Perspectives

Modernizing Medical Education through Leadership Development

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The Flexner Report of 1910 transformed medical education and ushered in over a century of major medical advances and improvements in the practice of medicine. The requirements set forth by the report grounded modern medicine in the biomedical sciences and equipped physicians with the competencies to become excellent clinicians, researchers, and educators. However, rapid changes in the complexity and scale of the American health care system present today’s physicians with a set of unique challenges. The adoption of new health care technologies, major policy changes to curb the cost of health care, and demographic shifts will fundamentally alter the practice of medicine in this century. We must reform medical education to respond to these changes. Besides conferring expertise in clinical care and the biomedical sciences, medical schools and residency programs should also incorporate interprofessional education, formal management training, and training pipelines that reflect the diversity of those receiving care.

INTRODUCTION

The 1910 Flexner Report ushered in an era of major scientific progress in medicine and helped enable the doubling of life expectancy observed over the last century [1]. Abraham Flexner believed in a medical education grounded in laboratory science and biomedical research. Yet, modern challenges in the American health care system have rendered a singular focus on laboratory investigation and biomedical science insufficient in the face of the rapidly evolving practice of medicine and our increasingly complex health care system.

The changing landscape of medicine has led 45 percent of clinicians to report a symptom of physician burnout, which has been associated with lower patient satisfaction and a longer length of patient recovery [2]. Rising physician burnout is a symptom of a multidimensional challenge to the health care profession. According to some researchers, dehumanization and a culture of detachment have become endemic to medical practice [3-5]. In 2010, The Lancet Commission on Medical Education identified gaps in professional health education and the need for medical schools and residency programs to move toward transformative learning with the aim of developing leadership and interprofessional education to strengthen effective health leadership at the local, nation-
al, and global levels [1]. The Commission further identified a mismatch between professional competencies and patient needs because of “poor teamwork; persistent gender stratification of professional status; narrow technical focus without broader contextual understanding; episodic encounters rather than continuous care; predominant hospital orientation at the expense of primary care… and weak leadership to improve health-system performance [1].” Similarly, global consulting firm McKinsey identified the critical need to develop clinician leaders to spearhead efforts to ameliorate complex challenges that impact the health of populations at home and abroad [6]. The increasingly dynamic organizational and resource-limited environment in which physicians now practice underscores the importance of integrating leadership training that begins in medical school, persists through residency training, and continues throughout the practicing life of a physician.

The excellency in basic science education advocated by Flexner and implemented by medical schools in the early twentieth century has not been matched by a commitment to inculcating an ethos of caring and a robust culture of leadership development, including the cultivation of skills in strategic thinking, team building, and quality improvement [7,8]. Shrinking financial margins and rising costs have driven healthcare systems to undertake significant measures to eliminate waste, improve efficiency, and integrate hospitals and physician practices clinically, structurally, and financially. The widespread implementation of electronic health records, continuous improvement efforts, and precision medicine among other major developments in the health care industry are in line with these efforts to reduce costs, improve access, and enhance quality. While many of these advances in health care are beneficial to patients, predominant paradigms in medical education and residency training are ill-equipped to prepare future physicians with the skills and training to confront rapid changes in health care delivery and financing whilst remaining committed to their primary mission of ensuring their patients’ overall health and well-being.

Traditionally, physicians have had three primary roles: clinician, researcher, and educator. Flexner’s corpus prepared medical students well for this approach to health care. The American medical profession currently faces significant headwinds. Despite considerable progress in improving the quality of health care for all Americans, daunting challenges have emerged in the implementation of new health care technologies, the curtailment of health care spending, and the reduction of health disparities.

Flexner revealed and successfully catalyzed reforms to address major problems that undermined the legitimacy of medicine as a profession. Today, medical practice faces new challenges such as emerging technological advancements and policy changes on track to fundamentally alter the American health care industry. According to Dzau et al., “academic health centers face evolving policy measures at the federal and state levels to curb health care expenditure and decrease research funding [9]. The evidence is clear that medical schools and residency programs must begin to modernize their curricula to meet emerging health care demands and the disruptive forces that aim to shape the industry. Despite nearly three quarters of US allopathic medical schools deans calling for fundamental reforms to medical education in 2005, profound change to medical education remains long overdue [10,11]. I suggest that medical schools and residency training programs focus on three main areas to refine medical education for our current era: (a) interprofessional education, (b) formal management training, and (c) training pipelines for medical students that reflect the diversity of those receiving care.

