Supplemental Digital Appendix 1
A Complete Description of the Search Strategy for the Scoping Review Conducted on Leadership Curricula Within Undergraduate Medical Education in the United States
Matsas UME Leadership Curriculum

Updated May 14, 2021
Pull Date June 22, 2020

PubMed: 314
Embase: 771
ERIC (EBSCO): 91

Total after de-duplication in EndNote: 1007

14 additional citations were removed after de-duplication in Covidence for a grand total of 993 citations to review.

Pull Date May 14, 2021

PubMed: 23
Embase: 76
ERIC (EBSCO): 5

After deduplication in Covidence: 101 newly added

PubMed

Concept 1
(Leader[Title/Abstract] OR leadership[Title/Abstract] OR influential[Title/Abstract]) OR ("Leadership"[Mesh])

Concept 2

Concept 3
(Undergraduate medical education[Title/Abstract] OR UME[Title/Abstract] OR medical training[Title/Abstract] OR medical instruction[Title/Abstract] OR medical programme[Title/Abstract] OR medical program[Title/Abstract] OR medical teaching[Title/Abstract]) OR ("Education, Medical, Undergraduate"[Mesh])
Concept 1 AND Concept 2 AND Concept 3
((Leader>Title/Abstract) OR leadership>Title/Abstract) OR influential>Title/Abstract) OR ("Leadership"[Mesh]) AND ((Competency-based education>Title/Abstract) OR integrated curriculum>Title/Abstract) OR Curriculum>Title/Abstract) OR curricula>Title/Abstract) OR short-term course*>Title/Abstract) OR short term course*>Title/Abstract) OR competency based education>Title/Abstract) OR competency-based education>Title/Abstract) OR interdisciplinary studies>Title/Abstract) OR problem-based learning>Title/Abstract) OR ("Curriculum"[Mesh])) AND ((Undergraduate medical education>Title/Abstract) OR UME>Title/Abstract) OR medical training>Title/Abstract) OR medical instruction>Title/Abstract) OR medical programme>Title/Abstract) OR medical program>Title/Abstract) OR medical teaching>Title/Abstract) OR ("Education, Medical, Undergraduate"[Mesh]))

Citations: 313

ERIC (EBSCO)

Concept 1
TI ( Leader OR leadership OR influential ) OR AB ( Leader OR leadership OR influential ) OR KW ( Leader OR leadership OR influential ) OR ( (DE "Leaders" OR DE "Leadership" OR DE "Leadership Qualities" OR DE "Leadership Styles" OR DE "Leadership Training") )

Concept 2
TI ( Competency-based education OR integrated curriculum OR Curriculum OR curricula OR short-term course* OR short term course* OR competency based education OR competency-based education OR interdisciplinary studies OR problem-based learning ) OR AB ( Competency-based education OR integrated curriculum OR Curriculum OR curricula OR short-term course* OR short term course* OR competency based education OR competency-based education OR interdisciplinary studies OR problem-based learning ) OR KW ( Competency-based education OR integrated curriculum OR Curriculum OR curricula OR short-term course* OR short term course* OR competency based education OR competency-based education OR interdisciplinary studies OR problem-based learning ) OR DE "Curriculum"

Concept 3
TI ( Undergraduate medical education OR UME OR medical training OR medical instruction OR medical programme OR medical program OR medical teaching ) OR AB ( Undergraduate medical education OR UME OR medical training OR medical instruction OR medical programme OR medical program OR medical teaching ) OR KW ( Undergraduate medical education OR UME OR medical training OR medical instruction OR medical programme OR medical program OR medical teaching ) OR DE "Medical Education"

Concept 1 AND Concept 2 AND Concept 3
(TI ( Leader OR leadership OR influential ) OR AB ( Leader OR leadership OR influential ) OR KW ( Leader OR leadership OR influential ) OR ( (DE "Leaders" OR DE "Leadership" OR DE "Leadership Qualities" OR DE "Leadership Styles" OR DE "Leadership Training") ) AND (TI ( Competency-
based education OR integrated curriculum OR Curriculum OR curricula OR short-term course* OR short term course* OR competency based education OR competency-based education OR interdisciplinary studies OR problem-based learning ) OR AB ( Competency-based education OR integrated curriculum OR Curriculum OR curricula OR short-term course* OR short term course* OR competency based education OR competency-based education OR interdisciplinary studies OR problem-based learning ) OR KW ( Competency-based education OR integrated curriculum OR curricula OR short-term course* OR short term course* OR competency based education OR competency-based education OR interdisciplinary studies OR problem-based learning ) OR DE "Curriculum"") AND (TI ( Undergraduate medical education OR UME OR medical training OR medical instruction OR medical programme OR medical program OR medical teaching ) OR AB ( Undergraduate medical education OR UME OR medical training OR medical instruction OR medical programme OR medical program OR medical teaching ) OR KW ( Undergraduate medical education OR UME OR medical training OR medical instruction OR medical programme OR medical program OR medical teaching ) OR DE "Medical Education")

