant findings, including areas needing further research, particularly related to this study's research problem and the assumptions underlying the problem. There is minimal research on the cognitive processes teachers employ while developing instruction in higher education including medical education; more research is needed. The clinical medical school faculty member's conception of subject matter and their instructional focus can influence community health care practices. There is no research on why clinical faculty choose to be in academic medicine, particularly the extrinsic and intrinsic rewards from teaching which, if known, could heighten consciousness of pedagogical decisions. Existing research shows that medical school faculty in general enter teaching without formal preparation in pedagogy. It is assumed however, that clinical faculty use some type of theoretical approach to teaching. Moore's (1982) general theory of education is offered as an empirical base against which to describe the clinical faculty's theoretical approach to teaching.

Since the problem is lack of research on how clinical faculty select and combine instructional methods and media, the criteria they use and the influences upon this process are unknown. What is known however, is that the instructional practices of clinical faculty must address the whole of professional practice. Clinical faculty must socialize the medical students into their professional role by addressing both the content and context of the specific clinical practice discipline. It is also known that the academic health delivery setting in which clinical faculty are making these educational decisions is in the midst of change. There is concern about how the changes are affecting the clinical setting, thus clinical faculty's multiple roles and activities

including teaching and instructional choices. This research study focuses on the educational aspects of this complex situation. Educational research indicates that the process of determining proper use of instructional methods and media is an unresolved issue throughout education. Therefore, the outcome of this study -- an ethnographic description of sample clinical faculty member's instructional practices including selection of methods and media -- may add new knowledge or be reflected in the existing educational research.

CHAPTER III.

SETTING

There are three sections in this Chapter. The first describes the setting where medical education takes place -- the academic health center. The second includes a brief general description of medical school criteria for student admission, curriculum, and methods of student evaluation. This is followed by a description of how the two medical schools apply these criteria.

The third section describes one clinical faculty member's actual activities over the course of a week. The aim of this section is to go beyond description of the formal organization, to give the reader a global perspective on the full range of clinical faculty member activities.

The Academic Health Center

Medical schools/colleges are professional schools within the system of higher education. However, unlike most other professional schools which are located on a University's campus, medical schools are part of academic health centers, which are often quite a distance from the campus. As described in the Association for Health Services Bulletin (1990), these centers are the health complexes of the nation's major universities and are comprised of a medical school, at least one other health professional school or program, and one or more teaching hospital. They are our primary resource for health professional education, biomedical research, and many aspects of patient care services (p. 6). The medical school/college's location in relation to the University's main academic setting is relevant to the study because this can

affect interaction between medical and non-medical University faculty. The constraints of time and travel often limit medical faculty participation with other academic faculty in the university's education-related activities. This means that medical school faculty, and particularly clinical faculty, interact more with health practitioners whose primary activity is providing health care services to patients, whereas in the main University setting the teaching of students is the primary activity. Thus, when considering the meanings of educational actions by clinical faculty as they develop instruction, the patient care setting must be kept in mind.

The Medical School And Students Admission

Although medical schools and their faculties independently determine student admission criteria, curriculum design, and methods of student evaluation, in reality these criteria and designs are similar. Therefore, students interested in being admitted to medical school familiarize themselves with this information well in advance of making their applications. For instance, students aware of medical school criteria typically obtain Baccalaureate Degrees with a strong focus in the sciences to increase their chance of acceptance. Although a science-focused undergraduate degree is the most common premed preparation, some medical schools have been known to admit students with an outstanding grade point average in at least 90 hours of their required courses and no undergraduate degree. All medical school applicants take the Medical College Admission Test (MCAT), which is prepared by the American College Testing Program and administered by colleges and universities. The MCAT scores are scaled and made available to all medical schools throughout the country through the Association of American Medical Colleges (AAMC). This provides a national picture and

a common denominator for comparison of all medical school applicants. Dr Ellis, one of the medical school administrators in the study says:

> we view MCAT's as one major criterion for evaluating students' learning ability. MCAT is a test of what they have learned and retained. It allows one to look at students from many colleges on a common denominator -- grade point average is inflated, everyone tells me. And, it [grade point average] varies so drastically from one institution to another that it's very difficult to take the grade point average from one college and say that it has some relevance to a grade point average at another. So, MCAT's give a uniform basis.

Medical schools receive these scaled MCAT scores on a yearly basis as a service of the AAMC.

However, each medical school sets its own standards or criteria for admission, including how the admissions committee evaluates and weighs different criteria. Medical school admission committees generally base decisions on: attributes of character and personality as defined by the given medical school, academic skill and ability, the results of the Medical College Admission Test (MCAT), and the results of a personal interview. Other factors also come into play, most notably ownership of the medical school. If the medical school is part of a given state's system of higher education, like the two in this study, in-state versus out-of-state residency becomes a factor. Tuition rates can be almost double for out-of-state students, and the state's legislature can suggest that of all qualified applicants accepted for admission in-state students receive priority.

Curriculum And Student Evaluation

Although the curricula of medical schools are similar in length and content, over the past few years they have shown an openess to change their designs. This change is being prompted by a number of factors, one of which is government pressure to contain health care costs. Medical school administrators and faculty realize that although at present medical education costs are offset by faculty-generated patient care payments, this may soon change. And although curricular approaches may also change, the medical school's goal -- to provide a framework for the didactic and clinical studies of its medical students -- will remain the same. Typically, the first two years of the four year curriculum are primarily basic sciences, such as human anatomy and physiology, biochemistry, epidemiology and pathology. The last two years consist of clinical rotation studies, called clerkships (please see Appendix A. Defined Terms), and electives in medicine, surgery, psychiatry, pediatrics, obstetrics/gynecology and other practice specialties. See Appendix E. for the curriculum outline of each medical school in the study.

Participating medical schools can obtain curricular and other education-related assistance from the Association of American Medical Colleges (AAMC) in Washington, DC. This voluntary medical school membership organization sets accrediting guidelines for curriculum and its administration and coordinates testing services such as the Medical College Admission Test (MCAT). The AAMC also conducts annual and special education conferences, publishes a refereed journal, plus performs other services, such as the American Medical College Application Service (AMCAS) which facilitates the student's application process.

The AAMC guidelines for accreditation do not obviate different approaches for designing a medical school curriculum. For example, one school might use a completely integrated curricular approach where the normal structure and function of the human body is taught simultaneously with basic science content such as biochemical implications and appropriate clinical patient applications. Another medical school might follow a combination of separate content courses such as normal human structure and function, biochemistry, and abnormal human structure and function in clinical settings.

The medical school system of student evaluation consists of teacher-prepared tests administered during and at the end of each course. At the close of each academic year, a promotions committee also reviews students' academic performance before recommending promotion or graduation to the Dean. In addition to this school-designed evaluation process, medical students take the comprehensive National Board of Medical Examiners (NBME) examinations, prepared and offered under the direction of the AAMC. Each medical school determines if the student is required to take the NBME examinations and decides how exam results are used. NBME Part I tests basic science knowledge and is usually taken at the end of the second year, before starting the clinical clerkships. If the medical student does not master the Part I exam, some schools provide special instruction in medical sciences during that third year before repeating the exam. They must make up any clinical time missed before graduation; however, a passing score is not required by all schools for promotion or graduation. The NBME Part II examination is taken at the end of year four and is focused on clinical skills. Typically, but not in all schools, the Part II exam must be mastered for medical school graduation. Also during the fourth year of medical school, the students

complete AAMC-generated forms for the selection of internship sites. A similar process is followed for the selection and acceptance into a residency program. There are situations where the internship and residency training occur in the same academic health center.

Medical school one

The first medical school to be described is located in an urban setting and is part of the state's system of higher education. The Associate Dean providing the site profile data, is a physician-educator teaching medical pharmacology in addition to his administrative role. The school of medicine maintains more than 1,050 beds in the hospitals of the academic health center, and offers medical students contact with patients in the outpatient clinics and at the Veterans Administration hospital. According to a medical school publication: "tens of thousands of individuals are treated in these facilities each year" and the medical center's hospitals are "ranked 14th nationally in number of patient visits" (p. 8).

In terms of how the School of Medicine relates to the University in such administrative areas as faculty policies and budget, Dr Ellis, the Associate Dean, says, "we have our own promotion and tenure policy....The general broad standards of excellence are the same for the University and the medical school....Our finances are in part from the state, [from medical research, and the third source] is from patient care".

The School has more than 1,100 clinical members on the faculty. Of that number, 526 are full-time clinicians, including affiliates, assisted by 625 interns and residents, and 37 part-time and 747 volunteer clinical faculty. The student body of the School of Medicine is made up of men and women from various backgrounds. Some are

single and enroll directly from college; others are married, have families, and have had extensive work experience. The size of each entering class is 168; in-state residents comprise the majority with approximately 75 percent, and 25 percent from out-of-state. Dr Ellis points out that there is no written policy regarding in-state and out-of-state numbers, but "our goal would be to have about 75 percent in-state. ...we feel an obligation to have predominately in-state students since the students' tuition pays only a minority of the cost of this education, the rest being provided by the state". He says that they have on average, 2,400 applications per year and nearly 2,000 of those are out-of-state. They select those with the best credentials plus interview. There is a higher credential standard for out-of-state applicants which is how the large number are handled. Data as to where those not selected chose to go Dr Ellis says, is "theoretically available through the Association of American Medical Colleges".

As with all medical schools, this School uses the Medical College Admission Test (MCAT) score along with other "credentials" for admission. Dr Ellis says, "we view MCAT's as one major criterion for evaluating students' learning ability". The mean scaled score they use as a cutoff is "in the nine's", which is approximately at the 80+ percentile rank of all students taking the MCAT nationally.

In addition to academic credentials, the interview by an Admissions Committee member adds other information. Dr Ellis says that all criteria add to the "process in which we try to select those whom we consider the best candidates". He went on to say:

> we give preference to students who have a rural background because it's understood that they are the most likely to return to rural [state's name] where there's a great need. We give preference to minority applicants again because of the great need for minority positions.

He states that the Admissions Committee serves two major roles. One is the review of all the completed applications, and the evaluation of those that meet the minimum standards. The second is interviewing applicants who meet minimum standards.

In describing the strengths of this medical school when measured against all other medical schools in the country, Dr Ellis says:

Well, there are some external measures of medical schools but they are basically not related to teaching. They are based on things like research. Our research funding is the highest in the state and is 31st or 32nd or something like [that] in the country among the 126 medical schools. So, that from a standpoint of funded research, we are very high. From the standpoint of clinical facilities and of the breadth of care of patient availability, we're the fourth largest health science center in the United States. So, we certainly have tremendous clinical facilities, faculty to manage it and experiences for students -- undergraduate [medical students] and post graduate [interns, residents, and fellows]. I know of no one who's attempted any kind of ranking of the educational process. There's so much varience from one school to another, it's amazing. And, any attempt to make it uniform is difficult.

Dr Ellis comments on their medical school curriculum by saying that he is concerned about the amount of content in all medical school curricula and says -- "what do you remove to be able to add something else?" In discussing instructional methods and media Dr Ellis says he is not happy with the number of lectures used by faculty and the fact that faculty want to keep lecturing and use other methods/media to "supplement" the lectures. He gives the impression that if he had his way, almost all

lecturing would be abolished and replaced with more interactive methods/media, such as small group discussion and computer/videodisc learning centers. However, Dr Ellis wants to continue the clinical teaching of physical diagnosis with one faculty member working with two medical students, adding other learning activities that allow "students to be more active in their learning".

Since Dr Ellis is administratively involved with both curriculum design and faculty teaching he wants to increase faculty development efforts in both areas. He says that they are already involved with assisting faculty in their teaching role and recently had a full-day session on how to improve the lecture method. The approach used included videotaping of faculty giving a part of their lecture followed by feedback and critique by experts/educators. This approach to faculty development pleases him and he feels that they are on the way to doing what will be useful for medical school faculty and students.

Medical school two

The second medical school in the study is located in a small city situated in a rural county with a combined population of city and county at about 100,000. This university thus medical school is also a part of the state's system of higher education. All medical school information used in the study comes from documents and individuals only involved in the medical school. Two medical school administrators, Dr Grisom and Dr Harlow, during separate interviews describe the medical school. Dr Grisom is a physician-educator involved in clinical teaching in addition to his administrative role. Dr Harlow is a PhD faculty member in basic sciences, as well as serving in his administrative capacity.

In this instance, the academic health center and medical school buildings are within walking distance of the main University campus. However, due to busy schedules the clinical medical school faculty and the medical students spend their time at the University's hospital and clinics. The hospital, consisting of 883 beds, cared for 25,941 patients in 1988, plus around 148,000 out-patient visits in the clinics and the Primary Care Center. The medical school also operates an Affiliated Hospitals Program, where medical students, interns, and residents rotate for clinical training to hospitals, such as the Veterans Administration hospital, in another city.

In terms of how the school of medicine relates to the University, Dr Harlow says that "the medical school is an integral part of the University because it's right here on the grounds". He states that all faculty promotion and tenure decisions are carried out at the medical school - they don't get mixed in with the School of Architecture for example. However, all new medical school faculty do go to University orientation. He says that each Dean ensures that new faculty have exposure to University history and traditions, as well as the honor system and teaching. Dr Grisom describes the current organization of the university and academic health center by saying:

the Vice President of Health Sciences is directly under the [University] President. And, there's a Provost for the rest of the University under the President. And, they are parallel. Then, under the Vice President for Health Affairs [Health Sciences], ...is the Dean of the Medical School and the Executive Director of the Hospital. ...there's a lot of desire to work together as much as we can and we are integrated in a cooperative sense. Having said that, each school has it's own internal policies and student affairs office and sort of unique questions, issues, [and] problems it yields.

The School of Medicine has over 875 faculty members, and looking at faculty funding plus other expenditure issues, Dr Grisom says:

> ...there are certainly a number of areas where we share in state funds through the University and we receive our just share, and there are a number of ways in which we have training grants and other sources of income. The clinical income does not go through the University directly. ...faculty is supported in part, by clinical earnings, in part by the state for teaching, and in part by grant income. And, we have been in the top ten medical schools nationally in terms of grant support which allows us to have state of the art faculty members defined by research, and seeing we are the - sort of, on the cutting edge of medicine. So, I think that's important.

Interview notes and documents show that the student body is made up of men and women from various backgrounds, with the mean age of approximately 23 years; the size of each entering class is 139 persons. In-state students comprise the majority with approximately 70 to 75 percent, and about 25 percent out-of-state. It used to be 50 - 50 but bills introduced in the state legislature, although not enacted, helped to change the ratio. Dr Harlow says their present target for qualified students is 75 percent from in-state, however the applicant pool had been decreasing. Now, as of 1989 they have 70 percent in-state and 30 percent out-of-state. In 1990 they have 65 percent in-state and 35 percent out-of-state. He says that overall the good news is that the applicant pool for medical schools in general is up; last year it was up 1.8 percent and 1990 is 11.5 percent over last year.

Dr Harlow states that out of an estimated 2467 applications received in 1989, they accepted 139; many were qualified but they selected the best they could get based

on the School's admission criteria. When asked if he knew where the others choose to go when not able to be placed here, he remarks that the majority go out of state according to AAMC data. He feels that their medical school is in competition with Duke, Hopkins, Harvard and so on.

According to the medical school's catalog, student admissions is based on the Medical College Admission Test (MCAT) score along with general academic ability as reflected by transcripts, and difficulty of the major in which the degree was earned; personal qualities and characteristics of the applicant, such as career goals, leadership, commitment to community service, communication skills, and ability to undertake independent and creative research. The lowest mean scaled MCAT score of the entering class of 1989 was 9.59, which is 84.4 percentile rank of all students taking the MCAT. An admissions committee reviews credentials, interviews applicants meeting the admission criteria and implements final selection. The Committee is composed of faculty of the School of Medicine and fourth year medical students. Dr Harlow says that faculty are appointed to the Committee on Admissions by the Dean and also have refusal rights as far as serving in that capacity.

Dr Grisom discusses the medical school curriculum design by saying that "it's fairly classical in its design" and they are making "innovative changes in the second year curriculum". He goes on to describe the change as:

> use of patient problems and small group tutorial sessions in clinical medicine...
> there are six students and a [clinical faculty] mentor that go through a series of
> [patient] cases that are unknowns...it teaches group skills and how to throw out
> ideas -- to be wrong or right -- how to negotiate that -- settle that without
> becoming incensed that someone doesn't agree with you....and by the time

they're finished with the second year, they're able to put together a good differential diagnosis.

He went on to say that they have been introducing students into the actual clinical setting during their second year for about the "last decade".

Dr Grisom says that now the medical school faculty and administrators are involved in integrating the first year's curriculum into a pattern that is "similar to the Harvard new curriculum". They are also planning to add "more exposure to ambulatory care in the future" within the third clinical year. Dr Grisom points out that:

...the basic model will remain the same in third year [which] has always been the case method. It's an apprenticeship -- the more traditional lecture and a socratic compliment to the hands-on -- then the [patient] work-up, finding the principle diagnoses approach to therapy and diagnosis with physicians who have gone through it before.

Dr Grisom closes by discussing the strengths of the medical school, he says:

we're one of the top medical schools in the country....We have top notch students, faculty members and facilities. You can't do better [than] to come here.

The multiple responsibilities of clinical faculty

Since this study deals with clinical instruction, particularly the how and why faculty select and use specific methods and media within their instruction, their work activities can be revealing. Clinical faculty have to manage multiple activities and interactions each day. Therefore, time management and constraints on time can affect instructional strategies including selection of methods and media. This raises the

question of -- how much time a faculty member can devote to teaching when other rewarding activities must also be adequately addressed?