**INTERPROFESSIONAL EDUCATION**

Depending on specialty, physicians interact with nurses, pharmacists, and allied health professionals (e.g. medical scribes, midwives, and social workers) to varying degrees. Effective collaboration and teamwork within interdisciplinary teams are necessary to ensure that the diverse health care needs of patients are met. The World Health Organization (WHO) defines interprofessional education (IPE) as experiences “that occurs when students from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes” [12]. Previous research by the Institute of Medicine and others have demonstrated that IPE increases patient safety, enhances quality of care, and improves health outcomes [13,14]. When health care teams work better together, the health of their patients are more likely to improve. However, since the publication of the Flexner Report over a century ago, the education of health care professionals has largely been siloed with minimal interprofessional collaboration until they begin their careers [15]. IPE has not been incorporated into most medical school curricula [16]. There is no explicit training in understanding the role of other health workers and strategies to bridge differences in expertise and training. Even when training in content and skills overlap, it is rare for students of different health professional programs to interact with peers of other programs. This results in most physicians entering medical practice lacking knowledge of the important roles played by other healthcare professionals in their teams. The barriers to effective teamwork and collaboration—negative attitudes, teamwork skills, and knowledge—can be addressed through reforms to medical education. Evidence suggests that the absence of IPE contributes to mutual misunderstanding and profes-
sional protectionism [17].

The famous principle of “first do no harm” underscores the importance of finding gaps between the practice of medicine and medical education. According to the Joint Commission, nearly 70 percent of adverse events impacting patients result from poor communication and collaboration between health care professionals [18]. This suggests that medical schools need to do more to address this important issue, especially with the rapid shifts in the way health care is delivered in the United States. While increasing recognition of the importance of IPE is a major step forward, there remain significant historical power hierarchies that pose a serious threat to further progress and a major source of conflict [19]. Medical schools can incrementally overcome residual power structures through the integration of IPE. Leveling the hierarchy within interprofessional health care teams may help members with traditionally less power to speak up and have their input valued [20]. Empowering members of interprofessional teams to question decisions or actions can help reduce medical errors and improve patient safety [21].

The ability to work collaboratively with health care professionals across different backgrounds and expertise remains critical to curbing the cost of health care [22]. The United States leads the world in health care spending. Nonetheless, the outcomes of the American health system are not commensurate with the amount we spend on health care, especially when we compare our health expenditure and outcomes to those of other developed countries [23]. Previous work has shown that collaboration enhances the quality of care delivered while reducing the overall cost of care [24,25]. Engaging all stakeholders such as nurses, social workers, and physical therapists in the delivery of health care can also greatly enrich quality improvement efforts by bringing different perspectives to traditionally physician- and administrator-led teams. Just as precision medicine adapts the best medical therapies to the medical conditions of the patient, modern health care increasingly capitalizes on the wide expertise of diverse interprofessional teams to tailor the delivery of health care to the needs of the patient [26].

Interprofessional collaboration will only increase in importance with the overhaul of health care delivery in the United States towards integration and population health. Despite continued challenges to the Affordable Care Act enacted in 2010, the transition from the traditional fee-for-service model of rewarding volume to the value-based alternative payment models of promoting value will inevitably progress. In 2015, Medicare Access and CHIP Reauthorization Act (MACRA) was enacted with broad bipartisan support in both chambers of Congress. It repealed the sustainable growth rate system, which was previously employed by the Centers for Medicare and Medicaid Services (CMS) to determine physician payment. MACRA has fundamentally altered both the structure and financing of health care [27]. Just as US Department of Health and Human Services (HHS) Secretary Alex Azar told me in person, “the days of mom and pop practices are over [28].” Indeed, according to researchers, this law has spelled the end of small, independent physician practices and has set the country on course to adopt greater vertical integration [29]. Higher levels of hospital-physician integration and consolidation speak to the growing importance for medical schools to adopt strategies to incorporate IPE into their curricula. Moreover, health systems will increasingly rely on interprofessional collaboration to meet not only the needs of patients, but also those of the emerging models of health care delivery.

The collective undertaking to enhance interprofessional teamwork faces many inherent challenges that become salient as health care professionals enter their respective disciplines of study and training. There is a tenuous balance between maintaining the autonomy to practice and deferring to the expertise of others in the team. Historical hierarchies in the delivery of health care only reinforce rigid power structures. Continued research and innovation in pedagogy and approaches will be necessary to best equip health care professionals with the competency to engage in effective interprofessional communication, collaboration, and conflict resolution.

