



Including Lifestyle Medicine in Medical Education: Rationale for American College of Preventive Medicine/American Medical Association Resolution 959

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Introduced by the American College of Preventive Medicine and released by the American Medical Association House of Delegates in 2017, Resolution 959 (I-17) supports policies and mechanisms that incentivize and/or provide funding for the inclusion of lifestyle medicine education and social determinants of health in undergraduate, graduate and continuing medical education. Resolution 959 was passed to help address the current healthcare costs of lifestyle-related, noncommunicable chronic diseases that exert a devastating economic burden on the U.S. healthcare system. Approximately 86% of \$2.9 trillion is spent annually on obesity, cardiovascular disease, type 2 diabetes, and some cancers, with very poor return on investment for health outcomes. Lifestyle medicine provides an evidence-based solution to the noncommunicable chronic disease epidemic; however, medical education in lifestyle medicine is minimal to nonexistent. This paper provides the case for healthcare innovation to include lifestyle medicine in the prevention and treatment of noncommunicable chronic diseases. Our medical education system recommendation is to provide lifestyle medicine training for prevention and treatment of noncommunicable chronic diseases. Exemplar lifestyle medicine schools are showcased and guidance for reform is highlighted that can be used to aid lifestyle medicine integration across the medical school education continuum. With a transformation of curriculum and development of new policies to support a focus on lifestyle medicine education in medical education across the continuum, a new healthcare model could be successful against noncommunicable chronic diseases and U.S. citizen wellness could become a reality.

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INTRODUCTION

Introduced by the American College of Preventive Medicine and released in 2017 by the American Medical Association House of Delegates (AMA HODs), Resolution 959 (I-17) states:

Our AMA supports policies and mechanisms that incentivize and/or provide funding for the inclusion of lifestyle medicine education and social determinants of health in undergraduate, graduate and continuing medical education.¹

Resolution 959 was passed to help address the overwhelming morbidity and mortality related to lifestyle-related, noncommunicable chronic diseases (NCDs) and their devastating economic costs to the U.S. healthcare

system. The Centers for Disease Control and Prevention (CDC) reports that approximately 60% of U.S. adults have one or more chronic medical condition,² which currently accounts for 90% of \$3.3 trillion in annual U.S.

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healthcare expenditures.^{3,4} Between 2009 and 2012, the national annual cost of cardiovascular disease and stroke was \$316.6 billion⁵; diabetes, \$245 billion⁶; cancer care, \$157 billion⁷; smoking, more than \$289 billion; and obesity, \$300 billion,⁸ with \$1,429 greater annual medical costs per person than a person of normal weight.⁹ Obesity-associated comorbidities account for 45% of all cases of hypertension, 18% of hypercholesterolemia, 35% of heart disease, and 85% of type 2 diabetes.¹⁰ Unfortunately, it is estimated that 45% of the U.S. population will be obese by 2035.¹¹ Additionally, annual cost of physical inactivity is approximately \$117 billion.¹² The current morbidity, mortality, and costs of lifestyle-related NCDs reflect a failed healthcare model that primarily addresses disease symptoms via pharmaceuticals and expensive medical procedures.

Healthcare needs a new model that includes physicians counseling patients on NCD prevention and treatment in lieu of symptomatic disease management. However, patient encounter survey studies throughout the last 2 decades suggest that most standard-of-care treatments and medical advice given have not addressed the root cause or prevention of NCDs. In a 1999 survey of more than 12,000 patients, only 42% of obese adults received counseling from their healthcare provider to lose weight.¹³ A 2004 study found that patient encounter time spent on lifestyle behavior discussion, such as diet, exercise, and smoking, was on average less than 1 minute per topic,¹⁴ and in a 2005 cross-sectional observational study of eight family medicine practices, weight loss was addressed 33% of the time.¹⁵ A 2012 study found that only 32% of patients said their physician provided physical activity counseling.¹⁶

Because peer-reviewed evidence supports the clinical practice of using lifestyle medicine to treat and prevent NCDs,¹⁷ transitioning to a prevention-oriented, reversal-of-disease/standard-of-care model may help individuals recover from the significant financial and morbidity/mortality costs related to NCDs. However, to date lifestyle medicine has been a relatively unknown approach for mainstream physicians.

