

ASSESSMENT/EVALUATION

## “Where Have All the Students Gone?” Retaining Medical School Graduates through Educational Innovations

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**ABSTRACT** **Context:** *New Mexico is a sparsely populated rural state in the USA, with 20% of New Mexicans living in poverty. There is a need for physicians in the state, especially in primary care. New Mexico’s only medical school, the University of New Mexico School of Medicine is state supported. New Mexico and its medical school have a vested interest in its graduates returning to the state to practice.*

**Objectives:** *Evaluate the effects of early community preceptorships on graduating physicians’ specialty choice and subsequent return to practice in the state where they attended medical school.*

**Strategies:** *A Primary Care Curriculum (PCC) was introduced into the medical school in 1979. Students expressing interest in this programme were considered. Twenty students per year were assigned to the PCC. The remainder went through the traditional curriculum. The PCC used a problem-based learning model. All PCC students participated in a 16-week, one-on-one community preceptorship (Phase 1B) in a small or rural community during their first year. Graduates from 1983–1996 were analysed for specialty and practice location.*

**Main outcomes:** *Of the 294 students doing Phase 1B, 99 (40%) returned to New Mexico to practice compared to 221 (32%) of traditional students. Fifty-eight (23%) of the Phase 1B students practice primary care compared to 112 (16%) of the traditional students.*

**Conclusion:** *Self-selected students choosing and participating in early community-based clinical experiences coupled with problem-based learning are more likely to return to the state and to practice primary care.*

**KEYWORDS** *Education, medical, preceptorship, primary care health.*

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## Introduction

New Mexico is a sparsely populated, rural state in the USA. It ranks 48th out of 50 states in per capita income with 20% of New Mexicans living in poverty. About 20% of the US population live in rural areas, but only 9% of physicians practice there (Geyman *et al.*, 2000). There is a geographic maldistribution of physicians in New Mexico similar to other rural areas of the country. Albuquerque, the urban centre with 33% of the state's population, contains 60% of the licensed MDs in New Mexico (State of New Mexico Board of Medical Examiners, 2001). With 158 physicians per 100,000 population, New Mexico has many fewer physicians per 100,000 than the USA average of 200. Twenty-nine of New Mexico's 33 counties are designated as Health Profession Shortage Areas and Medically Underserved Areas for primary care (Weiner, 1994; Bennet, 1996; Council on Graduate Medical Education, 1998).

Growing evidence suggests that a range of positive learning experiences occur during early preceptorships for medical students. In a recent background paper for the AAMC-sponsored (Association of American Medical Colleges) Medical School Objective Project, several components for education in ambulatory care settings were strongly recommended. These recommendations stressed the importance of including longitudinal preceptorships with preceptor role models for students in settings that provide educational experience in community-oriented, population-focused medicine (Hunt *et al.*, 1999). Carney *et al.* (1999) in a multi-institutional assessment of various aspects of early preceptorships found that medical students reported positive contributions to their knowledge, critical thinking and problem-solving skills from their community-based preceptorship experiences. Effective teaching behaviours in rural preceptors and the importance of the preceptor as a role model have been reported elsewhere (Quill, 1987; Goertzen *et al.*, 1995; Biddle *et al.*, 1996).

The influence of medical education on students' later career choice needs to be carefully considered. Many medical students who participate in community-based preceptor programmes as part of their medical curriculum matriculate with interest in primary care training and in serving in underserved areas (Pathman, 1996). In a review of more than 150 studies, three types of curricular experiences within medical school were identified as likely to increase student interest in primary care: third year required family medicine clerkships (6 weeks or longer in duration), continuity experiences in primary care settings, and primary care tracks (Meurer, 1995).

Studies looking at factors contributing to a physician's choice to practice in rural areas had similar findings. Growing up in a rural area, male gender, and first year medical student career plans for a Family Practice specialty were all predictive of a future rural primary care practice. Once in school, selection of a senior year rural Family Practice clerkship was also found to be predictive of a future rural primary care practice (Rabinowitz *et al.*, 2001).

Since 1979, the University of New Mexico School of Medicine (UNM SOM) has promoted the training of medical students for the health care needs of the state of New Mexico. An intense, community-based clinical experience for first year medical students coupled with a problem-based curriculum is one approach the UNM SOM has used. This paper will focus on: (1) a description of the early community-based, clinical education for first year medical students and (2) specialty choice decisions and practice location of the graduates from this programme.

## **Description of the Programme/Methods**

A Primary Care Curriculum (PCC) was introduced to the medical school in 1979. Students expressing an interest in this programme were considered. Students first had to gain admission to the medical school. A total of 73 students per year are accepted into the entering class. Applicants were then reviewed by a subcommittee for acceptance into the PCC. Ten students the first year, 15 the second year, and 20 students in subsequent years were assigned to this track. By the fifth year of the programme, interested students were randomly assigned to the PCC instead of by subcommittee selection. The % of students accepted into the medical school and applying for PCC ranged from 22% during the first year of the programme to 50% by the final year of the programme (Martinez-Burrola *et al.*, 1985). The PCC involved small group problem-based learning for the first 2 years of medical school. They also had a community-based clinical experience during the summer between the first and second year of medical school (Phase 1B). Students in the traditional track had lectures and labs for the first 2 years and were not involved in this early clinical experience (Kaufman *et al.*, 1989).

