



# Leadership Training in the Medical School Curriculum: A National Landscape Analysis

## Citation

Wohler, Diana M. 2016. Leadership Training in the Medical School Curriculum: A National Landscape Analysis. Doctoral dissertation, Harvard Medical School.

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Scholarly Report submitted in partial fulfillment of the MD Degree at Harvard Medical School

21 January 2016

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**Leadership Training in the Medical School Curriculum: A National Landscape Analysis**

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Title: Leadership Training in the Medical School Curriculum: A National Landscape Analysis

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Purpose: Physicians are expected to practice in a rapidly changing, team-based environment, and leadership skills are becoming more valuable for graduating physicians if they are to serve as leaders of these teams. However, it is unclear if academic medical institutions are teaching these skills to medical students.

Methods: In 2015, a database search of the terms “teamwork” and “leadership” was conducted of the Curriculum Inventory, a collection of undergraduate medical curricular materials. Additionally, an original survey of medical students assessing attitudes and perceptions of leadership training was designed and piloted. This survey was distributed via the communications channels of several national-level organizations and via snowball sampling.

Results: The database search resulted in 164 courses, from 57 allopathic U.S. medical schools. Of these courses, 48.8% addressed “teamwork” and 34.8% addressed leadership or leadership development. Only 4.3% of courses addressed team management, and 7.3% courses addressed change leadership. In response to the survey questions, medical students believed that there were sufficient opportunities to work within teams (81.7%) and to learn about creating a climate of continuous improvement (79.2%). However, 47.8% of students believed that there were insufficient opportunities to learn to manage teams within the medical school curriculum. Respondents indicated that they were more likely than not to take a class that taught leadership skills.

Conclusion: Medical students have voiced a desire to be leaders and willingness to complete courses that offer leadership training, but few institutions report that their curricula offer sufficient coursework in team management or change leadership.

## Contribution to the Work

The project detailed in the abstract and attached paper was a unique experience for me in that I had the time, resources, and ability to carry this project through from conception to submission.

I wrote up the overall design of the research project, with advising and mentoring from Dr. Sullivan, an expert on mixed methods research, and submitted the proposal for approval from the Scholars in Medicine Office. After completing a graduate-level course on survey design methods, I identified a workable leadership framework and used this framework to construct an online survey. Once this survey was written, I reached out to various national-level organizations that served medical students, with the help of contacts of Dr. Stout. Once the plan for distribution was agreed upon with these organizations, I wrote, submitted, and secured IRB approval.

Using contacts from Dr. Stout, I negotiated a database search plan of an AAMC curriculum database; a representative at the AAMC conducted the actual search and generated the raw findings, due to concerns for confidentiality.

After the survey was distributed and the data collected, I created a data analysis plan with the advice and mentorship of Sophia Arabadjis, a researcher at the Harvard Medical School Center for Primary Care. Once the data were analyzed, I wrote the background, methods, findings, and discussion into a manuscript for submission. Dr. Sullivan and Sophia Arabadjis revised and edited the manuscript. I submitted the manuscript for publication and, at the time of writing this report, await news on its acceptance to a peer-reviewed medical education journal.

## Leadership Training in the Medical School Curriculum: A National Landscape Analysis

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Submitted on January 11, 2016

Word count: 2713

Financial Support: This study was funded by the Harvard Medical School Center for Primary Care and the Scholars in Medicine Office of Harvard Medical School.

Presentations: Some content of this manuscript has been or will be presented via poster format at the following conferences:

- Medical Education Day of the Academy of Harvard Medical School; Oct. 27, 2015; Boston, MA
- Society of Teachers of Family Medicine Conference on Medical Student Education, Jan 28-31, 2016; Phoenix, AZ

Key words: undergraduate medical education; leadership; competency-based curriculum

## **Abstract**

**Background and Objectives:** Physicians are expected to practice in a rapidly changing, team-based environment, and leadership skills are becoming more valuable for graduating physicians if they are to serve as leaders of these teams. However, it is unclear if academic medical institutions are teaching these skills to medical students.

**Methods:** In 2015, a database search of the terms “teamwork” and “leadership” was conducted of the Curriculum Inventory, a collection of undergraduate medical curricular materials.

Additionally, an original survey of medical students assessing attitudes and perceptions of leadership training was designed and piloted. This survey was distributed via the communications channels of several national-level organizations and via snowball sampling.

**Results:** The database search resulted in 164 courses, from 57 allopathic U.S. medical schools. Of these courses, 48.8% addressed “teamwork” and 34.8% addressed leadership or leadership development. Only 4.3% of courses addressed team management, and 7.3% courses addressed change leadership. In response to the survey questions, medical students believed that there were sufficient opportunities to work within teams (81.7%) and to learn about creating a climate of continuous improvement (79.2%). However, 47.8% of students believed that there were insufficient opportunities to learn to manage teams within the medical school curriculum. Respondents indicated that they were more likely than not to take a class that taught leadership skills.