WHAT IS LIFESTYLE MEDICINE?

Lifestyle medicine (nutrition, physical activity, behavior change, sleep health, tobacco cessation, responsible alcohol use, emotional wellness, and stress reduction) is an evidence-based, clinical discipline that emphasizes physician counseling on the adoption of healthy lifestyle behaviors and activities in patients.¹⁷ From Hippocrates's purported pronouncement, "Let food be thy medicine, and medicine thy food," lifestyle medicine principles for health outcomes have been examined in

observational as well as intervention studies of whole-food, plant-based diets and lifestyle medicine from early times to throughout the 21st century.^{18–20} The term *lifestyle medicine* was first associated with health outcomes in relation to smoking and cancer at a 1989 Brussels Conference on indoor air quality.²¹ The discipline gained momentum with the study by Ornish et al.²² in 1998 reporting reversal of coronary artery disease in patients adhering to an intensive, non-pharmaceutical lifestyle modification. Mishra and colleagues²³ showed that 18 weeks of a low-fat, plant-based dietary intervention in more than 20,000 people significantly improved body weight, plasma lipids, and glycemic control in diabetics. Significant improvement of medical risk factors including body weight, blood pressure, resting heart rate, total cholesterol, and low-density lipoprotein cholesterol in men and women with coronary artery disease are possible after lifestyle interventions.²⁴ Additional substantive population studies demonstrate that adopting a healthy lifestyle may prevent 90% of all heart disease²⁵ (including 81% of heart attacks); 50% of strokes; 93% of diabetes; and 36% of cancers²⁶ and may decrease mortality in overweight/obese groups, with survival improving each time a new healthy habit is added.²⁷ As the American College of Lifestyle Medicine (ACLM)¹⁷ founders understood in 2004, the proposed mechanisms for lifestyle medicine are that the human body may heal itself when proper diet and physical activity are implemented and tobacco use, alcohol misuse, and stress are removed.

Despite HHS and U.S. Preventive Services Task Force statements that primary care is an effective place to address lifestyle-related conditions, physician training in lifestyle medicine is scarce or nonexistent.^{28,29} The purpose of this paper is to provide the case for AMA HODs Resolution 959 through the voices of practicing physicians, residents, medical students, administrators, and institutional leaders, as well as to describe programs and resources that further support Resolution 959 and lifestyle medicine in medical education.

VOICES FROM THE FIELD

Physicians

Although physicians believe it is their responsibility to educate patients on lifestyle modifications and to implement prevention into routine patient care, they cite lack of knowledge, clinical skills, time, and the available resources/reimbursement models as barriers to success.³⁰ Most providers do not receive the necessary training to provide nutrition/lifestyle medicine education and counseling to their patients with NCDs.³¹ A 2002 survey of U.S. allopathic medical schools found that only 13%

included physical activity and wellness in the curriculum.³² Veterans Affairs physicians state that the biggest obstacle faced for providing counseling about diet and exercise was insufficient obesity education in medical school and residency.³³ Fortunately, VA physicians who practiced positive personal habits were more likely to counsel their patients on positive habits, and patients were more likely to accept advice from VA physicians who were not themselves obese.³³

In addition to inadequate training and time, physicians also cite lack of patient compliance and compensation as barriers to providing care,³⁴ which discourages physicians and subsequently leads to less nutrition counseling with patients.^{13,15} This domino effect places additional burden on the healthcare system by increasing staff time, hospital room, and equipment allocation to NCDs, evidenced by the estimated 10.6 additional hours/day needed to treat the ten most prevalent chronic diseases.³⁵ This lack of time and resources available for other patients can lead to physician burnout.