Although there are national statistics available on medical and surgical practice hours, such as can be noted in the American Medical Association (AMA) publication, Trends In Health Care 1990, these hours indicate time invested in patient care. Upon telephone contact, one of the AMA researchers involved in developing the statistics says that he does not know if clinical faculty are included in the population. In any event, the statistics show 58.2 hours as the average total practice hours of work per week by all medical and surgical specialties and ages in 1988 (Trends in Health Care 1990, page 90). Based upon the small sample in this study, clinical faculty invest an average of 60 hours of work per week. As can be seen in the following week's activities for Dr Bently, the average day starts around 7:30am and ends around 6:00pm to 6:30pm. That's about ten to eleven hours a day, monday through friday; four hours on saturday for the Grand Rounds teaching session, patient visits and writing progress notes on their patients' charts; and two hours on sunday for patient visits and charting. Description of Dr Bently's activities helps the reader analyze what is going on and can help identify some faculty beliefs about the inter-relationship between patient care and clinical instruction. Data presented here, and in the following Chapter IV. FINDINGS, are discussed in Chapter V. DISCUSSION.

A Week in Dr Bently's Life

The following narrative describes Dr Bently's activities as observed during the week of January 8 to 13, 1990. Dr Bently is involved from Monday through Saturday in multiple education and teaching activities that intertwine with his research and patient

care responsibilities. This, according to Dr Bently, is what constitutes the typical work pattern of a clinical faculty member.

Monday.

Monday begins with a surgical procedure on an ambulatory patient. According to Dr Bently, it is a light morning's work. After the surgery, he checks in at his office, then leaves for the Radiology Department to review a patient's CATSCAN and x-rays with a staff radiologist. Based on his consultation with the radiologist, he telephones the patient about his need for further surgery. After this, he telephones the Dean's office for assistance with a grant proposal. Shortly thereafter, he leaves for the VA Hospital six miles across town. At the VA Hospital he joins the residents and other surgical attending on patient walking rounds. Following rounds, he returns to his VA Hospital office and telephones data to a contact in Chicago to help locate funds for medical research. He then telephones two cancer patients to tell them results of tests. After working on his grant proposal and paperwork required for the work he does at the VA Hospital, he signs out for the day.

Tuesday.

At 7:30am Dr Bently attends a Clinical Patient Conference at the Medical College with residents, interns, medical students, and other attendings in surgery, radiology, and medical oncology. The goal is to discuss each patient as a learning experience by developing a differential diagnosis for each case. The chief resident opens the conference with a verbal presentation of a patient's demographic data, presenting symptoms, and laboratory findings. As he sits down, the radiologist mounts the patient's CATSCANs on the lighted x-ray viewbox and describes his findings. No diagnosis is given by either physician as the purpose of group discussion is to elicit

ideas. The chief resident asks clinical faculty or attendings in the audience how they would handle the patient if given the presenting symptoms and related data. By only presenting limited case data, it places emphasis on the audience's clinical reasoning and ability to ask questions for further data. This problem-solving approach is applied to the cases of four different patients. The discussions are collegial other than hierarchical, with all of the participants focused on the patient and what can be done to correct/improve his or her health problem. Even though the medical students, sitting in a group toward the back of the room, do not enter into the exchange, they listen intently while taking notes.

The conference runs until 9:00am. Afterwards, Dr Bently returns to his office to work on patient charts and the grant proposal. The latter has reached a stopping point, so he walks to Radiology to examine x-rays and discuss the findings with a radiologist.

Between about 9:30am and 12:30pm he is in the clinic. Of his 18 patients visiting the clinic, all except one were there for post surgical cancer follow-up checks. He also examines a new patient who was referred to the medical center by a physician from a distant rural community. He examines the patient and makes an initial diagnosis of cancer. Between patients Dr Bently tape records his progress notes for transcription by his secretary, breaking off several times to respond to paging or make telephone calls. When he finishes his patient load, he goes to the Dean's office for grant proposal forms.

Around 2pm Dr Bently is examining a patient with the resident, discussing the findings. Afterwards, he telephones a physician he is trying to get as a speaker at a clinical conference for the medical students. After telephoning the Dean's office about the grant, he leaves the clinic at 4pm and goes to the surgical intensive care unit

(SICU). As attending surgeon, Dr Bently must inform his patient's family of the patient's deteriorating condition. This takes place in a private conference room. The patient's wife suddenly becomes hysterical, screaming that it was all Dr Bently's fault, and runs from the room with her children trying to calm her. Dr Bently stands quietly for a moment, then says how bad he feels but there's nothing he can do surgically as the heart couldn't handle it. Dr Bently informs the patient's nurse to call him if the family wishes to talk, then returns to his office to work on the grant proposal until 6pm.

Wednesday.

At 7:30am the next morning, Dr Bently is at the VA Hospital. After exchanging his jacket for a crisp white lab coat, he goes to the patient unit conference room to meet with three third year medical students. The students have prepared patient cases representing condition(s) frequently encountered in community practice.

After the first student presents a case, Dr Bently asks a question on an issue that could directly affect the decision to operate. The student's response is not correct, but Dr Bently thinks it shows good thinking/processing skill. "As long as they think and do the proper preparation, I'm happy", he says. As students make their presentations, he asks questions of the others to involve them in the discussion. Dr Bently uses the chalkboard to outline the specific bodily organs and depicting how he would carry out the surgical procedure he talks them through it. The students become more relaxed and open as the small group discussion progresses; they appear to be enjoying the learning process.

At 8:30am Dr Bently walks to the Gastrointestinal (GI) Conference to join a group of about 13 medical students, interns and residents as well as attendings in general surgery, medical specialists in gastroenterology, and radiologists including

endoscopic specialists. The chief surgical resident presents each patient case by describing the specific data, including CATSCAN, x-ray endoscopy, and laboratory findings. Different attendings speak up by asking questions or making comments as the diagnosis in each case is not given. As they finish discussing each patient the chief resident describes what they had done or were planning to do clinically.

Following the GI conference, Dr Bently returns to his VA Hospital office. He reviews the drafted grant proposal, making phone calls to verify some of the statistics. Leaving the VA Hospital, he arrives back at the medical center at 1pm to give an hour Core Lecture to 25 medical students. Dr Bently arrives with slides in a carousel, loading it on the projector in the middle of the room. He leans an elbow on the podium while holding a pointer/light and discusses his slides as they are projected onto a large wall screen in front of the room. The slides are a combination of black and white morbidity statistics, x-rays and CATSCANs, and photos of color drawings of bodily organs. When he turns the lights down to show the x-ray slides, he says "snore quietly" -- the medical students laugh aloud.

At 2pm Dr Bently returns to the office to answer phone calls, review mail, work on patient charts, sign correspondance, and work on the grant proposal. This is his weekly personal health activity day, so Dr Bently leaves his office at 5pm for the tennis courts.

Thursday.

Thursday morning begins at 8am in the clinic's well-equipped conference room, with the Tumor Clinic Conference. The resident presents a patient case with a radiologist who projects a CATSCAN in slide format on a wall screen, while discussing a very visible tumor. The resident explains the surgical procedure used to remove the

tumor, then asks for comments and questions from the 40-plus person audience. The audience consists of medical students, interns, residents, physicians from the community, nurses, social workers, laboratory technicians and other health workers from inside and outside the academic health center. A number of other patient cases are presented, and although Dr Bently does not present a patient case, he participates in the discussion of findings and suggested treatments. The focus is on developing a differential diagnosis by describing what has proven to be the "best" theraputic intervention for this type of tumor based on reviews of literature and personal experience.

The methods used during the conference are: case presentation, discussion of patient findings on radiographs, "chiding each other" about personal treatment choice, along with discussion of treatments recommended in the literature; the media used include: histologic tissue color slides and CATSCAN slides, along with a podium, lavalier neck microphone, and wooden pointer.

Immediately following the conference, Dr Bently and the other clinical faculty attendings and residents in his surgical group, review their operating room schedule for the following week. They decide who will do which surgical patient procedures on which days. In fact, Dr Bently will operate on an out-of-state patient sent to him because of the textbook chapter he wrote about this particular patient condition.

Dr Bently returns to his office briefly to check phone messages and mail, then quickly walks to the clinic where he examines patients from 9am to 11:30am. He then leaves for an out-of-hospital luncheon and surgical meeting across town.

Upon returning to the academic health center at 2:45pm he goes to a conference room on the patient unit for a small group discussion with three third year medical

students on clinical clerkship rotation. The other group with whom he met with on wednesday are at the VA Hospital for a similar clerkship rotation.

At 4:30pm Dr Bently attends a Morbidity & Mortality monthly meeting which is required for hospital accreditation. All surgeons within the department of surgery, come together to discuss patient deaths (mortality) and patient recovery problems (morbidity) which are atypical for the given surgical intervention. Following the meeting, Dr Bently returns to the office to continue with the grant proposal. Around 5:30pm two of the surgical residents from the VA Hospital stop by his office to say hello and kid around for a few minutes. He completes some patient-related paperwork and leaves for home at 6:30pm.

Friday.

At 7:30am Dr Bently is in a small conference room at the VA Hospital for Surgical Grand Rounds. Dr Bently and five attendings at the VA Hospital and three attending physicians from the community listen as two surgical residents present patient cases. As with all other patient case conferences occurring during the week, medical students and interns sit in the back of the room, attendings sit together in the front, and residents sit wherever there is an empty seat. The instructional methods and media used to present the patient data include: CATSCANs mounted on an x-ray viewbox, chalkboard and chalk, journal articles of published surgical research data, case presentation-discussion for problem-solving, and socratic dialogue between the resident presenting the case and various attendings.

After the hour and a half conference and back in his office still at VA, Dr Bently reviews patient charts and returns phone calls to post surgical cancer patients needing feedback about laboratory tests. Meanwhile, the resident starts a possible bowel

resection surgical case in the operating room (OR); the nurse phones to tell him they are ready for him. His teaching style is to do surgery with the resident until he is confident in the resident's ability, then he or she opens the case and Dr Bently assists the resident. Immediately after the telephone call Dr Bently goes down the hall to the OR, changes into scrub clothing and joins the surgical team after re-examining the x-ray on view in the room.

Returning to his office at the medical college across town, he does more follow up on the grant proposal and paperwork. Around 2:30pm he makes patient rounds including a visit to radiology to check a bone scan result and personally inform the patient of its result. Dr Bently then returns to the office to review new journals and remove articles to read and use for teaching purposes. Since the grant proposal needs the Dean's and the Chief-of-Surgery's signatures, he hand carries the forms to their offices; returns to his office and telephones a new physician who recently joined the staff to say hello/welcome. He then reviews patient mammogram results, dictates patient chart progress notes, and other in-basket "stuff" as he calls it. That evening he leaves for home around 6:30pm.

Saturday and Sunday.

Saturday morning Surgical Grand Rounds start at 8am in the large, theater-style auditorium that accomodates over 200 persons. The audience consists of medical students, interns, residents, clinical medical school faculty and other attendings.

The Surgical Grand Rounds begin as did previous conference sessions during the week, with different residents and attending physicians presenting an "interesting" patient case. The Rounds end at approximately 9am so Dr Bently walks across the

street to the hospital to do patient rounds and some office work, leaving about 10:30am for home.

On sunday he does patient rounds around 8:30 - 9am. If on call, he takes it from home since he can get to the hospital in case of emergency in less than 20 minutes.

The multiple roles Dr Bently assumes during this typical week in his schedule of activities, provides a glimpse of a clinical faculty member's reality as clinician, researcher, and teacher. As will be pointed out in Chapter V. DISCUSSION, these role-related activities must be managed effectively to obtain personal, institutional, and medical-social rewards. It will be shown that clinical faculty rewards for teaching are more in the realm of personal satisfaction, whereas rewards for the providing of patient care and research are medical-social and financial. The next Chapter on FINDINGS adds further detail to the research discussion by presenting teaching practices shared by all sample faculty as well as individual characteristics displayed by Dr Abbott, Dr Bently, Dr Crawford, and Dr Dotson.

CHAPTER IV.

FINDINGS

This chapter consists of two sections describing the instructional practices of the sample clinical faculty. The first describes some commonalties shared among all four faculty members:

a) the importance they place on teaching the skills of differential diagnosis;

b) the belief that there is a teaching-learning hierarchy implicit within the apprenticeship system upon which clinical education is based;

c) and the patient care reimbursement systems such as Diagnosis Related Groups (DRGs) do impact on their practice.

The second section describes the variation across the four faculty members -- Dr Abbott, Dr Bently, Dr Crawford, and Dr Dotson -- and suggests some of the sources of this variation in instructional practice.

A. The Skills of Differential Diagnosis

When discussing individual patients with medical students, the four clinical faculty members focus on the problem-solving and decision-making process the student uses to develop a diagnosis and treatment plan. The faculty member's instructional goal is to help students develop their mental processing of patient-related information, other than just feeding back the "right answer". For instance, if a given fourth year medical student were to fail to arrive at a correct diagnosis, but had mentally worked through the process correctly, none of the faculty members studied would be upset.

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They would try to help that student by going back through his or her thinking process to locate the error. Dr Bently says:

> I wouldn't feel bad [if they made an incorrect diagnosis]. No ... As long as they're moving in the right direction ... I want to see how they think. And I think that's important. It doesn't happen too often but it does happen sometimes. It can happen. But if they're thinking logically and following a logical approach to the patient and working in their mind, working through this thing and they come out with the wrong answer at the end, chances are 999 out of 1000 that that won't be detrimental to the patient. It will probably end up in doing approximately the right treatment for them anyhow. So, I feel it's how they think about it. How they approach it is very, very important.

A medical student who comes up with the correct diagnosis but has not evaluated the evidence to establish a logical basis for the patient's condition, could be guessing and coming up with the most obvious illness or condition. As pointed out by Dr Abbott, this student could "get into more trouble than the guy who just happened to make a bad judgment on a given case, but the process he used to achieve this was okay". Dr Dotson states that two separate decisions occur as first a diagnosis is made and then the choice of therapy is decided upon. He also points out that:

> there's a lot of overlap because sometimes we use trials of therapy as a means of differential diagnosis ... usually you try to make your diagnosis first and then you try and design treatment. If you can't make a diagnosis, then your designing of treatment is a little different. It's a lot more empirical. The patient comes in with community-acquired pneumonia and you can't figure out what kind it is.

Well then, you'd have to rely on statistics. What's it likely to be to decide how to

treat?

None of the clinical faculty say that their teaching of differential diagnosis and

treatment design is effective in the sense of producing students who invariably make

the correct diagnosis. Dr Bently points out that no one makes a correct diagnosis one

hundred percent of the time. All faculty in the study see the student's thinking ability

more than the clinical teaching as the important factor. In fact, when discussing their

teaching of a clinical course, all faculty members believe that they only contribute their

way of doing things. They say they do not teach a course, preferring to say that clinical

skill development is a cumulative effect.

B. The Teaching-learning Hierarchy in Apprenticeship

The four clinical faculty described themselves as products of a hierarchical

apprenticeship system. The role models they use in their teaching come from this

medical apprenticeship hierarchy. The aspect of teachers and learners is best described

by Ebert (1987) when he says:

...the nature of clinical teaching is such that the student is far more likely to be

directly supervised by a resident or fellow than by a member of the faculty.

Clinical teaching is done at the bedside or in the examining room with real

patients, and the student learns by doing. There is nothing inherently wrong

with this system, but it depends heavily on a hierarchy of students, with the

medical student at the bottom of the ladder, [the intern,] the first and second

year resident next in line, and finally the senior resident and fellow at the top (p.

74-75).

All four faculty members are themselves products of this system, and all of them described incidents from their own past learning during the research interviews. For instance, the role models they all use in their teaching come from this medical apprenticeship hierarchy.

There was also a hierarchy of clinical skills, a pattern of specific skill groups that clinical faculty believe should be mastered by third year medical students, fourth year medical students, interns, and residents. The following briefly outlines these hands-on skills and behaviors as characterized by Dr Abbott:

(1) **Medical students, third year** - By the end of the third year they ought to be able to do a good physical exam, and to have developed a good, rational approach to going beyond that history and physical as far as identifying what a particular problem is. They should have a passing knowledge of most of the major medical problems, but they are not to invest time in learning [patient] treatments.

(2) **Medical students, fourth year** - These are the treatment years, and they need to realize that they are going to have to continually update their treatments. Physical diagnosis and approaching diseases, you don't really update that as much as you do practice. You get better at them but those facts and processes don't change by and large.

(3) **Interns** - The patient-oriented procedures and more difficult treatments [are the] interns' domain. Sometimes, however, this can be overplayed. Although they are great at starting IV's and carrying out a thoracentesis, if not enough energy and time is invested in 'diagnostic thinking', when they enter a residency where diagnosis and treatment skills are important, they can have difficulty.

(4) Residents - Are leaders of the patient care team. They make patient rounds with interns and medical students, choosing diagnostic and treatment interventions they believe appropriate. [To reinforce this leadership role,] I make morning rounds by deliberately starting [patient visits] at the opposite end of the hall from house staff rounds.

The resident plays a key role in the teaching-learning hierarchy as part of a given patient care team. The team members including medical students, interns, and the resident, work with the clinical faculty member for only four to six weeks before rotating to another clinical service. Dr Abbott encourages the resident to delegate patient activities to interns and medical students and to do some of the teaching related to these activities. During team discussion rounds, Dr Abbott expects the resident to ask him to explain unusual patient-related data. Dr Abbott says that he will not ask the resident questions in front of the team members because he is attempting to develop the resident's leadership and group process skills. During the first few days of the randomly assigned rotation, Dr Abbott meets privately with the resident to explain his own style of teaching.

All four clinical faculty members believe that medicine is a field in which people learn by doing. Dr Abbott says, "in clinical medicine, in the clinical years, you learn to be a physician by acting like a physician ...". He describes the apprenticeship concept as applied within medicine by saying, "... at the theoretical level at least, medicine is viewed as a practical learning experience ... at least for the clinical years".

C. Diagnosis Related Groups and Clinical Teaching

The Diagnosis Related Groups (DRGs) are part of MEDICARE's prospective payment system, where payment or billing is formulated before the patient is admitted for care. Each DRG consists of illnesses grouped together by cost, based on estimates of the amount of time and the kind of treatment. Costs above what the federal government determines to be appropriate for each diagnosis will come out of the hospital's profit. The costs of medical education are included in the DRGs as indirect costs for teaching hospitals. And the reimbursement for the clinical faculty's medical or surgical patient care is based on documented evidence such as the patients' charted progress notes. The federal dollars come to the hospital which in turn re-allocates funds to the medical school for faculty salaries and related operating expenses.

