

# Evaluation of a One-Year Masters of Public Health Program for Medical Students Between Their Third and Fourth Years

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## Abstract

For physicians to better treat and advise their patients on the roles of behavioral and social factors in health and disease, greater levels of competency in social and behavioral sciences are needed. Physicians should also understand the structure, financing, and administration of the health care delivery system, so that they will be able to practice medicine effectively and participate in planning and managing the delivery of care. And, improving overall public health requires that physicians understand the basic tenets of population-based medicine. One way

to achieve these goals is to develop education and training programs for integrating formal public health training with formal medical training.

There are many models by which a medical student or practitioner can obtain a master of public health (MPH) degree. In this article, the authors describe an accelerated one-year MPH program for competitively selected New York City medical students who have completed their third year of training and enroll at the Mailman School of Public Health, Columbia University. The Macy Scholars Program, offered between

1999 and 2007 to 12 students per year, is completed between the third and fourth years of medical school. Under full-tuition scholarships, students complete a practicum experience, attend seminars, and write a master-level paper or thesis, among other requirements. Data from an evaluation of this program demonstrate participant satisfaction and support of the program, outstanding academic performance, and the effect of public health training on their residency and career choices.

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**T**here is growing recognition of the need for physicians to have greater levels of competency in the social and behavioral sciences, to be better positioned to treat and advise their patients on the role that behavioral and social factors play in health and disease.<sup>1</sup> Similarly, it is increasingly urgent for physicians to understand the structure, financing, and administration of the health care delivery system so they can more effectively participate in planning and managing this system. They must also be able to address medical practice from the public health perspective, taking into account the issues of cost, access, and quality of care, to ensure that they

will be able to practice medicine optimally.<sup>2</sup> Finally, the future of robust public health itself requires that physicians understand the basic principles of population-based medicine and that some physicians focus their careers on the practice and administration of public health and preventive medicine.<sup>3,4</sup> One way to achieve these goals is to develop education and training programs for integrating formal public health training with formal medical training.

There are many models by which a medical student or practitioner can obtain a master of public health (MPH) degree. One model is to integrate education in public health and medicine so that students can obtain both degrees in a formal dual-degree program.<sup>5,6</sup> A second model is to have individuals obtain their medical degrees and subsequently obtain the MPH degree independently, or as part of a preventive medicine residency or postresidency fellowship. In this article, we describe a modification of the dual-degree model, an accelerated one-year MPH program for competitively selected New York City medical students who have completed their third year of training and enroll at the Mailman School of Public Health, Columbia University (MSPH), as full-

time students. Those from the Columbia University College of Physicians and Surgeons are awarded a dual MD/MPH degree on the completion of medical school, and the students from other New York medical schools are awarded the MPH on completion of the requirements and independently of their medical school degree.

### The MSPH Program: Overview

Between 1999 and 2007, Columbia University's MSPH, in collaboration with all the medical schools in New York City, offered medical students from these schools the opportunity to develop competencies in public health and receive an MPH degree between their third and fourth years of medical school under the auspices of the Macy Scholars Program. Each year, 12 students were competitively awarded full-tuition scholarships with funds provided by the Josiah Macy, Jr. Foundation. Macy Scholars (Scholars) met all the requirements for the MPH degree in one academic year rather than the 16 to 22 months taken by most students. The program was conceived as a close-ended test to determine whether this cooperative educational model was viable in the New York City area.

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Acceptance into the Scholars program was a two-stage process. Applicants were first put through the same admissions process as other students applying to the school. They were evaluated according to their previous academic performance, standardized test scores, a personal statement, and three letters of recommendation. For Scholar applicants, one of these letters was to be from their dean of student affairs. Scholars were also required to submit a second, 500-word statement about their career plans for integrating medicine and public health. The complete applications of those who were accepted in the general admissions process were reviewed and ranked by a five-member committee that included representatives of four academic departments and the MSPH dean of students.

