

## The Penn State Mini Medical School: A Prescription for Community Engagement in Health Care Issues and Research

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### Abstract

The Penn State Mini Medical School is a high-impact community engagement program created and led by the Office of Continuing Education at the Penn State College of Medicine. The broad goals of the program are to respond to the general public's intense desire for health and medical information, to educate the community about biomedical science and the translation of medical research to clinical treatments, to enhance the pipeline for health care professionals, and to advance the land-grant mission of Penn State University to educate the general public to a level of competence for decision making in today's complex health care environment. This article reviews the development of mini medical schools across the country, describes one example of how this outreach activity has been applied in order to stimulate community engagement for downstream effects, and further suggests how the use of this outreach model might be incorporated in different disciplines and venues.

### Background

The demand for information about health issues and health care is great, as evidenced by the burgeoning self-help/health sections of bookstores, the increased coverage of medical controversies, "miracles," and research, and the popularity of consumer health information resources such as the *Harvard Health Letter* and WebMD. Community health education programs have become popular and are readily available, often organized by community hospitals, public health departments, medical organizations such as the American Cancer Society, and public service agencies. Public health departments, large corporations, and health insurance plans have implemented programs directed at prevention of health problems such as cardiovascular disease, cancer, smoking, and substance abuse. Such health education programs have had mixed results in terms of the impacts

on health and health outcomes (*Hancock et al. 1997; Wandersman 2003*). Yet it is rare that “regular people” have the opportunity to engage with a biomedical researcher, clinical investigator, or even a physician scientist in a setting where the process of scientific investigation and biomedical research is described and where questions are invited and encouraged. Thus the concept for the mini medical school was born.

Dr. Bruce Fuchs, director of the Office of Science Education at the National Institutes of Health, is the leading organizer and advocate for mini medical school programs across the country, although it was Dr. J. John Cohen who started the first mini medical school at the University of Colorado in 1990. Dr. Fuchs organized a mini medical school in 1992 at the Medical College of Virginia in Richmond and continues to direct the mini medical school program at the National Institutes of Health. He has also conducted mini med programs on Capitol Hill, in a senior high school, and at a community center in Washington, D.C. In addition to championing the concept of the mini medical school, he has created the organizational framework to support the creation of mini medical schools across the country.

Dr. Cohen first envisioned the mini med school as a mechanism to increase the public’s understanding and appreciation of the science and the education of medical professionals within a medical school. Two main objectives provided the framework for the original mini medical school design: (1) to create a mechanism to establish connections between basic scientists and the general public in order to foster an understanding of and excitement about the importance of science and (2) to generate a new perspective within the scientific community to view the public as a “partner” in the scientific enterprise. As mini medical schools have been created and implemented across the country, many address these primary objectives, though the format, topics, and venues vary widely. There are currently more than forty such programs at medical schools and hospitals across the United States and in Canada.

### **The Penn State Mini Medical School**

At the Penn State College of Medicine, the mini med school concept has been embraced and embellished. Through careful planning and implementation, this theoretical construct has been transformed into a successful model of engaging a community audience with leading-edge biomedical researchers and physicians

on high-interest topics where medical research has advanced the understanding of disease and health. Within the lecture halls of the Penn State Mini Medical School in Hershey, Pennsylvania, the mysterious link of biomedical research to improvements in patient lives is revealed, along with the personalities and passion of the scientists who work at the interface between laboratory research and patient care.

The PSU Mini Medical School began in 1999 and has been held annually since. In 2003, the program was extended to the main campus of Penn State University in State College, Pennsylvania. The main goals of the program are to increase the understanding of the process and impact of basic biomedical science and research on the public health, and to facilitate communication and understanding between biomedical scientists/physicians and the general public. The goals both define the activity and differentiate it from a health education program. The curriculum incorporates basic science, clinical application, and medical research, rather than focusing on a specific disease or treatment. Topics and speakers are carefully selected to combine basic biology, pathology, and pathophysiology with clinical treatments and future research directions. The process of scientific discovery and medical research is woven into the discussion of topics that have application to maintaining health and treating disease. Thus, the Penn State Mini Medical School presents topics to the public from the perspective of “laboratory bench to bedside treatment.”