This federally-mandated change in reimbursement procedures for patient care services provided by clinical faculty has affected their clinical practice and teaching role. The four faculty interviewed for this study, as physicians in charge, must document patient visits daily and write up substantive progress notes. They acknowledge that it probably results in better patient care, but say it takes away from teaching time. Dr Dotson notes that rather than spending time on teaching, some clinical physicians write their progress notes.

Dr Abbott believes that the DRGs also have affected the admission side of patient care. Since admitting diagnoses determine the rate of payment, people are not admitted to the hospital unless they are "very sick". This has an impact on medical education because it means students are dealing with patients who have multiple problems. There are more symptoms to define and separate to arrive at a diagnosis. Dr Abbott says that before DRGs the patient would be admitted with fewer symptoms and

often at an earlier stage of an illness. This pre-DRGs admission system provides two things:

> (a) a "simpler" patient problem allows the student to develop a differential diagnosis under a less stressful learning situation;

> and

> (b) the student has time at the early stage of an illness to teach the patient lifestyle changes and help curtail further problems.

Dr Abbott points out that now health teaching must be offered in other ways and at other locations.

In addition to the similarities outlined above, there were important differences in the teaching practices or decision-making styles of the four clinical faculty interviewed. The second section of this chapter will examine these differences. The meaning-perspective or point-of-view of each faculty member will be examined in turn. As Erickson (1986) asks:

> What do these actions mean to the actors involved in them, at the moment the actions took place? How are the happenings organized in patterns of social organization and learned cultural principles for the conduct of everyday life -- how, in other words, are people in the immediate setting consistently present to each other as environments for one another's meaningful actions? (p. 121).

DR ABBOTT

Introduction.

The first physician is Dr Abbott, who has a graduate degree in educational psychology in addition to his medical degree and Board Certification in Internal

Medicine. He is consistently aware of time, people, and what is happening around him. Management of time down to minutes seems to pervade his way of life, both at work and at home. Dr Abbott laughs sheepishly and says his wife gets annoyed with him if he overdoes time management at home. The impression he gives is that there are so many things to do and people to work with, that he doesn't want to miss an opportunity to participate and use his creativity.

In his teaching of medical students and house staff he believes in using every available teaching moment. When discussing what occurred between himself and a patient during patient rounds, he directly questions team members about what they learned from the interchange. Dr Abbott focuses his teaching on medical interviewing and group process skills because he believes these skills are critical to success in medicine. He uses himself as a role model, as his primary teaching method. He uses other methods and media occasionally to reinforce his focus on the doctor-patient relationship.

One consequence of focusing on interpersonal skills and using himself as a role model is Dr Abbott's emphasis on developing student's self awareness skills. One goal is to enable students to enjoy the results of personal growth. He tries to apply this to himself as well as his students. For instance, he admits that when first in teaching, he was uncomfortable if unable to answer a student's question. But now he says, "I feel comfortable saying, I don't know what's wrong with this person. You can either get help or we need to figure out what's wrong...". He combines this interest in being self-aware with his sensitivity to individual differences and when promoting the importance of psychosocial aspects of patient care. Medical students, interns, and residents know that psychosocial needs better be addressed while caring for the patient. Although

medical procedures and lab tests are important, Dr Abbott believes they have not performed well unless the whole patient is cared for and that includes psychosocial care as well as physical care.

Dr Abbott's present position as clinical faculty in Internal Medicine and Family Practice combines his interest in teaching with a desire to take "care of the whole patient rather than just the organ system". Dr Abbott had "curriculum courses" and a "methods course" as part of his degree program in Educational Psychology which he completed after medical school. These courses, particularly one in measurement and evaluation, provided him with some "hands-on" preparation, but he says, "I don't know any methods courses being helpful once I got into the classroom".

In addition to his clinical teaching role, he teaches a course in medical interviewing for second year medical students at the medical school and holds seminars on medical interviewing skills for practicing physicians. Working with these seminars has helped him develop a "learner-centered or self-directed learning" approach that he feels best represents his personal style of clinical teaching. He also tries to improve by experimenting. For instance, if he hears of a new or different teaching technique, he jots it down in a journal for future reference - "to remind myself of some things that I want to try".

Although concerned about his teaching, he still considers patient care to be the most important part of the whole picture. For instance, in addition to regular medical patients, Dr Abbott has a multi-disciplinary somatization clinic which has been an interest of his since the early 1980s.

Instruction develops moment by moment.

Dr Abbott does not develop instructional content in written form, such as preparing lesson plans that outline what he wants to teach. He says that he develops instruction "for a month of ward attending", by keeping an open mind and trying to always be prepared to detect a teaching moment. Dr Abbott goes on to say that he believes there is no instructional strategy that's unique to clinical teaching. What is unique is that clinical teaching is improvised because patient admissions drive the day-to-day teaching content. He says, "when I start the month, I never know what kind of patient is going to get admitted. I never know what kind of house staff [resident and interns] I'm going to have". His instructional strategy is to "take advantage" of what patient clinical conditions do get admitted, and "maximize learning from that". Then, through assessing medical students' and house staff learning needs, he teaches whatever else they need or desire through other means. The hospitalized in-patients and their presenting symptoms form the basis of his content and the patient care unit becomes the context. Dr Abbott feels context is just as important as content because he and the team must deal with admitted patients problems or issues then and there. As he points out, teaching on the patient care unit is:

> almost always spur of the moment. I may have had a chance to do some reading or stuff beforehand, especially if I know the issues or know the type of patients that were admitted that we're going to discuss".

Dr Abbott has a general idea that he wants to make some points about such things as medical ethics, humanism, and routine diagnostic testing. He keeps a mental priority so when a patient is admitted who might fit into one of his priorities, Dr Abbott

structures his teaching to make those points. So he doesn't forget or repeat himself, he also keeps a mental list of those topics they haven't had a chance to talk about.

Dr Abbott explains that clinical faculty do receive a course syllabus from the Clinical Coordinator, "but not much more than that". There is no department of education or funded group within the medical school whose mission is to help clinical faculty do their job better, or at least be available to help them if help were requested. If such help were available, Dr Abbott would like to see his teaching content priorities combined with other clinical faculty's priorities and developed into a written document. At present, Dr Abbott teaches what "they are unlikely to get elsewhere". He says, "you know, some of the things that I do on the wards [patient care units], senior residents tell me no one has ever done before, which is why I do it".

Dr Abbott feels there is a randomness to the way clinical faculty teach. In fact, "it's why students can get through medical school never having discussed a certain kind of problem or having had any exposure to it,...". It's up to the medical student to recognize their own deficiencies. Dr Abbott continues, "if they recognize that they're deficient in it [e.g. care of diabetes], they might, for instance, elect an endocrine elective in their fourth year...". This is why he believes medical students need skills of self evaluation and self motivation to be able to detect academic weaknesses or deficiencies. They need to correct any lack of exposure or experience before taking the Board Exams at the end of medical school. He says that "there's no way of systematically knowing where you're weak in a given [medical practice] field until you get to the time of the Boards". He pauses, then thoughtfully continues by saying, "I'm never sure. You know, the best predictor of Board scores, Part Two, is admission testing for pre-medical school....what that tells me is that if you admit good students, you'll graduate good

doctors". This is what "senior people" have said to Dr Abbott although he says that he doesn't completely believe it. He believes that a combination of student ability, the types of patient-related experiences the medical student is exposed to, and the teaching skills of clinical faculty lead to good doctors.

Team process skills highly valued.

Dr Abbott tends "to accent process type skills and thinking skills more than facts because facts are so evanescent". He recalls that the half life of medical facts is about five years. Dr Abbott focuses his teaching on the team concept by saying to medical students and others, "we consider your [group] process skills a vital part of any sort of medical teaching because it's rare - actually rare that you work in anything but a group....It's just unusual to have a one-on-one relationship in medicine".

This brings out Dr Abbott's favorite part of clinical teaching, which is the "interpersonal interaction with the folks" he's involved with during their medical rotation. It's why he's in clinical teaching, and part of the reason why he doesn't enjoy lecturing. He is aware that some residents do not share this perspective, and place less value on interviewing and talking to patients than on laboratory test results. However, he hopes that medical students, interns, and residents feel "like they've seen a good role model which is more important to me in some ways than they've learned seventeen facts that month or seventeen hundred facts - whatever we expect them to learn". When with his team on the patient care units, Dr Abbott can be observed teaching how "to go about approaching a differential diagnosis" or asking medical students, "what sort of processes do you do when a patient presents a problem that you've never seen before".

Dr Abbott communicates in the same manner with patients, the medical students and house staff, and colleagues. His body language, word usage, manner of dress, and preparing people beforehand for what he's going to do, lets the medical students and house staff know what to expect. He will tell the resident the evening or day before a discussion round what he intends to talk about and asks the resident for suggestions. This is indicative of Dr Abbott's team orientation. He's a people-person who prefers being a contributing member of a team rather than being singled out in a highly visible fashion.

Selecting and using methods & media.

Dr Abbott believes the selection and use of instructional methods and media should be in response to student needs. He says he would like to be able to walk into a room to give a talk to second year medical students at 3:00pm, start a set of slides, and after five minutes say, "you know, you guys look so tired. Why don't we just sit down and talk about this junk rather than me showing these slides". Although he has never done that, he hopes to be able to someday. He says he's not "as flexible or as moment to moment" when in a classroom talk as when involved in clinical teaching. In a classroom he's "more content than process driven," but he's trying to get to a point where he can change methods or media in the middle of a presentation, if he sees that the group is not engaged.

Dr Abbott's most used instructional method is role modeling. This allows him to pursue a "patient-centered" approach to teaching. For instance, during a roleplay on patient interviewing technique, he taught "the patient centered need approach". For negotiating with a patient, he told the medical students, interns, and residents to think in terms of a "need approach" where the physician first determines the patient's "need"

or desire and recognize that first before the physician/health care need is met. Dr Abbott's approach is to write down all problems on a list together with the patient. He then asks the patient which one(s) they want to discuss, and places a circle around those. He uses whatever time is left during this first negotiating visit to start discussing those problems. At the end of the visit, he writes a progress note and puts all information in the patient's chart so that each problem can be recalled and worked on during subsequent visits. In effect, he considers the patient an important, if not central, member of the health care team.

When with his patient care team, talking about a patient or some particular finding, there's a warmly positive plus respectful communication among them. If a medical student suggests a possible diagnosis based on his or her research of the patient's condition, Dr Abbott will look at the student and say "that's a good thought", or perhaps will say, "a good call" when a team member makes the correct diagnosis. When approaching a patient who replicates a "textbook case" of a particular heart problem, for example, he respectfully asks the patient if team members can listen to his heart sounds as a learning experience. Another aspect of his communication style is use of similes which can be helpful for learners whether student or patient. For example, in teaching a patient about her medication Lasix, he says, "it [the medication] works like a light switch in reducing water build up, when you are on it the fluid flushes out quickly, but when not on it, the fluid builds up".

Another method Dr Abbott uses frequently is the "Socratic method, use of a question within a question," along with "how" questions, for example, "how would you take care of that problem with that patient?". Dr Abbott says, "students are participating and giving their ideas rather than his lecturing and them being silent for

the majority of the time". He thinks opening discussion through such questioning techniques is of critical importance "for discussing ethics or psychosocial issues".

His use of questioning, small group discussion, chalkboard or flipchart, journal articles, anecdotal teaching and humor all come into play during Discussion Rounds. This is when Dr Abbott, his resident, interns, and medical students, together with a pharmacy school faculty member, discuss all of their patients. Discussion Rounds usually follow their walking rounds where all patients are visited by team members, including Dr Abbott. Although Dr Abbott is ultimately responsible for all care provided by his team, the resident delegates care of each patient to different team members based on patient needs and the team member's skill level within the learning hierarchy. As they all gather around the conference table in the small conference room on the patient unit, Dr Abbott readies himself to listen. He calls this room the "facilitating room". It is where patient-centered teaching-learning can occur privately, yet close to the patients in case of emergency. Dr Abbott is in his element in these small group discussions. During the patient presentations, he writes patient name, critical lab results or notes about pending labwork, possible diagnoses, related family history, and any other relevant data. As team members complete their patient presentations, Dr Abbott pauses briefly then either asks a question directly related to the data or brings in information from an article he has read. Sometimes he will make anecdotal remarks from personal experience, usually including a note of humor where he pokes fun at himself. It appears that these anecdotes are carefully chosen to assist team members with retention of patient care information. His comments bring a sense of reality to the patient cases. Since he considers the resident the team leader, he does not get involved

in who presents when, and will usually wait until the end of each presentation to comment.

Recent journal articles are brought into the discussion when they contain data that bears on the patient's condition. Dr Abbott brings personal, high-lighted journal articles with his name on them and leaves them in the facilitating room. He also assigns specific journal research to the medical students which they then report to the team during Discussion Rounds.

Occasionally Dr Abbott will get up and use a portable chalkboard/flipchart while making a point. For instance, he prepared an "advance organizer" or "tabular organization of the way I had it in my head"...as the students "needed a visual picture of the way I was thinking". This diagram or tabular arrangement of data facilitated the differential diagnosis of pneumonia from other lung conditions. He followed this with a visit to selected patients where they used a stethoscope to listen to the different lung sounds.

Although the patient and use of himself as a role model form the basis of Dr Abbott's clinical teaching, he does use other items if readily available. However, only those methods and media which reinforce the patient as core content are selected and used as adjuncts. The real day-to-day patient care instructional scenes Dr Abbott gets involved in are what define his clinical teaching.

Dr Bently

Introduction.

Dr Bently is the second physician involved in the study, and comes from an older tradition of clinical training. He graduated from medical school and completed his

internship, surgical residency, and Board Certification in General Surgery, in the 1950s. This was during the days that the chief residents, such as Dr Bently who was a chief resident in surgery, were considered to be "in training", so were paid little money while working long hours in taking care of patients. As Dr Bently points out, they received a "big time salary - room, board, laundry, and $25.00 a month".

While chief resident in general surgery, Dr Bently had broad teaching and patient care responsibilities which were delegated to him by his clinical faculty attending. Then, in turn, he was in charge of delegating patient care to interns, medical students and other residents training within their service area. This style of clinical apprenticeship still occurs in the large medical centers throughout the country.

This older tradition of responsibility resting squarely on chief residents affected Dr Bently's style of practice and teaching. It shows in his approach to patient care, and in the way he makes himself available to house staff when needed in surgery.

Patient care through proper diagnosis and surgical treatment is central to Dr Bently's teaching, thus he tries to reinforce independent decision-making skills with medical students and house staff alike. When teaching medical students he delegates responsibility for selecting patient cases to be discussed. In the group discussion, he attends to each student's decision-making about the patient through directed questioning. Dr Bently says that this face-to-face interaction is his favorite teaching method, particularly when a real patient diagnosis is involved.

Dr Bently is part of a five member clinical faculty team of attendings teaching general/oncologic surgical patient care in the clinics and operating rooms. This includes initial diagnoses and post operative follow up care, as well as the surgical procedures. In addition to teaching in the clinical areas, Dr Bently, as well as other

team members, reinforce core content in the classroom through clinical correlation lectures for medical students.

Although he doesn't speak of himself as a role model, he does talk about physicians who have influenced him. Two in particular influenced him by their interpersonal styles:

> one of the best clinical surgeons I've ever seen ... never lost sight of the patient as the major responsibility in anything he did ... a dynamic investigator ... marvelous sense of humor ... he enjoyed working with the students ... could be tough, but I've never seen him intimidate or embarrass someone.

Dr Bently emulates these characteristics, but he has a style of his own. For instance, although conservatively attired, he also wears stylish bow ties and pastel-colored cotton shirts with his initials on the breast pocket. He says that since they always had to wear white while in training, he really enjoys being able to wear more colorful shirts now.

Traditions of responsibility.

As noted earlier, Dr Bently started teaching as a resident during the time that on-the-job training for the health professions, including medical education, was strongly favored. Residents in particular carried a great deal of teaching as well as patient care responsibility. In effect, the residents "assigned priorities" in the large teaching hospitals -- from prioritizing patient admissions and discharges, to deciding what the interns and medical students did during clinicals. As Dr Bently points out, while chief resident:

> you ran the whole hospital - 380 bed hospital. And, you ran the whole surgical side which was orthopedics, neurosurgery, everything else. You made up the surgical schedule...and it was your responsibility to run the teaching labs. No

attending made rounds with me except once a week on a 35 bed ward....They gave me the complete responsibility then, so the teaching rounds and everything else were mine, and I just sort of stepped into them and did them like my predecessors did. I reckon I learned from good people. I had some very good predecessors. And so, it never - so much of it is on-the-job teaching that it didn't really - maybe I wasn't as concerned about it as I should have been. But so much was on-the-job; it was not necessarily classroom teaching.

Given his background as a chief resident, teaching "sort of came naturally" to Dr Bently: "...I had been teaching so much when chief resident". He does not separate clinical teaching from clinical practice; teaching is built into the system of patient care practice. He sees teaching others as part of his responsibility in providing the best possible patient care. However, although he enjoys the human interaction, the talking, intellectual stimulation and as he says, "laying on of hands," that are part of clinical instruction, he does not appear to feel the same about classroom teaching. He is visibly annoyed and frustrated when discussing classroom teaching even though he knows he must do some as a responsible faculty member. He says clinical faculty don't do a lot of classroom teaching, but:

> what classroom teaching we do, I would call lectures or what have you, I'm concerned that we get a critical amount of information across to the [medical] students and that we get the major points without making it - without hiding it in a whole lot of information that's really very extraneous. So, it's hard to really get straight in your own mind what you think is the basic amount of information. The, quotes, core curriculum.

Although he knows there are instructional methods and media courses that might help in the classroom, he is uncertain of their value. In his previous academic position the medical school administrators and faculty had talked about having teaching sessions. But Dr Bently felt that "the person who was sort of going to put it together was so impractical, we lost our enthusiasm". He thought for a few moments then says, "now, I think we probably should, somewhere along the line have some. There's a lot of teaching aids and what have you ... but, we - it sort of evolves". The impression is that he's aware clinical medical school faculty should stay up-to-date with teaching skills, and feeling his responsibility, he wants to do the correct thing. But, until someone proves that time invested in teaching skill development has a payoff for the students, he probably will not participate.

