

# A Systematic Review of Physician Leadership and Emotional Intelligence

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## Abstract

**Objective** This review evaluates the current understanding of emotional intelligence (EI) and physician leadership, exploring key themes and areas for future research.

**Literature Search** We searched the literature using PubMed, Google Scholar, and Business Source Complete for articles published between 1990 and 2012. Search terms included *physician and leadership, emotional intelligence, organizational behavior, and organizational development*. All abstracts were reviewed. Full articles were evaluated if they addressed the connection between EI and physician leadership. Articles were included if they focused on physicians or physicians-in-training and discussed interventions or recommendations.

**Appraisal and Synthesis** We assessed articles for conceptual rigor, study design, and measurement

quality. A thematic analysis categorized the main themes and findings of the articles.

**Results** The search produced 3713 abstracts, of which 437 full articles were read and 144 were included in this review. Three themes were identified: (1) EI is broadly endorsed as a leadership development strategy across providers and settings; (2) models of EI and leadership development practices vary widely; and (3) EI is considered relevant throughout medical education and practice. Limitations of the literature were that most reports were expert opinion or observational and studies used several different tools for measuring EI.

**Conclusions** EI is widely endorsed as a component of curricula for developing physician leaders. Research comparing practice models and measurement tools will critically advance understanding about how to develop and nurture EI to enhance leadership skills in physicians throughout their careers.

## Introduction

Successful health systems are actively responding to consumer and regulatory pressures to decrease costs and increase quality and value. Patient-centered medical homes, accountable care organizations, and many other care innovations will have significant impacts on the future of the US health care system. These new models require a high degree of collaboration among physicians, between physicians and organizations, and between health care organizations. However, physicians have been considered “collaboratively challenged,” and relatively little attention has been given to collaboration in the traditional processes of

physician education and career development.<sup>1</sup> Physicians also have traditionally functioned in a culture that celebrates the physician as a “lone healer” and independent decision maker, perhaps reflecting the fact that persons attracted to and selected for careers in medicine are characteristically independent, self-directed, and confident.<sup>2</sup> Additionally, health care systems are often structured like silos or fiefdoms, further undermining collaboration.<sup>1,3-5</sup>

In this context, the most successful emerging models will effectively address the shift from a culture of physicians as lone healers to a culture of collaboration and interaction.<sup>2</sup> Effective leadership in health care will be needed to execute this shift, and many observers have suggested that emotional intelligence (EI) is a critical health care leadership competency.<sup>6</sup> Indeed, EI has been advocated as a key competency in all clinical settings—from the boardroom and chairperson’s office<sup>6</sup> to the ward and bedside.<sup>7</sup> EI is “the ability to perceive and express emotion, assimilate emotion in thought, understand and reason with emotion, and regulate emotion in the self and others.”<sup>8,9</sup>

Although several models of EI are available and there is disagreement regarding the best instruments to assess EI, a popular model of EI<sup>10</sup> proposes a 2-by-2 table with cells describing self-awareness, self-regulation, social awareness,

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Theme	Expert Opinion	Practice Model	Implementation Tools	Qualitative Study/Survey Results	Uncontrolled Trial/Pilot Studies	Total No. (%)
Endorsement of EI in leadership	43	6	0	21	13	83 (58)
Practice of EI and physician leadership	9	14	3	1	4	31 (22)
EI strategies throughout medical education	20	3	0	1	6	30 (21)

Abbreviation: EI, emotional intelligence.

and relationship management. The cells are populated by 18 component competencies (eg, team orientation, empathy, and optimism) that define EI. The model<sup>10,11</sup> posits that EI, rather than being an inborn trait, is a set of competencies that can be explicitly developed<sup>12,13</sup> to enhance performance. Rather than an ill-defined concept of professionalism or leadership, the EI model is explicit, is teachable, and allows for honest examination and self-reflection to improve leadership skills. Ample evidence supports the importance of EI as a key leadership competency in business leaders,<sup>14–16</sup> though far less attention has been paid to EI as a leadership competency in health care.

