

Lifestyle Medicine

Prevention, Treatment, and Reversal of Disease



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KEYWORDS

- Lifestyle medicine • Health behaviors • Medical curriculum • Preventive medicine
- Whole person health • Chronic disease • Population health • Reimbursement

KEY POINTS

- Lifestyle medicine (LM) focuses on six pillars—a plant-predominant eating pattern; physical movement; restorative sleep; management of stress; avoidance of risky substances; and positive social connections.
- LM expands the scope of preventive medicine by focusing on the promotion of healthy lifestyles while preventing, treating, and reversing the majority of chronic diseases.
- Whole health care is an interprofessional, team-based approach anchored in trusted relationships to promote well-being, prevent disease, and restore health.

HISTORY AND BACKGROUND

The actual causes of death in the United States were first articulated in a landmark 1993 analysis by Dr. Michael McGinnis of the Federal Office of Disease Prevention and Health Promotion and Dr. Bill Foege of the Centers for Disease Control.¹ The study, updated in the early 2000s, demonstrated that personal health behaviors, and the environmental factors promoting or impeding them, remained the most significant contributors to mortality.² Lifestyle behaviors such as tobacco use, poor diet, physical inactivity, and excessive alcohol use are the primary causes of chronic diseases leading to premature deaths. Despite this evidence, physicians have not routinely or systematically received the education, training, practice skills, and support to address these root cause behavioral and environmental challenges faced by patients.

Responding to this ongoing deficit and the growing demand by physicians for training and recognition in promoting effective patient behavior change, the American College of Preventive Medicine (ACPM) hosted the Blue Ribbon Panel on Lifestyle

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Medicine Competency Development in 2009.³ Representatives of all major medical primary care and related specialty societies defined physician competencies in five essential and mutually-reinforcing domains: leadership, knowledge, assessment skills, management skills, and use of office and community support. These physician and practice competencies represented a foundational building block for undergraduate and graduate medical students, practicing physicians, health professionals, and health systems to not only prevent but also treat and even reverse most chronic diseases.

The rapid growth of lifestyle medicine (LM) and expanding interest by health practitioners led to the LM core competencies being updated in 2022, expanding from 15 to 88 competencies and 5 to 10 domains.⁴ The focus now includes the science of LM, leadership and advocacy, nutrition, physical activity, sleep hygiene, risky substances, clinical processes, health behavior change, emotional and mental health, connectedness, and positive psychology.

Scientific and Clinical Practice Evidence Supporting LM

The nearly 70-year-old medical specialty of preventive medicine has been rooted in the evidence that both public health and the clinical practice of prevention in medical care are essential for disease prevention and health promotion.⁵ Primary prevention (health promotion, immunizations), secondary prevention (early detection, screening, and case finding), and tertiary prevention (prevention of disease progression through treatment) represent a continuum long recognized by the field of preventive medicine.

The groundbreaking work of the U.S. Preventive Services Task Force (USPSTF) first published in 1989 codified the evidence hierarchy for evaluation of the periodic health examination and the importance of delivering age, gender, and risk-specific screening tests, counseling, and immunizations.⁶ These primary and secondary preventive services rely on providers being competent in delivering them and on creating a supportive clinic practice ecosystem. The specialty of preventive medicine embraced clinical preventive medicine to advance the optimal delivery of evidence-based services based on the USPSTF recommendations. However, the USPSTF did not include the *treatment* (tertiary prevention) of existing diseases or conditions in its charge and neither did the practice of “clinical preventive medicine” in its scope or goals.

At the same time, clinical evidence of the impact of lifestyle changes on disease treatment and reversal was growing. Drs. Dean Ornish and Caldwell Esselstyn, among others, demonstrated that lifestyle interventions with a focus on whole food plant-based eating, physical activity, and stress reduction could prevent the progression of atherosclerotic cardiovascular disease, the recurrence of cardiac events, and even reverse angiographically observed coronary artery plaque.^{7,8}

Advances in basic science understanding of epigenetics, microbiome, neuroplasticity, and cellular function reinforced that lifestyle behaviors had a direct impact on the causation and reversal of common disease processes. Physicians from multiple specialties began to articulate the urgent need for prioritizing LM in the treatment of leading causes of disease producing premature morbidity and mortality.⁹

The continued rise in the burden of chronic disease not only in the United States but worldwide, the underfunding of prevention research particularly relating to lifestyle behaviors in disease treatment¹⁰ and the growing body of basic science and clinical practice data lead to the convening of the Lifestyle Medicine Research Summit in 2019.¹¹ Fifty nationally recognized expert basic science and clinical researchers and practitioners reviewed the evidence for each of the six pillars of LM—plant-based eating pattern, physical activity, restorative sleep, stress management, avoidance of risky substances, and positive social connections, in preventing, treating, and

reversing common chronic and other diseases. **Fig. 1** captures the major conclusions of the summit, demonstrating the common causal pathway of systemic chronic inflammation leading to disease and disease progression which can be initiated, promoted, or reversed through lifestyle interventions.