Centrality of the patient.

Dr Bently says without hesitation that the best part of clinical teaching is the patient - "the patient oriented exercise of teaching. That's what it is. I mean, whether it's on the floor [the patient care unit] or it's in the operating room, it's patient oriented". He gives the same response when talking about the most effective teaching methods, as he says, "... it's the laying on of hands so to speak. The patient - seeing the patient". He believes that the crux of clinical teaching is the live patient with a presenting problem or condition. The medical students and house staff can examine the patient, and while in discussion rounds can actually see the person being discussed. He says, "they know who the patient is. They may be talking about the patient ... but they've seen the patient on rounds ... and they've listened to them and what have you".

As Dr Bently explains, "third year medical students or Board-interested medical students are assigned to the teams in clinic....We use almost invariably four -

occasionally five here and ... four at the VA [Veterans Administration Hospital].... They make rounds with us on the patients". The medical students also scrub with them in the operating room, where Dr Bently tells them "... I want you to feel this and see what it's like ... and see what we do". At the end of the surgical day, the medical students make patient rounds with the house staff, although they've made patient rounds early that morning before going to surgery.

Dr Bently does more hands-on teaching with the interns and residents as they gain experience and move closer to deciding on surgery as their practice area. For instance, he says, "I helped the intern do a breast biopsy for the clinic patient ... I scrubbed in because I had never helped him before, to make sure that he knows - and this way, they really get a better taste of what's going on....".

Dr Bently respects the residents' need to function as independently as possible, however, when residents first join their surgical service, Dr Bently tells them:

> I am a great believer in not overlooking the obvious. I'll say when they first come on ... these patients are yours. I'm your attending to help you with them. I'll talk to the families. I'll talk to anybody that you wish, but I'd prefer that you initiate it and you talk to them. If you feel that you need more support from me - could need it in some testy situations..." [then ask].

Dr Bently believes in the strength of the patient care team, in that the more expertise focused on the patient's problem the better. He reinforces the team concept in his teaching and in day-to-day practices with patients. When providing direct patient care he includes consultations with particular attending faculty and others skilled in diagnosis and treatment. For example, Dr Bently frequently uses the radiologists' consulting services to read his patient's x-rays and CATSCANs. There is a faculty

member in oncologic radiology who Dr Bently feels is a helpful member of their patient care team. He says, "he's very good and we lean on him heavily" as he's specially trained to deal with cancer patient treatments and prognoses.

In further discussion of how he and his colleagues provide surgical patient care while teaching surgery, he says:

> the other thing you should know about this place that's interesting, we have both a moral and an economic commitment to be in the operating room with every patient that's done [undergoes surgery] at this institution, because we render a bill on every one of them....And, we're responsible for every one. I don't care whether they're a street person that lives under the bridge or whether they're Mr Reynolds of Reynolds Metal, because we have both here. We are responsible for them so we're here.

Selecting and using methods & media.

Dr Bently's favorite teaching medium is the patient. His favorite method is small group discussion in the clinic or operating room. He says:

> small groups are better ... you can really look at the students eyeball to eyeball, so to speak ... I really want to see how they think.... if they're thinking logically, and following a logical approach to the patient ... how they approach it [a diagnosis] is very, very important.

Small group allows him to ask direct questions and watch how students think through their responses. While doing surgery, he can guide their attention to specific body structures and functions. The operating room is where he is most comfortable as a teacher:

I'd rather be in the operating room than anywhere else because my focus is there. My attention has to be -- making sure the patient gets the best procedure he or she can get at that time, and they can scream about all their outside problems in the world, but, I've got that -- that's my responsibility. I'm not going to leave that and that's a good place to be. They've got to come to me.

Whether in small group, lecture hall or on a patient unit, Dr Bently teaches by telling anecdotes of his early experiences sprinkled with humorous comments to put the medical students at ease. When residents make patient case presentations, they turn to him asking questions and listening to his experience with a similar patient situation.

Dr Bently says he's "a people person" and believes that personal interest in the subject and the audience are more important than knowledge about educational theory and knowing how to use a variety of methods and media. If you're not interested, you won't do the best for your students, he points out, and media will not save you. He goes on to say, "I think you've got to be there. I mean, you might run a video or what have you ... for the students, but honest to God, I think it's better if you are there. ... everything has become so impersonal now that I don't like it." Dr Bently says that help is available from media people, if needed. He says, "yeah, we've got very good media people here but we have to bring them in".

Dr Bently does prepare for instruction by writing an outline. After writing it, he thinks about the content in the outline and formalizes it in his mind. He focuses on content first, then context. He says to himself, "what is the basic information I need to get across, and try to see how I could best get it across". Dr Bently believes that the content he presents in lecture or other "formal classroom" instructional situation should be kept tightly correlated to the realities of clinical practice. He says, "they can

read all the other stuff [in textbooks]. You should hit the high points". In fact, he feels slide content should directly relate to clinical patient care practice and be designed carefully, "to keep it [instructional content] to four or five lines on a slide" and they should be used sparingly. He says, "I found slides would put them to sleep". Slides come up again, and not positively, as he talks about how he experiments in his teaching:

> I've been tempted - like walking over there for my hour lecture ... and saying, oh, I forgot the slides. I haven't done it yet - that would be a great departure. Yeah, I've fiddled around - I've changed the slides, some things like that, but no - no tremendous departure".

Dr Bently brings up his concern about the large volume of medical information, when discussing what gives medical students the most trouble with learning. He believes there is "too damn much information ... too much to learn - overwhelming". Clinical teaching faculty should therefore work hard to "point out the really pertinent things ...", he says.

The most frustrating part of teaching for Dr Bently is, "dealing with a class of 160 people, you know - they've got classes all day long and you've got to interject something in there ... the later it gets in the day, the tougher it is ... that's really the most frustrating". He prefers teaching a small group of three to five medical students in a small conference room. He explains:

> sitting in there and discussing the various aspects ... no blackboards ... you don't need any visual aids or anything else. You need the room in which they can't get to you or they can't get to the students either. That's what you need.... I

still think that's the most effective way. No question about it. And, the bigger the audience, the more difficult it is to keep their attention.

The same attention to the small group is particularly in evidence in the operating room. When an unexpected surgical specimen is removed during a bowel resection at which the students are not present, Dr Bently has the nurse locate them on the patient unit and waits eight to ten minutes for their arrival. He has them don gloves and feel a stricture in the still warm specimen of bowel. Dr Bently individually guides their hands through the examination, while patiently explaining the patient case. His verbal pattern of explanation is reminiscent of a narrator-teacher on film or videotape. After the experience, one of the medical students says, "...this has been a good experience [clinical rotation] because they care about teaching us". The live, presenting patient is central to Dr Bently's teaching, and every other medium or method is selected and used adjunctively.

Dr Crawford

Introduction.

Dr Crawford, who has been in academic medicine since the early 1980's, is Board Certified in General Surgery and has research interests in pancreatic transplantation and endocrinology.

The content of his teaching revolves around what he does every day in providing surgical patient care, both in and out of the operating room. In fact, Dr Crawford says he is a "body in motion", moving between the operating room, radiology, his office, his laboratory, surgery clinic and the patient care units. While discussing his approach to teaching, Dr Crawford says he prefers to function informally with medical students and

house staff. He says he would like to spend more time teaching, but is hard pressed to find time outside the operating room, his research, and meetings required by the medical school community. He admits that teaching is the first to go when he's in a time bind. He is rewarded for doing surgery -- it brings income to the medical school, -- for getting grants that bring money for his research.

Dr Crawford wonders whether he's "any damn good at it [teaching]", or is "just boring all those people out there". Then he becomes serious and says, "you do surgery and you do research and you do the administrative BS that they make you do. And then, the easiest thing to put off is the teaching". Dr Crawford is feeling guilty because this particular week he finished writing and submitted a grant proposal and two surgical papers, made an out-of-town medical presentation, operated all day the day before, and did patient rounds and required charting, but had not invested as much time as he felt he should with the medical students. He says:

> ... not always, but they're [the medical students are] one of the things that tends to get pushed off. But then, you find the next week you make up, so - and, there's no rewards for teaching -- promotion and tenure is the weight of your CV - - they make this lip service ... you have to be a good teacher but you could never prove that on your CV. You just can't. I have won one teaching award and I've been cited in the ...report saying I was a good teacher. And then [the Promotion & Tenure Committee says] prove to us that you're a good teacher, and you say, and then they turn you down for a promotion because then they say, ... you haven't published as many papers as somebody else. So, the lip service to teaching ...I always am sort of amused by people that say one thing and do the other.... So, don't give the nonsense about teaching and therefore -- that only

goes ahead and supports the behavior that teaching gets put off by faculty members.

Dr Crawford feels that there are no substantive rewards for teaching in any university not just a lack of reward for clinical teaching in the medical schools.

Dr Crawford's knowledge and surgical skill, his openness and candor in stating beliefs, plus his wry humor make him a person the medical students and house staff like to be around. He uses these personal attributes to strengthen his informal clinical teaching style. For example, during surgery he may ask the medical student if they have any questions about what's going on. The student, usually standing quietly holding retractors, asks a question. Dr Crawford answers the question and continues into a discussion of the case. This helps the medical student feel comfortable in asking further questions. Surgical faculty such as Dr Crawford are aware that the operating room environment can be intimidating for a medical student. The student must master sterile technique and get used to the hurry up and wait work flow, in addition to thinking about the patient case.

However, because Dr Crawford feels that medical students should be preparing for their Part II Board Exam (which occurs at the end of year four) and shouldn't be pressured into choosing surgery as an area of practice, he invests more teaching energy in surgical interns and residents. Like Dr Bently, Dr Crawford's teaching is modeled in part after former surgeon-teachers: "I do certain cases because ... somebody that I thought a lot of did that case that way, and that's why I try to do that case". Dr Crawford has not been in private practice, choosing academic medicine immediately following his chief residency in surgery. He believes there are differences or trade offs

between these two major practice segments. Some of his private practitioner friends tell him they miss having residents and teaching, but he says:

> they get paid three times as much as we do and the reason they do is because they don't have to pay their residents.... that's one of the trade offs, is your capability of running your own destiny and making some more money. On the other hand, you're out there sort of at the mercy of, you know, the commercial whims where - I mean, I can see one patient or sixty patients, I still get paid the same. So, that's your trade off.... there's frustrations and rewards in both of them.

Being part of an academic health center brings Dr Crawford in contact with research scientists and colleagues in many practice specialties. He enjoys the collegial atmosphere and looks for opportunities to match wits with medical as well as surgical specialists.

Teaching by doing.

For Dr Crawford, teaching is inseparable from the rest of his responsibilities. It's so integrated into his way of thinking that when describing how he spent his time during a typical week, he allocated 60% for surgery, 30% for research, and 10% administrative. He didn't have a separate percentage for teaching even though he's constantly involved with residents, interns and medical students. He serves as academic advisor for two medical students and he has two to four surgical interns, and two surgical residents to train. He works with three to four medical students every eight weeks as they rotate through general surgery, scheduling informal teaching sessions at least weekly. Although the surgical residents make patient assignments for the medical students, he observes what is going on. The student should have a

communicative patient, he says, one "... who's willing to talk over the disease process". After observing, Dr Crawford talks with the resident if he wants to change a medical student's assignment.

Dr Crawford believes that there is "a huge body of knowledge" including many different diagnostic tools that are potentially confusing to medical students. He tries to focus on those things that confuse or are troublesome to individual students. For example, he may review a topic and ask, "what bothered you about it? Give me a topic that you don't think that's been expanded on". He says that students ask:

> ...how do you decide to operate on somebody? ... You know, you read about it in textbooks. But, how do you really decide to operate on them? -- which is a very intelligent question ... because that's getting at what we do. And, that's why I like it.... how you make a decision -- a real big decision like operating.... particularly the ones who want to be surgeons. They feel that, oh God, I'll never be able to get the knowledge and then be able to figure out how to operate. I say, oh that's easy -- if I can do it, you can do it.

He tries to put them at ease while helping them learn to develop their individual thinking process.

Dr Crawford does not try to decide what's important for the medical students to know. He says:

> I just do what I can in terms of shepherding them through the beginning of the knowledge ... I tell them laughingly they've got to know everything. And, to a certain extent, that's not wrong. It's hard to figure out. And that's part of growing up. They've got to figure out what's important. Sooner or later, they've got to make a decision of whether or not it depends on saving somebody's life ...

I'll expand on anything that they ask me to expand on but you can't cover it all, and they know that they can't learn it all. They've just got to learn a body of knowledge.

Selecting and using methods & media.

Dr Crawford is not aware of any educational theories and explains that he doesn't have formal background in such subjects as teaching methods. He says he has not found discussions of teaching problems and use of methods and media at the surgical meetings very helpful. "I just sort of tailor things [my instruction] kind of my own way", he says.

Perhaps a reason for this is Dr Crawford doesn't believe he's teaching a course. He says, "... it's not like I have a straight course or anything ... my teaching is dealt with in the clinical arena ...".

Dr Crawford's favorite teaching method is an informal discussion with small groups "... just starting a series - starting talking about a topic and then just going to whatever the students are interested in". He quickly adds:

> ... when I get together with students, we spend an hour informally, going over it. But, a lot of information can be passed that way. I expect them to take that as a starting point and go read up on that stuff. But, I'd rather be informal.

This ties in with his informal system for developing instruction. Dr Crawford says, "you've seen it. You know it's very routine - it's a body in motion that works that way ... I don't have this set algorithm of teaching I go through. I just kind of, do what sort of shows up that day". In effect, he uses the teaching moment to focus on content. The teaching context is the operating room, the patient unit or wherever he is with the medical students and house staff. He believes that there's no better method of teaching

than sharing his knowledge and experience with students as he deals with a patient. Dr Crawford moved to this informal style from a more formal presentation style. He says:

> ... I used to do a lot more slides and just sort of straight up presentation ... I think that's dull.... I found slides would put them to sleep.... about a year after I got here, I just sort of gravitated toward the more informal stuff".

Now Dr Crawford uses a small conference room on the patient unit for his weekly, hour-long teaching sessions with three to four medical students. He often uses the wall-mounted whiteboard in the conference room to draw body organs, or outline content for a differential diagnosis. Dr Crawford says that the main reason for using the small group format is to provide opportunity for some "give and take" discussion. He says, "I think they get very little time for one on one, or three on one. I think they enjoy it better". Dr Crawford believes the students become more involved in their learning, which helps retention and encourages self-directed learning. For instance, he will say, "Baby Cecil [a medical textbook] has more information on this, read it before the exam".

Dr Crawford believes that medical students should have a strong basic sciences focus in the first two years of medical school. He feels this is critical and hopes that "there's no further erosion of basic science" because ... "it sets your mind up for what you're going to do". He goes on to say that some medical schools get caught up in "relevancy courses" which take time away from the basic sciences, such as "basic biochemistry and basic pharmacology". He says:

> there's a little bit too much of worrying about what's going on - the ethics and stuff like that. Now, that's important - don't get me wrong. I can get going on ethics. But, I think, at first and second year, it's unethical not to give them a solid science background. The ethics come later.

Dr Dotson

Introduction.

The fourth and final physician we are looking at is Dr Dotson, who is Board Certified in Internal Medicine and Infectious Diseases. His military obligation was with the Venereal Disease Control Division at the Centers for Disease Control in Atlanta. His going into academic medicine was partially due to the fact that, "in the sixties, the only way to do infectious disease, was to go into academic medicine".

His first formal teaching experience was as a teaching assistant for a genetics course between his second and third year of medical school. He gave lab lectures, worked on lab manuals and helped write exam questions with the course professor. He says, "that was the actually the first honest-to-God formal teaching that I had done. That was a lot of fun now that I think about it".

Dr Dotson says that the favorite part of his work is teaching along with patient care, although he realizes that research and patient care carry higher rewards. As a clinical coordinator for medicine, he feels teaching needs to be given as much attention as patient care and research in academic promotion and tenure decisions. At present, however, patient care and research are the things that bring in dollars and professional recognition and thus claim the bulk of faculty time and energy. Dr Dotson must therefore cajole faculty to sign up for teaching assignments in his administrative role as Clinical Coordinator. This particular administrative role is frustrating:

> ... administratively, I have enormous frustrations in getting people to teach because it takes effort and it's a very low priority for many of our faculty - the lowest of the three priorities - patient care, research and teaching. I think that we have grown up in an environment that fosters that. ... there has never been

anyone not ... not promoted ... because that person didn't teach enough in the medical school. I think that's true. There are lots of people who haven't been promoted because they didn't write enough papers or didn't bring in enough clinical earnings or whatever.

Dr Dotson feels that changes presently in the works, where teaching awards are recognized in promotion decisions, may prove beneficial ten years down the academic road. He knows that change takes time and his love of clinical teaching and working with medical students and house staff prevail over the frustrations.

When observing Dr Dotson, before he begins talking, there is an impression of a rapidly moving, neatly attired and quietly professional physician. As soon as he begins talking, his intelligence and self-deprecating humor come through and add to this initial impression. He uses these personal characteristics in his teaching. Dr Dotson also stresses teamwork between the resident, interns and medical students. He focuses the group's energy on the patient's condition, particularly in Discussion Rounds, by asking questions of various team members to build a base of medical knowledge. While the team is developing this medical knowledge if Dr Dotson is asked a question he can't answer, he will openly say so. If no team member has the information, he will ask someone to find it and bring it back to the group. Dr Dotson believes that this builds teamwork while developing a base of patient information for group problem solving.

