

Letters

RESEARCH LETTER

A Faculty-Student Mentoring Program to Enhance Collaboration in Public Health Research in Surgery

Academic physicians with mentors produce more publications and receive more grant funding than those without mentors. Furthermore, mentorship during training can influence

the mentee's career choice and future success.¹⁻⁷ We combined the disciplines of public health research and surgery to create a unique mentoring program to enhance the academic experience for public health students and clinical surgical faculty. We report participant characteristics and academic productivity of our structured mentoring program.

Table. Participant Characteristics Among 44 Surgical Faculty Members (Mentors) and 90 Public Health Master's-Degree Students (Mentees)

Characteristic	No. (%)
Mentor sex	
Male	32/44 (72.7)
Female	12/44 (27.9)
Mentee sex	
Male	61/90 (67.8)
Female	29/90 (32.2)
Mentee underrepresented minority	
Yes	30/90 (33.3)
No	60/90 (66.7)
Mentee master's degree	
MPH	76/90 (84.4)
MHS	12/90 (13.3)
MPH, MBA	2/90 (2.2)
Mentee position during program	
Foreign medical graduate ^a	42/90 (46.7)
Medical student	27/90 (30.0)
Surgery resident	12/90 (13.3)
Other ^b	9/90 (10.0)
Mentee current position	
Resident	39/90 (43.3)
General surgery	22/39 (56.4)
Internal medicine	4/39 (10.3)
Otolaryngology-head and neck surgery	3/39 (7.7)
Emergency medicine	2/39 (5.1)
Urology	2/39 (5.1)
Neurology	2/39 (5.1)
Anesthesia	1/39 (2.6)
Family medicine	1/39 (2.6)
Pediatrics	1/39 (2.6)
Radiology	1/39 (2.6)
Researcher	23/90 (25.6)
Other ^c	14/90 (15.6)
Medical student	7/90 (7.8)
Attending	7/90 (7.8)

^a This number likely reflects the highly international nature of the graduate student body at the Johns Hopkins Bloomberg School of Public Health.

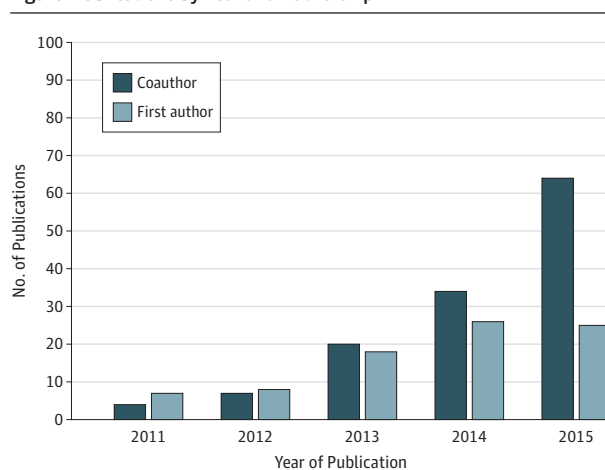
^b Includes health care worker, researcher, or college graduate.

^c Includes PhD student, assistant professor, health industry, applying to residency, practicing in home country, or unknown.

Methods | In 2010, surgical faculty (led by A.H.H.) from The Johns Hopkins University School of Medicine collaborated with leaders of the Johns Hopkins Bloomberg School of Public Health (led by M.D.-W.) to establish a collaborative student mentoring program. The objectives of this new program were to develop competent, experienced academic surgical researchers and to assist students in reaching professional goals in surgical disciplines.

During the first term of the academic year, interested public health students are matched with carefully selected surgical faculty (based on students' areas of interest), who then work together to develop a research question and testable hypothesis. In addition to one-on-one project-specific meetings, students participate in biweekly meetings providing a structured curriculum. Early in the year, these meetings include faculty-led lectures or discussions on aspects of clinical research, including institutional review board processes, literature reviews, data analysis approaches, oral presentation skills, and manuscript writing. As the year continues, discussion topics mirror the academic curriculum and support progress on student projects. All students give "work in progress" talks to present their hypothesis, explain their scientific approach, review statistical methods, and receive feedback

Figure. Publications by Year and Authorship



We identified 212 articles coauthored by mentor-mentee partnerships. Mentees were first author on 83 of 212 articles (39.2%).

from faculty and peers. Many master of public health (MPH) students use this project to fulfill a mandatory capstone degree requirement.