The lecture series is designed to give the lay public a sense of what medical students experience during their four years of undergraduate medical education. The public is introduced to the anatomy, biochemistry, and physiology underlying medical knowledge to demonstrate how these basic sciences are linked to a physician’s treatment of patients. The lectures, though scientifically based, are presented in a manner and language easily understood by a general audience. Topics discussed have included cardiovascular physiology and pathophysiology, neuroscience and dementing illness, cancer biology, concepts of screening and prevention, physiology of stress, transplant medicine, and the Penn State artificial heart device.

### **Educational Methodology and Format**

The educational methodology utilized in the Penn State Mini Medical School mimics the lecture-based format of the preclinical years of medical school. Although most speakers employ

didactic lectures with Powerpoint slides for their presentations, case-based instruction and some components of problem-based learning methodology have been utilized. Enhancements include the use of video clips, demonstration of surgical instruments and medical devices, and testimony from actual patients. Speakers are selected from the faculty of the Penn State College of Medicine; they are clinicians, clinician-researchers, and basic science researchers who are skilled in communicating complex medical concepts to a general audience. A critical element of each presentation is the question and answer period, and participants consistently rate this lively and dynamic interchange as the most valuable part of the program. The opportunity for the public to interact directly and openly with physician researchers—and, importantly, for physician researchers to understand the concerns and questions of the lay public—is the core of what the program is intended to achieve.

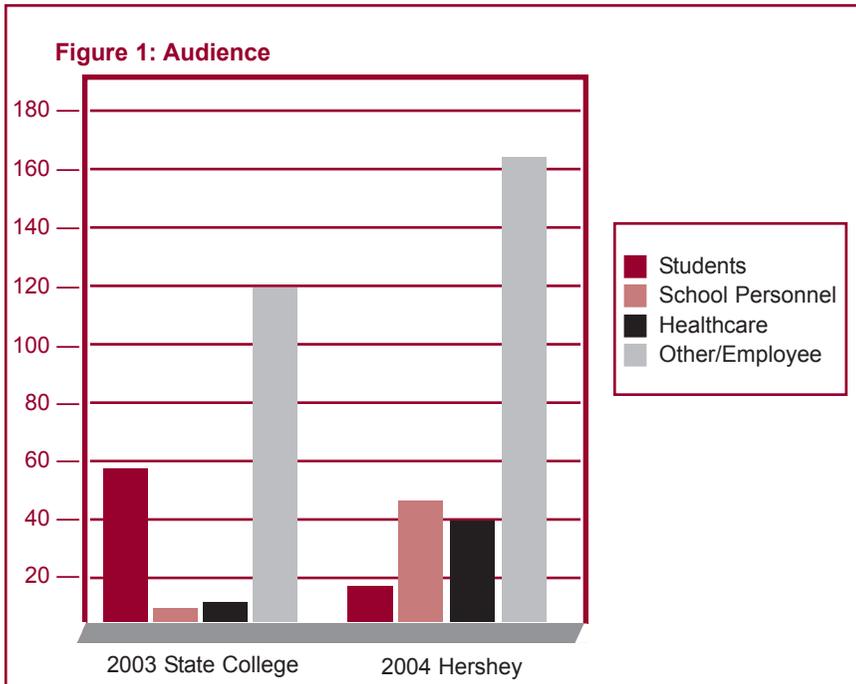
The Penn State Mini Medical School follows the same general format each year, but the topics and speakers change. In keeping with the parallel to medical school, the dean of the College of Medicine provides an official welcome to the “students” and officially closes the program with a graduation address. The final session is filled with pomp and circumstance, as the dean appears in full academic regalia and graduation certificates are presented to participants. The support of the top medical school administrator underscores the commitment to a greater public understanding of medical science, medical research, and the important role of the academic health center within the community.