Dr Dotson feels that communication, compassion and knowledge are critical to providing the best patient care. He tries to get that idea across to medical students and house staff by being enthusiastic about uncovering information relevant to the patient's condition and needed for developing a differential diagnoses. The idea is also reflected in his description of a successful physician, as he says:

Number one is medical knowledge. Number two is clinical reasoning ability and boy, that's important and that's one of the things that I try to stress in the clinical teaching. Why did you make that decision? Do you understand Baye's Theorem - predictive value, and so on. Communication skills meaning the ability to communicate with the patient and the ability to communicate with colleagues. Ethics. Professional behavior. Compassion. Consideration. Communication. These things overlap a bit obviously. Intellectual honesty is absolutely important.... Now, that's the clinician. Now, somebody in academic medicine, I think, has to have all those things. You have to add to it, I think, the successful academic contributes to our total stock in medical - funda-medical knowledge which means investigation, not necessarily lab investigation but investigation of some sort. And, finally, the successful academic is an effective teacher. That's all real - I mean, that's pretty obvious stuff I think.

The following description addresses the ways Dr Dotson attempts to move students toward this ideal through his clinical activities.

As clinical faculty in medicine, Dr Dotson serves as attending one full month during the year. It means that during this 30-day period he must see all patients on his service at least once per day, seven days a week. After visiting each patient, he writes a progress note on each patient's chart, checks the patient's laboratory findings and other test results, and reviews the progress notes of the medical students and house staff. This is one way he combines patient care documentation requirements with teaching. Later, he may comment to medical students or house staff about their chart entries, or ask a question about lab results in Discussion Rounds. In this way he tries to manage his time in doing patient care, teaching, research and publishing

articles. Dr Dotson writes all the activities he wants to accomplish on a loose-leaf desk calendar. Each day he reviews his progress. Activities not accomplished one day, he writes in on the next day's list. He is visibly disappointed when he doesn't accomplish all items on the list, and may take some of it home to assuage guilt.

Dr Dotson has quite a few family members and friends in teaching. He says, "all my friends teach.... it's really interesting because a lot of the friends I made in medical school are in academics...". He does not, however, consciously model his teaching on that of his teachers or his friends:

> I can think of people who are very good lecturers and think of people that I thought were very good attendings, but I don't remember enough of the details of their style. I must have adopted it without thinking about it consciously.

Medicine as intellectual detective work.

Although all clinical faculty in this study work hard to identify causes for each patient's illness, Dr Dotson seems to transform this activity into a kind of detective work. The work is obviously intellectually stimulating and rewarding for him, and his enthusiasm is infectious. He can turn a search for medical information into a game that keeps the medical students searching until a reasonable answer is found.

During Discussion Rounds, Dr Dotson encourages similar exchanges of information among his team members. The focus of the team's detective work is on developing a differential diagnosis for a newly admitted patient, or on discussing observed results from a medication in a previously diagnosed patient. If, for example, the medication was not effectively improving the patient's condition, Dr Dotson often asks the house staff for other medication recommendations. Later, he says he does this

"because they know what has been going on with pharmaceutics" and their knowledge can help him select a more effective medication for a given patient's condition.

A love of teaching.

Dr Dotson loves to teach. He says, "the best part is seeing the light go on over their heads.... And, when the realization hits or when they've arrived at a technique for analyzing a problem ... I love it". He looks for patient situations that help the medical students develop diagnoses that are related to what they read about in textbooks. For instance, when he sees a patient with influenza who will be discharged in about two days, Dr Dotson remarks: "this is an interesting patient for the students ... his labs and physical exam ... good learning".

He still worries about knowing enough himself to be able to help the medical students and house staff. He says, "I'll tell you one thing that some people don't quite understand - if you don't know it, you can't teach it". This worry has been with him throughout his teaching career, along with another problem he tries to deal with. He says:

> So, the problem with teaching is knowing enough. A second problem of teaching, obviously is the ability to communicate what you need, what you want people to get out of [the teaching] ... that's what, you know, teaching is all about, I suppose.

He deals with the first problem by admitting when he doesn't know "the stuff", while the second is alleviated through his use of teaching methods and media. For instance, in the sexually transmitted disease clinic he will use the method of direct patient examination describing the physical findings to the medical student during the patient exam. They examine the sample organism taken from the patient under a microscope

in another room, after discussing the treatment he will tell the patient. If the student asks for more detailed information, Dr Dotson then provides journal articles descriptive of the organism just seen in the clinic patient. He makes copies of those articles requested by the medical student, and as an author of some of the articles is pleased when a medical student shows an interest in further study.

In discussing how he decides what is most important for medical students to know, he says:

> I think that that probably comes from clinical experience -- which things have been most important for me to know as I deal with my patients....I think that the students perceive that as well....That's what I think about when I decide whether to teach a point or not. Is it something that I've made use of?

Dr Dotson observes how medical students carry out patient examinations and actively listens to the type of questions the students ask him regarding their patient findings. He gives the students immediate feedback, then will "try to improve the way things are presented". He will do what he calls "mini-experiments". For instance, he says:

> there are two students and I'll listen to the patient's chest first and say, now, what I hear is this. Why don't you listen and see if you hear that versus you listen to the patient first. Tell me what you hear then I'll listen and see if I confirm it".

Dr Dotson's teaching involves more than the month's clinical attending role. Other activities include writing and reviewing test items for second year medical students to ensure that the items reflect clinical realities.

Selecting and using methods & media.

Dr Dotson has not participated in formal coursework on pedagogy nor more informal workshop sessions on teaching or use of instructional methods and media. Some years ago when first entering academic medicine as an attending, he did review two teaching texts from the university library for helpful advise, but he says, "I didn't find them particularly useful". In discussing use of educational theories in medical education he says:

> I don't know enough about them.... I mean, I would guess that you will find that
> I must be following something that's been described but I don't know what it is.
> Isn't that something -- that's pretty impressive, I think, that we as a group, I
> think, have no grounding of this at all.

He has tried out a variety of instructional methods and media over the years, keeping those he feels are effective based on student feedback, and eliminating those that don't seem to appeal to the students. Because of this trial-and-error approach he feels that his instructional skills have developed "in fragments" as he learned useful details about methods and media. For example, he notes that in a talk "segues are important" or with media, "slides oughtn't have more than five lines on them if you really expect people to read them". Sometimes he will deliberately deviate from these instructional practices to get the audience's attention. For example, he will take a slide with "92 lines" of copy on it, put it in upside down and backwards on purpose, "usually when dealing with second year medical students who tend to be fairly compulsive". When the slide "hits the screen" they all make noise thinking he has made a mistake. He then interjects a humorous comment about the slide content which usually gets the students involved and paying attention. He says, "I definitely, consciously try to include humor".

In discussing how he goes about selecting methods and media to teach clinical practices to the medical students, Dr Dotson says:

> most clinical teaching is context oriented. The patient.... The patient comes in with a problem. And so, we've got there - the context is defined and then we have to decide what content do we need to know to manage that patient.

This use of the patient as both context and content shows up in Dr Dotson's most favored instructional method -- case presentation -- where he takes "... the medical students to the bedside or [discusses the patient] ... from a case oriented standpoint". He points out that where a law student researches a case in the library, the medical student "gets the case but it becomes attached to a real person". The difference does not end there, as the medical student must develop a differential diagnosis. He also brings in other applications of the case method -- he uses it when talking about the live patient on the care unit, in discussing patients anecdotally, and in tutorials with second year medical students.

Dr Dotson says that the case method helps focus the medical team member's attention to details within the medical problem to be solved and allows discussion of what would happen if this or that medical diagnosis were selected. The development of medical problem-solving and decision-making skills are critically important in medicine and case method, along with open discussion, promotes learning. He says:

> ... supporting the student or the house officer's right to be incorrect" is very important... "since we want to encourage people to think ... and to bring forth their ideas and to examine them, you have to make it a supportive environment.

Dr Dotson believes that presenting the same content in different formats is also important as people learn or mentally-process information in different ways. Because of this belief Dr Dotson uses:

> multiple context ... the list [of symptoms and possible diagnoses], but then followed by the case [discussion] approach. Case approach is very, very important. If I had to give up one or the other, I would definitely give up the list method because ... they can always do that in [studying] textbooks".

Dr Dotson does Walking Rounds, visiting his patients with medical students and house staff, in a similar fashion to other clinical faculty in the study. Discussion Rounds follow in the small conference room on the patient care unit. Dr Dotson listens intently to each team member present their patient while making notes on 3"x5" white cards. He may comment or ask questions and occasionally adds an anecdote or story of his experience. The facial expressions of the group show positive anticipation whenever he starts one of his "stories". There is always some useful comment about reality along with the humor. For instance, he may include a medical mnemonic such as "what's good for the heart is not good for the kidneys". Occasionally he will write something on the whiteboard, using it as a discussion focusing device. For example, he may write a differential diagnosis outline related to a patient's pleural fluid, then read the written information aloud, interspersing it with questions directed at the group. He's in his favorite detective role, and is visibly excited when someone provides appropriate information. The team works toward developing a diagnosis, selecting treatment, and then watching the patient improve and hopefully get well -- watchful waiting as it's called in medical circles.

Dr Dotson stresses with the medical students, that he wants them to speak up, ask questions, and participate in discussion rounds beyond their patient case presentation. He explains that if there's not enough time during rounds, they should still bring up any questions to him after rounds "so we can talk about it later". This is to help them learn as much as possible. He feels that the major problem for medical students "is the enormous, vast, mass of material that has to be learned". So, the more repetition of information the better. He says that although some have difficulty with clinical reasoning skills, "more commonly it's people just haven't learned the enormous mass of material, which is much, much more than I had to learn when I was a medical student".

Dr Dotson says, "I clearly believe in telling them what you're going to tell them, and tell them what you told them". He heard that years ago but can't recall who told him. To reinforce this type of repetition he uses handouts so they have information for future reference. He also uses his handouts, particularly when giving a fairly complicated lecture, as a presentation outline for himself. He writes on it when to show certain slides, and other media he intends to use.

A point that Dr Dotson finds disturbing, is the lack of evaluative data about which instructional methods and media are best. He says this is true in the medical education literature as well as his personal work. For instance, he says:

> for the past five years, I've had the top evaluations of the forty lecturers. That means nothing because that's filled out now.... If I tell a better joke, I will get a better evaluation. What we want to accomplish is improved patient care back in these folks' practices. We have no way to measure that. They probably have no way to measure that.... my entire teaching interaction - I can't believe I'm doing

any harm but I don't know that I do any good and I couldn't compare. I couldn't change my approach and say, well, let's see if this is going to be better ... or, I could be a lot more rigid on the ward [the patient care unit], much less informal and I would get different evaluations back. But, I have no way to know whether that would improve the care given by those house officers [interns and residents] to their patients.

He's sincere in wanting to know how he's doing as a teacher, and would change whatever he's doing if the medical students, interns and residents said it was not helpful.

CHAPTER V.

DISCUSSION

This chapter synthesizes all of the study's findings, draws conclusions in light of the evidence and with reference to the reviewed literature, and suggests recommendations for further research.

As noted by Friedman et al (1990, pp. 12-13), more studies of medical school faculty's satisfaction with the educational process including teaching approaches and practice outcomes, are needed. This study addresses one segment of the medical school faculty -- the clinical faculty. Although the study started out to define clinical faculty's instructional planning process, their use of a specific educational theory, and a determination of what influences faculty members' selection of instructional methods and media, the findings show a somewhat different outcome than initially hypothesized.

The Research Hypothesis

The hypothesis as originally stated is that: the clinical faculty member's instructional strategy, which includes specific methods and media selected and combined within the strategy, is grounded in an educational theory.

Findings show that the instructional strategy is not intentionally grounded in an educational theory. The sample clinical faculty are not able to confidently name/discuss educational theories in general nor identify a specific theory as the one underlying their instructional strategy. The clinical faculty member with a graduate degree in Educational Psychology says he is student-centered but he is not sure if that is considered a theory or not, while all other sample clinical faculty openly admit lack of

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knowledge about educational theories. This lack of knowledge is reasonable in light of the medical education literature which suggests that medical school faculty have little formal preparation in pedagogy. Another finding, related to this pedagogical issue, is that no one in the clinical faculty sample referred to a set of prepared learning objectives nor described their use of a syllabus for teaching defined content even though a syllabus is available. Sample faculty seem to believe that pedagogical knowledge would not make a difference in what they do in their teaching role because clinical instruction is practice-oriented and based on the realities of illness and wellness. In effect, when instructing medical students about how to diagnosis a patient's problem accurately so treatment is effective, medical knowledge not pedagogical knowledge is needed.

It can be assumed however, that the sample clinical faculty use some type of pedagogically-sound, theoretical approach to teaching even if it is unintentional. Using Moore's (1982) general theory of education as an empirical base, the evidence in this study suggests that Moore's organic model is visible in the sample clinical faculty members' instruction. A brief description of elements in this empirically-based model shows that:

> the organic... [emphasizes the student's] pupil's need to develop his [or her] own methods of working and acquiring knowledge and skill. The teacher may still be regarded as an authority, but the role... is that of a supervisor or consultant. [The student is to develop] an accurate picture of reality... by exploration,... and by insight through dealing with concrete reality... Education is a process of discovery... [with] here-and-now problems to be solved (Moore, 1982, pp. 75-76).

Evidence indicates that a primary goal of clinical faculty members' instruction is to assist the medical students develop their innate thinking processes in patient-oriented problem-solving. The faculty member uses the real problem(s) of a hospitalized patient, and involves the student in the team-based process of exploring alternatives to define the diagnosis or diagnoses and select appropriate treatment. Faculty believe that the student's thinking ability is more important as a teaching-learning variable than the clinical teaching. The most preferred and pedagogically-sound instructional methods and media used by clinical faculty provide the medical student with "an accurate picture of reality". Specifically:

- the live presenting patient provides the content and problem(s) to solved;

- the patient care unit serves as context;

- the clinical faculty member role-models the physician's skills & knowledges;

- the team-oriented problem-solving, small group discussions, Socratic dialogue and open-ended questions, help medical students explore concrete reality.

Since these instructional practices reflect elements in the organic model, it can be concluded that there is unintentional rather than intentional use of educational theory by the sample clinical faculty.

The Research Questions

During conduct of the study, evidence indicated that the sample clinical faculty do not apply an instructional planning system as defined in the literature (e.g. Gagne and Briggs (1979), Wildman and Burton (1981). For example, if using an instructional planning system as described by Wildman and Burton (1981, pp. 5-14), the faculty

would select a design strategy based on an appropriate learning theory, then develop each component of the instructional system. This planning and development process would help the faculty member:

(a) determine and specify the instructional content and context;

(b) determine that the instruction is grounded in a specific learning theory;

(c) determine rationale(s) for selecting certain methods/media for delivering the content within the given instructional strategy.

Since the sample clinical medical school faculty do not appear to use this type of instructional planning system, the data was searched for evidence of what they do use. Findings suggest that clinical faculty use intuition based on student feedback and past successes of the medical apprenticeship system, such as instruction from their personal role models.

Although the medical school's curriculum plan and catalog describe the clerkship rotations and electives in terms of courses, the clinical faculty do not think in terms of a medical school course. Evidence shows that clinical faculty members in the study believe that they "only add their way of doing things" when teaching within a medical student's clerkship rotation or clinical elective. Therefore, to best reflect the clinical faculty member's thinking the research questions refer only to the teaching of clinical content.

The research questions addressed in this study are:

(1) How do clinical medical school faculty select/design and combine instructional methods and media in teaching clinical content?

(2) What influences the selection and use of a particular method/medium for clinical teaching?

Research question one.

Findings show that the clinical medical school faculty in the study select/design and combine instructional methods and media in teaching clinical content:

- by using what is provided/available in the clinical settings;
- by exercising their intuitive judgment;
- by studying, assessing and responding to medical students' reactions to their teaching;
- by cognitively structuring and integrating basic science data and anecdotal experiences with medical or surgical practice processes, involving patients with illnesses/conditions;
- by employing an accepted hierarchy of clinical knowledge and skills inherent in the medical education apprenticeship system and based on the cultural patterning of the medical or surgical practice group.

Evidence for the first finding shows that clinical medical school faculty typically use themselves and the patient, along with a few non-patient-oriented media when in the clinical patient care setting. The non-patient media used most often by the sample clinical faculty members are chalkboard or whiteboard with color marking pens in the patient area conference room, and copies of relevant medical journal articles. Dr Abbott states:

> I guess in the setting of teaching like on a clinical ward, [a] blackboard would be the most effective, I think, because it enables you to really take advantage of the moment and you can't, -- you just can't anticipate what you're going to walk in and they're going to ask you -- you can't bring slides and you can't bring

overheads and whatever. So, something that more enables you to paint a visual picture of what's going on ....[is selected].

Dr Bently remarks, "I found slides would put them to sleep", so he uses the chalkboard if needed to clarify verbal discussion with students. All clinical participants feel that no particular method or medium, other than a given patient and themselves sharing knowledge and experience, is better than another in the clinical patient care setting. However, when in a classroom setting they may use slides in a carousel which they hand-carry to the classroom or lecture hall as the projection and microphone equipment are already in place.

The second and third findings indicate that the clinical faculty members in the study select methods/media by exercising their intuitive judgment based on an assessment of the medical students' reactions to their teaching. Faculty may respond by eliminating a given method or medium or increase its use if indicated. The method of active listening is particularly relevant as the sample faculty combine its use with clinical skill observations and questioning methods. For instance, the faculty members' active listening is in evidence while observing a student examine and interview a patient, and while listening to a medical student's case presentation during rounds. Clinical faculty appear to be listening for problem-solving and reasoning skills -- in effect the processing of pertinent data to develop a differential diagnosis. How a given medical student processes patient-related information is critical to the faculty member's educational judgement of the student's emerging clinical knowledge and skills.

