

A Community Medicine Clerkship On the Navajo Indian Reservation

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Abstract—An elective clerkship in community medicine for medical students has been conducted for 16 years on the Navajo Indian reservation. An important part of the clerkship is a project in which most students select a health problem which they investigate using epidemiological methods of assessment and for which they seek a solution. The requisites for the projects are that real health problems are involved, scientifically sound methods are used, usable information is provided, and data collection can be completed within the clerkship tenure. Topics for the projects are selected jointly by the students and the faculty members from several general subject areas; this allows the work of individual students to be carried out as independent subprojects of larger projects, and this, in turn, produces more information about and has more impact on the problems addressed. Other clerkship objectives also are achieved through investigative projects that may involve students in planning, organization, and evaluation of health care and in public health practice.

Clerkships in which medical students participate in the practice of various medical specialties are universally used to teach clinical medicine. They also have been reported as useful for teaching community medicine (1-4). Although community medicine and clinical clerkships both employ problem-solving and guided practice, help develop attitudes and skills, and teach information, they differ in the kinds of problems encountered, the setting, the methods of supervision, and direction. The authors in this paper describe a clerkship in community medicine for medical students which has been conducted on the Navajo Indian reservation for over 16

years and discuss characteristics of the clerkship which may have contributed to its effectiveness. The clerkship was modeled after one developed during the 1950s at Many Farms, a Navajo community, by Cornell University Medical College and described by Adair and Deuschle (5).

Background and Description

Since 1967 the Indian Health Service (IHS) and the University of Pittsburgh School of Medicine have jointly sponsored elective clerkships in community medicine for medical students on the Navajo reservation in northern Arizona and New Mexico. The clerkship has been based primarily in two communities, Fort Defiance and Tuba City, Arizona. The IHS provides housing, a small stipend, and day-to-day supervision of medical

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students, and the university provides faculty supervision for students and consultation to the IHS. Clerkships are offered to up to 10 students for eight weeks during the summer following their second medical school year and to one or two students for a six-to-12-week period during the fourth year.

The Navajo community medicine clerkship has both practice and investigative components. Practice experience includes observation of activities and workers in various community health programs as well as apprenticeship to the physician who heads the local IHS community health program. In this apprenticeship, the students participate with the community health physician in daily duties or perform work assigned and supervised by him.

About two-thirds of the clerkship students undertake an investigative project which is intended to teach methods and procedures for identification, diagnosis, and remedy of community health problems. Work on the project occupies approximately half of the students' time. The questions or problems selected for these projects are often identified by the IHS physicians as of interest and importance in Navajo health care.

Students begin to prepare for their projects before they start their clerkships. While still in Pittsburgh, they meet with the full-time faculty director of the clerkship program to discuss the objectives and activities of the investigative part of the clerkship and to select a topic for study. The project choice is made jointly by the student and the faculty clerkship director; they take into consideration the student's interests, IHS needs, and projects already in progress. In the early years of the clerkship, subjects selected by the students for investigation during their individual clerkships were largely unrelated to each

other. Currently, topics for investigation are selected from general subject areas in which other students have worked. Thus, one project is linked to another, and this allows the work of several students to be aggregated and provides considerably more information and impact on problems than would be possible from a single student clerkship project. Students are assisted in the design of their studies by the director and by statisticians in the Department of Community Medicine at the School of Medicine. It is essential that the student project be small enough in scope to be completed during the clerkship tenure and that the student identifies the project as his own responsibility and accomplishment.

When the student and the faculty director have chosen an area of interest, they telephone the IHS physician who will be the student's major clerkship preceptor and discuss the project's feasibility, records or clearances which need to be obtained before the student's arrival, and the relation of the project to other parts of the clerkship. The clerkship director helps the student acquire background information, often through reprints, reports of other students' works, and books and library references from the director's files. The goal of the preparatory activities is to have the student ready to begin working on the project soon after arrival, since the clerkship is too short for most projects to be completed without advance work.

On-site supervision varies in relation to the student's skills and the available time of local preceptors. Usually, the faculty clerkship director supervises the project by frequent telephone calls to the student and the preceptor and by a two-day site visit once during the clerkship, usually soon after the first week. The faculty site visit is an expensive, time-consuming, but essential part of the clerkship. During the

visit, the faculty clerkship director meets with the student to determine how the planned project is working. Often there may be unanticipated problems, such as access to patient records or problems regarding the assistance of field workers and interpreters. With the help of the physician who directs the IHS Community Health Program and the student's preceptor (if they are not the same), the faculty director, during the site visit, attempts to solve these problems through appropriate IHS administrative channels. An equally important part of the site visit is brief courtesy visits by the clerkship director to IHS administrative officials and influential members of the Navajo tribe. During these calls, the faculty member reiterates the appreciation of the medical school for the opportunity provided its students, presents a progress report on the clerkship program, and asks for comments about the program.

