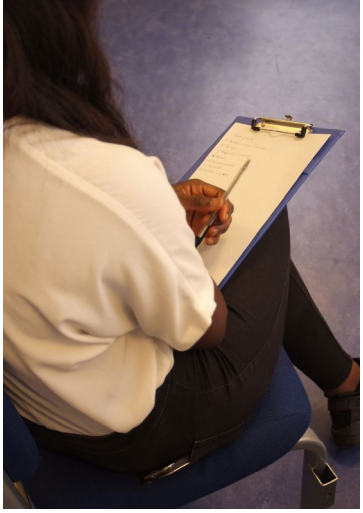
Leadership



A first-year leadership programme for medical students

Heather Wagenschutz, Erin L McKean, Rajesh Mangrulkar, Katie Zurales and Sally Santen

University of Michigan, Ann Arbor, Michigan, USA

SUMMARY

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

Methods: Our 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 used 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 extracurricular activities (e.g. in a student-run free clinic). Students recorded leadership experiences using a novel reflective assessment tool, obtained multi-source 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, and the ability to problem-solve, apply systems thinking and build teams. Students self-reported that they were *often* building, leading and managing productive teams, and applying influence and communication. The multi-source feedback assessment revealed that students, on average, were rated as competent to proficient.

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

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

Would students and medical faculty members see leadership as just a 'big L' Leader, running hospitals, medical schools or large organisations?

INTRODUCTION

Effective leadership by physicians is needed because of the increased complexity of health care.[1] There is rapid expansion of scientific knowledge, a heavy impact of chronic diseases, a shift towards interprofessional team management and skyrocketing health care costs, with suboptimal outcomes. The UK'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 the health care 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] Although almost 60% of academic health centres in the USA have faculty leadership programmes, 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 that medical students can learn how to lead and build teams, in order to identify any changes needed, and can create an inspirational vision to execute the change. Our goal was to design, implement and assess an integrated, required leadership programme for all first-year medical students. The purpose of this paper is to describe the innovation, and to share the evaluation and the outcomes.

METHODS

Development of leadership model

Programme development began with a review of health care leadership models and organisational literature (Table S1). In order to develop a model we had work groups and meetings with stakeholders, including deans, students and the hospital leadership. This iterative process helped us to conceptualise a transformational leadership model that would develop humble, reflective leaders who identify problems, work collaboratively with teams to create solutions, and create a vision for positive change (Table S1).

Leadership competencies

We grappled with the vision of a medical student leader. Would students and medical faculty members see leadership as just a 'big L' Leader, running hospitals, medical schools or large organisations? 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 (Box 1 and Table S1).

Curriculum overview

Session learning objectives were mapped to the leadership competencies (Box 1 and Table 1). 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 members.

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

Formal curriculum

A total of 11 sessions were conducted (Table 1). Experiential

Box 1. Medical school leadership competencies in 2015/16

- 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 non-verbal communication, analyse 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 to improve team efficiency and efficacy
- Executing and problem solving: students know the fundamentals of quality implementation tools, are able to analyse the health care culture and are able to design approaches to create solutions to important health care problems
- Impacting systems: students understand basic health care value economics and are able to analyse systems to navigate and effect positive change