Conclusion: Medical students have voiced a desire to be leaders and willingness to complete courses that offer leadership training, but few institutions report that their curricula offer sufficient coursework in team management or change leadership.

## Introduction

To prepare graduating students to succeed and thrive, several medical schools, particularly private medical schools, have made it their mission to create leaders in medicine(1-6).

However, it is unclear if these institutions are fulfilling their mission to train leaders, especially given the changing nature of healthcare delivery. Healthcare delivery is moving more towards team-based care in primary care and throughout various specialties: patient-centered medical home initiatives have expanded four-fold from 2009 to 2013(7), upwards of 85-90% of oncological care is delivered in multidisciplinary team-based outpatient settings(8), and the U.S. Department of Veteran Affairs has integrated full-time mental health providers into each home-based primary care team for interdisciplinary physical and mental health coordination(9). The Institute of Medicine report *Health Professions Education: A Bridge to Quality* has stated that the ability to work in interdisciplinary teams as one of the five core competencies of all health professionals in order to deliver high-quality, patient-centered care(10). Additionally, the Association of American Medical Colleges has published explicit entrustable professional activities, or competencies, for medical school graduates regarding the ability to collaborate on an interprofessional team(11).

As the Affordable Care Act continues to challenge the structure of health care in the United States, physicians are expected to practice in a rapidly changing, increasingly team-based environment. The skills of team-based care, including teamwork, team leadership and change leadership skills, are becoming extremely valuable for graduating physicians as they join and lead these teams into the medical practices needed in the 21<sup>st</sup> century. However, it is unclear if



academic medical institutions are preparing medical students to be leaders in this new healthcare landscape. While there is general agreement on the importance of physician leadership and the value of medical school students graduating with leadership skills, there is little consensus as to how and to what extent to incorporate leadership training into the undergraduate medical education curriculum(12-21). Very few papers have been published in the academic literature regarding programs that offer leadership training in the allopathic undergraduate medical curriculum; there is little understanding of what is available and what trainees require with regards to leadership training.

Therefore, this study seeks to explore the current state of leadership training in the U.S. undergraduate medical school curriculum. We also sought to explore the desirability for curricular leadership training opportunities among allopathic U.S. medical students.

## **Methods**

### *Database Search*

A keyword search using the terms “teamwork” and “leadership” was conducted of the Association of American Medical Colleges (AAMC) Curriculum Inventory database, a searchable collection of undergraduate medical curricular materials voluntarily submitted by Liaison Committee on Medical Education (LCME) accredited MD-granting medical schools to the AAMC from 2012-2014. At the time of the database search, 119 of 141 possible LCME-accredited schools had submitted materials to the Curriculum Inventory. Due to concern for confidentiality, investigators were blinded to the identities of individual institutions during data analysis.

## *Survey Design*

A search for validated and tested frameworks for leadership assessment elicited 10 potential surveys. We chose to base our framework on the National Health Service Clinical Leadership Competency Framework Self-Assessment Tool(22), a competency-based self-evaluation survey validated to assess the frequency of clinical leadership behaviors among various health professionals at varying levels of training. In order to assess leadership training that goes above and beyond what is already required of medical schools, we eliminated from the National Health Service Clinical Leadership Competency Framework Self-Assessment Tool the competencies that were already required of U.S. allopathic medical school curricula by the LCME (23). This resulted in five competencies related to teamwork, team leadership, and change leadership (Figure 1). Based on this framework, we developed a questionnaire for medical students to determine the availability and appetite for curricular opportunities that taught these leadership competencies.

Respondents were asked to rate their perceptions of the sufficiency of curricular opportunities for leadership training as well as the likelihood that they would take a class that offered mastery of each of the leadership competencies. There were 20 total items that addressed each aspect of the leadership competencies; all were designed using a five-point Likert scale to assess for greater nuances in attitudes. Additionally, respondents were asked to rate their agreement with two statements regarding career aspirations in medicine using a five-point Likert scale. Demographic information was also collected, including year of training, home institution, possession of or pursuit of a dual degree, and number of years of work full-time

before medical school. To mitigate selection bias, respondents who completed the survey in its entirety were offered the chance to enter a lottery for one of four Amazon gift cards valued at \$100 each.

Before distribution, the questionnaire was critically reviewed by a committee at the Academy Center for Teaching and Learning at Harvard Medical School, as well as research methods experts at the Harvard Medical School Center for Primary Care, to identify issues with question design. The survey was subsequently piloted on three medical student volunteers to assess time to complete the survey and identify any confusing or misleading question wording via verbal probing. The questionnaire was modified on the basis of feedback from the above parties. The final questionnaire (see Appendix 1) was administered through Qualtrics software.