In the context of this pressing need for broad-based effective leadership in health care and what appears to be sparse and scattered attention to EI as a health care leadership competency, a systematic review of EI and health care leadership is warranted. We undertook the current study to systematically review available literature regarding the following questions: What is known about EI and physician leadership? What models and measurements exist to develop leadership in the context of EI? Given what is known, what questions remain regarding EI and physician leadership in the context of rapidly changing health systems?

**Methods**

Three databases—PubMed, Google Scholar, and Business Source Complete—were searched using the terms and/or medical subject headings (MeSH) *physician and leadership, emotional intelligence, organizational behavior, and organizational development*. The literature between 1990 and 2012 was searched, the former being the year of Salovey and Mayer’s<sup>17</sup> seminal initial description of EI. Studies were included if they directly addressed physicians rather than other health care providers, leadership, and the concept of EI or any of its component competencies. After scanning abstracts for these criteria, complete articles that satisfied

the criteria were fully reviewed by 1 of the authors (L.J.M.), and a thematic<sup>18</sup> analysis was conducted to identify important themes in the literature and to synthesize what is known about EI and leadership in physicians. These findings were categorized and aggregated to determine the themes that are presented.

**Results**

Our initial search produced 66 eligible articles in PubMed, 70 in Business Source Complete, and 3577 in Google Scholar. After reviewing the search results and abstracts regarding the study findings, a total of 437 (11.7%) articles were selected by 1 of the authors (L.J.M.) for full-text review, 144 of which met the inclusion criteria (4.0%). The analysis identified 3 themes: (1) EI is broadly endorsed as a leadership development strategy for many types of health care providers and in many medical settings; (2) leadership development practices in health care and models of EI vary widely; and (3) EI is desired and relevant throughout medical education and practice.

TABLE 1 summarizes the types of articles that describe each of the 3 themes in the literature. TABLE 2 summarizes the studies and interventions included in the literature search.

**EI Is a Key Component of Medical Leader Development**

Eighty-three articles addressed the theme that EI is a key component of developing medical leaders, and most of these articles were expert recommendations endorsing EI in various health care contexts. Many authors endorsed EI as an important component of leadership development for physicians in general,<sup>19–37</sup> for successfully navigating the business of medicine for physician executives,<sup>38–48</sup> in academic settings,<sup>49–51</sup> for developing effective social networks in health care,<sup>52</sup> as a leadership component across specialties,<sup>53–65</sup> and as a way of partnering with patients.<sup>66,67</sup> Two studies (1 a pilot<sup>68</sup> and the other a qualitative study<sup>69</sup>) suggested that developing EI could transform the seemingly

**TABLE 2 RESULTS OF QUALITATIVE, SURVEY, AND PILOT STUDIES ADDRESSING EMOTIONAL INTELLIGENCE (EI) AND PHYSICIAN LEADERSHIP**