PCC students were matched to primary care preceptors in the state. Their Phase 1B experience consisted of working 16 weeks with their primary care preceptors. Five half-days per week were spent in the patient-care setting. Two to three patient encounters per day were used as a springboard for in-depth, self-directed study. Integration of clinical medicine with the basic sciences was stressed. Opportunities to become socialized into rural, community, and professional practice life were available. Students were exposed to the patient's environment and studied its impact on health. They learned from first-hand experience the realities of serving as a physician in the community.

In their third year, all 73 students had the same required clinical rotations. During their fourth year, all students complete a 4-week rural preceptorship.

All graduating classes since 1983 have been followed with yearly practice location and specialty questionnaires. The response rate averages 75% per year. Graduates now practicing in New Mexico and their specialties were

determined from the New Mexico Board of Medical Examiners publications. This captures 100% of practicing physicians in the state. Percentage differences for Phase 1B and traditional students were compared using a Chi-square test.

## Results

A total of 249 graduating medical students did a Phase 1B 16 week first year preceptorship and completed a questionnaire over the period from 1980–1994. During this time, there were 684 graduating students not exposed to Phase 1B. We compared medical school graduates who did not complete a first year clinical experience (non-Phase 1B) with those who did for practice location and specialty. We were able to track 100% of the physicians practicing in New Mexico and their specialties. Of the 15% of graduates not responding, we assumed they were practicing outside of New Mexico in a non-primary care field.

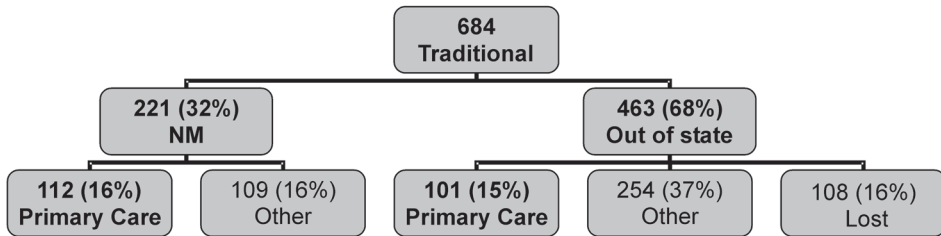
There are 99 (40%) Phase 1B graduates practicing in New Mexico. This compares to 221 (32%) non-Phase 1B practicing in the state ( $p=0.03$ ). In the Phase 1B group, 58 (23%) practice primary care in New Mexico. The non-Phase 1B group has 112 (16%) primary care physicians in New Mexico ( $p=0.0154$ ) (Figure 1).

## Discussion

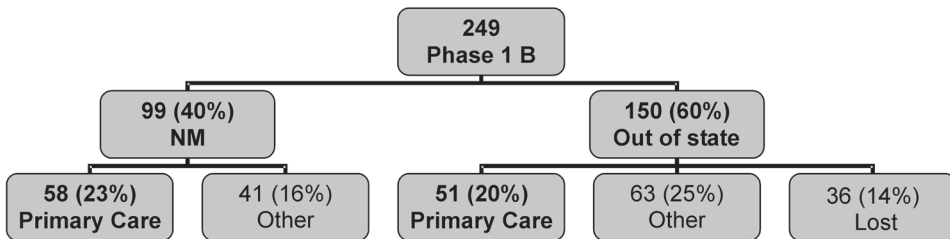
State supported medical schools have a vested interest in their graduates returning to practice in the state. This is especially true for those with large underserved populations. Our findings support the strategy to expose interested students early in their medical careers to a community-based educational experience when linked with a problem-based curriculum. Because of the nature of this analysis, the community-based preceptorships and problem based curriculum cannot be seen as the only factors influencing these findings. Students' attitudes and demographics can factor into this decision. In a study of physicians in practice in primary care, differences between physicians who planned to leave and those who planned to stay in primary care were assessed. Findings indicate that social values, religious beliefs, and the presence of a role model prior to medical school influenced physicians' choice of primary care and had a lasting effect on their commitment to that choice (Xu, 1995).

The student self-selection process into this programme must also be considered. Recommendations from systematic studies analysing the relationship between medical school characteristics and graduates' choices of primary care specialties emphasize increasing the number of students interested in primary care who are selected to enter medical school as the single most effective strategy (Rolfe *et al.*, 1995; Senf *et al.*, 1997).

# Traditional Students



# Phase 1 B



Practicing in the state  $p=0.03$   
 Practicing primary care  $p=0.02$

**Figure 1.** Location and specialty choice by educational programme.

Community-based education at UNM SOM is linked to a developmental sequence of courses and experiences for medical students. These begin in their first week of medical school and continue into their fourth year. In 1993, despite logistic difficulties, the community-based preceptorships were expanded to include all medical students in the summer between the first and second year of medical school.

## Conclusion

Interest in a primary care specialty as a career is sustained among self-selected medical students who participate in early clinical community-based experiences

in a problem-based curriculum. These students are more likely to return to the state to practice and to practice in a primary care specialty. This programme has helped this state supported school reach one of its goals, increasing the number of primary care physician providers for the state from among its graduates.

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