The summit also intensely discussed and summarized the role of social determinants of health (SDoH) influences, environment, and exposures, particularly in the context of underserved and understudied populations which historically suffer a disproportionate disease burden increasingly being linked to impactful inequities and disparities. Toxic stress in early childhood from psychological trauma, physical abuse or adverse childhood experiences, environmental chemical exposures, and low-grade chronic inflammation caused by systemic racism is known to affect neurologic development and increase the risk of medical and psychological chronic diseases.^{12,13} Research priorities for the six LM domains included recommendations for focused explorations of the impact of culturally sensitive and demographically tailored approaches to address lifestyle and environmental challenges in disadvantaged populations and geographies.

LM Competent Physicians and Practices

Multiple foundational changes need to be realized in order for LM to make a measurable difference in health, health care outcomes and health care systems. Health care professionals need a basic understanding of the six LM pillars and their primary role(s) in addressing the root causes and solutions in disease prevention, treatment, and

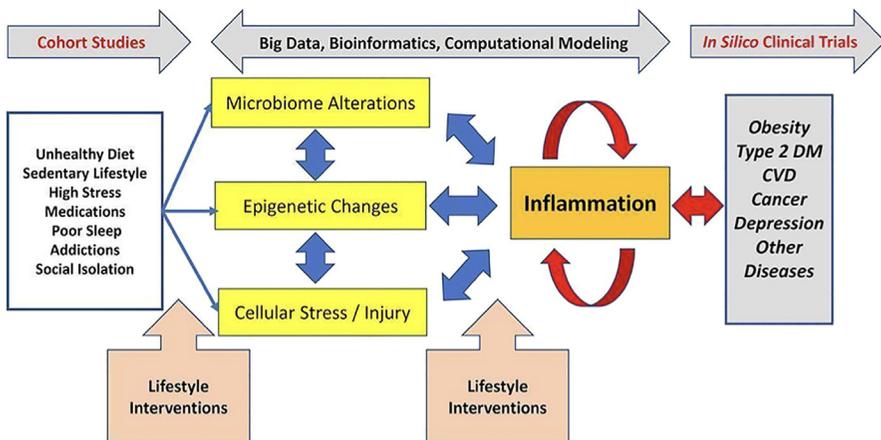


Fig. 1. Lifestyle-associated pathogenesis, interventions, and emerging methods for lifestyle medicine research. ^aLifestyle-associated pathogenesis, interventions, and emerging methods for lifestyle medicine research. Unhealthy lifestyles cause dysregulation in the microbiome, epigenetic changes, and various types of cellular stress and injury which, together, drive inflammation. In turn, inflammation can drive further derangements in the microbiome, can cause distinct epigenetic changes, and can drive further cellular stress and injury. This positive feedback leads to a process wherein inflammation becomes chronic and self-sustaining, ultimately resulting in chronic diseases, such as Type 2 diabetes. The non-linear nature of these processes means that they fail. Effective lifestyle interventions prevent, treat, and reverse common chronic diseases. To accelerate the adoption and dissemination of clinical lifestyle medicine interventions, there is a need for cutting-edge biological and computational approaches to decipher this complexity. (^aFrom *Frontiers in Medicine*,¹¹ with permission. Available via Creative Commons CC-BY license, Version 4.0.)

reversal. In addition, a holistic LM primary care approach is fundamentally different from the traditional reductionistic allopathic medicine models. Differences include team-based care, group sessions, practice setting alterations, preferred reimbursement models,^{14,15} and the creation and inclusion of an LM intensivist within health systems.¹⁶ Intensivists can adjust patient medications, lead patient group sessions, and provide treatment using Intensive Therapeutic Lifestyle Change.¹⁷ The American Board of Lifestyle Medicine (ABLM) created experiential and educational pathways qualifying for separate certification as an LM Intensivist.¹⁸

LM in Primary Care Practice

An example of LM in the clinical practice is the Holistic LM Primary care model,¹⁹ which has four organizing components (**Box 1**).