Author (Date)	Medical Setting	Study Design	Findings
McDaniel et al <sup>140</sup> (2009)	Faculty membership in academic medical centers	Interviews	Funding, structural, and personnel challenges make academic medicine an increasingly difficult space to negotiate Successful medical leaders use EI to accomplish “alignment” in increasingly complex academic medical settings Leaders must have the tools and resources to implement changes and vision for academic medicine
Davidson et al <sup>68</sup> (2012)	Health research executives	Interviews	Leadership in health research organizations requires significant attention to personnel and resource development Health care leaders require tools and strategies that include EI in order to implement solutions to emerging health research challenges
Snell and Dickson <sup>141</sup> (2011)	Graduates of medical leadership programs	Interviews	Emerging health systems changes make strong physician leadership a critical component of success Physician engagement emerged as a key component to leadership; engaged physicians cited their family of origin and other formative influences on their desire to be engaged Institutions can cultivate physician engagement through formal recognition, building on preexisting successes, facilitating involvement by removing time pressure and excessive obligations, increasing opportunities for mentoring and networking, and including physicians in structural decisions within hospital systems Several factors discourage physician leadership: hierarchy and bureaucracy, gendered power structures (“the old boys’ club”), age-bound differences in physician enthusiasm and engagement
Parker and Sorensen <sup>142</sup> (2008)	Managers in the British National Health Service	Survey (EI assessment tool)	High EI was statistically significantly associated with transactional and transformational leadership styles
Dine et al <sup>143</sup> (2011)	Interdisciplinary health leaders at an academic medical center	Focus groups	Physician leadership skills fell into 3 themes describing leaders: <ul style="list-style-type: none"> <li>• Team dynamics and team interaction: solicits input, is sensitive, shows commitment, creates an environment that fosters contribution, participates actively, ensures efficiency, manages resources, delegates tasks, teaches the team, and makes decisions</li> <li>• Vision: has a vision, creates a common goal, ensures that goals and vision are accomplished, displays enthusiasm, sees the whole picture, strives for quality, is patient- and family-centered, aims for the greater good, and is not necessarily outcome oriented</li> <li>• Communication: communicates high performance expectations and goals, and ensures that tasks related to them are completed</li> </ul>
Sanfey et al <sup>85</sup> (2011)	Faculty in an academic medical center	Survey	Leadership academies can boost practitioner motivation to pursue leadership goals Interest in leadership decreased over time, particularly in women, necessitating further research about maintaining practitioner motivation to pursue leadership roles
Taylor et al <sup>144</sup> (2009)	Physicians in practice	Interviews	Role modeling (silent observation, separate from mentoring) was described as a significant influence on practitioner behavior Aspiring leaders preferred strategic and problem-based interactions with established leaders rather than traditional long-term mentoring Emotional and psychological support is a key component of these relationships
Taylor et al <sup>145</sup> (2008)	Physicians in practice	Interviews	Aspiring and established leaders agreed that EI/people skills, knowledge, and vision are key components of leadership Established leaders also added the characteristic of “organizational orientation” or “organizational altruism” to describe effective leadership
Ham et al <sup>146</sup> (2011)	Managers in British National Health Service	Interviews	Newly minted chief executive leaders need support and resources to grow from being “keen amateurs” to “skilled professionals”
Hopkins et al <sup>147</sup> (2006)	Women in leadership positions in health care	Surveys	Female leaders in health care <ul style="list-style-type: none"> <li>• defined leadership as “other-oriented” and in stereotypically female-gendered ways</li> <li>• defined successful career advancement as “self-oriented” and in stereotypically masculine terms</li> </ul>
Murdock and Brammer <sup>71</sup> (2011)	Community practice physicians	Self-assessments	A complex set of changing health care system dynamics and interhospital factors increases the need for greater physician leadership A leadership development intervention focused on community practice physicians increased physician likelihood and interest in pursuing leadership positions

**TABLE 2 RESULTS OF QUALITATIVE, SURVEY, AND PILOT STUDIES ADDRESSING EMOTIONAL INTELLIGENCE (EI) AND PHYSICIAN LEADERSHIP CONTINUED**