Table 1. Formal and informal first-year leadership curriculum

Required, formal leadership sessions

Topic	Learning objectives	Pedagogical approach	Competency domain
Leadership and doctoring day	Recognise how four different leadership styles can help to build or hinder a team	Problem solving Cooperative learning	• Leading self • Building teams
Developing a personal agenda: competing values framework	Identify personal and professional values for an authentic professional identity in medicine	Feed forward Cooperative learning	• Leading self
Assessment: ML-CV and LDR360	Session to organise 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	Just-in-time learning Guided practice Self-assessment 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	• Influence and communication • Problem solving • Building teams
Challenging conversations	Work through challenging conversations using effective communication strategies for leaders	Role-play	• Influence and communication • Problem solving • Building teams
Motivating self and others	Identify and examine what drives and motivates ourselves and others	Critical reflection	• Leading self • Building teams
A3 thinking in health care	Connect and practice A3 thinking as a framework for analysing problems in health care	Hands-on learning	• Problem solving • 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	Interactive Learning Simulation and role-playing	• Influence and communication • Impacting systems
Select one: medical problem solving or doctor as designer	Case study to solve problems within different health systems Apply design thinking to address health care, wellness or disease management issues	Case analysis Group discussion Practice creation and design in pairs	• Problem solving • Impacting systems
Leading yourself: avoiding burnout, increasing emotional intelligence and thriving	Explore the concept of emotional intelligence and burnout. Identify factors that contribute to medical student burnout	Group share and discussion	• Leading self • Influence and communication • Problem solving

Examples of informal curriculum leadership learning

- Co-managing the student-run free clinic
- Leading student group to promote diversity through Doctors of Tomorrow
- Running for and serving as a curricular representative
- Joining a Path of Excellence to pursue a capstone experience

LDR360, Leadership 360; MD, Medical Doctor; ML-CV, Leadership Curriculum Vitae.

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

Table 2. Examples of student entries in the XX Leadership-CV

Focus or title	What?	So what?	Now what?
'Challenging conversations' leadership session	How we handle difficult conversations. We role-played 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 or curriculum meetings, working with course directors, working with other student leadership figures	Advocating for my classmates and conveying student opinion and distilling concerns	Be curious. Anticipate big student concerns rather than reacting to them. Build connections with faculty members and administration in order to optimise my opportunities
MedEd Impact Challenge competition	Created an AMA grant submission that included proposal, a video pitch, and presented to a group of medical school faculty members	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 the clear establishment of roles and tasks
Interprofessional clinical experience	Met with Dr B in out-patient clinical setting to ask questions about payers and payment structure	Opportunity to practise knowledge and ask meaningful questions that added to the team	Find outlets to piece together the knowledge I am learning about in-patient versus out-patient 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

AMA, American Medical Association; LDR360, Leadership 360.

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 faculty members in the clinical skills course.[7]

Informal curriculum

The course intentionally leveraged the informal curriculum. This was based on the premise that leadership occurs everywhere. Extracurricular 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 organisations, community or committee groups and a student-driven impact capstone project (Table 1).

Assessment of learning

We assessed students' leadership competencies with two novel tools developed at our institution: the Leadership Curriculum Vitae (ML-CV) and the Leadership 360 (LDR360). The ML-CV reinforced the practice of identifying and reflecting on leadership gaps and actions (Table 2). 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

Table 3. Mid-year 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%)
2015/16 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%)

Box 2. 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 and 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.'

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 members using a scoring rubric. General feedback was provided to the class, with individualised feedback also available if desired.

Students received feedback using a multi-source LDR360 modelled on 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 (ranging from 1, novice to 9, expert). Students received an anonymised LDR360 summary that included competency averages and written feedback. Students included an 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 members.

Programme 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 of ML-CV and LDR360 (performance). The programme evaluation was reviewed by the Institutional Review Board and determined to be not regulated.

RESULTS

Evaluation of programme and student reactions

The students' evaluation of the new curriculum was not what we had hoped for (Table 3). A mid-year course evaluation was sent to all first-year medical students. One-third (30%, 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

The leadership of the programme changed, as did the years in which the leadership content was delivered, with the deletion or addition of sessions

that the leadership curriculum developed their leadership skills (Table 3). Free text comments noted that the strengths of the programme included enthusiastic faculty members, 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 the sessions only during times of lighter pre-clinical learning loads.

Programme evaluation and student assessment

Students filled out the ML-CV, and recorded and reflected upon their leadership learning opportunities that occurred in the formal and informal curriculum. This was reviewed by leadership faculty members 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 [standard deviation] 0.91) in the 'competent to proficient' range. A summary of comments is presented in Box 2.