We examined cohort data to summarize participant characteristics. In September 2015, we searched PubMed for publications coauthored by the mentor-mentee pair, recording authorship positions and journal impact factor.

Institutional review board approval was not necessary for this non-human participants study. It was exempt per the US Department of Health and Human Services protocol.

Results | Between July 2010 and May 2015, a total of 90 public health master's-degree students and 44 surgical faculty members participated in the Johns Hopkins Surgery Center for Outcomes Research (JSCOR) Surgery Faculty-Student Mentoring Program (<http://www.jscor.org/surgery-mentoring-program>). Mentees were 67.8% (61 of 90) male and 33.3% (30 of 90) underrepresented minorities. Many mentees were foreign medical graduate physicians (60.0% [54 of 90]), surgical residents (13.3% [12 of 90]), or medical students (30.0% [27 of 90]). Since completing the program, 39 mentees (43.3%) are now residents, with 56.4% (22 of 39) in general surgery (Table). Twenty-three of 90 mentees (25.6%) pursued careers in academic research.

We identified 212 articles coauthored by mentor-mentee partnerships. Students were first author on 83 of 212 articles (39.2%). Overall, 47 of 90 mentees (52.2%) coauthored at least 1 publication, with 35 of 47 (74.5%) being first author. Of those who published at least 1 article, the mean and median numbers of publications were 5.3 and 2, respectively. The number of citations has risen each year (Figure).

Mentees' publications were published in 62 journals, including *JAMA*.⁸ Most common were *JAMA Surgery* (22 of 212 [10.4%]), *Surgery* (22 of 212 [10.4%]), and *Journal of Gastrointestinal Surgery* (16 of 212 [7.5%]). The mean journal impact factor varied by year (range, 2.54-3.93).

Discussion | The Johns Hopkins Surgery Center for Outcomes Research Surgery Faculty-Student Mentoring Program is a flagship example of collaboration for clinical and public health research in surgery. Most mentees published their projects in peer-reviewed journals, many as first author. Process standardization and year-to-year adjustments increased the program's academic productivity, with mentor-mentee publications increasing in terms of quantity and impact across time. The program's success attracted mentors from surgical subspecialties (eg, urology and orthopedics), broadening opportunities for students with diverse interests. The systematic application of public health methods to surgical research has greatly benefited students and mentors alike, illuminating important systems-level and population-level issues in health and health care.⁹ The inclusion of multiple surgical faculty using a standardized curriculum demonstrates the program's long-term sustainability, even in times of change with the departure of a key faculty member (A.H.H.) and the transition to a new director (E.R.H.). This program has been valuable to all involved and could be used as a model to recreate at other institutions.

Blair J. Smart, MD, MPH
R. Sterling Haring, DO, MPH
Cheryl K. Zogg, MSPH, MHS
Marie Diener-West, PhD
Eric B. Schneider, PhD
Adil H. Haider, MD, MPH
Elliott R. Haut, MD, PhD

Author Affiliations: Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland (Smart, Haring, Zogg, Haut); currently with the Department of Surgery, Keck School of Medicine of USC, University of Southern California, Los Angeles (Smart); currently with the Center for Healthcare Quality and Patient Safety, Università della Svizzera Italiana, Lugano, Switzerland (Haring); currently with the Yale School of Medicine, New Haven, Connecticut (Zogg); Department of Biostatistics, Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland (Diener-West); Master of Public Health Program, Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland (Diener-West); Department of Surgery, The Johns Hopkins University School of Medicine, Baltimore, Maryland (Schneider, Haider, Haut); currently with the Center for Surgery and Public Health, Department of Surgery, Brigham and Women's Hospital, Boston, Massachusetts (Schneider, Haider); Deputy Editor, *JAMA Surgery* (Haider); Department of Anesthesiology and Critical Care Medicine, The Johns Hopkins University School of Medicine, Baltimore, Maryland (Haut); Department of Emergency Medicine, The Johns Hopkins University School of Medicine, Baltimore, Maryland (Haut); Armstrong Institute for Patient Safety and Quality, The Johns Hopkins University School of Medicine, Baltimore, Maryland (Haut); Department of Health Policy and Management, Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland (Haut); .

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Study supervision: Schneider, Haider, Haut.

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