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A Medical Student First Year Leadership Program

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Pullouts:

Our goal was to design, implement and assess an integrated, required leadership program for all first-year medical students.

Would students and the medical faculty see leadership as only the “big L” Leader: running hospitals, medical schools, or large organizations?
Could we, instead, envision a “little l” leader, where students can empower teams, collectively solve problems, and ignite lasting change?
We assessed students’ leadership competencies with two novel tools developed at our institution. Creating a robust curriculum for first-year medical students carried some humbling lessons. Leadership of the program changed, as did the deletion or addition of sessions and which years leadership content should be in.

Introduction: The established medical hierarchy, dramatic expansion of scientific knowledge, and emphasis on value-based health care means graduating physicians need to know how to manage and lead positive change. Teaching these skills has a critical gap in undergraduate medical education.

Methods: The medical school developed a first-year medical student competency-based leadership curriculum that focused on: leading yourself, teams and teamwork, influence and communication, problem solving, and systems thinking. The course utilized four methods of teaching leadership: experiential learning, targeted development, reflection and feedback. The formal curriculum included topics such as developing a leadership agenda, challenging conversations, and negotiations. The informal curriculum (learning outside of the structured curriculum) included applying leadership in co-curricular and extra-curricular activities (e.g. student run Free Clinic). Students recorded leadership experiences using a novel reflective assessment tool, obtained multisource feedback, and then articulated a plan for improvement.

Results: Course evaluations noted that only one-third of first-year students responded that the curriculum developed skills in communication, ability to problem-solve, applying systems-thinking, and building teams. Students self-reported that they were *often* building, leading, and managing productive teams and applying influence and communication. The multisource feedback assessment revealed that students, on average, were rated as competent/proficient.

Discussion: Creating a robust curriculum for medical students in the first year is challenging. Student reactions ranged from affirming to critical. Next steps will focus on increasing interactive teaching and on helping students understand why, where, and how leadership is important.

Introduction

Effective leadership by physicians is needed due to the increased complexity of health care.[1] There is rapid expansion of scientific knowledge, heavy impact of chronic diseases, a shift toward interprofessional team management, and sky-rocketing health care costs with suboptimal outcomes. The United Kingdom's National Health Service, and other countries, are leading the call to improve physician leadership.[1-3]

The development of positive, transformational role models in healthcare professions is needed including in medical school. To address this, training future physician leaders should include developing core leadership and management skills, starting in medical school.[2] While almost 60% of the United States' academic health centers have faculty leadership programs, leadership skills training for students and residents is beginning to receive attention.[2,4] Many medical schools have launched electives or selective leadership training, but few have made it mandatory.[4,5]

Our medical school is committed to developing great clinicians who can improve health, health systems, and health care. We believe medical students can learn how to lead and build teams to identify needed change and create an inspirational vision to execute the change. Our goal was to design, implement and assess an integrated, required leadership program for all first-year medical students. The purpose of this paper is to describe the innovation, share the evaluation and the outcomes.

Methods

Development of leadership model*:* Program development began with a review of health care leadership models and organizational literature (Supplemental Table). We had workgroups and meetings with stakeholders including deans, students, and the hospital leadership to develop a model. This iterative process helped us conceptualize a transformational leadership model that would develop humble, reflective leaders who identify problems, work collaboratively with teams to create solutions, and create vision for positive change (supplemental table).

Leadership Competencies: We grappled with the vision of a medical student leader. Would students and the medical faculty see leadership as only the "big L" Leader: running hospitals, medical schools, or large organizations? Could we, instead, envision a "little l" leader, where students can empower teams, collectively solve problems, and ignite lasting change? After agreeing on the leadership model (e.g. transformational, little "l" leadership), five competencies were identified that aligned with other studies of student leadership curricular objectives: leading yourself, influence and communication, building teams, problem solving, and impact on systems of health care (Table 1, Supplemental table).

Curriculum Overview: Session learning objectives were mapped to the leadership competencies (Table 1, 2). The instructional methods were predominantly experiential learning. Formative assessment was conducted through self-assessment and reflection. Lastly, students had the option to pursue periodic leadership coaching from medical school faculty.

Curriculum design was approached using the PDCA (plan–do–check–adjust) framework for continual process improvement, recognizing how a leadership curriculum might be disruptive and require revisions.[6] The curriculum was first piloted and then revised with implementation for the 2015-16 class with subsequent revisions based on student feedback.

