



Welcome to *Progress in Preventive Medicine* from the Editorial Board

Ross Arena, PhD, PT, FESPM; Michael Sagner, MD, FESPM; Charles Auffray, PhD, FESPM; Luc Tappy, MD, FESPM; Leroy Hood, MD, PhD, FESPM; Elissa Epel, PhD, FESPM; Bruce McEwen, PhD, FESPM; Zhu Chen, MD, PhD, FESPM; David Wood, MD, PhD, FESPM; Pekka Puska, MD, PhD, FESPM

From the Departments of Physical Therapy and Kinesiology and Nutrition (RA) and College of Applied Health Sciences, University of Illinois at Chicago (RA, MS); European Institute for Systems Biology and Medicine (CA); Department of Physiology, Faculty of Biology and Medicine, University of Lausanne (LT); Institute for Systems Biology (LH); Department of Psychiatry, University of California, San Francisco (EE); Harold and Margaret Milliken Hatch Laboratory of Neuroendocrinology, The Rockefeller University (BM); Key Laboratory of Systems Biomedicine (Ministry of Education), Shanghai Center for Systems Biomedicine, Shanghai Jiao Tong University (ZC); International Centre for Circulatory Health, National Heart and Lung Institute, Imperial College London (DW); and National Institute for Health and Welfare (THL) (PP).

Correspondence to Michael Sagner, MD, FESPM, College Applied Health Sciences, University of Illinois at Chicago, 1919 W. Taylor Street, 454 AHSB, Chicago, IL 60612; E-mail: sagner@esprevmed.org

We are currently facing a chronic disease crisis around the world, which has largely been brought about by preventable risk factors. Specifically, physical inactivity, poor nutrition, psychological stress, and excess body mass, the risk factors most intricately linked to chronic disease, are alarmingly high and on the rise.^[1–4] Moreover, these unhealthy trends have spread and are increasing in low- to middle-income countries.^[5,6] In parallel, over centuries, healthcare in many countries has evolved into a “reactive” system, one that fully engages when symptoms or disease first appears, ignoring years of disease trajectory and subclinical risk. Seemingly, we have become efficient in prolonging the lifespan through traditional healthcare and managing chronic disease once it has been diagnosed. However, at the same time, this healthcare-mediated increase in lifespan is doing so at the sacrifice of the healthspan (ie, the number of years a person is healthy and free of disease).^[7,8]

There is now broad recognition that preventing unhealthy lifestyle and associated physiologic characteristics from ever occurring is the global way forward to prevent and reduce the burden of chronic disease. In fact, there is clear evidence that the vast majority of chronic diseases can be prevented or delayed to a significantly later time in the lifespan by appropriate interventions.^[9–11] Essentially, in order to increase the healthspan, we must transform from a reactionary system to one that is preventive at the earliest point possible, promoting health and wellness across the lifespan. This transformation requires a reconsideration of what actually constitutes a healthcare system (and not a “disease care system”). We need to rethink the traditional model of a hospital and outpatient clinics. Prevention of chronic diseases largely takes place outside of hospitals and outpatient clinics. To promote lifelong wellness, prevent chronic dis-

ease risk, and prolong the healthspan, a number of other settings must become part of the future healthcare enterprise. The future healthcare provider must meet people where they live, go to school, and work.^[12,13]

There is also a strong economic rationale for healthcare to focus on prolonging the healthspan as the costs of treating those who lead an unhealthy lifestyle and develop high chronic disease risk or, most commonly, ultimately have one or more confirmed chronic disease diagnoses, are much more costly to care for through hospitalizations, surgeries, and pharmacotherapy. Regardless of the economic model that covers healthcare in a given country (i.e., government vs private funded or a mix thereof), reduced amounts of a country’s economy devoted to the management of chronic disease are highly desirable.^[14–18]

The theoretical, technological, and conceptual advances throughout the last decade also warrant the rapid transition to a “proactive” healthcare system, focused on optimally prolonging the healthspan as opposed to managing disease.^[7,8,12] The care delivered in this proactive system must transform and become Preventive, Predictive, Personalized, and Participatory, a concept known as “P4 medicine.”^[19,20] P4 medicine holds great promise to (1) provide deep insights into disease mechanisms; (2) make blood a diagnostic window for viewing health and disease for the individual; (3) stratify complex diseases into their distinct subtypes for an impedance match against proper drugs; (4) provide new approaches to drug target discovery; and (5) generate metrics for assessing wellness. Patients and consumers will be a major driver in the realization of P4 medicine through their participation in medically oriented services directed at improving their own healthcare.^[21–24]

Healthcare education and practice, across the disciplines, commonly follows a reductionist approach with strong focus on single organs and organ-focused specialties. Complex interactions, nonlinearity, and convex responses have been neglected in the science and clinical practice of medicine. Convexity in medicine is at 2 levels. First is the understanding the effect of dosing and its nonlinearity. Second, at the level of risk analysis for patient interventions. The human body is arguably the most complex system known to mankind; we only understand a fraction of its function-

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ality and interactions. A grand challenge impeding optimal prevention and treatment of chronic diseases, such as cancer, arises from the complex nature of the disease: the cellular heterogeneity and the myriad of dysfunctional molecular and genetic networks as results of genetic (somatic) and environmental perturbations. Systems biology, with its holistic approach to understanding fundamental principles in biology and the empowering technologies in genomics, proteomics, single-cell analysis, microfluidics, and computational strategies, enables a comprehensive approach to medicine, which strives to unveil the pathogenic mechanisms of diseases, identify disease biomarkers, and begin thinking about new strategies for drug target discovery. Embracing complex system expertise and technology will help to improve health and advance medicine. Systems biology and the digital revolution are together transforming healthcare to a form of systems medicine that aligns with the P4 approach. [20,23,25,26]

In this context, *Progress in Preventive Medicine* aims to provide a platform to publish articles and discuss the principal aspects of how healthcare must transform and embody the aforementioned attributes. Studying complex biological systems in a holistic manner as opposed to a “one organ, one gene, or one protein” approach requires the concerted effort of scientists from a wide variety of disciplines. As such, we are honored that many world-leading experts join our endeavor to advance the future proactive healthcare system and disseminate knowledge through *Progress in Preventive Medicine*.

Given the rapid and needed evolution of healthcare, there could not be a better time for the launch of *Progress in Preventive Medicine*. This journal will address all topics related to the aforementioned areas, from the cellular, to clinical, to the population level. Cutting edge original publications, reviews, case reports, and perspectives focusing on healthy lifestyle and precision medicine will define this journal. Our goal is to rapidly have *Progress in Preventive Medicine* recognized as the premier source for information chronicling the transformation of healthcare as we all work together to prevent chronic disease, improve quality of life, and prolong the healthspan. Albert Einstein once said: “Intellectuals solve problems, geniuses prevent them.”—maybe we can all aspire to be a bit more like that and look at root causes and system interactions to predict and prevent diseases.

It is with great pleasure that we, the leading editors, present you with this first edition of the new peer-reviewed open access journal *Progress in Preventive Medicine*. We are grateful to all of our colleagues and contributing experts who made this journal possible and who support this important initiative. We look forward to receiving and publishing your articles. Onward and upward for health and science, together.

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