91 Citations

EMBASE
Concept 1 AND Concept 2 AND Concept 3 (WITH MEDICAL SCHOOL rather than MEDICAL EDUCATION Controlled Vocabulary Term)

('leadership'/exp OR leader:ti,ab,kw OR influential:ti,ab,kw) AND ('curriculum'/exp OR 'problem based learning'/exp OR 'integrated curriculum':ti,ab,kw OR curriculum:ti,ab,kw OR curricula:ti,ab,kw OR 'short-term course*':ti,ab,kw OR 'short term course*':ti,ab,kw OR 'competency based education':ti,ab,kw OR 'competency-based education':ti,ab,kw OR 'interdisciplinary studies':ti,ab,kw OR 'problem-based learning':ti,ab,kw) AND ('undergraduate medical education'/exp OR 'medical school'/exp OR 'undergraduate medical education':ti,ab,kw OR 'medical training':ti,ab,kw OR 'medical instruction':ti,ab,kw OR 'medical programme':ti,ab,kw OR 'medical program':ti,ab,kw OR 'medical teaching':ti,ab,kw)

770 citations

June 11, 2020

PubMed
Concept 1: Leadership
Controlled Vocabulary
"Leadership"[Mesh]

Keywords
Leadership OR influential

Syntax
Leadership[Title/Abstract] OR influential[Title/Abstract] OR "Leadership"[Mesh]

Concept 2: Curriculum
Controlled Vocabulary
"Curriculum"[Mesh]

Keywords
Curriculum OR curricula OR short-term course* OR short term course* OR competency based education OR competency-based education OR interdisciplinary studies OR problem-based learning

Syntax

Concept 3: Undergraduate Medical Education
Controlled Vocabulary
"Education, Medical, Undergraduate"[Mesh]

Keywords
Undergraduate medical education OR UME

Syntax
Undergraduate medical education[Title/Abstract] OR UME[Title/Abstract] OR "Education, Medical, Undergraduate"[Mesh]

Concept 1 AND Concept 2 AND Concept 3
Citations: 262

**ERIC (EBSCO)**

**Concept 1: Leadership**
**Controlled Vocabulary**
(DE "Leaders" OR DE "Leadership" OR DE "Leadership Qualities" OR DE "Leadership Styles" OR DE "Leadership Training")

**Keywords**
Leadership OR influential

**Syntax**
((DE "Leaders" OR DE "Leadership" OR DE "Leadership Qualities" OR DE "Leadership Styles" OR DE "Leadership Training") OR TI ( leadership OR influential ) OR AB ( leadership OR influential ) OR KW ( leadership OR influential )

**Concept 2: Curriculum**
**Controlled Vocabulary**
(DE "Curriculum")

**Keywords**
Curriculum OR curricula OR short-term course* OR short term course* OR competency based education OR competency-based education OR interdisciplinary studies OR problem-based learning

**Syntax**
(DE "Curriculum") OR TI ( Curriculum OR curricula OR short-term course* OR short term course* OR competency based education OR competency-based education OR interdisciplinary studies OR problem-based learning ) OR AB ( Curriculum OR curricula OR short-term course* OR short term course* OR competency based education OR competency-based education OR interdisciplinary studies OR problem-based learning ) OR KW ( Curriculum OR curricula OR short-term course* OR short term course* OR competency based education OR competency-based education OR interdisciplinary studies OR problem-based learning )

**Concept 3: Undergraduate Medical Education**
**Controlled Vocabulary**
DE "Medical Education"

**Keywords**
Undergraduate medical education OR UME

**Syntax**
DE "Medical Education" OR TI ( Undergraduate medical education OR UME ) OR AB ( Undergraduate medical education OR UME ) OR KW ( Undergraduate medical education OR UME )