Formal Curriculum: Eleven sessions were conducted (Table 2). Experiential learning methods included role play, small group discussions, and simulations. Leadership content and training was also integrated with other parts of the formal curriculum. For example, the Competing Values Framework (a model of leadership styles) was jointly taught to students and their faculty in the clinical skills course.[7]

Informal Curriculum: The course intentionally leveraged the informal curriculum. This was based on the premise that leadership application happens everywhere. Extra- and co-curricular activities, provided opportunities where students integrated leadership skills from the formal curriculum. These skills could be applied to experiences ranging from participation in student organizations, community or committee groups, and a student driven impact capstone project (Table 2).

***Assessment of Learning**:* We assessed students' leadership competencies with two novel tools developed at our institution: The Leadership Curriculum Vitae (ML-CV) and the Leadership360 (LDR360). The ML-CV reinforced the practice of identifying, reflecting, identifying leadership gaps and actions (Table 3). Students recorded leadership experiences throughout the formal and informal curriculum and then reflected on each entry using Borton's "What? So What? Now What?" framework.[8,9] This framework pushed students to derive deeper meaning from the experiences by creating the next step of "Now what?" Students completed the ML-CV twice during the first year. It was reviewed by the course faculty using a scoring rubric. General feedback was provided to the class with individualized feedback also available, if desired.

Students received feedback using a multisource, leadership 360 assessment (LDR360) modeled after business 360 tools. Students selected at least five personal and professional assessors who they believed could adequately assess their leadership competencies. Assessors noted strengths, areas of development, and provided an Overall Leadership Score using a 9-point scale (1=novice to 9=expert). Students received an anonymized LDR360 summary that included competency averages and written feedback. Students included a LDR360 reflection to their ML-CV, thus linking the two assessments. They could also pursue leadership coaching on the ML-CV and the LDR360 with leadership faculty.

***Program Evaluation**:* We conducted a mid-year and end of year evaluation of the leadership curriculum (reactions). We used the internally developed Leadership Inventory for Medical Education (LIME), a 12-item instrument, to document students' self-reported leadership.[10] Evaluation of the course also included the assessments ML-CV and LDR360 (performance). The program evaluation was reviewed by Institutional Review Board and determined to be not regulated.

Results

***Evaluation of program and student reactions**:* Students' evaluation of the new curriculum was not what we hoped for (Table 4). A mid-year course evaluation was sent to all first-year medical students. One-third (21/70) of students indicated that the Leadership curriculum contributed to their learning. In the end-of-year course evaluation, again only a third of the students agreed that

the leadership curriculum developed their leadership skills (Table 4). Free text comments noted the strengths of the program included enthusiastic faculty, coaching on how to set leadership goals, and a practical communication framework during challenging conversations. Areas of improvement included more explicit connections to medicine, the increased use of small groups, challenging curriculum content, and holding sessions only during lighter pre-clinical learning loads.

Program evaluation and student assessment: Students filled out the ML-CV, recorded and reflected on their leadership learning opportunities that occurred in formal and informal curriculum. It was reviewed by leadership faculty and all students received general feedback. If the ML-CV was incomplete, students received more detailed, individual feedback.

Every student submitted five or more assessor names for the LDR360. Assessors completed the majority of LDR360s (79%, 729/928). The LDR360 Overall Leadership class score average was 6.7 (SD 0.91) in the "competent to proficient" range. Summary of comments are in Table 5.

Additionally, students' completed a self-reported leadership competency using LIME. On a scale of 1=Never; 2=Sometimes; 3=Often; 4=Always, students reported that they *sometimes* achieved the competency of Problem Assessment and Problem Solving (mean 2.38, SD 0.61, 140 students), and Understanding Systems/ Healthcare Systems (mean 2.19, SD 0.65). Students reported that they were *often* building, leading, and managing productive teams (mean 2.93, SD 0.60) and applying Influence and Communication (mean 2.97, SD 0.49).

Discussion

Creating a robust curriculum for first-year medical students carried some humbling lessons. Student reactions were affirming to critical and identified limitations to the initial implementation. Webb found that medical students recognized a need for leadership education, but also identified a lack of curriculum time and disinterest in some activities[4]. Our students similarly reflected that they didn't get the "Why" of leadership and also noted time conflicts with other curricular elements.