When students return to Pittsburgh, they submit a preliminary written report of their investigation. Often this report includes only a statement of the problem studied, a brief review of pertinent literature relevant to that problem, and raw data from the clerkship investigation. The students subsequently participate with the faculty director in further analysis and writing a final report over a period of several months. The final report is presented to the IHS and sometimes submitted for publication in a journal. The report to the IHS not only provides information about a specific question the IHS staff might have identified but also provides the agency with a record of accomplishment that can be used to justify continuation of the clerkship program.

Results

Of the 169 students taking the community medicine clerkship from 1967

through 1983, a total of 115 (68 percent) participated in specific investigative projects. The students authored or coauthored 85 written reports that contributed to 22 papers in refereed journals. Twenty-seven of 96 clerkship participants (28 percent) who had completed their postgraduate training by 1983 had joined the U.S. Public Health Service, almost all for a period of at least two years in the IHS on the Navajo reservation or adjacent other Indian reservations in the southwestern United States. Several of these physicians who remained for extended periods served as local preceptors and as collaborators with the Pittsburgh faculty in a series of investigations.

The subjects selected for inquiry have not limited the project from serving as a means of teaching epidemiological methods for assessing and solving health problems. Following are brief examples of subjects selected for investigation, some clinical, some public health, and some research. All eventually led, through the process of linking one project to another and through continued emphasis on community aspects of health, to experiences satisfactory for teaching the diagnostic methods and interventions of community medicine.

Gasoline sniffing—IHS pediatricians at the IHS hospital in Tuba City, Arizona, reported seeing a number of Navajo adolescents with encephalopathy considered to be secondary to lead intoxication produced by sniffing gasoline. The clerkship medical students identified and described the clinical characteristics and therapeutic outcome in 23 cases of organolead toxicity by retrospective review of the hospital charts and interviews with physicians in all the IHS hospitals in the Navajo area. Anonymous questionnaire surveys conducted by some of the students at three Navajo junior high and high schools

showed that 11 percent of the Navajo adolescents had at least tried gasoline sniffing, and 7 percent reported doing so regularly (6). However, the testing of the Navajo pupils in the same schools for lead and zinc protoporphyrin showed that lead overload was not widespread. Habitual gasoline sniffing and lead toxicity were confined to children and adolescents who gave other evidence of poor adjustment and disturbed family relationships. These studies led to the funding of a counseling program for adolescents with drug abuse problems.

H. influenza type b disease—Studies conducted at Children's Hospital of Pittsburgh showed a marked variation by race and socioeconomic status of the incidence and age of onset in children of invasive disease due to *H. influenza type b*. The investigators in these studies requested the help of the clerkship program to obtain observations of Navajo children to study factors further affecting the incidence and age of onset of *H. influenza* disease. Clerkship students surveyed discharge diagnoses at IHS hospitals in Navajo areas over a period of 12 years and found that the incidence of *H. influenza type b* meningitis was consistently higher among young Navajo children than in almost any other population reported (7). Eighty-one percent of the meningitis cases clustered within the first year of life, but very few cases occurred during the first three months. Serological studies in Navajo newborns showed high maternal IgG antibodies in cord blood, presumably accounting for neonatal protection. Subsequent student studies (8) confirmed a high incidence in Navajo children of other invasive *H. influenza type b* disease, such as septicemia and pneumonia. Publication of these findings led to a request to the Navajo clerkship program to participate in a multicenter clinical trial to

determine the immunogenicity of a newly developed *H. influenza* polysaccharide vaccine. The proposed trial was presented to the Navajo Health Board of elected citizens who advise the IHS, and its approval was obtained. Findings of this trial (9) contributed to development of an improved vaccine that eventually may be used to protect Navajo infants in the first year of life.

Rheumatic fever control—The physician director of the Fort Defiance, Arizona, IHS community health program requested assistance of the clerkship program in resuming a rheumatic fever registry that had become inactive. In 1971 and 1972 the students collected clinical information to establish, in cooperation with the Arizona State Health Department, a rheumatic fever registry for the Navajo nation. The students assisted in prophylaxis and follow-up of these cases for several years thereafter. Continued monitoring of acute rheumatic fever and rheumatic heart disease cases led to a descriptive report of these conditions among the Navajo (10). In 1974 the students helped in developing a streptococcal disease control program that included the testing of throat cultures of Navajo school children. A large component of this program involved testing asymptomatic children as well as taking cultures from those with sore throats and other respiratory symptoms. The former was expensive and inefficient and yielded low results. The students calculated cost-benefits and concluded that the cost of the program outweighed the estimated cost of the cases prevented (11). Consequently, the surveillance program was scaled down to provide throat-culturing and treatment only for symptomatic children in the schools.

Nutrition survey—In the late 1960s, Navajo leaders expressed to clerkship fac-

ulty members their concern about the adequacy of the population's nutrition, especially those living in remote areas of the reservation. Clerkship faculty members contacted the National Nutrition Survey (NNS) and offered to collect information in the remote Lower Greasewood, Arizona, area. NNS personnel worked with students to develop assessment protocols and sampling frames. The students carried out the entire survey and, with collaboration of the clerkship director, prepared a report with recommendations that were implemented subsequently (12). The clerkship continued to support the Lower Greasewood IHS medical clinic for the next seven years. Four University of Pittsburgh graduate physicians served the clinic sequentially as IHS medical officers. Some of the students developed and conducted a health appraisal program for community members, a school health program, and a follow-up care system for chronically ill persons.