Author (Date)	Medical Setting	Study Design	Findings
Salas-Lopez et al <sup>48</sup> (2011)	Female physicians in leadership	Case study	Female leaders in medicine have 10 core qualities: <ul style="list-style-type: none"> <li>• Have core values and principles</li> <li>• Keep life and personal balance</li> <li>• Are visionary and communicate that vision</li> <li>• Can inspire others to follow</li> <li>• Have drive and perseverance</li> <li>• Are hands-on</li> <li>• Are good listeners</li> <li>• Are self-aware</li> <li>• Have courage in leadership</li> <li>• Have mentors</li> </ul>
Mets and Galford <sup>49</sup> (2009)	Leaders in academic anesthesiology	Surveys	Leaders in academic anesthesiology identified “setting the direction for the department” as the critical leadership challenge; they also identified the “visionary” and “coaching” styles from Goleman as the most desirable, along with the components of chairperson roles in academic anesthesiology
Kaiser <sup>50</sup> (2010)	Physician executives	Survey (EI questionnaire)	Physician leaders’ EI scores <ul style="list-style-type: none"> <li>• were in the low average range, though 2 were in the high average range</li> <li>• indicate a need for EI development</li> <li>• were lowest in the area of experiential EI and highest in the branch score of understanding emotions</li> </ul>
Stergiopoulos et al <sup>51</sup> (2010)	Medical residents	Survey	The survey results indicated that residents perceive significant gaps in leadership competencies, including such knowledge areas and skills as personal and professional self-care, time management, leadership in clinical practice, conflict resolution and negotiation, self-assessment and reflective practice skills, information technology in health care, mentorship, change management, and meeting management
Mackay et al <sup>52</sup> (2012)	Radiologists in the United Kingdom	Survey (EI questionnaire)	Online survey of UK radiographers and a comparison sample showed that radiographers, particularly women, assessed themselves as having higher EI on a trait assessment
Jensen et al <sup>53</sup> (2008)	Surgical residents	Survey (EI questionnaire)	Surgical residents believe leadership skills are important and scored high on 2 measures of EI (the EQ-i and a 20-item survey re: leadership)
Stanton et al <sup>54</sup> (2011)	Practicing psychiatrists and surgeons	Survey (EI questionnaire)	Psychiatrists and surgeons had no significant difference on total scores of EI Psychiatrists scored significantly higher on subscales of self-awareness, empathy, social responsibility, and impulse control Surgeons scored significantly higher on subscales of self-regard, stress tolerance, and optimism
Borges et al <sup>54</sup> (2009)	Medical students	Survey (EI questionnaire)	Three surveys of EI among medical students showed no significant differences between the EI of medical students pursuing primary care versus non-primary care specialties
Horwitz et al <sup>56</sup> (2008)	Surgical residents	Survey (EI questionnaire)	A surgical resident cohort <ul style="list-style-type: none"> <li>• scored higher on a leadership assessment than the general populace</li> <li>• had more leadership-style similarities than differences by gender</li> <li>• showed a strong relationship between transformational leadership styles and the outcomes of effectiveness, satisfaction, and extra effort</li> </ul>
Herkenhoff <sup>77</sup> (2010)	Practicing physicians	Survey (EI questionnaire)	A survey of physicians working in a low-resource environment identified a common set of values and organizational dedication but had significant defensive and unproductive organizational communication Higher EI skills were associated with lower levels of defensive communication
Kusy and Essex <sup>91</sup> (1995)	Practicing physicians	Survey	A survey of leadership needs resulted in identification of the qualities needed in leadership development programs: screening tools for physician motivation, knowledge components (data management, finance), mentorship, and the human side of management (including EI); these are essential leadership components for physician leaders
McCurdy et al <sup>89</sup> (2004)	Faculty in academic medicine	Interviews	The following characteristics of leadership in academic medicine were identified by participants: clarity of purpose, vision, building trust and credibility, perseverance through obstacles, political savvy, working with and through others, giving praise and recognition, and keen self-awareness
Fisher et al <sup>91</sup> (2005)	Practicing physicians	Case study	A focused leadership development program resulted in participants remaining invested in pursuing leadership positions and reporting increased leadership skills and benefit from the program

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**TABLE 2** RESULTS OF QUALITATIVE, SURVEY, AND PILOT STUDIES ADDRESSING EMOTIONAL INTELLIGENCE (EI) AND PHYSICIAN LEADERSHIP CONTINUED