The fourth finding shows that after clinical faculty cognitively structure and integrate basic science data, relevant anecdotes, and patient care processes, they use the case method as their primary means for teaching about the clinical patient. All data

revolve around the case embodied in the live, presenting patient who is the focal point of the team's diagnostic and treatment activities. Each clinical patient case is assigned to a team member, however, all patient cases are addressed by clinical faculty in walking rounds and formal Discussion Rounds. Observation in both medical school sites reveal this wide use of case method, which faculty occasionally combine with other methods/media to enhance retention. For instance, Dr Dotson uses repetition and multiple context such as:

> ...the list [of diseases leading to possible diagnoses], but then, followed by the case approach. Case approach is very, very important. If I had to give up one or the other, I would give up the list method because [I can say to the student]... go read up on the obliterated endopathies -- okay, so the student goes and reads this list and reads all about it. That material has not been learned in the appropriate format. The appropriate format is patient comes in with eczema of the legs -- now what's your differential diagnosis? ...Again, not unique. The masters have been doing it for years. But ... the students start with a case....Context rather than a list of diseases organized by pathology, it is a starting out in the context of the patient's presenting problem.

The fifth finding involves cultural patterning and the use of apprenticeship in medical education. A premise of the medical apprenticeship system is that the faculty role model clinical knowledge and hands-on clinical practice skills. The accepted hierarchy of knowledge and skills are inherent in the practice processes of the medical or surgical group. Over years of cultural patterning these clinical practices change and develop into what the practice group considers contemporary professional practice. As each new group of medical students enter the clinical apprenticeship phase, they are

instructed in these accepted knowledges and skills. Dr Crawford notes that "teaching those behind you, or lower on the medical education hierarchy, is accepted as part of the responsibility of being in medicine....and responsibility for teaching is part of the Hippocratic Oath taken by all physicians". In fact, all sample faculty say that they were taught by faculty and residents ahead of them on the medical education teaching-learning hierarchy. The role models who positively influence their practice processes and teaching approaches come from these past experiences in medical education. For instance, when asked how the role model enters into teaching, Dr Abbott says that in a difficult situation, "I'll remember an actual similar situation where he handled it or I'll imagine how he might" [have handled it]. Dr Bently says that he has been influenced by two surgeons, while the other faculty members say that they employ the role models' patient care technique by visualizing it in their mind's eye or have adopted it unconsciously. Use of themselves as role models and mentors is evidenced throughout the research data. As Dr Abbott says, "I guess in clinical teaching, whenever possible you use role modeling...[and] I find that just modeling for students what I do as a clinician is real important".

Research question two.

The study shows that the influences on clinical medical school faculty's selection and use of a particular method/medium for clinical teaching are:

- the direct patient care context and use of the teaching moment;
- the particular practice processes and related content of surgery and of medicine; and

- the need to select and focus on content that helps develop clinical problem-solving and decision-making skills.

The first finding shows that the clinical faculty member decides how to teach patient care content when in the context of the patient care unit. For instance, if a newly admitted patient has an undetermined type of pneumonia, the faculty member may take his team to that patient's bedside so they can listen to lung sounds with a stethoscope and discuss findings to develop a diagnosis and plan of treatment. Pre-planning of specific content is not part of the clinical faculty's instructional design process. For example, Dr Abbott says:

> a situation of clinical teaching [is one of uncertainty] in that...you never know what you're going to have to talk about one day to the next -- things like that. ... the strategy would be being driven by what's in front of us rather by being driven by a priori plans that I make before the day or month start....

Use of the "teaching moment", which all sample faculty employ, tends to reinforce the focus on context. Since teaching moments occur when in the context of a patient care unit, the clinical faculty use what is immediately available. This means informal or formal Discussion Rounds and perhaps a stethoscope become method and medium respectively.

Also, the sample clinical faculty seem to use every contact with a medical student as a "teaching moment", whether in a patient-related discussion of which lab test would be best or commiserating with them if up all night on-call. This use of the teaching moment appears in both fieldwork settings and suggests that the socializing of a medical student into professional practice is an on-going personalized activity.

The second finding indicates that clinical faculty are influenced in their methods/media selection by the discipline's specific practice processes, related medical or surgical content and clinical practice setting. Faculty believe however, that they are not unique as other practice-focused disciplines are influenced to use the same strategies including particular methods/media in their own situations. For example, Dr Dotson notes that in law school the student researches client cases in the law library; likewise, the medical student "gets the case but it becomes attached to a real person, and then [the student] works on the case including [medical] library work and physical exam work". This suggests that clinical faculty's instructional selection criteria reflect the clinical realities and cultural patterns as presented by the clinical practice group.

In this research study there are two major clinical practice faculty groups involved in teaching medical students. They are surgical clinical faculty represented in the study by general surgeons, and medical clinical faculty represented by internists. Evidence suggests that particular methods/media selection and use differs due to clinical patient practices and the clinical site of instruction. For instance, medical practice faculty directly involve medical students in the clinical patient care process by having them examine patients, present findings and implement treatment. The surgical faculty, being involved with more invasive surgical interventions, peripherally involve the medical students in a patient's surgery through discussions instead of hands-on surgical practice.

In addressing the third finding, data indicate a similarity in selection and use of the patient care unit and clinically-focused journal articles for teaching both medical and surgical content. However, there are individual differences in the way that faculty

members think about selecting clinical content. For instance, Dr Abbott says that he selects by category of skill:

> You know, ...there are skills like physical examination or communication skills -
> - there are processes of thinking, you know, like how does one go about
> approaching a differential diagnosis or what sort of processes do you do when a
> patient presents a problem that you've never seen before...and then there are
> facts, and I tend to prioritize in that direction.... I tend to accent process type
> skills and thinking skills more than facts....

Dr Bently says that his content appears in the clinical coordinating lectures and is selected to:

> correlate [with] some of that [hands-on clinical patient content]. ...They can read
> all the other stuff [in textbooks and journals]. You should hit the high points".

Dr Dotson selects content based on his own experience. He says:

> I think that that [content selection] probably comes from clinical experience --
> which things have been most important for me to know as I deal with my
> patients...I think that the students perceive that as well....that's what I think
> about when I decide whether to teach a point or not.

While Dr Crawford does not decide what the medical students should know, as he says:

> I don't [select content]. I just do what I can in terms of shepherding [the medical
> students] through the beginnings of the knowledge.... They've got to figure out
> what's important. Sooner or later, they've got to make a decision of whether or
> not it depends on saving somebody's life and you can't tell them, well, you're not
> supposed to read that -- that's part of growing up and you're dealing with a
> mountain of information and...I usually kind of let them pick the topic and then

we, you know, take it from there. But they've got to know all and about a million

other things I didn't say.... They've just got to learn a body of knowledge.

For all sample clinical faculty the selection and use of a particular method/medium is

geared to the clinical situation to assist medical students develop specific practice

processes and decision-making skills.

Searching for site and faculty differences.

The research data were searched for evidence of difference between the medical

schools and between the sample clinical faculty. In searching the data for evidence of

difference between the two medical schools in the study, findings show that the mission

statement of each medical school is reflected in their curriculum design as described in

the school's catalog, and may indirectly affect the selection of instructional

methods/media for clinical teaching. Evidence indicates that site one employs a

traditional medical school curriculum where, as described in the school's mission

statement, patient care and research are primary, and the graduates are promoted to be

practice-focused. Site two data suggests use of an innovative curriculum in that they

use problem-based learning in clinical small group tutorials, and the graduates are

promoted as being academically-focused. This study does not address the differences

in curricular structure. However, as pointed out by Friedman et al (1990, p. 8) 90% of

all North American medical schools have traditional curriculums, and studies are

needed to determine if graduates of one or the other curriculum perform better in

"integrating the basic and clinical sciences and [display] superior independent learning

skills" (p. 8).

Evidence relating to differences between sample clinical faculty members indicate that, when comparing medical clinical faculty with surgical clinical faculty regardless of medical school site, there is a difference in the selection and use of methods/media attributable to the medical or surgical practices or interventions required.

Clinical faculty and time use.

The findings about clinical faculty's time use, as depicted by Dr Bently's typical week, unexpectedly appeared during conduct of the research. The data is of interest because it shows the inherent complexities of this academic setting including faculty's multiple activities. Clinical faculty invest over 60 hours a week in work-related activities of clinical teaching, research and direct patient care. These activities must be managed effectively to maintain their academic position and obtain extrinsic institutional rewards such as salary/benefits and academic rank, and medical-social rewards from clinical research. The intrinsic personal rewards are more difficult to identify perhaps because of the subjective nature of these rewards. This study's evidence suggests that the rewards clinical faculty receive from their teaching role are the intrinsic personal satisfaction derived from sharing expertise, and being part of a dynamic collegial atmosphere.

The study also suggests that a clinical faculty member's scheduling or use of time may be related to the economic pressures of the medical school, in addition to valued extrinsic rewards presently available for patient care and research but not for teaching. For instance, clinical faculty are:

- rewarded financially because the more patients they provide service to (e.g. as documented on a Medicare patient's chart) the more income is disbursed to the medical school;

- rewarded financially and status-wise by having private patients through the medical school-sanctioned practice plans;

- rewarded professionally and financially by writing and implementing patient-related research grants that bring prestige to the academic health center, money to the medical school, and professional recognition to the clinical faculty member.

Whether this time use and reward situation should or should not change is beyond the purview of this research study. However, the study shows that medical school administrators as well as clinical faculty are aware of the present situation. As pointed out by Dr Ellis, "medical schools are not measured by their teaching but by the amount and type of [funded] medical research". And as noted by Dr Grisom in discussing the present system of clinical teaching, he says:

> I think teaching is inherently not an effective way to see patients than they might. Teaching takes time by definition. And, whenever you take time, that keeps you from other activities which might generate reimbursement [income]. So, ... there's some point one can't make teaching a totally efficient system. You have to reimburse teaching for teaching's sake.

Findings in relation to the reviewed literature.

The study reveals a sample faculty who as a group are highly focused on teaching problem-solving and decision-making related to clinical patient care practices.

However, as noted by Townsend (1987) and found in this study, these highly skilled decision makers have minimal awareness of their decision-making in instructional development. For instance, although the sample clinical faculty in this study receive clinical teaching awards from medical students, they do not know what they do educationally to receive them. The results of this study may provide usable data for clinical faculty members' to analyze their instructional decision-making and increase self-understanding.

The type of student that clinical faculty work with is an important factor in teaching, particularly when making instructional choices. Existing research on medical students by Becker (1961), and Dinham and Stritter (1986) indicates that this group of students are highly motivated and career-focused. In fact, each clinical faculty member in the study believes he has very bright, highly selected students to work with but they do not seem to go beyond this assumption. Clinical faculty treat this student factor as a given and seem to believe that how the individual medical student selects and comprehends the clinical information is something the faculty member cannot control. Paradoxically however, each faculty member is interested in how the medical student develops a differential diagnosis and how they reach the given diagnosis through reasoning.

Evidence suggests that the clinical faculty in this study, unlike those in studies discussed in Feiman-Nemser and Floden (1986), obtain their rewards not from the teaching activities themselves, but from the student's gain in clinical knowledge and skill including information processing through problem solving. As Dr Dotson says, his teaching reward comes from "seeing the light go on above the student's head" when he or she grasps a concept being taught. Observable evidence of personal satisfaction and

reward is seen in the faculty member's positive response -- such as a wide smile coupled with "that's a good call" when a medical student gives a correct diagnosis.

Research shows that long-established methods of clinical teaching are being re-examined in light of changes in the health delivery system (e.g. Blacklow, Veloski, and Robeson (1988). Clinical faculty members, such as those in this study, know what is being said by the leaders in medical education. For instance, Dr Dotson is aware of statements by Petersdorf (1988), who feels teaching sites need to be changed or added to reflect community patient care patterns. All of the faculty members in the study say that federal reimbursement changes have affected their practice and the medical students' clinical experiences.

The clinical faculty members' sense of responsibility and trying to do all work activities well was specifically discussed by two of the sample faculty each in a different academic setting. The time use issue related to their activities and how to effectively meet teaching, research, and clinical patient responsibilities is a concern. Each seems to say that the need to ensure compliance with federal reimbursement guidelines could eventually erode further into teaching time. This belief reinforces research by Edwards, Kissling, Pauche, and Marier (1980) who say medical schools are becoming dependent on the faculty's generating more revenue through patient care, therefore there is less time to teach.

Although Buchanan (1986, p. 105) believes "academic medicine's energy is largely focused on maintaining the status quo of medical school curricula and graduate training programs", the study does not find that to be the case. Medical school administrators and clinical faculty cooperated fully with this study and are interested in the research results.

Conclusions

The following conclusions are drawn from the research data describing the two medical schools and the sample medical and surgical clinical faculty members. The study shows that:

- The sample clinical faculty are cost-efficient users of instructional resources because they select person-centered methods such as the patient and themselves as role-models more often than the more costly media-driven teaching alternatives.

- Use of intuitive judgement in selecting and teaching clinical content allows the clinical faculty member to immediately reflect upon and respond to the medical student's learning need.

- Clinical faculty use pedagogically-sound instructional practices such as role-modeling, coaching, mentoring, active listening, Socratic dialogue and small group discussion in teaching clinical process skills to medical students.

- Use of the teaching moment with a patient as clinical content and the patient care setting as context facilitates the teaching-learning of clinical problem-solving and decision-making as found in medical or surgical practice.

- The sample clinical faculty invest an average of 60 hours per week in carrying out their responsibilities as clinician, administrator, researcher, and teacher.

- The roles of clinician/patient care provider and teacher of the medical or surgical discipline seem to intertwine into a productive whole whereby the

faculty member's direct patient care generates income for the academic medical center and their teaching provides physicians for the community.

The different ways clinical faculty develop instructional strategies and select methods/media are influenced by cultural patterns within their practice. The central theme is that the medical and surgical practice cultures, thus points of view, are learned behaviors based on practice habits as part of that shared learning. Although the sample clinical faculty may not differ in their love of clinical teaching, the study shows that how they think about instruction and their pattern of time use, have been shaped by their respective medical and surgical clinical groups.

Other influence on instructional practice comes from: (a) the ways in which medical and surgical practice are structured within the particular academic health center, (b) the way the medical school and the academic health center define the roles that clinical faculty can assume, and (c) how individual faculty members view and carry out their role in educating and socializing students into medical or surgical practice.

In summary, the clinical medical school faculty in this study are cost-efficient teachers who reflect upon the medical students' learning needs, and use pedagogically-sound instructional practices to teach the clinical patient care processes. These productive faculty members take their responsibilities of providing patient care, carrying out clinical research, and educating medical students, very seriously. The results of this study as described in the conclusions are offered to the clinical faculty members and medical school administrators for their review and use in discussing their present situation and future plans.

RECOMMENDATIONS FOR FURTHER RESEARCH

Since the clinical faculty participants show curiosity about what they do to acquire clinical teaching awards, continuing research in instructional decision-making and teacher effectiveness may be in order. The study shows that the sample clinical faculty think about what goes on within the overall medical school curriculum not only the clinical clerkship years. For instance, when asked what they would do if given an opportunity to reorganize the medical school curriculum, they suggest:

(1) Increasing small group time and decreasing lecture time.

(2) Increasing time spent on communication and clinical skills -- such as learning to do physical exams -- in the first two pre-clinical years.

(3) Facilitating the students' acquisition of core, essential information by presenting it "in a way they can accept it, accumulate it, and make use of it".

(4) Ensuring a solid background in basic sciences.

(5) Converting some fourth year elective time to out-patient "selectives," or adding another clerkship, such as an out-patient clerkship with two months in medicine plus "selectives" in medical specialties, and one month in surgical out-patient "selectives".

This research should involve focus groups of pre-clinical as well as clinical faculty to develop ideas about curriculum and instructional decision-making. As Barrows (1986) points out, the whole medical school curriculum should be considered "clinical" as faculty are preparing clinicians. The outcome of this holistic approach to curricular and instructional design research can improve intra-faculty communication and allocation of dollars for instructional resources.

Research on how the present system of rewards in clinical medical school faculty member's work relate to the teaching of medical students may help clarify expectations of all involved administrators, agencies, and the faculty themselves. This relates to the need for research on faculty satisfaction as recommended by Friedman et al (1990).

Two instructional design-related questions raised during the study which need further research are:

(1) Can instructional designers as internal consultants, help clinical faculty develop or refine their instructional planning skill according to personally-defined educational needs?

(2) Would exposure to clinical content early in the medical school curriculum, such as through use of videodisc-based medical and surgical decision-making software, better prepare medical students to take advantage of the clinical faculty members' "teaching moment"?

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DEFINED TERMS

The following terms are defined for purposes of this research:

Attending is a clinical faculty member in charge of patient care and teaching of assigned residents, interns, and medical students on their medical or surgical service during a specific time period.

Attending rounds usually refers to the process of discussing/reviewing patient progress by a group of residents, interns, medical students and faculty member walking from patient room to patient room.

Attribute is a quality or characteristic of a person or thing, such as an instructional model, method or medium.

Clerkship is a learning experience where the medical student has direct contact with patients by providing care as a member of the patient care team. The student rotates to various patient services such as pediatrics, medicine, and surgery and stays for a pre-determined number of weeks to learn about practices unique to the given specialty (see also Clinical rotation).

Clinical reasoning skills, use of involves a cognitive listing all the possibilities and the arguments for and against each patient-related diagnosis, and finally eliminating the possibilities one by one until the specific diagnosis/problem is singled out (see also Differential diagnosis).

Clinical rotation is when residents, interns and medical students are randomly assigned to particular clinical patient services and faculty attendings based on the curriculum plan and available or elective clinical sites.

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Clinical setting is where the primary event is provision of patient care services, such as a hospital in-patient care unit or an out-patient clinic.

Context is the situation or the circumstances in which a particular event occurs.

Diagnoses/diagnosis a defined condition or illness seen in a given patient/client displaying particular symptoms.

Diagnosis Related Groups (DRG's) is a designation used by the federal government related to the Medicare system of patient care services provided by physicians. Payment or reimbursement for service is formulated according to these designations.

Didactic/didactics means the intention to instruct; the art or science of teaching or instruction; pedagogy.

Differential diagnosis, developing of is a process whereby the evidence surrounding a patient's unknown condition/disease is evaluated using clinical reasoning skills, to distinguish one condition/disease from another, to establish a logical basis for the patient's condition and thus determine the diagnosis/diagnoses and appropriate treatment (see also Clinical reasoning skills).

Discussion rounds is the presentation of active patient cases in a conference format; similar to attending rounds.