FORMAL MANAGEMENT TRAINING

The shift toward value-based health care will only accelerate the critical need for clinician leaders at all levels, from frontline clinicians to institutional leaders [6]. Increasingly, the role of clinicians has moved beyond the diagnosis, treatment, and management of disease among patients. Across all specialties and disciplines, modern medical practice requires clinicians to focus more on disease prevention and health promotion. The application of managerial principles to the models and practices of health care delivery has been promoted with the aim of enhancing quality, access, and health outcomes [30]. With greater levels of vertical integration across the industry, new physician-executives and physician-administrators will also need to be groomed to serve as mediators between clinicians and high-level management within health organizations, systems, and nonprofits. As The Lancet Commission on Medical Education described, it is imperative for medical schools to incorporate leadership training into their curriculums to prepare for major shifts in health care delivery and medical practice in the coming years [31]. Already, previous research has highlighted the vital importance of clinician leadership for structural, financial, and strategic decision-making at the institutional and organizational levels [8,32]. Incorporating formal
management training into medical school curricula and residency programs will help advance physician training into the modern era. Increasing recognition of the importance of applying the managerial sciences to health care has led to a growing trend of students acquiring concurrent graduate management training through formal and informal MD-MBA programs nationwide [30]. Those with formal business training are well equipped to not only manage the health of populations and individuals but also apply the principles of finance, economics, and accounting to the delivery of health care [33]. Despite these positive trends in medical student interest, there is an ever-growing need for nurturing physician-leaders to address the complex demands of our rapidly changing health care landscape. According to Lerman and Jameson, “health systems should make leadership development an organizational priority [8].”

McKinsey identified three major barriers to the development of effective clinician leadership: (a) skepticism of the value and impact in studying and developing their leadership abilities, (b) weak incentives or disincentives in place for physicians to enter service leadership roles, and (c) a general absence of formal leadership training in medical training and education [6]. These barriers appear to stem from a general incredulity of the role played by leaders and administrators in medical practice [34,35]. The traditional incentives for physicians to focus solely on clinical care, research, and teaching as prompted by the Flexner Report as well as the slow disintegration of independent physician practices has created a culture distrustful and apprehensive of administrative leadership. Nonetheless, the transition to value-based care through alternative payment models such as Accountable Care Organizations (ACOs) has created strong economic incentives for greater care coordination, the elimination of unnecessary services, and lower cost as a result of economies of scale [36]. Vertical integration between physician practices and hospital systems is accelerating and previous work has shown that physicians are increasingly being employed by hospitals [36-38]. As consolidation of physician group practices and hospitals increase, the ability to negotiate across levels of management and apply management principles will become increasingly crucial.

The health care system currently lacks standardized and established pipelines for grooming and promoting physician-leaders. Training pipelines could be created beginning in medical schools and ending formally in residency and fellowship programs. Programs tailored to the competencies necessary to prepare the next generation of physicians regardless of whether they pursue positions as clinician administrators will benefit both physician-administrator and physician-patient relationships. The current model for selecting physician-leaders is based less on aptitude in management and more on clinical volume, research output, and career achievements [32]. This precedent of emphasizing research or clinical volume over managerial skill serves as a strong disincentive for aspiring physician-leaders to study and serve in administrative capacities. Relying on those who demonstrate research and clinical aptitude to lead organizations can create an unintended pipeline for promoting those with limited competencies in the business and policymaking surrounding health care delivery. According to some, this “accidental administrator model” can lead to mismanagement [32]. Future clinicians ought to understand not only the challenges of health care delivery and biomedical research, but also the complexities of health care and drug regulation, organizational culture and oversight, reimbursement, information technology systems, quality improvement, standardization of care, interprofessional dynamics, and competitive strategy. These growing pressures at the scientific, regulatory, and financial levels of health care delivery threaten to undermine the fundamental priority of the physician-patient relationship. Through the intentional cultivation of management skills, medical schools, and residency programs can nurture clinician leaders well versed in all aspects of health care delivery.

**TRAINING PIPELINES THAT REFLECT THE DIVERSITY OF THOSE RECEIVING CARE**

In tandem with efforts to refine medical education for this century, it is vital that medical schools and residency programs create pipelines for developing clinician leaders who reflect the diversity of those in the community receiving care. Without sufficient diversity in both frontline clinicians and management, modern medicine cannot fulfill its higher mission of providing equal access and care to all. The successful development and promotion of previously underrepresented minorities (URMs) into medicine pose a significant challenge, especially given the continued underrepresentation of African Americans, Latinos, Native Americans, and mainland Puerto Ricans in medicine [39]. For instance, African Americans and Hispanics comprise more than 30 percent of the US population but less than 11 percent of practicing physicians [40,41]. Within health care administration, women and traditionally underrepresented minorities in medicine remain even more severely underrepresented [42]. Modern health care organizations must embrace the diversity of local communities more fully with an institutional priority to minimize biases in patient care, physician employment, and promotion into management positions.