The MPH degree at the MSPH is 45 credits and includes 15 credits of schoolwide core courses in biostatistics, environmental health sciences, epidemiology, health policy and management, and sociomedical sciences that provide a common body of knowledge in basic public health philosophy and practice. The school also has a practicum requirement that provides students with the opportunity to integrate and apply the knowledge they gain in the classroom and to obtain the practical skills necessary for research, policy, or management careers in public health. Each student individually selected and tailored his or her practicum. In general, the practica lasted 10 weeks, and most were summer semester placements. We permitted several of the Scholars, however, to substitute academic year placements, which they carried out while taking their courses. For some, a fourth-year medical school elective in public health rotations was accepted for the practicum when it was clear that the experience would be as intensive and a suitable substitute. Such enrollment was permitted because it enhanced the MPH experience, and not because it was the only way in which these Scholars could complete their MPH degrees in a one-year period of time. All MSPH practica require the presence of an on-site preceptor who coordinates and supervises day-to-day work. The preceptor guides the student through the experience and, at the end, evaluates his or her performance. Each student is required to write a report, master essay,

or thesis, depending on the requirement of the individual department in which the student is enrolled.

Department requirements vary and usually include a few electives. The Scholars followed the same curricula as any other student in the MSPH, with the same requirements, but their course load was much greater because the period of study was reduced by 33% to 50% in comparison with the great majority of other full-time students in the school. Beginning in 2003, Scholars were required to register for a weekly yearlong seminar in which they are exposed to a wide variety of speakers, many of whom hold either an MD or dual MD–MPH degrees. Students are encouraged to use the seminar as a forum to present on their practica and research interests.

### Approach to Evaluation

At the end of the 2004–2005 academic year, we undertook a qualitative and quantitative evaluation of the program, which was a formal requirement of the Josiah Macy, Jr. Foundation. In the evaluation, we endeavored to understand Scholars' motivations for entering the program, satisfaction with the coursework, guidance and practicum experiences while enrolled in the MPH program, and their perceptions of the ways in which completion of the MPH affected their choices of residency programs and might affect the ways in which they would practice medicine. We used Survey Monkey to administer the online evaluation survey of the Scholars. The evaluation tool was based on a field-tested survey we currently use for evaluating the department of health policy and management. The main sections of the survey included satisfaction with coursework; attitude towards the MPH degree; influence of degree on residency training and career choices; and career trajectory. Most of the questions focused on Scholars' perceptions and attitudes more than on specific skill sets and practice patterns. We extracted demographic data about the students from their applications for admission. The quantitative questions on the survey were primarily Likert-like, and most of the qualitative data were derived from open-ended questions. We downloaded the Survey Monkey and demographic data into Microsoft Excel and Microsoft Access, and we kept track

of responders and nonresponders, following up on nonresponders with e-mail and U.S.-postal-mailed reminders.

The qualitative evaluation was based on our thematic analyses of

- essays completed as part of the application package for the Macy Scholars program;
- application essays that Scholars were asked to revise and to submit after their closing evaluation session;
- responses to open-ended questions posed in an online survey;
- group process reports developed at the initial orientation meeting for incoming Scholars, to assess their knowledge and attitude towards public health as they entered the program; and
- student course evaluations of a required Macy Scholars Seminar.

Eighty-five students from eight medical schools in New York (College of Physicians & Surgeons–Columbia; State University of New York (Downstate; Stonybrook and Albany); Albert Einstein College of Medicine; New York University School of Medicine; Weill Medical School–Cornell; Mt. Sinai School of Medicine) successfully completed their public health studies as Scholars by 2007. The data we report here are based on responses from 58 out of 73 Scholars who enrolled in the program by 2005 (79% response rate). Fifty-one of the Scholars completed the survey online, and seven completed a paper version that was sent to nonrespondents during the follow-up process. All the surveys were completed in full.