Residents

Survey studies demonstrate that residents believe it is within their scope of practice to counsel patients on lifestyle but do not feel qualified to do so.^{36–40} Although 77% of internal medicine residents acknowledged that nutrition discussions should be a part of primary care visits and 94% thought it their duty to address nutrition issues, only 14% felt they had the training necessary to do so.³⁶ Seventy-seven percent of Accreditation Council for Graduate Medical Education Residency Program directors felt that nutritional knowledge required for practice was not acquired through graduate medical education, that they themselves did not have adequate knowledge, and that continued advanced education in clinical nutrition should be implemented into residency program curricula.³⁷ Although internal medicine residents believed obesity and its comorbidities have vast medical consequences, they felt they lacked guidelines and training for assessing, diagnosing, and treating patients with obesity, which subsequently resulted in negative opinions about providing adequate care to patients.³⁸ Additionally, although 76% of residents felt they knew reasons physical fitness should be a priority, and 88% understood the benefits, less than 50% felt confident in their knowledge to create and implement the exercise prescription for their patients or even themselves.³⁹ At the 2015 ACLM conference, 94% of residents surveyed considered the current medical education model to be insufficient; surprisingly, many of these residents were not familiar with the Lifestyle Medicine Core Competencies.⁴⁰

Medical School Students

The problems voiced by physicians and residents stem from a lack of a foundational lifestyle medicine training in the undergraduate medical education. For example, despite the efforts of the NIH-funded Nutrition Academic Award,⁴¹ and consensus that nutrition knowledge is essential for physicians to counsel their patients on prevention of NCDs, many medical students feel they do not receive adequate training in medical school.⁴² Results from a survey that tracked U.S. medical students from Year 1 to 4 demonstrated that medical students came into school believing nutrition counseling and education was very important and would play a major role in their careers; however, by their fourth year, less than 50% felt this to be true, only 19% felt they had received adequate nutrition counseling training, and only 17% reported regular use of nutrition counseling in their patient encounters.⁴³ Results also demonstrated a strong positive correlation with the student's healthy personal practices and clinical prevention and nutrition counseling for their patients.⁴³ Administratively, only 10% of medical educator deans and directors perceived that their students had the competency and skill to create and prescribe an exercise prescription for health; only 47% of the deans/directors ranked the ability to develop and prescribe an exercise prescription as important.⁴⁴

The above survey studies highlight the contemporary lack of training and perceived importance for lifestyle medicine in undergraduate medical education. Students who matriculate into a traditional curriculum that is deficient in lifestyle medicine training in pre-clinical years as well as in third- and fourth-year clerkships (in which clerkship directors and faculty also are not lifestyle medicine trained) will have a gap in essential knowledge, skills, and attitudes needed to transition into residency.

Clinics, Hospital Systems, and Health Insurance

The burden of NCDs on clinics, hospital systems, and health insurers across the U.S. is substantial. Medicare attributes more than 99% of its expenditures to NCDs and Medicaid, 83%.⁴⁵ Individuals with NCDs account for 76% of all physician visits, 81% of hospital admissions, and 91% of prescription costs.⁴⁵ It also is estimated that in an insured population, 20% of the population accounts for 80% of all healthcare spending.⁴⁶ This leads to increased insurance premiums to accommodate the expansion of the expensive risk pool. Drastic reduction of the cost to insurance companies could be a reality with the prevention of NCDs, reducing the amount of funds needed to treat patients chronically. The savings may also create a trickle-down effect to consumers, who are currently faced with often impossible healthcare expenses, leaving many under- and un-insured.