The survey and study design were reviewed and deemed exempt from review by the Harvard Medical School institutional review board.

### *Survey administration*

In February 2015, an initial online invitation to allopathic U.S. medical students at LCME-accredited institutions was sent on our behalf by the American Medical Student Association, and the American Medical Women's Association, Association of American Medical Colleges' Organization of Student Representatives, and Primary Care Progress, through a combination of email list-servs, email newsletters, Twitter accounts, and Facebook pages. The initial invitation contained a cover letter and a link to the online Qualtrics survey. Additionally, emails containing cover letters and a link to the survey were distributed via snowball sampling from student to student. Survey collection continued through March 2015, for a total of two months.

### *Data Analysis*

To determine the current offerings and interest in explicit leadership training among undergraduate medical students, our analysis proceeded in three steps: a database search of current offerings in leadership and teamwork training in the undergraduate medical school curriculum, a demographic assessment to further understand our study population, and an analysis of reported perceptions on interest and opportunities across undergraduate medical schools. We determined frequency and percentage distributions for respondent and individual demographics, perception of sufficiency of leadership training in the undergraduate medical curriculum, and likelihood of pursuing leadership training if it were offered. We performed a variety of tests to assess the representativeness of our sample. The institutional demographic categories evaluated included institution type (public or private)(24) and AAMC regional affiliation(25).

## **Results**

### *Database Search*

The keyword search for “teamwork” and “leadership” in the AAMC Curriculum Inventory elicited 2101 results. The search results were examined for courses in which aspects of teamwork, team leadership, or change leadership training were included in the course objectives, explicitly mentioned in the title, and/or included as a major focus in the course description in order to limit our search to courses which intentionally sought to teach concepts or increase skills in teamwork, team leadership and change leadership. This resulted in 164

courses, from 57 de-identified institutions. Of the 164 courses, almost half explicitly addressed “teamwork” as a course objective (80 courses, 48.8%), and 57 courses (34.8%) addressed leadership or leadership development in some way. Only seven courses addressed “management” of teams specifically (4.3%), and twelve courses, or 7.3%, addressed change leadership in any sort of specific way (“quality improvement”, “redesign”, “change”, “continuous improvement”).

### *Survey Demographics*

We received 969 completed survey responses from medical students stemming from 56 (39.7%) of 141 LCME-accredited U.S. medical schools around the nation. Just under half of institutions represented were located in the Northeast region of the U.S. (47.9%, n=27), and the majority of these schools were private (75.3%, n=42). Of the participants themselves, the majority of students were fourth-year medical students (28%, n=267), however other years (and dual degrees/extensions) are fairly well represented. Further evaluation of these students’ and institutions’ demographics is represented in Table 1. In terms of leadership aspirations most students indicated “agree” or “strongly agree” in response to the statement “I desire to hold a leadership position at some point in my career” (839; 86.6%). Very few students indicated “disagree” or “strongly disagree” in response to this statement (35; 3.6%), and 10 % were neutral. On average, students from private institutions reported higher aspirations for holding a leadership position [mean = 4.39(0.82)] as compared to public institutions [mean = 4.29(0.88)]. However, the difference was not significant [t(953)=1.5738, p=0.12] (Table 2).

### *Perceptions of Sufficiency of Leadership Training in the Curriculum*

Respondents' perceptions regarding the sufficiency of curricular opportunities to learn various leadership concepts and skills are shown in Table 3. Of the students who answered this question, many students believed that there were sufficient or more than sufficient opportunities to work within teams (871; 81.7%) and to learn about creating a climate of continuous improvement (844; 79.2%). However, many students believed that there were insufficient opportunities to learn to manage teams within the medical school curriculum (505; 47.8%). There were no statistically significant differences with regards to sufficiency of curricular opportunities between students from public and private institutions with the exception of the opportunity to "work within teams", which students from public medical schools were more likely to rate as "sufficient" or "more than sufficient."

#### *Desire for Leadership Training*

Respondents were asked to rate the likelihood that they would sign up for a course that offered to teach various leadership topics; these responses are shown in Table 4. Across all of the leadership topics, respondents indicated that they were more likely than not to take a class that taught leadership skills. In particular, respondents were most likely to take a class that taught how to manage teams (619; 58.7%) and how to facilitate transformation (644; 61.0%). There were no statistically significant differences regarding desire for leadership training in any competency between students at public and private undergraduate medical institutions.

## **Discussion**

Given the value of teamwork and leadership skills for graduating physicians in a rapidly changing healthcare environment(26-31), several institutions have incorporated leadership training into their undergraduate medical curriculum through a combination of one-time courses, concentrations and educational tracks, or integrated dual-degree programs (21, 32-40). There is, however, no comprehensive review to date which examines the types of leadership training provided to medical students, nor an assessment of medical students' attitudes regarding leadership training. To address this gap in knowledge, we set out to provide an overview of the availability of and desirability of leadership training in U.S. allopathic medical schools.