### **Social Marketing of Community Science Education**

Experience gained from the rapid proliferation of community-based health education programs suggests that principles and techniques of social marketing may help bridge the gap between public health interventions and actual behavior change (*Lefebvre and Flora 1988*). The Penn State Mini Medical School demonstrates aspects of the social marketing process that have been incorporated to achieve a cost-effective program reaching a large number of the target audience. The program attracts high school and college students, teachers in the sciences, adults with lifelong learning goals, alumni and staff of the medical center and of the university, and the retired population that seeks to remain current on the medical advances that will enhance their lives.

Specific elements of social marketing (*Lefebvre and Flora 1988*) involved in the planning process include the use of a consumer orientation to market the program, audience analysis and segmentation strategies, the use of formative research in program design, employment of the “marketing mix” concept in planning, development of a participation and tracking system, and a management process of planning, implementation, evaluation, and feedback. A wide range of promotional strategies has been utilized. Electronic marketing has virtually replaced the reliance on brochures, newspaper ads and columns, and flyers of earlier years. The program has utilized a variety of e-mail discussion lists, including those representing a multitude of student groups, administrators and student advisors of various colleges, faculty and alumni, hospital employees and staff, and various community groups, as well as past participants of the program. When the Mini Medical School was held at the main PSU campus, use of the e-mail lists as a marketing method resulted in a much higher percentage of self-identified “students” in the audience in comparison to the program conducted at the Hershey Medical Center campus (figure 1).

Direct mailing is another form of promotion utilized by the Continuing Education office. Mailing lists were developed to reach



teachers and high school counselors and administrators, local alumni, and community nurses and other health care professionals. Science teachers, guidance counselors, and school nurses were specifically targeted in the marketing mix because Pennsylvania school personnel are required to complete continuing education hours under Act 48 of the state regulatory laws. Further, school personnel supply a “multiplier effect” to translate and transfer information to youth and peers, thus enhancing the educational outreach. As shown in figure 1, a higher percentage of this target audience was present in the Hershey program than in the State College offering, a finding that may relate to the larger population base and higher density of schools in the Hershey area.

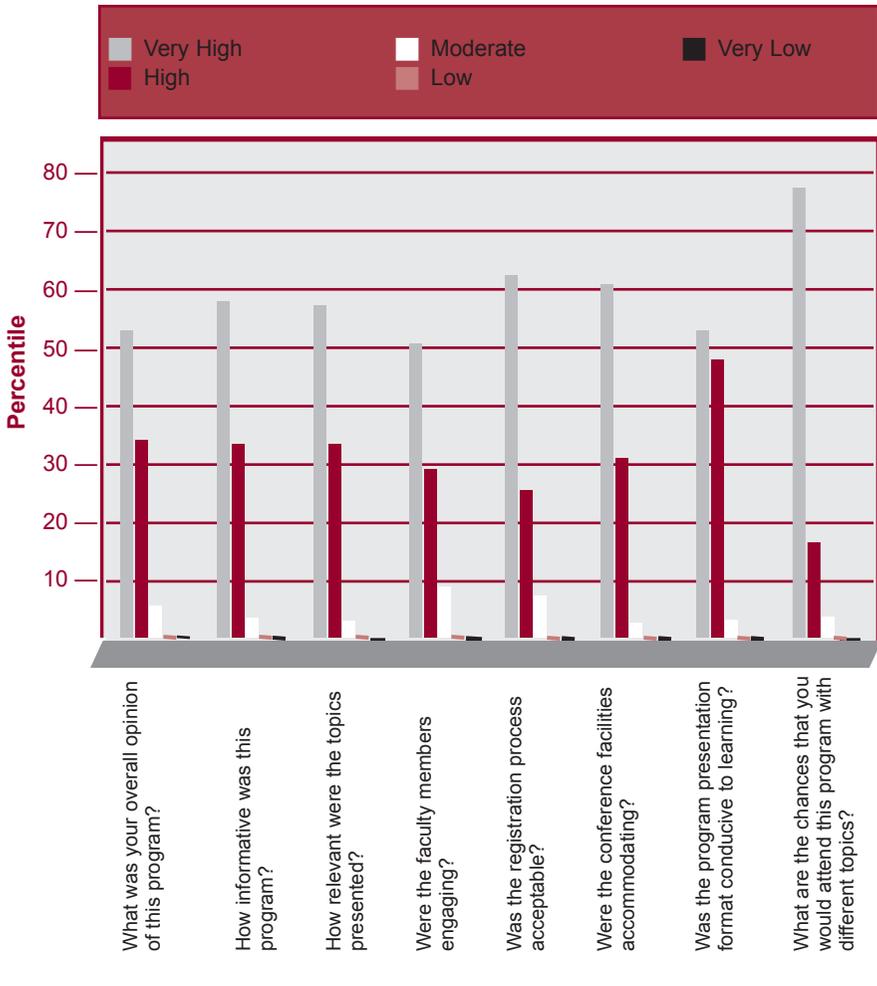
Again drawing from the constructs of social marketing and the use of a consumer orientation to develop and market the program, community groups were recruited to help publicize the program to their constituents. Community groups included organizations such as Retired and Senior Volunteer Program (RSVP), Community Academy for Lifelong Learning (CALL), Rotary, Kiwanis, city leadership institutes, retirement communities, business schools with health care programs, local hospitals and medical centers, and county employees. The interest and efforts of the local community groups helped make the “other/employee” segment of the audience the largest (figure 1). Finally, print advertising was utilized to a limited degree for marketing. Printed materials (advertising/brochures) often account for a large proportion of the promotion budget. Survey information from the evaluation suggested that although print advertising was an important marketing tool, it was not as effective as other promotional strategies.