Author (Date)	Medical Setting	Study Design	Findings
Black and Westwood <sup>98</sup> (2004)	Practicing physicians	Interviews	Participants in a leadership development program reported <ul style="list-style-type: none"> <li>• understanding others as persons or being understood as a person</li> <li>• formation of personal connections with others</li> <li>• a sense of belonging/acceptance/inclusion</li> <li>• a sense of safety and trust in communication</li> <li>• sensitivity to perceived level of team-member commitment</li> <li>• an appreciation of the facilitation of the group</li> <li>• an experience of group morale, both increased and decreased</li> <li>• reciprocity and demonstration of support</li> </ul>
Higgins et al <sup>97</sup> (2004)	Surgical residents	Survey, interviews	A customized tool and 360-degree feedback provided beneficial feedback and reproducible results for use in the residents over time
Clarke <sup>55</sup> (2006)	Health care workers, including physicians	Case study	Hospice workers identified complex emotional skills involved with roles in their work context, and identified that these emotional skills could be cultivated and enriched by explicit and implicit teaching and instruction in the clinical context
Nilsson and Furaker <sup>56</sup> (2012)	Health care managers	Interviews	Health care managers identified skills they learned in management practice, most of which were the result of managing conflict; the specific skills learned were in the areas of personal development, interpersonal leadership qualities, and developing leadership strategies.
Carrothers et al <sup>11</sup> (2000)	Medical school applicants	Survey	The EI of applicants to the 6-yearlong BS/MD program at 3 institutions was assessed; higher EI scores were associated with female gender and matriculating at the institution with an emphasis on the undergraduate humanities and social sciences
Marques <sup>57</sup> (2013)	Practicing physicians	Survey, interviews	“Soft-skills” (including EI components) were determined to be crucial components of leadership and recommendations were given about including training on these skills
Ogunyemi et al <sup>29</sup> (2010)	Medical residents	Survey (EI questionnaire)	Residents with administrative duties scored as significantly more competitive and accommodating than residents under academic or other review  Residents with higher collaborating scores were correlated with achievement of the Accreditation Council for Graduate Medical Education competencies of medical knowledge, communication skills, problem-based learning, systems-based practice, and professionalism  Higher collaborating scores were associated with positive supervisor evaluation
Talarico et al <sup>31</sup> (2008)	Medical residents	Survey (EI questionnaire)	No positive association existed between resident performance and EI domains
Varkey et al <sup>33</sup> (2009)	Students and faculty in academic medicine	Interviews	Trainees identified EI, confidence, humility, and creativity as necessary qualities of leaders and identified teamwork, communication, management, and quality improvement as necessary knowledge and skills  Self-assessment of skills and knowledge for leadership revealed varying self-assessment of leadership skills and described experiential learning as the best tool for leadership skill development
Stratton et al <sup>34</sup> (2008)	Medical students	Quasi-randomized, survey (EI questionnaire)	Between the first and third year of medical school, participants reported decreases in attention to feelings, mood repair, and empathic concern; they also reported an increase in personal distress

accidental nature of medical leadership development into an explicit developmental process.

As listed in TABLE 2, EI has been used to analyze and develop leadership in many health care settings and for a broad spectrum of health care providers, ranging from critical care physicians<sup>70</sup> to community practice physicians<sup>71</sup> and medical students.<sup>72</sup> A total of 36 citations reflect the range of health care settings and providers. Surveys report that physicians’ EI competencies vary within<sup>73</sup> and between specialties,<sup>74</sup> and that the level of EI among medical students does not predict specialty choice.<sup>75</sup> Finally, it appears that varying leadership styles evolve during residency training.<sup>76</sup>

### Leadership Development Practices and Models of EI Vary

Many groups have used EI in the context of leadership development programs for physicians and have offered descriptions of their models. Of the reviewed articles, 31 addressed the practice of EI, which are summarized in TABLE 1. For example, a survey analyzed by Herkenhoff<sup>77</sup> advocated EI as the basis for enhancing physician communication. The Healthcare Leadership Model was proposed by Calhoun et al<sup>78</sup> as a way of evaluating and cultivating health care professionals’ leadership skills in a wide-ranging set of domains, including EI.<sup>78</sup> Also, many have used the Leadership Practices Inventory by Posner and Kouzes<sup>79</sup> to measure clinical leadership, both as a

continuing medical education activity<sup>80</sup> and in their institutions.<sup>81,82</sup>