- **Foundational Concepts: Open Heart, Deep Caring.** The provider connects with the patient “heart to heart” demonstrating “deep caring” and “family-level commitment.” Providers explore details of a patient’s life, including family and friend networks, living situations, occupations, and vocations.
- **Assessment Approaches: Antecedents and Triggers.** Antecedents include genetic and environmental experiences that affect how someone operates.²² Triggers are day-to-day exposures resulting in hindbrain survival approaches that are counterproductive to achieving optimal health. These are explored through unique vital signs and comprehensive assessments.

Box 1

Holistic Lifestyle Medicine Primary Care Components^{15,20,21}

Foundational Concepts: Open Heart, Deep Caring Attitude

- Relaxing “spa-like” clinic atmosphere
- Extended visits
- Capitated or membership reimbursement model
- Board-certified providers in lifestyle medicine
- Medical assistants with additional training in health coaching and empathy

Assessment Approaches: Antecedents and Triggers

- Lifestyle medicine vital signs at every visit
 - Subjective 30-second check of the LM pillars
- Nutrition assessments²⁰ initially and annually
- Lifestyle medicine comprehensive physical activity assessment²¹ initially and annually
- Electronic medical record sections for each LM pillar

Treatment Approaches: Implementing Behavior Change

- Lifestyle medicine clinical protocols
- Customizable lifestyle medicine prescription templates
- A team available to assist in achieving health goals includes a registered dietitian, personal trainer, social worker, certified wellness coach, occupational therapist, and others.
- Groups visits
 - Weekly in-person and virtual support groups including nutrition, exercise, meditation, and health behavior change groups
 - Periodic cooking classes, walk with the doctor events, and other resources

Maintenance Approaches: Staying Connected

- Documentation of social connections
- Regular provider communication availability through either the electronic medical record or an interactive patient app
- Same-day acute or within one-week semi-acute appointments
- Proactive tracking of health risks and connecting with patients at an appropriate frequency based on the health risk profile

- **Treatment Approaches: Implementing Behavior Change.** Positive psychology builds on the strengths and affirming experiences of the patient, while motivational interviewing honors the concept that patients effectively come to their own best path forward. This is facilitated through the use of LM prescriptions, protocols, groups, and team resources.
- **Maintenance Approaches: Staying Connected.** Periodic follow-up and reinforcement for sustained behavior change.

Reimbursement Models for LM

Traditional health care reimbursement models focus on a fee-for-service model which incentivizes sick care. The ACLM has created resources to assist practices in approaching reimbursement from this perspective.²³ A more effective model for LM is a capitated or membership model whereby a periodic fee is paid by the patient, employer, or insurer. The capitated model economically motivates the holistic LM primary care provider to keep the patient healthy and reduce the total cost of care.

Opportunities for capitated reimbursement are currently best captured in the Medicare Advantage (or HMO Medicare) reimbursement model.²⁴ Medicare also created the Accountable Care Organization Realizing Equity, Access and Community Health (ACO REACH) for original and PPO Medicare recipients, providing contracted providers the ability to be reimbursed in a capitated fashion. A capitated reimbursement system using LM approaches has also been introduced for employers, through whom most Americans obtain their health insurance.²⁵ The Direct primary care approach is another growing subscription-based model that provides patients unlimited access to a care provider with an established monthly fee.²⁶

Measurement of health care quality is frequently assessed using a triple aim approach²⁷ (Fig. 2). Early reported experience from a primary care practice specifically developed using a holistic LM model has shown improvement in all three domains.²⁸ The LM practice operates under a capitated or value-based care payment model and has shown preliminary positive improvement in each of the triple aim goals:

Patient clinical outcomes showed a 20% reduction in low-density lipoprotein cholesterol, a 12% reduction in HgbA1C, and a 9% reduction in body mass index

Lifestyle Medical Triple Aim Outcomes Data

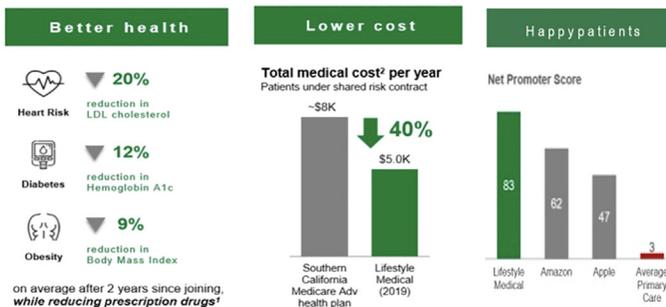


Fig. 2. Triple aim measurements and outcomes. (Data from Dysinger, W. Lifestyle Medical Clinic:internal practice data. Riverside, CA; 2019.)