### The Evaluation: Description and Findings

We compare the demographics of the Scholars with those of the general MSPH student body and MSPH Executive students. Executive students enter and complete their degrees at MSPH as a cohort that attends four-day intensive weekend course sessions during a 24-month period. We analyze them separately because the Executive students are dissimilar from the general student body and have a disproportionately higher representation of physicians. Only about 17% of the MSPH population and

42% of the Executive population are physicians or medical students, whereas all of the Macy population are medical students. Scholars have a higher representation of males (41%) in the program than in the general student body (25%), but a lower representation than in the Executive program (46%). Interestingly, the Scholars represent a broader racial and ethnic background than the other MSPH student groups, attracting more black candidates than the other two programs. There are differences in gender by track of enrollment: males are much more heavily represented in the department of epidemiology, and females are more heavily represented in the department of population and family health. Most Scholars entered through the program in general public health because it allows for individualized courses of study that cross departmental lines.

#### Qualitative analyses: The “interview process”

We employed an educational technique known as the “interview process” during a separate orientation that was held for the incoming Scholars to try to understand the students’ preexisting knowledge of and attitudes toward public health. Participants rotate through a series of one-to-one interrogations, in which they interview each other to answer the following five questions:

- What do you want to get out of your MPH training experience?
- What roles can/should physicians play in public health?
- What do other professionals contribute to public health, and what roles do they play?
- How does public health differ from clinical medicine?
- Where do you see yourself five years after residency?

Students then gather in subgroups to consolidate the responses to each question and to derive themes. The student synthesis shows they are interested in gaining a more comprehensive and holistic understanding of the health care system than they gained in medical school, that they want to understand health care in an international context, and that they are seeking ways to try to understand better how to integrate their concerns about public health with

their eventual clinical roles. They are also anxious about how, as physicians, they can have an impact on the health of the public.

The Macy program clearly attracts students who have already thought a good deal about public health and understand many basic concepts before their enrollment at the MSPH.

#### Medical students’ interest in public health education

We reviewed enrollment records of Columbia College of Physicians and Surgeons (P&S) students who were Macy Scholars, whose records were easily accessible to us, to see whether they had taken public health courses before entering a degree program in the public health school. We found that among the 31 Columbia P&S students in the program, 18 of them had taken 14 different courses before enrolling in the Macy program. After the Macy program, their public health education continued; 10 students enrolled in fourth-year public health rotations. The Scholars program was thus able to tap into existing interest in public health. We cannot, of course, estimate the prevalence of this demand among the student body as a whole.

Another measure of an interest in public health among the medical student population is the number of Scholars who had gained, on their own or through medical school courses, sufficient knowledge to be able to waive out of at least one of the core courses by the standard department waiver examination which the Scholars took and passed. Thirty-six percent successfully waived out of Epidemiology; 8.2% waived out of Environmental Sciences; 5.5% waived out of Health Policy and Management; and 4.1% waived out of Biostatistics. These course waivers permitted the students to substitute elective courses in lieu of the required core competency courses.

A demand for public health education among a portion of the medical student population is also supported by the response to our open-ended survey question, “If the Macy Foundation had not funded your tuition, would you have pursued a degree in public health?” Forty-two percent said “no,” 24% said “yes,” and 34% indicated they still wanted the degree but would have needed to figure out how to obtain it at a different point in their careers. We can

assume that many of them may never be able to rearrange their professional lives to fulfill this desire. In large part, this may be related to the indebtedness of physicians in training. An analysis of the federal loan status of Scholars shows 16% with no debt and 26% with debt loads in excess of \$100,000 before entering the Macy Scholars Program. The remainder spread across this range. Tuition for the MPH degree at MSPH was \$51,750 in 2007.

#### Comparisons between pre- and postprogram open-ended questions

The Web-based survey included the question, “What motivated you to apply to the Macy Scholars Program?” We used iterative analysis to classify the responses into the following nine categories of interest:

- public health (or population-based health);
- health policy;
- research skills;
- international health interests;
- funded tuition;
- work with the underserved; social determinants of illness (disparities); prevention;
- word of mouth;
- maternal and child health; and
- other.