Additionally, the students completed a self-reported leadership competency using LIME. On a scale of 1 (never), 2 (sometimes), 3 (often) and 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/health care 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 provided some humbling lessons. Student reactions ranged from affirming to critical and identified limitations to the initial implementation. Webb found that medical students recognised 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. The fourth lesson pointed out how leadership learning was also embedded in other courses (e.g. leading an anatomy small group or working through a contentious group discussion or session). Finally, even though the ML-CV was intended to help students to see leadership learning happening now, the set-up was overly complex.

There were limitations to this curricular implementation study. First, it was introduced in a single institution, limiting the generalisability. Second, it is difficult to measure the leadership learning outcomes, and 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.

CONCLUSION

Over the last 2 years we have continued to develop the leadership curriculum in the pre-clerkship and clinical clerkship (wards) phase, and have performed quality improvement on some of the individual sessions. The leadership of the programme changed, as did the years in which the leadership content was delivered, with the deletion or addition of sessions. Once we have a class that goes through an established 4-year programme, there are plans to publish a follow-up study of these students to determine whether the course enabled leadership growth throughout medical school.

REFERENCES

1. Kohn LT, ed. *Academic Health Centers: Leading Change in the 21st Century*. Washington, DC: National Academies Press, 2004.
2. Stringfellow TD, Rohrer RM, Loewenthal L, Gorrard-Smith C, Sheriff IHN, Armit K, Lees PD, Spurgeon PC. Defining the structure of undergraduate medical leadership and management teaching and assessment in the UK. *Med Teach* 2015;**37**(8):747–754.
3. Lucas R, Goldman EF, Scott AR, Dandar V. Leadership development programs at academic health centers: results of a national survey. *Acad Med* 2018;**93**(2):229–236.
4. Webb AM, Tsipis NE, McClellan TR, McNeil MJ, Xu M, Doty JP, Taylor DC. A first step toward understanding best practices in leadership training in undergraduate medical education: a systematic review. *Acad Medu* 2014;**89**(11):1563–1570.
5. Matthews JH, Morley GL, Crossley E, Bhanderi S. Teaching leadership: the medical student society model. *Clin Teach* 2018;**15**(2):145–150.
6. Langley GJ, Moen RD, Nolan KM, Nolan TW, Norman CL, Provost LP. *The Improvement Guide: A Practical Approach to Enhancing Organizational Performance* (2nd edn). San Francisco, CA: Jossey-Bass Publishers, 2009.
7. Cameron KS, Quinn RE, DeGraff J, Thakor AV. *Competing Values*

Leadership. 2nd edn. Cheltenham, UK: Edward Elgar Publishing, 2014.

8. Borton T. *Reach, Touch and Teach: Student Concerns and Process Education*. New York, NY: McGraw-Hill, Inc., 1970.
9. Wagenschutz H, McKean E, Zurales K, Santen SA. Facilitating guided reflections on leadership activities. *Med Educ* 2016;**50**(11):1149–1150.
10. Stansfield RB, Santen S, Skye E, Purkiss J, Tsai T, Mangrulkar R, McKean E. *The Leadership Inventory for Medical Education (LIME): A Novel Assessment of Medical Students' Leadership Skills*. Presented at Association of American Medical Colleges 2015 Medical Education Meeting, Baltimore, MD, 10–12 November 2015. Ann Arbor, MI: University of Michigan, 2015.

SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article.

Table S1. Building a Model of Medical Student Competency

Corresponding author's contact details: Heather Wagenschutz, Office of Medical Student Education, University of Michigan Medical School, Ann Arbor, Michigan 48109, USA. E-mail: hmwags@umich.edu

Funding: University of Michigan Medical School receives grant funding from the American Medical Association as part of the Accelerating Change in Medical Education Grant.

Conflict of interest: None to declare.

Acknowledgements: The authors would like to thank Paula Ross, PhD, for critical reading and revisions.

Ethical approval: The Institutional Review Board review found this study to be exempt.

doi: 10.1111/tct.13005