GUIDANCE FOR REFORM

U.S. Medical Education Curricular Reform for Lifestyle Medicine

Recent advances in curricular reform are starting to emerge. In 2010, *JAMA* published “Physician Competencies for Prescribing Lifestyle Medicine,” listing categories of leadership, knowledge, assessment skills, management skills, and use of office and community support as competencies needed for graduating medical professionals.⁴⁷ The Bipartisan Policy Center’s white paper “Teaching Nutrition and Physical Activity in Medical School: Training Doctors for Prevention-Oriented Care” summarized a 2013 panel discussion that included representatives from the Bipartisan Policy Center, Alliance for a Healthier Generation, the American College of Sports Medicine, doctors, medical students, faculty, and administrators that articulated the learning needed to effectively engage with patients for behaviors change.⁴⁸ At the 2013 New York Academy of Sciences’ conference session, Capacity Building in Nutrition Science: Revisiting the Curricula for Medical Professionals,⁴⁹ Kohlmeier identified state-of-nutrition education in U.S. medical schools, discussed current education models, and cautioned on the negative consequence of solely teaching basic science/biochemical nutrition, as clinical application may not be addressed.⁴⁹ Kushner et al.⁵⁰ suggested medical schools employ a physician/nutrition specialist or registered dietitian experienced in clinical nutrition and motivational interviewing to adequately train medical students. Both Kohlmeier and Kushner recommended that nutrition training be integrated longitudinally into the biomedical science organ system courses, the clinical skills test, and the clerkship rotations.^{49,50}

In 2016, the American Heart Association released a scientific statement, “Medical Training to Achieve Competency in Lifestyle Counseling: An Essential Foundation for Prevention and Treatment of Cardiovascular Disease and Other Chronic Medical Conditions,” which proposes a framework for U.S. medical school deans/program directors to integrate learning objectives that will improve lifestyle counseling competency among future physicians.⁵¹ In 2018, the American Heart Association also released “Medical Nutrition Education, Training, and Competencies to Advance Guideline-Based Diet Counseling by Physicians,” identifying specific nutrition competencies and information for heart disease prevention with resources for implementing nutritional education, with continuing medical education resources described.⁵²

Although nutrition has most frequently been addressed, all components of lifestyle medicine, such as

physical activity/exercise,⁵³ smoking cessation, and mindfulness/stress management should equally be implemented in a longitudinal format, as it pertains to relevant organ systems for preventing/treating NCDs. For example, lack of mental wellness is often a comorbidity with physical illness. The Act-Belong-Commit campaign provides healthcare professionals and clinicians with a guideline for promoting mental health and combines the principles of: being physically Active; Belonging to a group or organization; and Committing to an activity, cause, or organization for increasing the sense of purpose for one’s life.⁵⁴ All lifestyle medicine principles should be addressed in medical school to support the importance of self-care, resilience, and mental wellness for the physician and their patients.

Early Adopters: Exemplary Lifestyle Medicine Medical Schools

A number of medical schools have made remarkable advancements in lifestyle medicine education. The University of South Carolina School of Medicine Greenville integrates lifestyle medicine as required education across the undergraduate curriculum and in all biomedical and clinical science modules; which was included in the school’s Liaison Committee on Medical Education accreditation process.⁵⁵ Training includes mechanisms that explain lifestyle-related physiology of disease/prevention/treatment, methods of health behavior change, and models of team-based care with exercise physiologists, registered dietitians, and wellness coaches. Healthy student behaviors are encouraged through faculty-supported extracurricular exercise/physical activities as well as year-round cultivation of the organic garden.

Loma Linda University Health offers a 12-month lifestyle medicine fellowship,⁵⁶ a family medicine residency, a preventive medicine residency, and a combined family/preventive medicine residency, all heavily involved in lifestyle medicine training that includes multiple community programs and outreach.⁵⁷ In addition, they have a competitive lifestyle medicine track during medical school training that involves basic principles, didactic learning, culinary medicine experiences, and research in lifestyle medicine in the clerkship years.⁵⁸

Western University of the Health Sciences College of Osteopathic Medicine of the Pacific (COMP and COMP-Northwest), offers an elective longitudinal lifestyle medicine track across all years, learning best practices from clinicians who are currently incorporating lifestyle medicine in their clinical practices. Students are required to work on a capstone project to further grow their creativity and knowledge, giving them community-based lifestyle medicine experience.⁵⁹ The College of Osteopathic Medicine of the