From responses to the question, “What do you want to get out of your MPH training experience?” we created the following categories:

- Fostering a holistic view of the U.S. health care system: economic, political, and social underpinnings, in a “3D view.” Why is it this way?
- Understanding health care in the international context.
- Improving knowledge of health care system, and improving a sense of direction: Integration of public health and clinical practice. How can we have an impact and be better at what we do?
- Recognizing that the year off helps to balance medicine with broader interests.
- Increasing inspiration; developing new ideas; staying idealistic.

- Searching for a career; gaining insight into residency decision.
- Acquiring the MPH degree as a credential.
- Gaining exposure to role models/peers with similar interests. How integrated are clinical medicine and public health?

We also queried the students about the skills they would like to gain during their year at the MSPH. We coded their responses into the following categories:

- Training in research methods: epidemiology, biostatistics, outcomes research, public policy.
- Improving academic knowledge base to understand literature and evaluate information; know why I'm telling my patients what I'm recommending.
- Gaining knowledge of health system: understanding policy and management on a national system level and a hospital level; being able to integrate this knowledge into medicine.
- Identifying factors/forces to target for change.
- Determining methods to disseminate information to a population.

It is interesting to compare these interview responses, in answering the question posed during the initial orientation, with the responses gathered from the evaluation survey when the students were asked, "What were the major skills and expertise you gained from your experience at the Mailman School of Public Health?" The results are given in Table 1. Clearly, there is great overlap between the students' initial

**Table 1**  
**Skills and Expertise Gained by 58 Medical Student Participants in the Macy Scholars Program, Mailman School of Public Health, Columbia University, 1999–2005**

Skill or area of expertise	% of scholars
Epidemiology-biostatistics	26
General research skills-study design, organization, process	26
Health policy and understanding of health care system	21
Public health focus and history of public health; exposure to different fields in public health	12
Global health	8

**Table 2**

**Perceptions of Effect of Public Health Training by 58 Medical Student Participants in the Macy Scholars Program, Mailman School of Public Health, Columbia University, 1999–2005**

Perception	Percent of Scholars			
	None	Very little	Some	Very much
Able to utilize public health expertise in your work	1	6	39	54
Involvement in public health service or volunteer activities	5	24	41	30
Able to affect management/policy in your residency or work	11	21	37	31
Enhanced ability to meet the needs of your patients	2	8	46	44
Able to carry out personal goals	2	0	24	74

interests and their reports of the skills which they believe were enhanced by obtaining the MPH degree. In addition, the students' vision was broadened by their year in the study of public health. At the conclusion of their MPH program, several specifically mentioned that they had an understanding of a "public health perspective" and had become aware of the issues relating to global health.

The Scholars were also questioned about their knowledge and attitudes on "what role can or should physicians play in public health?" During the orientation, students' responses were:

- Physicians definitely have a role in public health. They should be more actively involved. The MD degree lends legitimacy. Greater weight is given to what a doctor says.
- Assessment/filters: Assessing changes and being aware of health status of individual and community. Be more watchful.
- Advocacy: Should represent practice communities and fight for rights/needs for patients and community (local, national, and global level). Medicine is a vehicle for social change. Even in taking care of the individual, always keep larger population in mind.

We compared these responses with the responses we gathered in the online survey about whether the students' perceptions of the impact of their education matched their ideas about what a physician's role should be. The specific question asked was, "... tell us whether your public health training has had [none, very little, some, very much] of an effect on" various aspects of

their roles as physicians. We summarize the distribution of their responses in Table 2. In interpreting the data in this table, it is important to keep in mind that the Scholars were either in their fourth year of medical school or residents when they were answering these questions, so they really could not evaluate the overall future impact of their public health education. However, despite this cautionary note, we can see that the great majority (93%) were using the skills gained in their work, and 9 out of 10 felt that their public health training enhanced their ability to meet the needs of their patients. The majority (74%) found that their public health education went a long way towards helping them meet their personal professional goals.