Concept 1 AND Concept 2 AND Concept 3
((DE "Leaders" OR DE "Leadership" OR DE "Leadership Qualities" OR DE "Leadership Styles" OR DE "Leadership Training") ) OR TI ( leadership OR influential ) OR AB ( leadership OR influential ) OR KW ( leadership OR influential ) AND ((DE "Curriculum") OR TI ( Curriculum OR curricula OR short-term course* OR short term course* OR competency based education OR competency-based education OR interdisciplinary studies OR problem-based learning ) OR AB ( Curriculum OR curricula OR short-term course* OR short term course* OR competency based education OR competency-based education OR interdisciplinary studies OR problem-based learning ) OR KW ( Curriculum OR curricula OR short-term course* OR short term course* OR competency based education OR competency-based education OR interdisciplinary studies OR problem-based learning ) AND (DE "Medical Education" OR TI ( Undergraduate medical education OR UME ) OR AB ( Undergraduate medical education OR UME ) OR KW ( Undergraduate medical education OR UME )))

Citations: 48

EMBASE
Concept 1: Leadership
Controlled Vocabulary
'leadership'/exp

Keywords
Leader OR leadership OR influential

Syntax
'leadership'/exp OR leader:ti,ab,kw OR leadership:ti,ab,kw OR influential:ti,ab,kw

Concept 2: Curriculum
Controlled Vocabulary
'curriculum'/exp

Keywords
Competency-based education OR integrated curriculum OR Curriculum OR curricula OR short-term course* OR short term course* OR competency based education OR competency-based education OR interdisciplinary studies OR problem-based learning

Syntax
'curriculum'/exp OR 'problem based learning'/exp OR 'integrated curriculum':ti,ab,kw OR curriculum:ti,ab,kw OR curricula:ti,ab,kw OR 'short-term course*':ti,ab,kw OR 'short term course*':ti,ab,kw OR 'competency based education':ti,ab,kw OR 'competency-based education':ti,ab,kw OR 'interdisciplinary studies':ti,ab,kw OR 'problem-based learning':ti,ab,kw

Concept 3: Undergraduate Medical Education
Controlled Vocabulary
'undergraduate medical education'/exp OR 'medical education'/exp

Keywords
Undergraduate medical education OR UME OR medical training OR medical instruction OR medical programme OR medical program OR medical teaching

Syntax
'undergraduate medical education'/exp OR 'medical education'/exp OR 'undergraduate medical education':ti,ab,kw OR ume:ti,ab,kw OR 'medical training':ti,ab,kw OR 'medical instruction':ti,ab,kw OR 'medical programme':ti,ab,kw OR 'medical program':ti,ab,kw OR 'medical teaching':ti,ab,kw

Concept 1 AND Concept 2 AND Concept 3
('leadership'/exp OR leader:ti,ab,kw OR leadership:ti,ab,kw OR influential:ti,ab,kw) AND ('curriculum'/exp OR 'problem based learning'/exp OR 'integrated curriculum':ti,ab,kw OR curriculum:ti,ab,kw OR curricula:ti,ab,kw OR 'short-term course*':ti,ab,kw OR 'short term course*':ti,ab,kw OR 'competency based education':ti,ab,kw OR 'competency-based education':ti,ab,kw OR 'interdisciplinary studies':ti,ab,kw OR 'problem-based learning':ti,ab,kw) AND ('undergraduate medical education'/exp OR 'medical education'/exp OR 'undergraduate medical education':ti,ab,kw OR ume:ti,ab,kw OR 'medical training':ti,ab,kw OR 'medical instruction':ti,ab,kw OR 'medical programme':ti,ab,kw OR 'medical program':ti,ab,kw OR 'medical teaching':ti,ab,kw)

Citations: 2163

Concept 1 AND Concept 2 AND Concept 3 WITHOUT Medical Education Controlled Vocabulary Term
('leadership'/exp OR leader:ti,ab,kw OR leadership:ti,ab,kw OR influential:ti,ab,kw) AND ('curriculum'/exp OR 'problem based learning'/exp OR 'integrated curriculum':ti,ab,kw OR curriculum:ti,ab,kw OR curricula:ti,ab,kw OR 'short-term course*':ti,ab,kw OR 'short term course*':ti,ab,kw OR 'competency based education':ti,ab,kw OR 'competency-based education':ti,ab,kw OR 'interdisciplinary studies':ti,ab,kw OR 'problem-based learning':ti,ab,kw) AND ('undergraduate medical education'/exp OR 'medical education'/exp OR 'undergraduate medical education':ti,ab,kw OR ume:ti,ab,kw OR 'medical training':ti,ab,kw OR 'medical instruction':ti,ab,kw OR 'medical programme':ti,ab,kw OR 'medical program':ti,ab,kw OR 'medical teaching':ti,ab,kw)

Citations: 181
Supplemental Digital Appendix 2
A List of Variables and Their Definitions Used During Data Extraction

- **Learning objectives**: Statements or lists that clearly define what knowledge, skills, and/or attitudes that the course directors want students to understand following the period of instructions.