A feature of the mini medical school that distinguishes it from other health education programs is the expectation for weekly attendance. The program is structured as a six- or eight-week series of seminars that can stand alone but also build on each other. When the mini medical school debuted on the University Park campus in State College, 160 people registered to attend the series. Of that number, about 33 percent attended every session, 33 percent attended several sessions, and 33 percent attended no sessions. The significant percentage of “no show” registrations is not uncommon for a public program without a registration fee. It is possible that the choice of date and time (Saturday morning, 9:00–11:30 a.m.) affected the attendance rate, particularly among the college students. In contrast, the spring 2004 series at Hershey, held on Tuesday evenings, had

255 registrants, with 23 percent attending every session, 57 percent attending several sessions, and only 20 percent “no shows.”

Evaluation of the Mini Medical School is conducted through the Penn State Office of Continuing Education to determine whether the program is meeting its goals and objectives. A survey tool designed to collect both quantitative and qualitative data about the program assesses program logistics, speaker effectiveness, and audience interest in the content of the program (figure 2).

**Figure 2: Mini Medical School Evaluation 2003-2004**



Qualitative data provides a rich source of feedback for the planning committee and the speakers (table 1), and review of the qualitative information has suggested a benefit beyond the originally intended expectations. To quote one participant, "All of it was valuable. Seeing the lectures in terms of how a medical student would see it gave me some idea of how a doctor thinks when he/she evaluates and diagnoses my medical problems." Evaluations also provide suggestions for program improvements, which are often implemented by the planning committee. For example, food served at the program is a "heart healthy" mix of pretzels and fruit rather than the cookies and brownies of earlier years. Participants strongly support the use of handouts, and speakers are heartily criticized if handouts are not provided.

**Table 1: Sample Comments**

"Mini Medical School has been the most effective treatment for me."

"Being abused, I now realize why I have suicidal thoughts and why I have been self-destructive."

"I learned not to be afraid and dread diabetes."

"Dr. Sumner's pictures of the mouth and the lungs, before and after smoking, said a thousand words."

"These classes are eye-openers and really show the average person how complicated the body is and what's involved in its healing process."

"Being spoken to by real and known doctors. It was very motivating and intriguing."

"Laughter was the most important part of attending this program."