(based on data from 55 patients over 2 years who joined the practice with elevated measures).

Patient satisfaction showed a net promoter score (NPS) average of 83 (based on NPS surveys sent to a revolving selected patient sample from a 1211 patient cohort on a monthly basis). This is compared to a typical primary care practice with an average NPS of 3.

Health care costs showed an average of \$3000 annual cost savings compared to regional Medicare Advantage mean patient costs representing a 40% decrease over 3 years (based on 102 Medicare Advantage patients). Although promising, the data are preliminary, and ongoing research is needed to demonstrate significant and sustained improvements in clinical outcomes, patient satisfaction, and cost.

LM Education and Resources

Over the last 10 years, an increasing number of medical schools offer LM as part of the curriculum. The University of South Carolina School of Medicine Greenville was the first medical school in the United States to include a 4-year LM curriculum.²⁹ The program's focus is to promote student self-care in the areas of nutrition, physical activity, behavior change, and resiliency while preparing them with the knowledge, skills, and advocacy to support their future patients. They also launched Lifestyle Medicine Education as an open-access evidence-based LM curricular resource for medical students. Another example of an LM program is the *Health Meets Food* Culinary Medicine comprehensive training program utilized at over 60 medical schools.³⁰ The program increases competencies and conversations about food and lifestyle between health care providers and patients.

Medical residency programs have also expanded their curriculum to include LM training. In 2022, the Lifestyle Medicine Residency Curriculum (LMRC) was included in over 170 programs in the United States, the majority being family practice.³¹ LMRC consists of a 100-hour educational component, including didactic units and independent application activities, followed by a practical experience.³² In 2017, LM certification became available from the ABLM for physicians and health care providers.³³ ABLM diplomate certification signifies specialized LM knowledge and competencies. To date, approximately 2500 US physicians have been certified.

ACPM Support for LM

In 2017, ACPM introduced an American Medical Association proposal supporting policies and mechanisms that incentivize and provide funding for the inclusion of LM education and SDoH in undergraduate, graduate, and continuing medical education (CME).³⁴ LM training began as a partnership between ACPM and the American College of Lifestyle Medicine (ACLM). With over 8000 members and growing, ACLM is a medical professional society whose aim is "to provide quality education to those dedicated to clinical and worksite practice of LM as the foundation of a transformed and sustainable health care system."³⁵ This partnership produced the LM training program titled *Lifestyle Medicine Core Competencies*, now in its third update.³⁶ The 10-module program focuses on improving competence and skills, encourages a team approach, and provides the research and clinical foundation for the field. Available online, the course awards 32 CME credits.

Finally, a recent consensus statement, *Lifestyle Medicine for Optimal Outcomes in Primary Care*,³⁷ provides the evidence-based essential elements of an LM competent primary care practice. Physicians looking to incorporate LM into their health care practice can begin by exploring publicly available resources.³⁸ Additional resources to

engage and educate patients include ACLM certified programs—both fee and free programs are available.³⁹

Growing Synergies of Preventive Medicine, Public Health, and LM

There is growing congruence between preventive and LM, whole person health, integrative, culinary, and complementary medicine. Examples include the National Institutes of Health's National Center for Complementary and Integrative Health focus on whole person health⁴⁰ and the Veterans Health Administration Whole Health transformation effort.⁴¹ Whole health is a team-based approach based on trusted relationships to promote well-being, prevent disease, and restore health. This approach empowers individuals, families, communities, and populations to improve their health by utilizing self-care, lifestyle, and behavioral interventions.

Momentum for LM increased in late 2022 with the White House Conference on Hunger, Nutrition, and Health. The conference laid out a vision for ending hunger and reducing diet-related disease by 2030, while closing disparities among the communities that are impacted most.⁴² In collaboration with the conference, ACLM created opportunities for LM continuing education⁴³ by providing an online CME at no cost. ACLM and ABLM also created support for LM training and certification in each U.S. Federally Qualified Health Center in the U.S.⁴⁴

