In the current issue of *Mayo Clinic Proceedings*, 4 separate articles address the impact of functional capacity and lifestyle characteristics on health outcomes and associated costs. These articles highlight the importance of promoting healthy living (HL) behaviors across the life span.

People who lead an unhealthy lifestyle are at high risk for the occurrence of bad and expensive health-related phenomena, particularly those related to cardiovascular diseases (CVDs). The bad is related to multimorbidity, frequent physician visits, pharmacologic dependency (eg, drugs to treat hypertension, hyperlipidemia, and diabetes mellitus), surgical procedures, and premature mortality. The expensive piece of this equation is related to the dramatically high (and steadily increasing) health care costs associated with treating these morbid complications. Suffice it to say, it is imperative to promote HL characteristics irrespective of age, sex, race/ethnicity, and baseline health status. Moreover, migration from unhealthy behaviors to 1 or more HL characteristics has the potential for significant health and economic benefits (ie, fewer bad, expensive health-related phenomena). Compared with those individuals with the most unhealthy lifestyles, those with an ideal lifestyle—that is, primarily related to being physically active, consuming a nutritious and healthy diet, not smoking, and maintaining a healthy body weight—have up to an approximately 80% lower risk of bad and expensive things happening to their health (ie, diagnosis of a chronic disease and associated adverse health consequences). In fact, there is no other pharmacologic cocktail or surgical procedure that can tout such risk reductions.

The American Heart Association has proposed a metric to define poor, intermediate, and ideal cardiovascular health (iCVH) named Life’s Simple 7 (LS7), and its framework consists of 4 health behaviors (physical activity [PA], diet, avoiding tobacco use, and body weight) and 3 health factors (managing cholesterol, blood pressure, and blood sugar). There is clear evidence that continual improvement in LS7 characteristics (moving from poor to intermediate to iCVH) results in progressive improvement in health trajectory, such as fewer bad health-related consequences and lower cost to the health care system. In this way, LS7 can be viewed as both a vital sign and an HL polypill (which, for the purposes of this discussion, we will describe as a single therapeutic intervention—that is, a metaphorical pill—that contains multiple physiologic and pharmacologic benefits). This polypill is unique in the sense that variable dosages and formulations will all lead to a unifying singularity: improved health outcomes with substantial cost savings. Moreover, this polypill has virtually no adverse effects and is of benefit to the entire human race. An HL health care system is globally applicable, and all individuals should have it prescribed and adhere to their personalized dosage of the HL polypill.

As stated at the outset, this issue of *Mayo Clinic Proceedings* contains several articles that highlight the importance of HL characteristics...
in preventing bad and costly health outcomes. In a cohort of patients with heart failure (HF) admitted to a skilled nursing facility, Manne-eman et al found that decreased physical function was a significant predictor of future hospitalization. In a large cohort of patients referred to cardiac rehabilitation (CR) in Canada, all of whom were diagnosed with CVD, Alter et al reported that those who participated in CR had significantly lower health care utilization and expenditure over the long-term. Supervia et al performed a separate meta-analysis assessing barriers to CR and solutions in women, who are historically underrefered and have significantly lower participation rates in CR than do men. Lower education level, multimorbidity, English as a second language, poor social support, and greater family responsibilities were all identified as barriers to CR. Conversely, facilitating CR enrollment, strong endorsement for participation by a patient’s health care provider, and alternate delivery models (ie, tele-health and home-based CR) were all found to be potential solutions to overcome identified barriers. In a large employee-based analysis in Florida, Osondu et al reported that more favorable profiles (stratified as poor, intermediate, or iCVH, as measured by LS7) equated to progressively lower health care utilization and expenditure in a young, ethnically diverse cohort, most of whom were not diagnosed with chronic disease.

In the United States and most of the Westernized globe, HF is a problematic diagnosis on a number of fronts, including frequent repeat hospitalizations. Functional capacity and PA, an integral component of LS7 and the HL polypill, is linked to the clinical trajectory of patients diagnosed with HF. This premise is again confirmed by Manneeman et al in an HF cohort at particularly high risk: that is, those admitted to a skilled nursing facility. This analysis highlights the importance of optimizing functional capacity in the skilled nursing facility environment. This can be achieved through various professional services, including physical therapy and exercise physiology.

Upon discharge from a skilled nursing facility, referral to an outpatient CR program for all qualified patients should be considered a priority, including those diagnosed with chronic systolic HF. Traditional CR is perhaps the most well-established dispenser of the HL polypill; although not conceptualized in this way for the past several decades, the key tenets of CR have been to optimize the LS7 phenotype.

There is a dearth of literature irrefutably demonstrating the benefits of CR for all qualified individuals, irrespective of age, race/ethnicity, and sex. Well-established CR benefits include significant improvements in quality of life (QOL), improved functional capacity, better adherence to dietary and pharmacologic therapies, as well as significant reductions in future adverse CVD events and health care expenditures. The investigation by Alter et al further reinforces the well-established economic benefit of CR, preventing future bad things from happening and reducing health care expenditures. Supervia et al, in the same issue of the *Proceedings*, highlight an important and concerning issue, which is the significant underutilization of CR in women compared with men. This is part of a larger underreferral and, more importantly, underutilization pattern of CR in all eligible patients. Numerous barriers, many highlighted by Supervia et al, have been identified. Strong health care practitioner endorsement and patient education on the benefits of CR are imperative to assist in overcoming these barriers. A shortened time frame from hospital discharge to initiation of CR also appears to be of tremendous benefit to CR referral, initiation, and, most importantly, completion. In a cohort of patients suffering a myocardial infarction, Parker et al demonstrated that engagement in an early-access CR clinic, held between 4 and 14 days after hospital discharge, resulted in a CR completion rate of 71.4%. This was significantly higher than the completion rate of 29.9% in the historical matched comparison group that was commonly evaluated and referred to CR several weeks after hospital discharge.