The results from our survey data suggest that courses that offer training in teamwork, team leadership, and change leadership would be welcomed by undergraduate medical students. 86% percent of our respondents indicated a desire to hold a leadership position at some point in their careers, with no significant difference between students from private and public institutions. Therefore, even schools without an explicit mission to create leaders in medicine would be meeting the needs and desires of its student population by providing these curricular opportunities. For the given topics on teamwork, team leadership, and change leadership in our survey, 45-61% of students reported interest in taking a formal course that offered to teach them further skills and concepts. Efforts to develop this coursework would not be in vain with regards to student interest and enrollment.

However, regarding the current availability of courses that provide this type of training, our results from the database search of course offerings suggest that only 57 of the 141 studied

allopathic undergraduate medical institutions in the U.S. offer explicit instruction in teamwork, team leadership, and change leadership. The courses that do exist primarily offer students the chance to work within teams, but there are very few opportunities regarding other facets of leadership such as team leadership or change leadership. This is reflected by our survey data, in which 47.8% of medical student respondents reported a deficiency in curricular opportunities to learn team management and 20-39% of respondents reported a deficiency in curricular opportunities for training in change leadership topics. Medical schools could make the greatest strides in creating robust curricula in leadership training for their students if their curricular boards concentrated on these areas of need in order to best prepare their students for leadership in team-based delivery systems in a rapidly changing healthcare system in the U.S. Additionally, there are currently no defined standards or competencies for leadership training for medical students, and this lack of comprehensive training requirements for a rigorous program in leadership education is a large barrier to the further adoption of similar programs among allopathic medical schools in the U.S. Our framework, as presented above, may be used as a starting point for leadership competencies appropriate for medical trainees.

### *Limitations*

With regards to our database search, our investigators did not have direct access to the Curriculum Inventory and were not able to link individual courses to institution names- we were therefore not able to link institutions from the database search with corresponding student responses from the survey and we were unable to control search terms. Additionally, while most institutions have submitted curricular materials to the Curriculum Inventory, the database



is not an exhaustive list of all curricular offerings at all United States LCME-accredited medical schools. Therefore, we may have underestimated the prevalence of leadership training offerings available to medical students in our study.

Although our survey had a large total number of respondents from a number of unique institutions, the respondents of our survey were not representative of the whole United States allopathic medical student population with regards to class year, geographic region, or type of institution, as was demonstrated by analysis of our demographics questions. This is due to our methods of sample recruitment via a convenience and snowball sample- by design, this type of recruitment will over-represent respondents who are very interested in the topic of leadership, and this raises the issue of generalizability of our analysis to the medical student population at large. Therefore, our data were not sufficient to us to weight the survey sample to account for demographic differences between survey respondents and the general U.S. medical student population. Our methods of response collection oversampled students from the Northeastern and Midwestern regions of the United States, students from private medical schools, and pre-clinical students. Taking this into account, we believe this study is valuable as the first multi-institution survey regarding the topic of preparing medical school graduates to be leaders of teams, but not robust enough to warrant meaningful regression analyses.

Finally, the medical student respondents may not have been aware of all available leadership training programs at their home institutions. With any voluntary survey, there is an issue of selection bias; our lottery was offered in order to mitigate the risk of selection bias.

This study reveals several gaps in leadership training for medical students around the country. Our review of course offerings has shown that there is no framework for operationalizing concepts and skills around leadership training as defined by the AAMC or LCME competency framework. In this study, we have proposed a possible framework as an initial step towards a leadership competency framework. Additionally, the results of this preliminary study have revealed the need for a larger, more fully representative needs assessment of leadership training for undergraduate medical students.

### *Conclusions*

This was an exploratory study to map out the landscape of leadership training in U.S. allopathic medical schools with regards to curricular opportunities and student attitudes and perceptions. Leadership training for medical school graduates is becoming increasingly more important as medicine becomes more team-based and health professionals are expected to be leaders in medicine in the United States. Medical students, regardless of whether they are training at private or public medical institutions, have voiced a desire to be leaders and willingness to complete courses that offer leadership training, but few institutions report that their curricula offer sufficient coursework in team management or change leadership. Competencies and standards for leadership training appropriate for the undergraduate medical curriculum should be created in order for more robust adoption by LCME-accredited medical institutions. Finally, more research, particularly a large-scale needs assessment of leadership skills for graduating physicians, is necessary to develop rigorous standards and competencies.

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*Acknowledgements:* The authors wish to thank Primary Care Progress, the Association of American Medical Colleges Organization of Student Representatives, the American Medical Students Association, the American Medical Women's Association, the Association of American Medical Colleges Curriculum Inventory staff, and the Robert Graham Center.