COVID Lessons Learned and the Future ahead

In 2019, two global pandemics—COVID-19 and obesity—intersected, exacerbating the virus' most harmful effects and disproportionately affecting underserved communities. To a large extent, the underlying health conditions, that heightened vulnerability to the virus, are lifestyle-related and directly impacted by SDoH. These unhealthy lifestyle behaviors increasingly affect health care expenditure, driving as much as 90% of health care dollars spent, making the precepts of LM more relevant and more urgently needed than ever.⁴⁵ The COVID-19 pandemic and a heightened awareness of systemic racism in the health care system give a sense of urgency to increase health equity and reduce the prevalence of preventable noncommunicable diseases such as hypertension and diabetes, particularly among higher-risk populations. In order to advance these precepts, the ACPM, in late 2020, convened a group of 24 stakeholders representing leading national health care organizations and collectively articulated recommendations for integrating lifestyle and preventive medicine contents into undergraduate medical education (UME).⁴⁶ The assumption is that integrating the contents of lifestyle and preventive medicine into UME will result in content and curriculum that is better aligned with population health needs and train physicians to be better equipped to meet future demands.

Recognizing continuing gaps in medical education, the Association of American Medical Colleges and the Accreditation Council for Graduate Medical Education committed to hosting the Medical Education Summit on Nutrition in Practice in March 2023,⁴⁷ bringing together over 150 leaders in medical education to explore the best approaches for integrating nutrition and food insecurity into medical education, with a focus on interprofessional treatment and health equity.

Virtual Practices

LM can be delivered via a wide variety of standard and multimedia formats targeted to different learning styles, thus improving patient engagement and health outcomes. There is sufficient evidence to support the use of many current technologies in the clinical practice of LM.⁴⁸ During the pandemic, patient satisfaction and efficacy were

demonstrated when a weight-management clinic rapidly converted to telephone appointments while maintaining close interdisciplinary collaboration.⁴⁹

The COVID-19 pandemic expedited the utilization and acceptance of both individual and shared medical appointment (SMA) telehealth encounters. As early as 2010, virtual Complete Health Improvement Program SMAs were piloted in an employee population, with financial metrics demonstrating a return of \$1.8 for every \$1 invested. Requiring little physical space, virtual SMAs create an opportunity for greater scheduling flexibility while offering new opportunities for LM education and the involvement of other family members.⁵⁰

Integration of Public Health, Preventive and LM: Whole Health

After COVID's peak, much has been written about weak public health infrastructure, lack of commitment to preventive medicine, and a significant need for greater investment. America should be committed to a community-based, equity-focused approach that optimizes well-being. A vision and strategy that educates, enables, and engages individuals within their communities combining historical and emerging practice frameworks are needed to address the conditions that enabled the inequitably distributed morbidity and mortality exacerbated by COVID. Through its Health Equity Achieved through Lifestyle Medicine (HEAL) project,⁵¹ ACLM convened researchers, health care professionals, clergy, and community leaders. Participants concluded that now is the time to identify and eradicate the root causes of the chronic diseases, which disproportionately impact underserved communities. The consensus was that LM is a critical component and foundation of a transformed and sustainable system of health care.⁵²

LM reframes the challenge of simply treating disease to recognizing, educating, and supporting patients' healthy and disease-reversing behaviors in their contextual environment, comprehensively addressing root causes. The National Academy of Medicine⁵³ boldly summarized the need to change the way we care for Americans: "Whole health is physical, behavioral, spiritual, and socioeconomic well-being as defined by individuals, families, and communities. Whole health care is an interprofessional, team-based approach anchored in trusted relationships to promote well-being, prevent disease, and restore health. It aligns with a person's life mission, aspiration, and purpose. It shifts the focus from a reactive disease-oriented medical care system to one that prioritizes health, well-being, and disease prevention. It changes the health care conversation from "What's wrong with you?" to "What matters to you?""

CLINICS CARE POINTS

- Lifestyle medicine (LM) clinical practice directly addresses and decreases systemic inflammation which is the common pathogenic pathway causing the majority of chronic diseases.
- LM honors the patient's beliefs and desires, collects "lifestyle vital signs", and creates a provider-patient plan and ongoing support for sustained behavior change.
- LM is optimized with aligned payment models; team-based care; skill-building; and individual, group, virtual visits and connectivity.

DISCLOSURE

Dr Parkinson is the Principal of P3 Health, LLC. Dr Parkinson serves on numerous boards and committees related to lifestyle medicine. Dr. Stout is the President &

CEO of Ardmore Institute of Health, a non-profit and active proponent of lifestyle medicine, including the provision of funding for research and publications related to lifestyle medicine. Dr. Stout serves on numerous boards and committees related to lifestyle medicine. Dr Dysinger is the CEO of Lifestyle Medical, a corporation that provides lifestyle medicine services. Dr Dysinger serves on numerous boards and committees related to lifestyle medicine.

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