Discussion

High student enrollment and satisfaction, physician recruitment from the program into the Indian Health Service, favorable impact on Navajo community health activities, and the good quality of student-conducted investigation have provided indirect evidence of success of the University of Pittsburgh School of Medicine's Navajo reservation community medicine clerkship described here. Similar project-centered clerkships have been conducted by the school in Jamaica, the West Indies, and the Pittsburgh area. Factors which appear to influence the success of these community medicine clerkships include selection of students; choice, preparation, supervision, and follow-up of student investigative projects; continuing personal

interaction with clerkship site personnel; and relationships with preceptors.

SELECTION OF STUDENTS

Students who elect community medicine clerkships often have a less realistic expectation about what the clerkship experience entails and its educational objectives than do students choosing clinical clerkships. Perhaps this is because clinical clerkships are visible in the medical school environment, but community medicine clerkships are not. Some students perceive community medicine as connoting clinical medical practice in the community, often as primary care with limited resources to populations of high need. Other students may believe a community medicine clerkship to be located in an exotic setting and to be attractive more for its novelty than for its educational objectives. For these reasons, the Navajo community medicine elective clerkship at the University of Pittsburgh (unlike clinical clerkships) requires the approval of the faculty director. Approval usually is based on his judgment of the student's expectations and apparent commitment to the clerkship's educational goals. Applicants are encouraged to discuss the clerkship with students who have taken it. While the opportunity for cultural experiences in the Navajo setting are encouraged, they are not allowed to supersede the clerkship's educational objectives.

INVESTIGATIVE PROJECTS

Essential characteristics of the clerkship investigative projects in community medicine are that they concern real health problems, that they employ scientifically sound methods for investigating community health problems, and that they produce usable information. The fact that many of the projects concern problems

identified by IHS physicians as affecting the health of the Navajos indicates to students that their work is important in much the same way that responsibility for the care of genuinely sick patients motivates students positively in clinical clerkships. The preclerkship background reading and the design of the project with faculty members and statistical consultants are important to ensure good methodology. The postclerkship preparation of a scientific report further emphasizes sound methodology. Bringing projects to a completion which provides answers and solutions for problems not only gives students the satisfaction of accomplishment but also establishes the validity of the investigative methods being taught. Projects which do not use good methodology or which are not completed are not pedagogically sound. For example, projects which produce only descriptive reports or which, because of incompleteness, are labeled "pilot" or "preliminary" are not regarded as satisfactory.

The linking of projects has a number of benefits. Such projects permit more sophisticated, larger efforts that are more likely to have identifiable effects on health programs and health status. Projects that are parts of larger projects allow students to conduct their own investigation in a short time, because they do not have time-consuming start-up requirements. Such requirements may include negotiations for access to data or for permission and arrangements to collect it.

Investigative projects also are the means by which other clerkship objectives are achieved. Through their projects, students often participate in community health services, study health care organization, learn to use a medical care data system, and provide service in hospital or community clinics. They experience an approach to illness that emphasizes envi-

ronmental, cultural, social, and behavioral factors as well as purely biological factors.

SITE PERSONNEL

The IHS provides complete health care for the Navajo people. However, most IHS physicians serve only for two years or less. In such a setting of relatively low priority for community medicine and of high personnel turnover, the faculty clerkship director must almost continually reinforce and renegotiate the relationship between the community medicine clerkship and IHS personnel. The enlistment in the IHS and assignment to the Navajo reservation of physicians who participated in the Navajo clerkship as students have been a fortunate circumstance in the Navajo community medicine clerkship. Seven University of Pittsburgh graduate physicians, for example, were practicing at different hospitals in the Navajo area at one time in the mid-1970s. Filling the clerkship positions continually has contributed significantly to maintaining the effective functioning of the clerkship and good relationships with IHS personnel working with the Navajos. When breaks of one or two periods have occurred in which no student has filled the clerkship, arrangements for housing, transportation, the use of facilities, and assistants sometimes had to be renegotiated for the clerkship to resume.

PRECEPTORS

While many physicians who are actual or potential preceptors support the concept of community medicine clerkships and are helpful in identifying investigative questions, some of the potential preceptors are precluded from participating because of the lack of time, commitment to teaching, and special knowledge and skills. The IHS community medicine

physician preceptor carries a full service load and may have no time for teaching. Moreover, he is more likely to be a specialist in some branch of clinical medicine than in community medicine. The faculty clerkship director can directly fill some of the needs for expertise in community medicine and, in addition, provide consultation to preceptors. Some IHS physicians support the clerkship program because they are favorably impressed by the quality of student reports, student performance on hospital care audits, student interaction with Indian health boards and other community groups, and maintenance of clerkship- and project-related literature files. The support of these physicians improves the clerkship experiences. The community medicine clerkship has provided some IHS physicians, particularly those in charge of community health and ambulatory care programs, an opportunity to learn methods for investigating problems and evaluating programs through their experiences with medical students and consultation with university faculty members.

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