There were multiple lessons learned and subsequent changes made. The first lesson was to more clearly define what it looks like to be a medical student and future physician leader. A second lesson was securing dynamic, well-trained small group facilitators. The third lesson was

offering more challenging, applicable sessions and letting students have more autonomy with session selection. Fourth, pointing out how leadership learning was also embedded in other courses (Example: leading anatomy small group, working through a contentious group discussion/session). Finally, even though the ML-CV was intended to help students see leadership learning happening now, the set up was overly complex.

There were limitations to this curricular implementation study. First, it is a single institution, limiting the generalizability. Second, it difficult to measure the leadership learning outcomes, therefore we will be working to develop measurements with validity evidence. Finally, improving the student response rate and conducting a longitudinal evaluation of the curriculum will be needed.

Over the last two years we have continued to develop the leadership curriculum in the pre-clerkship and clinical clerkship (wards) phase, and performed quality improvement on some of the individual sessions. Leadership of the program changed, as did the deletion or addition of sessions and which years leadership content should be in. Once we have a class that goes through an established four-year program, there are plans to publish a follow up study following these students and determining if the course enabled leadership growth throughout medical school.

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Table 1. 2015-16 Medical School Leadership Competencies

Leading Yourself: Students demonstrate insight into their own values and set effective goals through openness to change and receiving feedback.
Influence and Communication: Students understand the principles required for effective verbal and nonverbal communication, analyze important communication styles and effectiveness, and demonstrate the ability to tailor messages for different audiences.
Teams and Teamwork: Students understand differences in team members' values and needs in order to facilitate effective teamwork and improve team efficiency and efficacy.
Executing & Problem Solving: Students know the fundamentals of quality implementation tools, are able to analyze the health care culture, and are able to design approaches to create solutions to important healthcare problems.
Impacting Systems: Students understand basic healthcare value economics and are able to analyze systems to navigate and impact positive change.

Table 2. Formal and Informal First Year Leadership Curriculum

Required, Formal Leadership Sessions			
Topic	**Learning Objectives**	**Pedagogical Approach**	**Competency Domain**
Leadership and Doctoring Day	Recognize how four different leadership styles can help to build or hinder a team	1) Problem solving 2) Cooperative learning	1) Leading Self 2) Building Teams
Developing A Personal Agenda: Competing Values Framework	Identify personal and professional values for an authentic professional identity in medicine	1) Feed forward 2) Cooperative learning	Leading Self
Assessment: Leadership CV & Leadership 360	Session to organize and reflect upon leadership experiences using the ML-CV.Gather and review leadership feedback on the competencies from people both in and outside health care	1) Just in Time learning 2) Guided Practice 3) Self-assessment 4) Multi-source Assessment	All competency domains
Empathy, Rapport, and Connection	Examine the importance of "connected" communication as a leader with three roles: giver, receiver, and listener	Interactive Learning	1) Influence and Communication 2) Problem Solving 3) Building Teams
Challenging Conversations	Work through challenging conversations using effective communication strategies for leaders	Role Play	1) Influence and Communication 2) Problem Solving 3) Building Teams
Motivating Self and Others	Identify and examine what drives and motivates ourselves	Critical Reflection	1) Leading Self 2) Building Teams

	and others		
A3 Thinking in Health care	Connect and practice A3 thinking as a framework for analyzing problems in health care	Hands-on Learning	1) Problem Solving 2) Impacting Systems
Selective Formal Leadership Sessions (participate in small group or complete alternative assignment)			
Negotiations for MDs	Identify where and how negotiation can be applied in personal and professional spheres	1) Interactive Learning 2) Simulation/ Role Playing	1) Influence and Communication 2) Impacting Systems
Select (1) One: Medical Problem Solving OR Doctor as Designer	1)Case study to solve problems within different health systems 2) Apply Design Thinking to address health care, wellness, or disease management issues	1) Case analysis 2) Group discussion Practice creation and design in pairs	1) Problem Solving 2) Impacting Systems
Leading Yourself: Avoiding Burnout, Increasing Emotional Intelligence & Thriving	Explore the concept of Emotional Intelligence and burnout. Identify factors that contribute to medical student burnout	Group share and discussion	1) Leading Self 2) Influence and Communication 3) Problem Solving
Examples of informal curriculum leadership learning			
1. Co-managing the Student Run Free Clinic 2. Leading student group to promote diversity through Doctors of Tomorrow 3. Running for and serving as a Curricular Representative 4. Joining a Path of Excellence to pursue a capstone experience			