We can draw some conclusions from our analysis of the orientation evaluation process:

- The Scholars are self-selected students who already possess interest and insight into public health.
- Scholars' interests span the range of public health areas of specialization.
- Scholars' orientation and personal statement analyses mirror Institute of Medicine social/behavioral science training conclusions.<sup>1</sup>

**The practicum experience**

The practicum experience seems to have been an especially important and valued aspect of the Scholars' training experience. Some major themes gathered from the responses to the question, "What was most beneficial about the practicum experience?" include

- international experience;
- involvement in process of research;

- exposure to not-for-profit organization;
- health education experience;
- understanding and ability to apply didactic training in real world; ability to work with lots of people;
- understanding potential dual role of physician–clinician and population;
- career direction; and
- policy issues.

### The academic demands of the accelerated program

The Scholars faced the challenge of completing the MPH within one academic year. Despite the heavy course load, the average grade-point average for Scholars was 3.76/4.00. Only one of the Scholars who enrolled in the program by 2005 has not received the MPH degree.

We evaluated the demands of this rather strenuous course of study on the Scholars by asking, “How demanding was your year of study at the Mailman School of Public Health?” Most students (about 78%) found the exercise moderately demanding, whereas 11% found it very demanding, and 11% found it not demanding at all. Clearly, the great

success of the Scholars shows that it is possible for medical students to thoroughly enjoy the experience, to do well (as evidenced from their grade-point averages), and, on average, to only find the load moderately demanding.

### Influence on residency choices

In Table 3, we show the residency choices made by 71 Scholars categorized by their department of study at the MSPH. Several undertook transitional years in medicine or surgery before entering fields such as anesthesiology, emergency medicine, neurology, and otolaryngology. Scholars entered the primary care fields of medicine, pediatrics, and obstetrics–gynecology, as well as emergency medicine. However, fewer entered family practice.

To ascertain whether the program exerted an influence on the residency choices and on their chosen careers, we asked the Scholars, “How has obtaining an MPH changed your career plans?” and we obtained the following responses:

- expanded knowledge of medicine to include public health;
- provided focus and direction;

- improved ability to include research studies in future;
- offered opportunity to work internationally during residency and beyond;
- affected residency choice;
- oriented to clinical/policy research–academic medicine;
- committed to working with underserved; and
- improved knowledge to shape policy.

We specifically asked the Scholars to “rate the level of influence your experience at the Mailman School had on your residency specialty selection,” and we were extremely pleased that they reported a very substantial influence. At least half of the students rated the influence at 4 or 5 on a 5-point scale, and 18% gave ratings of 3. Only 9% assigned a score of 1. The distribution of responses for influencing career choices was even more favorable (35%, 38%, 21%, 5%, and 2% rated the response as 5, 4, 3, 2, and 1, respectively). We conclude that the Macy Scholars Program and the year spent at the MSPH to obtain the MPH degree had a major effect on residency and career choices. Residencies in primary

Table 3

### Residency by Mailman School of Public Health Department by 73 Medical Student Participants in the Macy Scholars Program, Mailman School of Public Health, Columbia University, 1999–2005

Residency	Total no. residents	No. (%) Biostatistics (2 residents)	No. (%) Epidemiology (6 residents)	No. (%) General public health (26 residents)	No. (%) Health policy and management (13 residents)	No. (%) Population family health (18 residents)	No. (%) Sociomedical sciences (6 residents)
Anesthesiology	1			1 (3.8)			
Emergency medicine	9		1 (16.7)	5 (19.2)	2 (15.4)	1 (5.6)	1 (16.7)
Family practice	5					4 (22.2)	
General surgery	3		1 (16.7)	1 (3.8)	1 (7.7)		
Medicine	20	1 (5.0)	4 (66.7)	6 (23.1)	4 (38.5)	3 (16.7)	1 (16.7)
Med/peds	1						1 (16.7)
Neurology	1						1 (16.7)
Neurosurgery	1			1 (3.8)			
Ob/gyn	6			2 (7.7)	1 (7.7)	2 (11.1)	1 (16.7)
Ophthalmology	4	1 (50)		2 (7.7)	1 (7.7)		
Otolaryngology	2			1 (3.8)	1 (7.7)		
Pediatrics	11			3 (11.5)	1 (7.7)	6 (33.3)	1 (16.7)
Psychiatry	4			3 (11.5)		1 (5.6)	
Radiation oncology	1				1 (7.7)		
Radiology	1			1 (3.8)			
Urology	1					1 (5.6)	