EI has been a part of leadership development programs in hospital systems throughout the United States and Canada. These institutions have described their approaches, which range from discrete interventions to targeting specific practitioners as leaders to institution-wide continuing education and development. These programs have reported success, suggesting that leadership development that includes EI improves team-based and collaborative care. Sambunjak et al<sup>83</sup> have recently reviewed the impact of leadership training programs in academic medical centers. Additional programs that have reported on their success include Boston Children's Hospital,<sup>84</sup> the University of Virginia,<sup>85</sup> the Cleveland Clinic (including a summary of outcomes after 14 years of leadership program operation),<sup>86,87</sup> the Mayo Clinic,<sup>88</sup> the University of Nebraska's Administrative Colloquium,<sup>89</sup> St Joseph's Hospital in Toronto,<sup>90</sup> and the Columbus Children's Hospital.<sup>91</sup>

A fuller description of the curriculum and format for 1 such program is available from the Cleveland Clinic's Leading in Health Care course.<sup>58,87,92</sup> This cohort-based course enrolls 30 to 35 nominated emerging leaders yearly and provides a participatory curriculum in 10 once-monthly sessions that address issues of institutional mission, vision, and values; finance and accounting; and organizational development (including EI with 360-degree feedback and executive coaching, team building, negotiation, conflict resolution, and situational leadership). Although recognizing potential selection bias among nominated program participants, they have consistently reported positive outcomes from their participation, including business plan development, greater leadership roles within the institution, and connection to mentorship resources. This nominated cohort's positive experiences may not fully translate to whole hospital settings, but the promising experience of this program supports giving greater attention to the potential of using EI for leadership development in medicine.

Leadership development programs have also been offered by official medical societies, such as the American College of Physician Executives and the American Orthopaedic Association. Hospitals have also reported success in cultivating emotionally intelligent leadership in different hospital improvement and quality care interventions.<sup>34,35,73,93-95</sup> EI has been used as a framework for leadership development in wide-ranging specialty practices<sup>96-98</sup> and in primary care.<sup>99,100</sup> A key feature of these interventions is that they were implemented across hospital systems. Programs typically consist of several sessions in addition to supporting materials and staff time dedicated to implementing the skills physicians learn in

their educational sessions. Examples of mature programs include the Mayo Clinic's report of an intervention centered on patient safety,<sup>88</sup> the Cleveland Clinic Foundation's focus on practice and outcome improvement,<sup>87,101,92</sup> and the Boston Children's Hospital's focus on interdisciplinary work and excellence in work environments.<sup>84</sup>

A noteworthy feature of the available studies regarding assessing EI as a health care leadership competency is that, in the absence of consensus regarding a standard assessment instrument or strategy, a variety of ways of measuring and assessing EI have been used. EI has been frequently measured in self-reports, using 360-degree feedback (combining self-assessment and feedback from others), ability-based assessments, and/or informant approaches.<sup>102</sup> An instrument used in 1 psychiatry evaluation was scale-based and empirical, but others have been highly customized to a particular practice,<sup>97</sup> and still others have assessed progress with interviews and qualitative assessment. Because different measurement approaches may provide different information,<sup>103</sup> it is difficult to compare findings across studies and interpreting the successes or failure of particular interventions is challenging.<sup>102,103</sup>

### EI is Desired and Relevant Throughout Medical Education and Practice

Medical educators have been among the many advocates for developing EI as a leadership competency for physicians.<sup>80,104-108</sup> This review identified 30 studies addressing EI in leadership education in medicine. Two groups<sup>109,110</sup> have advocated assessing applicants' EI as a criterion for admission to medical school, and Carrothers et al<sup>111</sup> have proposed an implementation plan for doing so. Others have questioned this practice based on the variability in measuring EI and on the lack of empiric trials consistently linking EI to outcomes in medicine.<sup>112</sup>