Health care in the United States and many other countries is undergoing a dramatic paradigm shift, moving from a reactionary model, in which individuals are commonly at high risk for or already diagnosed with a chronic disease, toward a proactive prevention model, in which avoiding diagnosis of a
chronic disease and ideally associated risk factors, such as those for CVD, is the primary objective. The latter model is far more advantageous from a number of perspectives, including enhanced functional capacity and QOL, as well as decreased health care utilization and expenditure.

A proactive prevention health care model is committed to prolonging the healthspan, defined as the number of years an individual is healthy and free from debilitating disease. A commitment to prolonging the healthspan is in stark contrast to prolonging the lifespan, the latter of which exclusively speaks to the number of years an individual is alive without necessarily considering functional independence and QOL. Moreover, a health system that focuses on promoting the healthspan as opposed to the lifespan is far more favorable from an economic perspective. There is not a more important medicine for a proactive premorbid/primary prevention health care model, committed to prolonging the healthspan, than the HL polypill.

Traditional health care systems should consider embedding HL teams (ie, exercise scientists, dieticians, and behavioral and physical therapists) throughout clinical settings, working alongside physicians, nurses, and so forth. Australia has already moved in this direction, providing a mechanism for accrediting exercise physiologists and making them an integral component of the interdisciplinary health care team. Moving outside of the traditional health care model toward a direction of primary prevention in the workplace, Osondu et al highlight the importance of iCVH in a large cohort of employees, most of whom have yet to be diagnosed with a chronic disease. Those with an iCVH phenotype, as measured by LS7, demonstrated significantly lower health care utilization and expenditure.

There are a number of other publications demonstrating the same pattern—that is, iCVH, as measured by LS7, equates to an improved health trajectory and decreased health care expenditure. In fact, the American Heart Association has made a significant commitment to advocating for a standardized, evidence-based model for worksite health and wellness programming recognizing the tremendous opportunity to improve iCVH metrics in a larger proportion of the population through immersion of a culture of health and wellness in the workplace. Arena et al also opined that the core evidence-based principles of CR are well aligned with worksite health and wellness.

Arena et al recently proposed expanding the traditional CR model to serve as the foundation to expand prescription and daily consumption of the HL polypill. The core tenets of CR—that is, promoting increased PA, intake of a healthy/nutritious diet, not smoking, and maintaining a healthy body weight—should be implemented in premorbid and primary prevention settings at every opportunity. In such a model, community settings, such as parks, grocery stores, school systems, and the workplace, would become part of the new health care system, immersing people in a culture of HL in which they live, work, and go to school. To realize such an expanded vision, stakeholders within such a health care system would have to be reconceptualized.

Arena et al recently published a blueprint for such an expansion in Mayo Clinic Proceedings. This document identifies key stakeholders including (1) professional organizations, (2) educational systems, (3) government, (4) health care organizations, (5) the insurance industry, (6) nonprofit and community organizations, (7) media outlets, (8) mobile health and technology companies, (9) employers, (10) the food industry, (11) the health and fitness industry, and (12) individuals and families. All the aforementioned stakeholders have a vested interest and important role in promoting HL. A nonhierarchical connectivity model was proposed, advocating for creative collaborations among 2 or more stakeholders with the goal of conceptualizing and implementing novel HL initiatives that are locally applicable. Such an approach could be an important component of the evolution of what is now known as CR, migrating from a secondary prevention model that reaches a suboptimal proportion of the population to a comprehensive prevention model (ie, premorbid, primary, and secondary) that has a much larger reach and impact.

There is also a need to ensure that health professionals are appropriately trained to prescribe an individualized HL polypill. Administration of this vital medicine should be the responsibility of all health professionals.
versal educational model. Arena et al. proposed a novel “stackable credential” in the form of a 21-credit certificate program that health professionals can either take (1) in parallel to their professional education or (2) as an elective sequence after the completion of their professional education. This HL practitioner mastery of information and credentialing would allow for all health professionals to dispense the HL polypill in a uniform, hope-fully evidence-based fashion. Other education/training models should be considered to train individuals from various walks of life, to champion for and promote a culture of HL. For example, it may be advantageous to consider training the lay public on the basic principles of HL in a similar fashion to the training provided for basic cardiopulmonary resuscitation.

In conclusion, when someone leads an unhealthy life, the risk of bad and expensive things happening significantly rises. Several articles in this issue of Mayo Clinic Proceedings highlight the importance of broad distribution of the HL polypill, which should be administered as early as possible and maintained throughout life, ideally preventing CVD risk factors associated with chronic disease from ever developing. In those individuals in whom risk factors or an actual chronic disease diagnosis has manifested, including CVD, initiating the HL polypill still has tremendous benefit, preventing future bad things from happening and reducing health care expendi-tures. It is time to recognize that the best medicine we have for improving population health consists of physically moving more, eating nutritiously, not smoking, and main-taining an appropriate body weight. Regardless of the future course of health care delivery and reimbursement systems in the United States, these 4 essential characteristics to one’s optimal healthspan should be the foundation of any health care system moving forward.

REFERENCES