- **Lesson topics**: List the published title, topic, or subject for each lesson published in the curricula in the order that they were delivered to the students. Include descriptions of course content when available.

- **Audience**: Report whether the course audience was “pre-clinical,” “clinical,” or “post-clinical” students. If the audience is defined by medical student year, include whether or not the audience was M1, M2, M3, or M4. If the author specifies that a medical student year can be assumed pre/post clinical or clinical, report this classification instead of the student year. For example, if the authors specify that an M3 student is a clinical year student, denote that the audience is clinical. For whom was the curricula aimed at (pre-clinical, clinical, post-clinical, or mix)

- **Audience Demographics**: Report how many of the enrolled students were male vs female or any other reported demographics.

- **Elective vs Mandatory**: Report whether the course was an elective that students had to opt-in to or if the course was mandatory for a set of students.
  - IF mandatory: Describe what cohort the authors chose and why they chose this cohort. Describe why the authors made the course mandatory if this is described.

- **Duration**: Report the length of the curricula in weeks. If the curriculum spans more than one month, denote the length in months. If the curriculum spans more than one year, denote the length in years.

- **Practical Application**: Does the leadership curriculum provide students with a practicum to practice their leadership skills? If YES, denote what type of environment was used to provide hands on learning:
  - Real World Experience: Students are provided with a real-world, existing leadership challenge that they work to solve as part of the curriculum.
  - Simulation: A realistic and hands-on but pretend scenario or situation that enables students to practice their leadership skills
  - Case-Based: A student is provided with hypothetical or real leadership challenges that they verbally analyze and react to in order to practice leadership skills
  - Didactic Only: Specifically note if the course does not have a practicum portion and is a didactic only.

- **Leadership Framework**: Report whether or not the curriculum cites a framework of leadership competencies or accepted leadership development model that was used in the course design. If YES, name the leadership framework or developmental model.

- **Outcomes Reported?**: Report Yes or No to describe whether or not the study reported any outcomes studied.

- **Outcomes Studied**: If YES to the above question, report the primary and secondary outcome(s) for the study.
### Supplemental Digital Appendix 3

#### Leadership Curricular Themes Categorized According to Subcompetencies of the Medical Leadership Competency Framework (MLCF)\(^\text{15}\)