As noted in a review<sup>109</sup> and several individual reports,<sup>113</sup> EI has been proposed as part of the curriculum to teach professionalism<sup>114-116</sup> and leadership<sup>117-119</sup> to trainees and senior physicians. Indeed, models of professionalism have been constructed around EI as a leadership skill.<sup>120,121</sup> For example, Lucey and Souba<sup>122</sup> stated that a new paradigm for teaching professionalism to medical students must include "structured reflection," which aligns well with the EI competency of self-awareness.

In the context of widespread support for EI as an important competency for aspiring and established physician leaders,<sup>118,123,124</sup> there are disparate views as to when EI should be taught during medical training; some advocate training through all training phases and others suggest training only for faculty. Favoring a more continuous training model, Stoller et al<sup>125</sup> invoked the concept of a spiral curriculum to emphasize that different EI

competencies are especially needed for medical trainees at different phases of training. For example, self-awareness and self-management were deemed to be of greatest interest to interns and residents, whereas interest in altruism was deemed greatest when physicians assume roles as faculty members. Several other articles have also proposed continuous training and have described EI as being especially relevant at specific points during the career cycle,<sup>126</sup> particularly during residency.<sup>100,124</sup> On the other hand, some programs have proposed EI training only for faculty.

Regarding outcomes of EI training, 2 consensus models suggested that family medicine training benefits from a leadership approach that includes EI.<sup>127,128</sup> Another training program reported positive results in training residents<sup>129</sup> and attributed the program's success to a longitudinal and skill-based structure that supported the residents in their leadership paths to advocate for children's health. Another small study showed that the Thomas-Kilmann Conflict Mode Instrument predicted Accreditation Council for Graduate Medical Education (ACGME) evaluations of residents,<sup>129</sup> suggesting the relevance of EI evaluation to ACGME competencies. In contrast, other studies have not shown a benefit from incorporating EI training into graduate medical education training.<sup>130</sup> Webb et al reported that it was difficult to assure that residents committed time to the training, which highlights the need for trials of EI to be practical and actionable.<sup>130</sup> During a volunteer intervention, Talarico et al<sup>131</sup> found that EI-focused leadership training did not positively impact resident performance. The finding of mixed outcomes in EI-focused studies is supported by a systematic review that mapped EI to ACGME competencies<sup>132</sup> and by findings from Lewis et al.<sup>112</sup>

Other studies have focused on the role of EI training for medical students and in assessing medical school applicants. Some have advocated assessing the EI of medical school applicants.<sup>109</sup> One report suggested that an EI competency inventory effectively assessed these skills in medical school applicants.<sup>111</sup> A survey of medical students and faculty suggested that both groups want EI to be a medical school competency,<sup>133</sup> and another small trial suggested that simulations are a good way of cultivating awareness of EI and leadership.<sup>72</sup> In a study that assembled a convenience sample of 64 medical students, Stratton et al<sup>134</sup> observed that EI decreased marginally during training, which could be mitigated by conducting workshops on EI for medical students.<sup>72,135</sup> On balance, the few studies on EI training for medical students suggest that EI can help build their leadership and empathy skills, which has been a concern for medical students as they enter the clinical years of medical school.<sup>136,137</sup>

## Discussion

Overall, 3 overarching themes emerged from this systematic review of the literature regarding EI and physician leadership development:

1. EI is widely recommended as a way of developing physician leadership at an executive level in institutions throughout medicine;
2. Wide-ranging strategies have been proposed to develop physician leadership and EI, including models that use both self-created and externally validated measurement methods; and
3. Medical professionals desire EI training, and different aspects of EI may be more important at different points during physicians' career trajectories. A body of available evidence supports the benefits of EI training, though the results have been mixed and vary in methodology and measurement strategies.