"I love coming to this program!"

### Impact and Outcomes

It is difficult to assess the impact of an educational intervention such as the mini medical school. Research demonstration projects of community-based health education and prevention programs such as the Minnesota Heart Health Program have laudable goals such as reduced mortality and morbidity (*Carlaw et al. 1984*). However, the Mini Medical School cannot be narrowly assessed as a traditional health education program. It is not intended to impact morbidity or mortality from a disease or disease process, and the educational content does not focus on a disease process or health promotion strategy. It does seek to engage citizens

so that they will embrace complex scientific and medical concepts and apply them to improve their own health and the health of society. More realistic outcomes and possibly more appropriate primary outcome measures in most health education programs include participation rates and program evaluation analysis (Mittelmark et al. 1993).

The intended outcomes of the Penn State Mini Medical School are the following: (1) to improve scientific (health) literacy so that the general public can become better-informed health care decision makers, (2) to enhance interest and understanding of biomedical science and translational research, and (3) to stimulate greater community support of the complex mission and value of academic health centers, biomedical research, and the education of health care professionals. These outcomes are difficult to measure and would require an outcomes evaluation beyond the current scope of the project. However, identifying and delineating these intended outcomes has provided a framework and context for the annual planning and continuation of the program.

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Applying the UniSCOPE model of scholarship, the mini medical school represents a form of scholarship encompassed in outreach teaching. Presentations to nonacademic audiences and instruction meant to benefit society are an integral part of the scholarship of outreach teaching and demonstrate engagement in addressing both academic and societal challenges (UniSCOPE Learning Community 2000). Engagement occurs when academic institutions and the community act as partners to address complex societal problems. The seven guiding characteristics of engagement proposed by the Kellogg Commission are responsiveness, respect for partners, academic neutrality, accessibility, integration, coordination, and resource partnership (Kellogg Commission 2001). While the mini medical school model does not represent engagement as an outcome, it does promote engagement as a process on the part of both the community participants and the academic researchers/physicians. The term community science seems more appropriate to apply to this activity. Wandersman (2003) defines community science as the philosophy that (1) educationally

involves the content areas of science, social science, and mathematics studied simultaneously to help a student understand more about their surroundings, such that (2) environmentally, this gained knowledge can be applied toward the betterment of the student's household, neighborhood, and community. Of particular application, however, is the impact of the learning on the student. The students of community science will "learn important issues and topics in science-related fields, and how this knowledge relates to our world today; use what they learn to improve the quality of their own lives, their families, and their communities; and apply this experience to make their own communities models from which others will follow and learn" (p. 235).

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*"This community education program has already increased the visibility of the academic health center and community understanding of its . . . mission . . ."*

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The organizers of the Penn State Mini Medical School predict that the program will have mid- to long-range effects. This community education program has already increased the visibility of the academic health center and community understanding of its three-part mission: clinical service, health professions education, and biomedical research. The value to citizens of having an academic health center in their region becomes apparent as faculty illustrate their roles as physicians and researchers providing complex and highly specialized care as part of a medical center with a demonstrated positive economic impact upon the local community and the state (*Tripp Umbach Healthcare Consulting 2003*). The goodwill generated by the program helps to extinguish the suspicion and fear that often surround medical research facilities, and to promote a sense of trust that is important in analyzing controversial biomedical issues such as stem cell research, medical errors, quality of care, and medical liability.

A valued outcome of the program is the contribution of the Mini Medical School to an educated and empowered patient population. The program seeks to improve health literacy (*Nutbeam 1986*) which, as defined by the World Health Organization, represents an individual's ability to gain access to, understand, and use information in ways that promote and maintain good health. It has been suggested that the need to improve science education

should be a national priority (*Massey 1989*). The Penn State Mini Medical School is a tangible example of how the medical scientific community can improve science education through community outreach. Teachers are encouraged to use the mini medical school as a resource for their own professional development and to enrich the curriculum of their science programs. By attending the program together, students and teachers transform and invigorate classroom experience.