As a result of the requirements set forth by the Flexner Report, only two medical schools—namely, Howard University and Meharry Medical College—remained to train the majority of Black physicians in the United States
for over 50 years [43]. Since the US Commission on Civil Rights in 1963 and the Kerner Commission in 1968, the US Federal government has recognized profound disparities between the health of Whites and that of people of color [44]. Today, the National Institutes of Health (NIH) has implemented substantial efforts to promote diversity with limited efficacy [45]. The lack of diversity in the medical profession has origins in the specter of systemic racism towards people of color embedded in our country’s democracy since antiquity [46]. Achieving greater racial equity in health care career attainment will certainly require a multifactorial approach. While NIH and medical schools have rightfully tackled the entry of more URMs into medical school, efforts to promote people of color broadly into positions of leadership have not garnered nearly as much attention. Similarly, there remains a physician wage gap between URMs and Whites such that Black male physicians earn 17 percent less than their White male counterparts; comparisons between other minorities and Whites revealed similar findings [47]. In positions of health care leadership, White men were more likely to hold senior positions than minority men, and the same was true comparing White women to minority women [47]. According to the American Heart Association (AHA) and the Institute for Diversity in Health Management, minorities comprise only 14 percent of hospital board members and leadership positions but represent over 39 percent of the US population [48]. Improving racial diversity in positions of seniority will also encourage more URMs to enter medicine as a profession.

The absence of diversity in the physician workforce poses a fundamental threat to the health of Americans. Racial and ethnic minorities experience poorer health care quality, outcomes, and access than compared with other American populations [44,49]. URMs also use less health care resources and report less satisfaction with the care they receive. According to the Joint Center for Political and Economic Studies, from 2003 to 2006 “the combined costs of health inequalities and premature death in the United States were $1.24 trillion” [50]. There is an unspoken assumption in diversifying the physician workforce—that promoting diversity will reduce health disparities. There is strong evidence that this is the case. Black and Hispanic physicians care for significantly more patients of their same race or ethnicity even after controlling for the racial and ethnic composition of their local community [51]. Racial concordance in care also aligns with patient satisfaction. Racial and ethnic minorities report greater satisfaction with their care if they were treated by a physician of the same ethnic heritage as them [45]. Diversity in leadership also enables the cultivation and reinforcement of cultural competence—the skill of cross-cultural communication—across health care organizations [52]. With the demographic shift occurring in the United States, an increasing share of frontline and senior minority physicians will be necessary to provide care for a growing share of minorities in the US population. According to the Brookings Institution, racial minorities will comprise 50.3 percent of the US population by 2045 [48]. Hence, URMs will play an increasingly important role in improving health care access and quality for all Americans.

RESISTANCE TO CHANGE

As with any transformational change, staunch resistance to modernize medical education remains. A minority of educators have published perspectives arguing for the end to or tempering of disruptive innovation through such efforts as the integration of social justice and healthy equity education into medical school curricula [53,54]. Critics of reform fear that increased focus on population health, social justice, and other health systems sciences (HSS) will produce medical school graduates who lack a solid foundation in biomedical science and an adequate understanding of the pathological basis of disease [53]. Others argue in the same vein that rather than learning about ways to solve health disparities, poverty, or other social issues, physicians should be trained foremost in medical science and public health issues including pandemic preparedness [54,55]. Alarmists fail to recognize the rapidly changing landscape of medicine. A rigorous understanding of the basic sciences and traditional clinical practice is necessary but no longer sufficient. As many other clinicians and researchers have made clear, medical education can no longer aim to train only the independent or sovereign physician whose primary scope of practice was in treating acute diseases [56,57]. There is growing recognition that the social determinants of health affect outcomes from both communicable and noncommunicable diseases across an individual’s lifespan [58-60]. Health care professionals increasingly work in interdisciplinary partnerships to address the complexity and multifaceted nature of chronic diseases. Advocating for HSS education in medical school curricula does not supplant the equal importance of biomedical science. Instead, HSS becomes a critical part of students’ development as professionals. Incorporating IPE, leadership training, and training pipelines for URMs will empower future physicians to become positive change agents in interdisciplinary teams as well as advocates for diverse and underserved populations.

Medical education goes beyond simply producing physicians; it is fundamentally about training dedicated clinicians who aim to improve the health of patients and their communities [61-64]. Curricular reforms must consider the inculcation of professional values and skills that reflect growing epidemiological and biomedical science
that underscore the impact of social context on individual and community health [65-67]. Physicians are not merely vessels of scientific and clinical knowledge—they are bound to a higher social calling of healing patients as individuals and as members of communities.

CONCLUSION

The Flexner Report set a powerful precedent for transformative change in medical education. However, medical schools and residency programs have deviated little from the guidelines set forth over a century ago. It is time for a reassessment of the competencies necessary to practice medicine. Major shifts in health care delivery and financing will require physicians trained not only in clinical care and the biomedical sciences, but also in interprofessional collaboration, health care management, and cross-cultural communication. Business as usual in medicine will not adequately equip medical students with the empathy, maturity, and expertise to address modern challenges facing the delivery of health care in the United States. The physicians of the future will work in integrated health care delivery systems that emphasize population health and the social determinants of health. Incorporating IPE, formal management training, and diversity leadership pipelines will ensure the health of our nation for years to come.

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Bai: Modernizing medical education through leadership development

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