Education is an intentional transaction that involves both teaching process and learning process where communication between teacher and learner leads to formation of new or revised information.

In-patient is a person admitted to the hospital for care/treatment and staying at least one overnight.

Instruction is a set of events (both internal to the learner and external) which affect learners in such a way that learning is facilitated. Adapted from Gagne and Briggs/pg 3 (1979).

Instructional media are instructional devices, usually consisting of two components, the hardware or machine and the software or program containing the teaching content. Examples are television, slide projection, overhead transparency projection and computer.

Instructional method(s) are systematic instructional techniques that often include the human element to transmit teaching content. Examples are case method, lecture, small group discussion and roleplay.

Instructional strategy is a particular combination of method(s)/media used by a teacher to involve the learner in acquiring identified information/content.

Instructional strategy development is a process involving the theory and art of instructional planning; includes the selection or design of specific methods/media and combining of same to enhance student learning.

Instructional technology is a systematic way of designing, carrying out, and evaluating the total process of learning and teaching in terms of specific objectives, based on research in human learning and communication, and employing a combination of human and nonhuman resources to bring about more effective instruction. Commission on Instructional Technology/page 21 (1970).

Intern is a medical school graduate who is licensed to practice medicine due to passing a state board examination, and is continuing education primarily in the clinical practice setting.

Media (see Instructional media).

MEDICARE is a federal health care provider reimbursement system administered through the Social Security Administration.

Medical student is a learner enrolled in medical school for a four year program of study; typically first and second year are didactics in basic sciences, and third and fourth year are clinical clerkship rotations and electives.

Method(s) (see Instructional method(s).

On-call is a system of medical staff coverage for patient problems and emergencies. Attending, resident, intern and medical student carry communication devices and can be called by hospital operator on a 24 hour basis, usually starting at the end of one workday to the next morning e.g. 3pm to 7am, or can be consecutive 24-hour days such as weekend call e.g. 3pm Friday through 7am Monday.

Out-patient clinic is a clinical patient care setting where persons visit for brief treatment, including uncomplicated surgeries, then go home the same day.

Patient work-up is the information gathering process including physical examination carried out by medical student, intern, or resident. Findings are typically discussed with other team members and faculty attending, who also examines the patient and assists with formulating the treatment plan.

Reimbursement, Medicare is a financial transaction between the federal government, a fiscal intermediary, and the academic health center where the clinical faculty member is paid for providing patient care.

Resident is a licensed, practicing physician completing basic or specialized clinical training in preparation for private practice and optional specialty board examination.

Rounds/rounding are patient visits carried out by the team of attending, resident(s), intern(s), and medical student(s) having primary responsibility for care. The intent is to check the patient's progress of recovery.

Service means a specific practice specialty such as Internal Medicine or General Surgery, where patients with certain conditions or illnesses are cared for by the practicing physicians and assigned medical students.

Teaching is a process carried out by a person(s) who selects/designs/sets in motion certain instructional events to accomplish a particular goal of learning in another person. Adapted from Gagne and Briggs/pg 3 (1979).

METHODOLOGY

Interpretive/descriptive research methodology, in particular the ethnographic approach which is used in this study, has been a vital part of sociological and anthropological research for many years. However, use within education is fairly recent as Erickson (1986) says, "the approaches have emerged as significant in the decade of the 1960s in England and in the 1970s in the United States ..." (p. 119). The ethnographic research approach as applied in this study, uses field-based techniques to gather the educational research data. Eisenhart (1988) points out, that these techniques are designed:

> to identify the sociocultural processes that constitute education in a particular
>
> setting and to make sense of this configuration through the development,
>
> modification, or adoption of theories of culture and social relations (p. 100).

It is the gathering of data in the field, then, that gives this methodology its unique character. As noted by Spradley (1980), fieldwork is where techniques are applied in an effort to seriously "learn what the world is like to people who have learned to see, hear, speak, think, and act in ways that are different" (p. 3). The fieldwork researcher becomes a student observing, listening, and learning from the participants how they perceive their world including the meanings they assign to what they do and say. In ethnographic terms, when human behavior is informed by meaning or a meaning-perspective, it becomes action. A fieldworker notes these actions, and as Erickson (1986, p. 121) points out, he/she then thinks about the actions in terms of questions, such as:

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(1) why is clinical teaching occurring in this way in this particular setting?

(2) what do these actions mean to the clinical faculty participants involved in them, at the moment the actions took place?

Erickson (1986, p. 121) goes on to say that the answers to such questions are needed in educational research for a variety of reasons: first, because everyday life has an invisibility about it, and those involved in the particular culture often are unaware of meanings -- both explicit and implicit. Second, he believes there is a need for specific understanding through documentation of concrete details of practice, especially if one is interested in the actor's point of view. For example, what clinical medical school faculty do in the clinical setting is influenced by the medical or surgical practice discipline, the academic health center and medical school cultures, as well as what is happening in wider spheres of social organization and cultural patterning. Considering these influences upon what is happening from the clinical faculty member's perspective can provide cultural knowledge about how these faculty view their world.

Cultural knowledge, then, can be defined as learned behavior which has explicit and implicit meanings to the people involved. And as Eisenhart (1988) notes:

> From this perspective meanings and actions, context and situation are inextricably linked and make no sense in isolation from one another. The "facts" of human activity are social constructions; they exist only by social agreement or consensus among participants in a context or situation (p. 103).

All humans have a rather complex combination of cultures which have been learned by making inferences from information in the environment. The same pattern of inference is used in ethnographic research, as the fieldworker makes cultural inferences from what participants say, how they act, and what artifacts they use or do not use. Each

cultural inference is analyzed until there is some certainty that the participants share a particular system of cultural meaning. Denscombe (1983) points out that "...this draws attention to certain shared elements that underlie the variety of accounts..." (p. 117). He addresses the ethnographer's need to check for validity of the data as part of the inference-making process. In addition to using multiple data gathering techniques, ethnographers can also check validity:

> by considering the plausibility of the account, the reliability of the informant, and the cross-checking between informants' accounts,...to be reasonably sure (although never positive) that they [the ethnographers] have not been 'set-up', misled or fobbed-off by respondents (p. 117).

In addition to the cultural meanings held by individuals, institutions such as medical schools, like other institutions in society, organize cultural meanings and social relations in particular ways. Researchers, such as Van Velson (1967) presented in Mitchell (1983), say that the focus of inquiry in research needs to be balanced between these data sources. Thus, educational research should include cultural data about the setting and the individual's cultural meaning, with balance being the ultimate goal. Often, the institutional meaning seems to overshadow the individual's point of view. However, Van Velson (1967) believes that balance can occur by providing greater emphasis on the "optative approach" (Mitchell, 1983, p. 190) in which the choice-making of individual participants is given due weight against the institutional framework within which they must operate.

The data collection techniques, then, should help locate information about the individual participants as well as the setting. Primary field-based techniques of participant interviewing, observing participants and others in the setting, and gathering

artifacts such as documents are commonly used to obtain the data. Researcher introspection and inference-making through data analysis is the fourth primary technique of this research methodology (Eisenhart, 1985, pp. 105-106).

The participant interview, particularly when tape-recorded, provides data which, after transcription, can be reviewed frequently. It also allows for the collection of background information helpful to an understanding of the present situation. According to Denscombe (1983):

> interviews can be used to collect information about events outside the immediate context, which, nonetheless, have a direct bearing on it. Through interviews, informants can be used to gather data on relevant events and facts occurring before research began or beyond the scope of the research context, and thereby enrich the data (p.110). Observation of participants in the field setting,

recorded through written fieldnotes, provides data describing day-to-day processes and patterns of organization. The fieldworker must focus observations and fieldnotes on data for the research. As with any data collection technique where some data are omitted, researcher bias can be a concern. But Becker et al (1961), state that "field-based participant observation is less likely than the more controlled methods of laboratory experiment and survey interview, to allow researcher bias in directions suggested by their own expectations, beliefs, or desires" (p. 42). They also say that:

> almost every field worker believes that proposition, ordinarily because he has often had to sacrifice pet ideas and hypotheses to the recalcitrant facts in his field notes.... In general, then, by making numerous observations we confront ourselves with the major features of the collective activity we study in a gross

and repeated way such that it is unlikely that we will unconsciously avoid recording some important matters. For this reason, we correctly place confidence in the field worker's evidence (p. 43).

The gathering of artifacts such as documents, teaching tools, and other human products, is the third data collection technique used to develop insight into a given culture. For instance, an educator analyzing a copy of a medical school's mission statement may do so to develop inferences about the educational program's curricular focus. This curriculum information in turn can draw the educator's attention to specific faculty actions leading to inferences about their teaching.

The fourth and final primary technique of ethnography is introspection and inference-making about the data in light of the research questions and hypothesis. This is perhaps the most difficult as it has as its goal the writing of a coherent descriptive ethnography. As Eisenhart (1985, p. 106) brings out, when the research is underway, all four of these methods are often employed together. Each can provide a different perspective on the research problem under study. In ethnographic research, the more perspectives represented the stronger the research design, because each additional perspective contributes to a more complete picture of what is happening.

This Study's Design

The following describes why the research topic and subjects were selected for the study, and presents details of the research design including why changes in the design became necessary.

Clinical medical school faculty and their instructional processes were chosen because they are highly educated health service practitioners who serve as academic

faculty teaching human care skills. As an educator and instructional designer, the researcher was particularly interested in learning how the faculty select methods and media, since no research evidence describing this process was available. Working with them clinically as a registered nurse, she believed that they could offer useful educational insights if their point of view on clinical teaching were known.

The ethnographic research approach was selected for the study because its techniques implement the theory that -- meaning lies in its observable consequences. Thus, by learning what clinical faculty think about and do in daily teaching activities, the researcher can gain insight into their beliefs and practice processes. The focus on how they go about teaching medical students, as opposed to interns and residents, was chosen to limit the research to the study of the clinical instruction of entry level practitioners. Although these other groups of learners are involved in the study, they are discussed only in their relation to the medical students and clinical faculty members. Student learning as an outcome of teaching is not addressed because the researcher is primarily interested in the faculty themselves and their teaching processes.

In summary, the study's ethnographic approach included use of the four primary data collection techniques previously described -- participant interview, observation, collection of artifacts, and researcher introspection and analysis of the data.

Selecting the settings and the participants.

Two medical schools out of the three available in the state were selected and approached. The researcher assumed the role of educator and instructional

technologist who just happened to be a registered nurse. Entry to one medical school site was facilitated by a colleague who provided an introduction by telephoning an Associate Dean's office on her behalf. Entry to the second site occurred through an Associate Dean involved with the school of education and the medical school. The relationship that eventually developed between the researcher and all physician participants became one of nurse-colleague doing educational research. The registered nurse credential, coupled with the twenty years of clinical and educational experience, helped to develop the physician's trust. Each physician participant seemed to relax once they had determined that the research could be helpful in terms of medical education and in understanding their own teaching practices. The non-physician participants didn't seem to share this feeling, however. In fact, one had difficulty responding to the researcher's inquiries about when physicians could be nominated, and the other stated that if he had known the researcher was an educator he would have attempted to prevent the research. The researcher had identified her university affiliation and informed all participants that it was educational research when arranging the appointments for the interviews. Perhaps because the educational research involved a student from another university and not their own, they had difficulty allocating time to this activity.

As noted, each medical school site was entered by first approaching an Associate Dean. Appointments were made with the respective Associate Deans to present the research idea and request the school's participation. These initial discussions were audiotaped, as were the subsequent site profile interviews where a specific set of questions were used (see Appendix D. for the list of profile questions). Although site one's administrative participant was consistent throughout the data gathering phase,

site two's administrative participants changed. This change occurred because of the site's administrative structure and personnel changes due to retirements.

In defining the clinical faculty sample, the Associate Dean at each site was asked to nominate a medical and a surgical representative from their population of full-time medical school faculty. At this point the difference between medical and surgical clinical faculty members' schedules became known. Medical clinical faculty serve as physician-in-charge of patients' care and teaching of medical students, interns, and resident, including 24-hour on-call, for one month within a 12-month yearly schedule. All clinical medical faculty within the practice specialty division, such as Internal Medicine and Family Practice, rotate this coverage among their faculty group. Surgical clinical faculty are on a year-round 12-month schedule of clinical patient care service and teaching, with 24-hour on-call coverage of weekends and random weeknights rotated among faculty in their surgical group. For all clinical faculty, being on-call means they must be quickly available to their assigned resident for patient-related emergencies. The researcher was able to conduct the study within each clinical faculty member's usual schedule.

The criteria for clinical faculty selection and nomination were then developed. This criterion-based sampling approach emerged from:

(a) review and analysis of faculty statistics in the **Association of American Medical Colleges: Faculty Roster System Data Book (1989);**

(b) each medical school's Associate Dean agreement to coordinate the initial contact and nomination of sample clinical faculty as there were over 300 faculty at each site;

(c) knowledge that faculty and their confidential file including credentials were only available to the Deans;

(d) the belief that participants should represent what the medical school considered their best teaching; and

(e) since choice of clinical practice might be a factor in teaching style both medical and surgical practitioners should be represented.

The criteria were then written as follows: one medical and one surgical faculty member from each medical school representing large practice groups, such as Internal Medicine and General Surgery; and each faculty member at the rank of associate professor or higher, with at least one clinical teaching award of excellence from their respective medical student groups. Once each Associate Dean provided the names of clinical faculty meeting these criteria who were possibly interested in participating, the researcher then contacted each one by telephone and follow-up correspondence. A plan was in place to re-enter the population if not everyone approached agreed to participate. The lack of cooperation or participation, for whatever reason, would have been a limitation to the research. Nevertheless, all clinical faculty approached agreed to participate and continued to be available through completion of the study.

Applying data collection techniques.

The collection of documents and other artifacts began early in the study. Some documents obtained in the early phase of the research were: Chamber of Commerce publications about each community, within which the university and academic health center function; medical school publications, such as college catalogs, admission packets for medical students, including the MCAT application materials; as well as a

descriptive publication of each academic health center. Documents requested from each clinical faculty participant include curriculum vita and list of publications, a copy of one published journal article they were particularly proud of writing, and a signed researcher-prepared consent form. The researcher purposely omitted requesting course syllabi or any course related documents or media software in order to see what the faculty members would offer on their own. A written outline of each faculty member's weekly activity schedule was developed and added to their document file to provide information about time use.

The data collection technique of participant observation preceded each clinical faculty member's formal interview. However, brief informal interviews occurred during observation if time were available. Each of the four clinical faculty participants were observed for seven consecutive days in the various situations of their activities related to patient care, clinical teaching, attendance at meetings, and research grant preparation. Descriptive fieldnotes were written by the researcher usually during or immediately after the observation while still in the clinical setting; diagrams of locations such as nurses stations and on-unit conference rooms were drawn to help the researcher recall the specific setting. Personal reactions and comments about the observed activity were also entered in the fieldnotes; a separate journal was written to describe overall research activities including feelings about what was going on. Toward the end of each clinical faculty's week of observation, the researcher asked for an appointment to conduct the formal interview.

The formal interview was scheduled three or more weeks after the observation week -- based on the faculty member's availability -- and conducted in each participant's private office. This third technique, participant interviewing, provided the

means to learn about their personal background and subjective views. Use of an interview schedule instead of an open-ended interview was selected because structured questions provide some measure of consistency.

The interview schedule of 50 questions, which appears as Appendix C., averaged three hours to complete. One faculty member elected to do the interview in two one-hour segments; the other three faculty scheduled a two hour block of time on their calendar. All audiotaped interviews were transcribed verbatim onto computer disc, and both formats were retained for analysis. No clinical participant knew the questions before the interview, nor were they informed about the number of questions on the schedule. Everyone responded to all of the questions with some elaborating more than others. Persons other than clinical faculty also provided research-related information. For example, each medical school's non-physician and physician administrators provided site profile data about student admissions, the curriculum, and observations on related issues. The site profile list of questions, Appendix D., facilitated the audiotaped interview of administrators. Other researcher-selected persons, such as the involved medical and surgical residents were informally interviewed on audiotape, while fieldnote comments from instructional media development administrators, interns, and medical students added valuable insights.

The computer software package **Ethnograph** was used to format the data for analysis; however, it was not used as fully as possible due to computer software compatibility problems. The researcher and the individual transcribing the data from the audiotapes to the computer discs had different data processing systems, thus conversion to ASCII facilitated data transfer; printouts were analyzed manually.

For analysis of the collected data, the initial research plan combined portions of the analysis strategies of Becker et al (1961), Smith and Pohland (1981), and Spradley (1980). Specifically, the work of Becker et al (1961) in the **Boys in White** to assist in defining the organizations, and determining relationships among elements of each organization, such as between the academic health center and the medical school. The Smith & Pohland (1981) constant, on-going reiteration and re-analysis of fieldwork evidence would be used to look for possible antecedents and consequences of important phenomena within the data. For instance, in searching for elements of an educational theory or model that strongly continued through each iteration. And, by using a simplified version of Spradley's (1980) Developmental Research Sequence (DRS) method, the domains of cultural meaning located within the data would be analyzed, drawing conclusions related to the research questions and hypothesis.

Although portions of the Becker et al (1961) medical school organizational analysis, and Spradley's DRS method were used, the combination as envisioned was found to be too complex. The Smith and Pohland (1981) analysis strategy was replaced by the Erickson (1986) approach of making and testing assertions about the data.

Specifically, the **Boys in White** (1961) description of the medical school environment from an ethnographic perspective provided insight into the setting and the research approach. More recent data on clinical education, medical school culture, and contemporary health service issues such as federal reimbursement, came from medical researchers such as Ebert (1986), Barrows (1986), Dinham and Stritter (1986), Irby (1986), Numbers (1980) and others. The collected data describing each medical school and clinical setting, and combined with the sample clinical medical school faculty

information, were analyzed in relation to the research questions and working hypothesis.