Pacific also offers an elective series of nutrition in medicine lectures for first- and second-year students.⁶⁰

Harvard School of Medicine has adapted structured nutrition education in their medical school curriculum and has begun to teach other aspects of lifestyle medicine as part of an optional student-led, faculty member–advised, parallel curriculum. Their “Lunch and Learn” lectures include exercise risk stratification and prescription, doctor self-care, nutrition counseling, and the use of the coach approach.⁶¹

The University of Texas Rio Grande Valley deploys a health equity–oriented general preventive medicine/public health residency program that meets all American Council of Graduate Medical Education competency domains and demonstrates fidelity to mechanisms of community engagement, health equity, and the practice of lifestyle medicine.⁶²

Other noteworthy programs include the City University of New York School of Medicine, a 7-year BS/MD program that integrates lifestyle medicine throughout their curriculum and promotes a healthy lifestyle on campus to students by having two fitness centers, physical activity programs, weekly mindfulness sessions, and healthy food options.⁶³ The University of Florida has an “Exercise is Medicine” lecture series in their medical school curriculum.⁶³ Tulane School of Medicine is the home of the Goldring Center for Culinary Medicine, whose curriculum received the 2017 Health Innovators Award.^{64,65} The University of North Carolina offers an online Nutrition in Medicine curriculum, and the University of Colorado School of Medicine and Boston University School of Medicine are now integrating nutrition into their medical school curriculum.⁴⁸ Other schools/institutions offering lifestyle medicine or culinary nutritional training (or both types of training) include Stanford University,⁶³ Johns Hopkins University, Florida State/Lee Health Family Medicine Residency,⁶³ Warren Alpert Medical School of Brown University,⁶⁶ West Virginia University and the University of Toledo College of Medicine and Life Sciences,⁶³ University of Texas Medical School at Houston,⁶⁷ and Northwestern University Feinberg School of Medicine.⁶⁸ In summary, these are some examples of exemplary efforts made by medical schools to further lifestyle medicine education. A more comprehensive list of lifestyle medicine schools/residencies can be found on the ACLM website.⁶⁹

Lifestyle Medicine Board Certifications, American College of Lifestyle Medicine Residency Programs, and Resources for Change

A driving force behind lifestyle medicine medical education is the American Board of Lifestyle Medicine’s

certification exam, launched in October 2017, and the 30-hour Lifestyle Medicine Core Competencies continuing medical education program provided the ACLM/American College of Preventive Medicine.^{70,71} In addition, the Lifestyle Medicine Education Collaborative, a multi-organizational alliance that provides curricular resources, mentoring, and a robust partner community to help integrate lifestyle medicine education throughout the U.S and globally,⁷² is in partnership with the National Board of Medical Examiners to pilot a customized exam to address the efficacy and competencies of lifestyle medicine that could be implemented in the Step I exam.⁷³ Finally, ACLM, Loma Linda University Health, and Lifestyle Medicine Education Collaborative have been involved in the development of a lifestyle medicine residency curriculum to pilot at multiple medical universities and teaching hospitals to allow participating residents to be qualified to sit for the American Board of Lifestyle Medicine exam after completion of the curriculum.⁷⁴

CONCLUSIONS

Healthcare systems and providers continue to face formidable barriers to providing necessary NCD prevention and treatment to U.S. citizens, and the related burden of morbidity, mortality, and cost of care continues to climb, potentially leading to highly adverse effects on the U.S. economy. As resolved in the AMA HODs, medical school curriculum reform must include training in lifestyle medicine to resolve the inadequacies that exist in preparing physicians for the growing challenge of chronic diseases they will be expected to treat and prevent. With a transformation of curriculum and development of new policies to support lifestyle medicine education in medical education to equip medical providers with the tools they need, a new healthcare model could help successfully address NCDs and lead to wellness as a reality, while also improving the health and economy of the U.S.

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