<table>
<thead>
<tr>
<th>Personal Leadership Style and Values (^\text{31,32,34,38,46,48,53})</th>
<th>Developing self awareness: being aware of their own values, principles and assumptions and by being able to learn from experiences.(^a)</th>
<th>Demonstrating Personal Qualities</th>
<th>Continuing personal development: learning through participating in continuing professional development and from experience and feedback.</th>
<th>Acting with integrity: behaving in an open, honest and ethical manner.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Leadership Style and Values (^\text{31,32,34,38,46,48,53})</td>
<td>Managing yourself: organising and managing themselves while taking account of the needs and priorities of others.</td>
<td>Self-Care and Stress Management (^\text{31,34,43,44})</td>
<td>Leadership and Career Opportunities (^\text{42,45})</td>
<td>Leadership and Ethics (^\text{38,39,50})</td>
</tr>
<tr>
<td>Self-Awareness (^\text{32,33,39,40,48})</td>
<td>Resiliency (^\text{38,43,44})</td>
<td>Create a Personal Development Plan (^\text{47,53})</td>
<td>Integrity (^\text{32,39})</td>
<td></td>
</tr>
<tr>
<td>Emotional Intelligence (^\text{32,35,38,39})</td>
<td>Self-Reflection (^\text{31,35,39})</td>
<td>Technical Competence (^\text{34})</td>
<td>Character in Leadership (^\text{45})</td>
<td></td>
</tr>
<tr>
<td>Strengths and Weaknesses (^\text{32,46,47})</td>
<td>Mindfulness (^\text{38,43})</td>
<td>Life-Long Leadership Habits (^\text{32})</td>
<td>Adherence to Core Values (^\text{34})</td>
<td></td>
</tr>
<tr>
<td>Identify as a Physician Leader (^\text{39,52})</td>
<td>Executive Presence (^\text{38})</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify Personal Challenges (^\text{31,45})</td>
<td>Work-Life Balance (^\text{42})</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implicit Bias (^\text{51})</td>
<td>Professional Etiquette (^\text{38})</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Working With Others</th>
<th>Developing networks: working in partnership with patients, carers, service users and their representatives, and colleagues within and across systems to deliver and improve services.</th>
<th>Building and maintaining relationships: listening, supporting others, gaining trust and showing understanding.</th>
<th>Encouraging contribution: creating an environment where others have the opportunity to contribute.</th>
<th>Working with teams: to deliver and improve services.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advocacy (^\text{32,39,41,43,44,50})</td>
<td>Conflict Management/Resolution (^\text{29,31,32,34,39,40,47})</td>
<td>Facilitating Effective and Inclusive Meetings (^\text{31,41,44,49})</td>
<td>Teams and Teamwork (^\text{29,31,53,32,34,35,37,38,40,43,45})</td>
<td></td>
</tr>
<tr>
<td>Networking &amp; Media</td>
<td>Communication Skills</td>
<td>Brainstorming</td>
<td>Team Diversity</td>
<td></td>
</tr>
<tr>
<td>-------------------</td>
<td>----------------------</td>
<td>--------------</td>
<td>---------------</td>
<td></td>
</tr>
<tr>
<td>Community Relations and Media</td>
<td>Interpersonal and Team Relations</td>
<td>Collaboration</td>
<td>Interdisciplinary Teams</td>
<td></td>
</tr>
<tr>
<td>Coalition Building</td>
<td>Building Relationships</td>
<td>Delegation</td>
<td>Building Consensus</td>
<td></td>
</tr>
<tr>
<td>Community Organizing</td>
<td>Difficult Conversations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community Service Activism and Communication Skills</td>
<td>Compassion in Leadership</td>
<td>Effective Followership</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cultural Humility</td>
<td>Empathy</td>
<td>Optimism</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Managing Services

<table>
<thead>
<tr>
<th>Planning: actively contributing to plans to achieve service goals.</th>
<th>Managing resources: knowing what resources are available and using their influence to ensure that resources are used efficiently and safely, and reflect the diversity of needs.</th>
<th>Managing people: providing direction, reviewing performance, motivating others, and promoting equality and diversity.</th>
<th>Managing performance: holding themselves and others accountable for service outcomes.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning and Organization</td>
<td>Health Care Economics and Finance</td>
<td>Giving Feedback</td>
<td>Performance Analysis</td>
</tr>
<tr>
<td>Strategic Planning</td>
<td>Manage an Institutional Budget</td>
<td>Facilitating Effective and Inclusive Meetings</td>
<td></td>
</tr>
<tr>
<td>Setting a Group Agenda</td>
<td>Resource Stewardship</td>
<td>Motivation and Influence</td>
<td></td>
</tr>
<tr>
<td>Patient-Centeredness</td>
<td>Fundraising and Grant Writing</td>
<td>Managing Group Dynamics</td>
<td></td>
</tr>
<tr>
<td>Project Management</td>
<td>Coaching</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Improving Services

<p>| Ensuring patient safety: assessing and managing the risk to patients associated with service developments, balancing economic considerations with the need for patient safety. | Critically evaluating: being able to think analytically, conceptually and to identify where services can be improved, working individually or as part of a team. | Encouraging improvement and innovation: creating a climate of continuous service improvement. | Facilitating transformation: actively contributing to change processes that lead to improving healthcare. |</p>
<table>
<thead>
<tr>
<th>Quality in Healthcare(^{39})</th>
<th>Analytical Thinking/Critical Thinking(^{32,39})</th>
<th>Creative Thinking(^{32,39})</th>
<th>Facilitating Change(^{32,39,52})</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk Analysis(^{34})</td>
<td>Systems Thinking(^{39})</td>
<td>Risk Taking(^{32})</td>
<td>Persuasion(^{32,39,44})</td>
</tr>
<tr>
<td></td>
<td>Product and Public Service Analysis(^{39})</td>
<td>Cultivating Innovation(^{45})</td>
<td>Negotiation(^{32,37,39})</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Logic Model(^{31,46})</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Becoming a Change Agent(^{32})</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Influence in Healthcare Organizations(^{32})</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Institutionalizing Change(^{41})</td>
</tr>
</tbody>
</table>