This review extends the available literature by systematically compiling and reviewing the available literature regarding physician leadership development and EI. For example, these themes go beyond the more focused context of mapping EI to the ACGME competencies, which has been described by Arora et al.<sup>132</sup>

The current review shows that many authors from a broad range of medical specialties recommend cultivating physician leadership and including EI training as a component of such training. Although substantial evidence supports the association of EI with business outcomes outside of health care, studies examining the benefits of EI in health care are sparse. This review underscores the gap between advocacy for EI as an essential training competency in health care and the critical need for further rigorous study of the issue. In support of this gap, the bulk of available studies are opinion or perspective pieces devoid of supportive data; several physician surveys are available. Furthermore, the available studies that do measure EI use a range of instruments, thereby threatening generalizability of conclusions across studies. To date, no randomized trial has addressed whether teaching EI confers benefits for enhanced leadership or patient care outcomes. Such studies are needed. In this way, the paucity of studies examining the impact of EI in medical leadership mirrors the lack of rigorous studies of the impact of leadership development in medicine in general.<sup>83</sup>

On the basis of this review of available literature, perhaps the best available evidence supporting the role of EI as an essential competency for medical trainees and for senior physicians is the experience of programs that have used EI in their leadership development programs over extended periods of time, for example, the advocacy-focused

program for residents at the University of California, San Francisco, which reported career and performance benefits from their intervention<sup>128</sup>; the Cleveland Clinic's program, which has generated innovative business plans that helped improve care delivery<sup>101</sup>; and the Mayo Clinic's programs, which have provided specialized support to program participants and helped them use their new skills and insights in a productive way within their institutions.<sup>88</sup> Although even these results are incomplete, the favorable experience of these and other programs seems to fuel growing enthusiasm for EI training in health care and justifies further study.<sup>92,138</sup>

Experience from these programs also offers insight about critical success factors for leadership training and EI development. First, because the concepts of EI may seem initially foreign to physicians, providing clear institutional support and time for EI training is necessary. As an example of successful support, in the Cleveland Clinic's leadership development program (which has trained approximately 11% of the institution's faculty to date),<sup>92</sup> attendees are nominated by current leaders to participate and are given sanctioned time for the 10-day annual course commitment. Also, leadership development must be framed for course participants so as not to engender expectations of immediate leadership positions. Without such framing, participating in a leadership development program could prove paradoxically dissatisfying to participants who might see their participation as an anointment to a leadership position. Instead, it appears that the most long-standing and successful programs emphasize that leadership skills are needed for a broad range of physicians' activities within the health care system (eg, from conducting bedside rounds and leading committees to assuming titled institutional roles).

Finally, it appears that linking the curricular programs to mentorship opportunities for emerging leaders and to experiential leadership assignments is especially important for programs to fully realize the leadership pipelines they are designed to support. Classroom learning and mastering a curriculum about leadership skills is but a single component of a full leadership development program.

### Conclusions and Future Directions

In summary, the paucity of useful research regarding EI in health care clearly invites greater attention. Studies are needed to further address each of the themes that emerged in this review. In particular, greater attention is needed to establishing and standardizing the measurement of EI in health care providers. Other remaining questions include the following: What are the benefits and shortcomings of the instruments that have been used in health care studies (ie, the Emotional Competence Inventory,<sup>150</sup>

Mayer-Salovey-Caruso Emotional Intelligence Test,<sup>139</sup> the Bar-On model of emotional-social intelligence,<sup>151</sup> or specially designed 360-degree evaluations<sup>57,97</sup>)? Which components of EI are most critical at specific times during the career trajectories of physicians? How should EI be integrated into the constantly increasing burden of skills and knowledge that competent physicians should have? Should all physicians receive leadership development training, or only those who are specifically recruited/interested? What are the long-term outcomes of EI training on patient, physician, and hospital system outcomes? The answers to these questions will help us navigate the challenging future of health care, which will mandate great leadership.

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