care specialties were more heavily represented by Scholars' choices than by national data. Some of the trends we observed, however, may also be a reflection of the orientation of training at Columbia P&S, which was overrepresented within the Scholars' ranks.

### Overall satisfaction

In general, participants' overall satisfaction with the program was extraordinary. In response to the question, "Looking back, how satisfied are you with your experience at the Mailman School of Public Health?" all respondents reported they were very or somewhat satisfied, with 88.1% indicating they were very satisfied. In response to the query, "Knowing what you know now, if you could go back in time, would you still choose to undertake a year of study in public health?" 95% indicated they would still choose to study public health, and the other 5% of respondents said, "Yes, but at a different time."

Satisfaction is also evident through the Macy Seminar course evaluations in which all students strongly agreed (80%) or agreed (20%) that the course "contributed to the pursuit of my professional goals." Commenting on the strengths of the course, Scholars repeatedly mentioned that they were stimulated and excited by what they learned. Recent comments on the strengths of the course include, "it gave me a ton of food for thought and exposed me to many different paths for the MD-MPH degree; I appreciate the attempt to bring role models to the students. I have already developed new career goals as a result of some of the speakers," and that it "provided insights into the field of medicine that I had little knowledge of."

### Conclusions

The program sought to help bridge the gap between clinical medicine and public health by giving the Scholars insights into the health care delivery system, population-

based approaches to health, and the social and environmental determinants of health—topics which, by and large, are not part of the medical school curriculum. This unique opportunity for students drawn from the New York City medical school population after completion of their first clinical year was intended to develop a cadre of young physicians who will help shape the health care system in areas of public health research, management, and policy making in ways that significantly improve public health; as well as to open the world of public health to these medical student-Scholars at a critical time in their training. The evidence we gathered in evaluating the program, and by formal and informal interactions with each of our Scholar cohorts, leads us to conclude that the Macy Scholars program, to a very large extent, met its goals, and that this model is a useful one for joint medical-public health education.

In this article, we present an evaluation of the first six years (September 1999–June 2005) of the eight-year Scholars program that was created and run at the MSPH. Our findings demonstrate overwhelming satisfaction and support of the program by the Scholars. Despite the compressed nature of the program, the Scholars maintained outstanding academic performance, and the program fulfilled an otherwise unmet desire for public health training among a substantial number of medical students. Our analysis shows that obtaining an MPH while still in medical school had a substantial impact on the residency and career choices that Scholars make after completing their degrees.

Our overall conclusion is that this program, funded by the Josiah Macy, Jr. Foundation, has significantly enhanced these Scholars' ability to eventually practice both public health and medicine, and that formal educational collaboration across these disciplines before residency training, and in an intensive one-year

format, can and should continue and be supported and replicated.

We think it appropriate to end with the words of two Scholars:

What your funding has bought is a group of future and now present physicians who will forever have an understanding and appreciation for the world of public health. A group who will understand that medicine and health are much more than a conglomeration of hyperspecialties. A group who understands that to effectively treat the population we need much more than technical knowledge.

The Macy Scholarship is truly a wonderful gift for a student in medicine. For me, I wanted to go north, and the experiences at Columbia acted as my compass. Not only do I have a sense of direction, but I have come to realize that my entire career will be a molding process . . . and for the first time in a long time, the possibilities seem endless.

### Disclaimer

Preliminary results of the evaluation were presented in an invited plenary session at the Association of American Medical Colleges Conference of the MD-MPH Education Community, Chicago, June 2005.

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