### Setting Direction

<table>
<thead>
<tr>
<th>Identifying the contexts for change: being aware of the range of factors to be taken into account.</th>
<th>Applying knowledge and evidence: gathering information to produce an evidence-based challenge to systems and processes in order to identify opportunities for service improvements.</th>
<th>Making decisions: using their values, and the evidence, to make good decisions.</th>
<th>Evaluating impact: measuring and evaluating outcomes, taking corrective action where necessary and by being held to account for their decisions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understanding and Impacting Health Systems(^{39,50,52,53})</td>
<td>Create and Share a Vision(^{32,41})</td>
<td>Leadership in Crisis(^{32,35})</td>
<td>Quality Improvement(^{32,44,53})</td>
</tr>
<tr>
<td>Population Health/Public Health(^{31,39,46})</td>
<td>Problem Solving(^{34,55})</td>
<td>Decision Making(^{34})</td>
<td>Evaluate an Advocacy Plan(^{39})</td>
</tr>
<tr>
<td>Health Law and Policy(^{39,50})</td>
<td>A3 Thinking in Health Care(^{53})</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organizational Awareness(^{39})</td>
<td>Politics of Change(^{39})</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Determinants of Health(^{39})</td>
<td>Organizational Design, Behavior, and Culture(^{39})</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify Barriers to Change(^{39})</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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These definitions of the subcompetencies of the Medical Leadership Competency Framework are taken directly from the third edition of the MLCF.
**Supplemental Digital Appendix 4.**
Leadership Competency Frameworks Used in 13 Curricula Included for Review

<table>
<thead>
<tr>
<th>Competency framework</th>
<th>No. curricula using this framework</th>
<th>Curricula</th>
</tr>
</thead>
<tbody>
<tr>
<td>Created own</td>
<td>5</td>
<td>UCLA PRIME Program, Boonshoft Physician Leadership Development Program, Feagin Leadership Program at Duke, Vanderbilt Medical Scientist Training Program Leadership Workshop, University of Michigan First Year Leadership Programme</td>
</tr>
<tr>
<td>Medical Leadership Competency Framework</td>
<td>4</td>
<td>UMass Leadership in Medicine Optional Enrichment Elective, Harvard Medical School Center for Primary Care Student Leadership Committee Course, Medical College of Wisconsin’s Student Leadership Development Initiative, Warren Alpert Medical School of Brown University’s Leadership in Healthcare Course</td>
</tr>
<tr>
<td>Personal-Interpersonal-Team-Organizational Model</td>
<td>2</td>
<td>USUHS LEAD Program, Johns Hopkins Leadership Selective</td>
</tr>
<tr>
<td>National Center for Healthcare Leadership's Health Leadership Competency Model</td>
<td>1</td>
<td>Warren Alpert Medical School of Brown University’s Leadership in Healthcare Course</td>
</tr>
<tr>
<td>United Kingdom's Healthcare Leadership Model</td>
<td>1</td>
<td>Warren Alpert Medical School of Brown University’s Leadership in Healthcare Course</td>
</tr>
<tr>
<td>Direct-Alignment-Commitment Leadership Model</td>
<td>1</td>
<td>Creighton University School of Medicine’s Art and Science of Leadership in Medicine Curriculum</td>
</tr>
<tr>
<td>Bolman and Deal’s Leadership Framework</td>
<td>1</td>
<td>Advanced Leadership Skills in Community Service by UNC School of Medicine</td>
</tr>
<tr>
<td>LEADS Framework (Canadian College of Health Leaders)</td>
<td>1</td>
<td>Harvard Medical School Center for Primary Care Student Leadership Committee Course</td>
</tr>
</tbody>
</table>

Abbreviations: UCLA PRIME: David Geffen School of Medicine at University of California Los Angeles Program in Medical Education; UMass: University of Massachusetts Medical School; USUHS LEAD Program: Uniformed Services University of Health Sciences Leader and Leadership Education Development Program; UNC: University of North Carolina.

*aSome curricula cited multiple leadership competency frameworks used during course creation, and we only counted such curricula once when analyzing the total number of curricula that utilized competency frameworks.*