Table 3. Examples of Student Entries in the XX Leadership-CV

Focus/Title	What?	So What?	Now What?
"Challenging Conversations" leadership session	How we handle difficult conversations. We did role play through three types of "challenging" conversation scenarios.	I am most interested in the "shared meaning" part of the protocol which was understanding each person's stake in the issue including their emotions.	Use strategies in future interactions. Our "shared meaning" can be the improvement of their health, and perhaps foster better shared decision making.
LDR360 Tool Development Team	Served on panel who reviewed the initial student feedback on the LDR360 instrument and worked to improve the tool and subsequently roll it out to the class.	My peers felt very strongly about the assessor feedback being anonymous. I disagreed but was persuaded to agree with the anonymous formatting even though my personal feelings on it were unchanged.	Seek out perspective to make more well informed decisions as a class representative
Curriculum Representative	Regularly attending planning/curriculum meetings, working with course directors, working with other student leadership	Advocating for my classmates and conveying student opinion while distilling concerns.	Be curious. Anticipate big student concerns rather than reacting to the them. Build connections with faculty and administration in order to optimize my opportunities
Med Ed Challenge Competition	Created an AMA grant submission that included proposal, a video pitch, and presented to a group of medical school faculty.	There is inherent difficulty in being creative within a team. Each person brought great ideas to the table, but it was difficult to articulate accurately and to reconcile them with other members' ideas.	Out of the box thinking style and "goal-oriented" thinking. Pursue experiences like this in the future so I can learn more about the importance of clear communication and clear establishment of roles and tasks.

Interprofes-sional Clinical Experience	Met with Dr B in outpatient clinical setting to ask questions about payers/payment structure.	Opportunity to practice knowledge and ask meaningful questions that added to the team.	Find outlets to piece together the knowledge I am learning inpatient vs outpatient systems.
Paths of Excellence	Took the Early Tech Development Course under the Fast Forward Medical Innovation group.	Learned key strategies in business development and how to further my ideas in medical innovation.	Explore my interests in the Innovation and Entrepreneurship Path of Excellence and take the new skills I learned into my professional life.

Table 4. Mid and End of Year Course Evaluations

	Agree/ strongly agree N (%)	Neutral N (%)	Disagree/ strongly disagree N (%)
2015-16 Mid-year Course Evaluation: N=70 students Response Rate =42%			
Overall, the Leadership curriculum has contributed to my learning.	21 (30%)	22 (31%)	27 (39%)
2015-2016 End-of-Year Course Evaluation: N=71 students Response Rate =42%			
The leadership curriculum developed their skills in listening, influence and communication,	25 (35%)	25 (35%)	21 (29%)
The leadership curriculum improved their ability to assess and problem-solve common challenges in health care	24 (34%)	25 (35%)	22 (31%)
The leadership curriculum provided me with opportunities to apply the basic principles of systems-based practice	22 (31%)	26 (37%)	23 (32%)
The leadership curriculum increased my understanding of how to build and manage productive teams	19 (26%)	27 (38%)	25 (35%)

Table 5. Examples of feedback given to students in each of the five competencies

- Building Teams: “Dependable; supportive; provides valuable feedback; respects process; understands teams rise and fall together. Find ways you can engage as many members of the group as possible.”
- Problem Solving: “Perhaps find a few times you could do more than address the question/prompt asked, and could steer the group conversation to a new direction.”
- Influence & Communication: "Sometimes in your enthusiasm you can speak quickly making it harder for some to process all the helpful ideas. For [student] to take your influence and communication to the next level, you will need to continue to work on the pacing of your speech pattern.”
- Systems Thinking: “As you get more familiar and comfortable with the health system, medical education and medicine as a profession I would encourage you to step back and consider "big picture" concepts and themes. It helps to think of things on a micro level (specific patient problem) and then on a macro level as well (how can we help all patients like this, how can we help doctors to help patients, how can the health system support doctors and patients in this issue). Admittedly this type of thinking takes time and practice to develop.”

Notes on Contributors

Ms. Wagenschutz was the Co-Director of Leadership and is currently the Director of Curriculum Services.

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