Spradley's (1980) DRS method assisted with the search for cultural meanings from the clinical faculty member's perspective. The body of cultural data which developed from clinical faculty artifacts in the form of documents, the fieldwork observations and interviews were analyzed for cultural themes. Use of cultural themes help to develop an understanding of the particular setting and informants by making general statements then more specific statements about the data. The DRS method was also used to develop a view of the clinical faculty's instructional processes by developing componential analyses of cultural domains of meaning. For example, data descriptive of selection and use of methods and media were analyzed in terms of (a) which methods and media are used, and (b) of those methods and media, which are the favorites -- the primary instructional elements.

The Erickson (1986) approach to data analysis was employed by making assertions about clinical medical school faculty and their environments. These assertions were then tested by searching through the body of data for evidence in support of these assertions. Analysis and re-analysis of each data source -- searching for strong, moderate, or weak support -- revealed a different level of support for each assertion. Only strongly supported and moderately supported assertions are addressed in the research discussion.

Special research problems.

As the study commenced, after the approval of the topic by the dissertation committee, it became clear to the researcher why this type of research may not be

undertaken by doctoral students. It can be a costly and time-consuming process therefore the researcher must creatively obtain income to survive while carrying out the research process. In this particular case, the research involved travel from the degree-granting university to two other university/academic health center sites in the state. This meant incurring travel, lodging, and food costs at each site, in addition to telephone costs to locate participants as well as arrange for observation and interview times. Due to the nature of ethnographic research there were necessary equipment costs of a computer and printer, expendable computer supplies, audiotapes and recording equipment, plus an hourly rate for transcription of data from audiotape to computer disc.

In this study, gaining entry to each medical school setting proved to be a challenge as consent for entry and actual entry proved to be two different problem sets. The actual entry to site two problem was overcome by a letter to the non-physician administrator with a copy to the Dean of the medical school. Researchers interested in replicating this study or if confronted with a similar entry problem could choose to write such a letter. Another choice would be to eliminate or, if possible, replace the research site after a reasonable attempt at entry.

Due to the large amount of data in ethnographic research, funds for the transcription of audiotaped interviews, written observation data and journal entries should be set aside. This funding proved to be an important budget item and well worth the investment as it frees the researcher for other things while the transcriptions are being done. Investment in a personal computer is vital for data analysis and the writing of the ethnography. A problem to avoid if possible are differences in word

processing software between the researcher and the person transcribing research data. Both parties need to use the same type of computer and word processing software.

In summary, the "lost time" due to the entry problem, plus necessary time for data analysis; the special travel-related costs; and surviving while researching; were the main challenges encountered in this ethnographic research study. Being employed by an institution interested in implementing ethnographic research, or developing other income-producing survival strategies can facilitate the conduct of the research. However, it should be remembered that other problems, such as site entry, cannot always be predicted and avoided since motives of those who would not facilitate entry are often unknown. However, on a positive note, the total ethnographic research experience can be growth-producing and rewarding. This particular research was rewarding because of the attitude of the clinical and administrative physicians who served as research subjects. Their cooperative spirit, interest and openness to help with this educational research was evidenced throughout. Perhaps being a registered nurse helped with their willingness to cooperate, or perhaps their curiosity of what would be found by the study caught their attention. It is difficult to determine why participants agree or refuse to participate in any research study. But, for anyone who is interested in carrying out an ethnographic study, who is prepared to face the inherent obstacles in researching details of human beings, whether in education or not, it's worth doing. As Spradley (1979) says:

> In our complex society the need for understanding how other people see their experience has never been greater. Ethnography is a tool with great promise....It is a pathway into understanding the cultural differences that make us what we are as human beings. Perhaps the most important force behind the quiet

ethnographic revolution is the widespread realization that cultural diversity is

one of the great gifts bestowed on the human species (p. v).

APPENDIX C.

CLINICAL FACULTY INTERVIEW SCHEDULE

Include on audiotape: "This interview follows observation of coded person: (on tape). Today's date is: (on tape); time is: (on tape); and location is: (on tape).

A.   Demographics:

____   How did you happen to choose medicine?

____   Did you ever seriously consider any other kind of work?   What kind?

____   What did your family think about you going into medicine?

____   Where were you born? When?

____   Do you have siblings? If so, did any become physicians?

____   Where were you reared? How big a place is it?

____   Where else have you lived?

____   What does (did) your father do for a living?

____   What does (did) your mother do if working outside the home?

____   What was highest level of education of father?

____   What was highest level of education of mother?

B.   Choosing Medicine as a Career:

____   What have you done since you left med school?

____   Have you ever worked in anything else other than medicine?

____   If yes, do you think this has made any difference?

____   Where did you go to med school?

____ Where did you do your internship and residency?

____ Did you do any fellowship work? If so, please describe.

C. Thoughts on Selecting Practice Specialties:

____ Why did you select your specialty?

____ Did you take any postgraduate work in another field outside of medicine? What field? Why? Why didn't you continue?

____ What is your idea of a successful physician?

____ What would be the usual reason for someone going into each of the following specialties, and what would be the usual reason not to go into each of them?

___ Medicine ___ Pediatrics ___ Dermatology ___ Neurosurgery

___ General Surgery ___ Obstetrics-Gynecology ___ Radiology

___ Psychiatry ___ Family Practice ___ any other specialty you wish to discuss?

D. Why Academic Medicine Instead of Private Practice:

____ Where did you first start your teaching career?

____ Did your experiences as a resident influence your movement into teaching?

____ Do you have friends or relatives who teach?

____ Do you think being a faculty member separates you from other physicians? If yes, in what way?

____ When you first got into teaching, what kinds of problems did you think you would have to deal with most frequently?

____ Are the "problems" still the same? If no, how have they changed?

____ Have the medical students changed in any way? If yes, what do you think most influenced the change?

E. Background/Beliefs in Educational

____ Approaches/Practices:

____ Have you had any formal or informal (eg. inservice) courses or sessions in teaching methods and media? If yes, what was most helpful? What was least helpful?

____ Do you have a system for developing your instruction?

____ What do you think about educational theories for instruction?

____ Is there one "educational theory" you use most frequently? Why?

____ Have you always taught clinical courses? If no, what else have you taught?

____ Do you think there is an instructional strategy unique to clinical teaching?

____ Are there specific teaching methods you find most effective? Why?

____ Are there specific media you find most effective? Why?

____ Do you have any role-model(s) for clinical teaching? If so, how has each influenced your clinical teaching approach?

F. Reflections on Being a Clinical Educator:

____ What is the best part of clinical teaching?

____ What is the most frustrating part of clinical teaching? Can this be changed in any way? If so, how?

____ We all know that textbooks, lectures and other methods/media have more information than anyone can remember. How do you decide which things are most important for medical students to know?

____ Do you decide on content first and then context as to how the content will be presented? If yes, why? If no, what else do you do instead?

____ Do you get much help in deciding what to teach from other faculty? From the Dean, Department Chairman, Division Chairman, or Clinical Coordinator? Do you get much help in deciding how to teach from other faculty? From the Dean, Department Chairman, Division Chairman, Clinical Coordinator, or media people?

____ Do you ever experiment in your teaching?

____ What gives medical students the most trouble with learning? How do you address this in your teaching?

____ How would you feel if one of your 4th year medical students gave a correct differential at a Clinical Patient Conference (C.P.C.) including a good discussion (according to the resident in charge) but missed the diagnosis?

____ Do you think the medical students get enough chance to carry out clinically relevant procedures? How important is it to get this kind of experience?

____ What kind of patients do you like to get assigned to the medical students to work-up? Who selects the patients for assignment? How is the selection determined?

____ Do you find that changes in reimbursement for patient care has affected your clinical teaching role in any way?

___ Have you done any work in research while you've been in your teaching role? Why or (why not)?

___ Have you done any medical writing for publication while you've been in your teaching role? Why or (why not)?

___ If you were in a position to reorganize the medical school curriculum, what changes, if any, would you make?

(1)   What percentage of medical students are from Virginia?

(2)   Is there a restricted admission policy regarding out-of-state students?

(3)   How many students on average do you "turn away" because there are not enough places?

(4)   Do you know where these individuals choose to go i.e. which medical schools when not able to be placed here? Do the majority stay in-state or go out-of-state?

(5)   Do you believe there is a correlation between expenditures per student (overall educational) and MCAT scores of the students coming to your medical school?

(6)   What is the mean MCAT score of your medical students?

(7)   How would you say your medical school "measures up" with all medical schools in the country?

(8)   How autonomous is the medical school within the overall University structure? How integrated is the financial structure? How integrated is the faculty promotion system i.e. is it exactly the same as for all other faculty in the University?

(9)   If Abraham Flexner walked into your medical school today, what do you think he would say?

(10)   Is there a text you can recommend that provides an historical account of the medical school?

ARTIFACTS/written materials needed from Administration:

Medical School Catalog

MCAT materials

Brochures/information sent to prospective students

other items:

APPENDIX E.

CURRICULUM OUTLINES

CURRICULUM

The program for the M.D. degree is divided into four phases, each of a year's duration. Medicine I, occupying the first year (late August to early June), emphasizes normal human structure, function, growth, and development. Medicine II, occupying the second year (August to June), stresses the abnormal. Medicine III occupies the third year (July to July) and consists of clinical education and training. The fourth year (Medicine IV), lasting from August to mid-May, consists of approximately one-quarter required clinical education and training and approximately three-quarters electives at
and at approved medical schools elsewhere in the USA and abroad. Elective opportunities are offered also in M-I and M-II.

One-half to one-day seminars on each of several practice-related topics are presented during the M-III year. The entire class convenes for these required sessions.

REGISTRATION IN COURSES OFFERED BY THE SCHOOL OF MEDICINE IS RESTRICTED TO STUDENTS ENROLLED IN THE SCHOOL OF MEDICINE AT THE MEDICAL COLLEGE

Medicine I and II

The curriculum is viewed as a dynamic and evolving entity, and course titles, content, or duration of emphasis may be subject to modification for the sake of improving the learning experience.

The first year begins with a two-day program concerned with the human values essential for the complete physician. The scientific courses begin with six weeks of cell biology, a combined course of molecular biology, biochemistry, cellular physiology, ultra-structure, and genetics. This is followed in sequence by the major sciences basic to medicine and by a combined systems course in neurosciences.

Course	Length
Human Values	½ Week
Cell Biology and Biochemistry	6 Weeks
Anatomical Sciences	11 Weeks
Physiology	12 Weeks
Behavioral Sciences	
Epidemiology/Biostatistics	
Neurosciences	6 Weeks
Pathogenesis	1½ Weeks
Introduction to Clinical Skills	

Each subject matter in M-I and M-II is designed and implemented by a faculty committee, and each phase of the curriculum is supervised by a faculty coordinator. In M-III a committee under a coordinator supervises the clinical experiences, and in M-IV there is an electives committee whose chairman is the M-IV coordinator.

In M-II, the organ system subject matters are

Course	Length
Infection and Immunity	7 Weeks
Preventive Medicine/Autonomic Pharmacology	1 Week
Hematology	3 Weeks
Central Nervous System	3 Weeks
Gastroenterology	4 Weeks
Behavioral Science	2 Weeks
Respiratory	3 Weeks
Cardiovascular	4 Weeks
Musculoskeletal-Skin	4 Weeks
Renal	3 Weeks
Endocrine-Reproduction	5 Weeks
Introduction to Clinical Medicine (concurrent with the above)	

Medicine III

Rotation	Length
Internal Medicine	12 Weeks
Surgery	8 Weeks
Pediatrics	8 Weeks
Obstetrics-Gynecology	6 Weeks
Psychiatry	6 Weeks
Neurology-Neurosurgery	4 Weeks
Community Practice	4 Weeks
M-III Combined Workshop	1 Week

All students are required to take National Board Part I Examination at the end of M-II and Part II in the fall of M-IV.

Medicine IV

The School of Medicine, in an effort to serve best the needs and goals of the individual student, offers M-IV students the option of choosing electives during three quarters of their senior year. The elective curriculum has been arranged primarily to allow those students who have definite goals to pursue them logically without adherence to a required curriculum. At the same time, it allows those who have not yet defined their goals an adequate assortment of electives with which to explore career options. Where standard elective choices seem too limiting, students are encouraged to approach individual faculty members relative to the development of unique courses that more closely approach individual needs. A member of the M-IV Committee is available to advise each student and to approve of each student's program.

The year is divided into nine 4-week periods. The required rotations which must be served at the Medical College   are emergency room and an acting internship.

A new electives catalog is published each year.

ʹbe Curriculum

The curriculum of the School of Medicine is designed
offer an integrated course of instruction which will pro-
de the student with a background for further post-
aduate training in a residency leading to certification
a variety of fields of medicine, or for advanced train-
g in public health or medical research. Although the
irriculum is organized by courses and is under super-
sion of several departments, instruction is correlated in
ch a manner that there is a logical progression. The
irriculum can conveniently be divided into three major
ʹmponents: 1) preclinical sciences, 2) clinical clerkships,
id 3) electives.

It should be pointed out that the curriculum as out-
ied here may change during any academic year upon
commendation by the Council on Medical Education
id approval by the faculty of the School of Medicine.

reclinical Sciences

During the first two years students will study a core
irriculum of those basic and clinical sciences requisite
an understanding of human biology, both its physical
id psychological aspects. During the first year, the stu-
:nt gains a basic knowledge of the normal structure and
nction of the human body. A continuous effort is made
integrate the basic sciences with clinical medicine
rough frequent clinical correlation sessions. Instruction
id experience in obtaining information from patients
ʹ interviewing and physical examination are also
troduced during the first year. In the second year, em-
1asis is placed on anatomical, physiological and
sychological deviations from normal, methods of detec-
ig such deviations, and the general principles of
ithology, microbiology, psychopathology, phar-
acology, laboratory medicine, and physical diagnosis.
he Introduction to Clinical Medicine course is based on
discussion of clinical cases in small group tutorials.

itional Board of Medicine Examiners

\Il students are required to take Part I of the National
ard examination, but a passing score is not required
promotion or graduation. Passing Part II of the
imination is a requirement for graduation.

Clinical Clerkships
(12 months)

The clerkship experience in the third year includes
twelve week rotations on medicine and surgery, eight
weeks each on pediatrics, six weeks in behavioral
medicine and psychiatry, six weeks in obstetrics-
gynecology, and four weeks in neurology. The learning
experience is by direct contact with patients in which the
student is one of those persons responsible for optimal
patient care. Teaching is related to the patient by small
tutorial seminars, lectures and group discussion. Emphasis
is given to the principles of prevention, diagnosis and
treatment and to a continuing integration of clinical
medicine with the basic medical sciences and those
psychological factors which influence health. Students
are divided into small groups which are rotated among
several clinical services, where the student gains practical
experience under supervision in the wards and outpatient
clinics of the University   · Hospitals,
Memorial Hospital and the Veteran's Administration
Medical Center   Teaching programs at
the affiliated hospitals provide the student with the op-
portunity to observe the practice of medicine in a com-
munity setting and to be exposed to a somewhat different
spectrum of illnesses than those at the University

Health Sciences Center. Students will be given
an opportunity to express their preference for taking a
given clerkship at the University   Hospital or
at one of the affiliated hospitals. However, all students,
unless exempted because of special circumstances, can
expect to spend ten to fourteen weeks of their clerkship
experience at an affiliated hospital.

Electives
(8 months)

The electives program in the fourth year offers students
the opportunity to pursue further their own interests.
With the guidance of a faculty adviser the student
prepares a program which is submitted for approval by
a committee responsible for administering the program.
The student may choose clinical rotations, graduate
courses, or research activities. Clinical rotations are
available in the affiliated hospitals in
                 as well as in the University
Hospital. Programs can be tailored to meet the interests
and needs of the individual student in any phase of
clinical practice, both office and hospital, whether
specialty oriented or in family practice. The student may
also select programs in other domestic and foreign institu-
tions, appropriate community medicine programs, or
other activities of suitable educational merit.

VITA

Lynn Kazemekas has worked professionally in educational development and instructional management for over 20 years. Her experience includes educational needs analysis, curriculum design, media production, training implementation and performance evaluation.
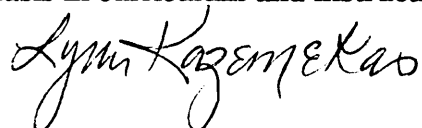
She was one of the founding administrative faculty members of a new college, Oklahoma City Community College, a model open-concept college for Oklahoma.

Kazemekas was a self-employed consultant in communications and media development with contracts from private business and public institutions and agencies. She also has written and implemented funded grants and contracts for clients and other employers.

A former dean of nursing, she coordinated the transition of a diploma nursing program to a baccalaureate nursing program including change of ownership and the development of an innovative wellness curriculum.

Subsequently she joined the faculty of VA TECH in 1985, as research associate and teacher-educator in health occupations education for Virginia, receiving an award for outstanding service to public schools.

Kazemekas began her professional career as a registered nurse in Connecticut, taking a position at Columbia-Presbyterian Medical Center in New York City and obtaining an undergraduate degree in education at Columbia University Teachers College. She holds a Masters of Medical Science in Biomedical Communication from Tulane University School of Medicine with an emphasis in curriculum and instructional design for the health professions.

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ABSTRACT

**The Development of Instructional Strategies by
Clinical Medical School Faculty**

This study described the instructional practices of selected clinical medical school faculty. It addressed the following questions:
- how do medical and surgical clinical faculty select/design and combine instructional methods and media in teaching clinical content?
- what influences clinical faculty use of a particular method or medium for clinical teaching?

The primary purpose of this research was to investigate how clinical medical school faculty make pedagogical decisions and carry out their instruction in clinical patient care settings. The research described the clinical faculty members' instructional practices with medical students and how the medical apprenticeship system is used for their clinical instruction.

The research involved two medical schools and a sample of four clinical faculty representing surgical and medical practice. A general method of descriptive research was employed including the data-gathering techniques of participant observation, interviewing, and collection of documents. Strategies developed by Spradley (1980) and Erickson (1986) were used for data analysis.

Findings indicated that the sample clinical faculty do not use an instructional planning process such as described by Gagne and Briggs (1979) or Wildman and Burton (1981). Instead, they select instructional methods and media intuitively, carefully monitoring the medical students' reactions to their instruction. The data show the instructional techniques that include the human element -- defined here as person-centered methods -- are selected most often.