A future-oriented impact of the mini medical school is to nurture a pipeline of future health care workers. The current nursing shortage has become a crisis looming in the future (*Berliner and Ginzberg 2002*). The message communicated through the mini medical school is clear: medical science is interesting and valuable; complex medical concepts can be simplified, learned, and understood; and physician researchers and scientists are real people doing great things. The mini medical school may inspire a first career, a second career, or simply a desire to learn more. Future Penn State Mini Medical School programs will target high school and college students to sharpen the focus on health care careers.

### A Model for Outreach

The mini medical school model of educational outreach need not be limited to health professions institutions. The template of expert, leading-edge scholarship and practice translated to high-interest vernacular programs can be applied to other professional schools. For example, what might be the high-interest topic areas for a school of veterinary medicine? Possibly care of pets. What about a program of three or four sessions covering eye-opening developments, procedures, and ailments of common or exotic pets? “Pet/Vet School” could issue a certificate of achievement to all those who complete the program. A law school might think of high-interest, high-volume legal issues and develop a “Law School Ltd.” program with topics such as wills and estate law, consumer rights, intellectual property, and legal definitions of childhood. A business school could offer the “Mini MBA” with a sampling of finance-related standbys such as stock market ABCs, balancing global business and domestic well-being, or entrepreneurship. For those community members who seek to develop their creative powers in the vicinity of a school of music or a school of arts and architecture, another type of program might be appealing. “Concise Conservatory” might put contemporary music into historical perspective, bring theory to young (and old)

practitioners, reveal the brain connections between music and math aptitudes, or demonstrate the effect of music on politics and health. The “ABC Art and Design School” might appeal to amateur design aficionados who would love some pointers on designing the attic, garage, bathroom, and kitchen of their dreams. Many courses in watercolors, figure drawing, or computer graphic design are offered through community education programs, but it is rare to see a series that offers a certificate for a thematic sequence: say, “Figures in Four Media: Charcoal, Woodblock, Digital Animation, Sculpture” or “Community Design Workshop for Urban, Suburban, Small-Town, Commercial, and Recreational Uses.” The unifying theme for such programs is the underlying philosophy and commitment to engagement with the community. Each professional school may customize its outreach program to attract the audience and address the issues that are most appropriate for its goals, whether it be to recruit nontraditional students, educate a voting public, or introduce complex or controversial concepts in a nuanced yet accessible manner. The model might also be customized for younger audiences in a summer camp format by transforming the series into a one- or two-week intensive program with six to eight shorter modules per day. Depending on the age of the target student population, professional students could be appreciated as preceptors or peer educators along with faculty.

### Summary

The Mini Medical School is an outreach project that exemplifies the Penn State College of Medicine’s investment in outreach and engagement with the community and its contribution to the public service mission of a land-grant university. Drawing on both the work of Boyer (1990) and the UniSCOPE Learning Community (2000), this program represents a form of outreach that provides direct benefit for the community in ways that are consistent with the university and college missions (*Penn State Milton S. Hershey Medical Center 2005*). The Mini Medical School, as an outreach project, has multiple dimensions of impact. First, in terms of the significance of the content, the issues addressed are serious, pertinent, and compelling for societal health and consequence. The methodological approach recognizes a variety of learning styles, education levels, and backgrounds of the community stakeholders, and has realistic goals and objectives considering the context and resources available. The project has become the basis for scholarship in writing and presentations related to

the project, and describes a model that might be applied to other disciplines seeking to become engaged with the community. Finally, and most important, the impact of the Mini Medical School is significant and evolving over time. The effect of the program on individuals has been documented through the evaluations, and the benefit on university/college-community relations, while not quantitatively measured, is certainly evident through testimonials, sustained interest, and enhanced reputation of the institution within the community. Clearly, the intent of outreach scholarship as highlighted by the Outreach Scholarship Conference 2004—Impact through Engagement: Engaging Communities and Changing Lives—has been achieved by the Penn State Mini Medical School.

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