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Editorial

Merging precision and healthy living medicine: Individualizing the path to a healthier lifestyle☆

As a global society committed to promoting the healthspan (i.e., "the number of years an individual is healthy and free from debilitating disease") for all, we must abandon the traditional reactionary approach to healthcare.[1,2] This reactionary approach typically entails waiting for individuals to, at best, chronically establish a poor health phenotype (e.g., obesity, dyslipidemia, pre-diabetes, systemic inflammation) or, at worst, having one or more confirmed chronic disease diagnoses [e.g., cardiovascular disease (CVD), cancer, pulmonary disease] following an adverse health event (e.g., myocardial infarction) before seeking care. The fact that individuals who: 1) Are more physically active; 2) Consume a healthy diet; 3) Maintain a healthy body weight; and 4) Do not smoke, have substantially better health outcomes compared to individuals who are on the opposite end of the lifestyle spectrum (i.e., sedentary, poor diet, obese and smoke) is well established in the literature[3] and accepted as unequivocal truth by professional organizations and healthcare professionals.[4,5] When considering the two ends of the lifestyle spectrum, those with optimal lifestyle characteristics demonstrate cardiovascular risk reductions >60% compared to those who demonstrate the poorest health characteristics.[3,6] As such, we have come to appreciate the four aforementioned desirable healthy living (HL) behaviors that play a central role in preventing and treating a myriad of chronic conditions, including CVD. In fact, HL medicine (HLM) must be prescribed to all individuals.[2,7] It is of the upmost importance to note that progression along the lifestyle spectrum, away from a poor lifestyle and toward healthier choices is continual with respect to improved health outcomes; significant benefits are obtained with small healthier choices with progressively greater benefits as an individual progresses toward an ideal HL phenotype. Suffice to say, all healthy behavior changes, no matter how big (running a marathon) or small (taking two 20 minute walks with your dog per week), should be recognized and celebrated.

While it is widely recognized that HL behaviors are of the utmost importance to preventing and treating chronic disease, adoption of the HL phenotype continues to be poor, particularly with respect to unhealthy diet, low levels of physical activity, increased sedentary behaviors (i.e., sitting and screen time) and excess body mass.[8,9] Perhaps poor adoption of HL behaviors by a large percentage of the global population is attributed to the perceptions of what it means to make meaningful healthy lifestyle changes. Traditionally, although not intentionally, HL is messaged as an all-or-none phenomenon, giving the misunderstanding that healthful benefits occur *only* when a particular, predefined health metric is met - exercising 150 min or more per week at a moderate intensity, eating 5 servings of fruits and vegetables per day, and having a healthy body weight defined as a body mass index <25 kg/m^2 are examples of predefined, dichotomous health metrics. This binary messaging and perception is incongruent with our current understanding of the impact of adopting one or more HL behaviors; any change that is positive, such as exercising 75 min at a light to moderate intensity per week compared to no exercise[10] or eating 2–3 servings of fruits and vegetables per day compared to no servings[11], is highly beneficial to an individual's health outlook. While interviewing women across a range of physical activity patterns, Segar et al.[12] reported "one low active participant said that walking her dog was a barrier to being active, which implied that she did not believe dog-walking counted as valid physical activity". This perception is evidence that patients may not always know small healthy changes, while below guideline driven thresholds that define ideal, can have tremendous benefits. For the previous example, while this woman may not have been ready to fully adopt the physical activity guidelines, she may be very willing to walk her dog for a greater duration and frequency if she knew it would be considered a clinically meaningful change toward the HL phenotype. Moreover, we often do not consider how key factors, such as the built environment surrounding an individual within a given community[13], impact decisions to either adopt or abstain from HL behaviors and in essence, drive various health disparities across populations. The decision to adopt HL behaviors is highly individualized, influenced by a myriad of factors that we often fail to consider. To significantly increase the adoption of HL behaviors on a population level, we need to abandon the one-size-fits-all approach and become much more precise in how HLM is delivered.[14]

The National Institutes of Health has defined precision medicine as "identifying which approaches will be effective for which patients based on genetic, environmental, and lifestyle factors".[15] This approach has gained increasing momentum in recent years, a trend that will most certainly continue. To this point, the primary focus of precision medicine has been centered on the role of genetics and how it is used to predict disease risk and individually tailor interventions to reduce risk as warranted.[16] While lifestyle and environmental factors are included in the definition of precision medicine, there has been a lack of focus on these areas. Moreover, long-term sustainability of structured HL intervention programs are potentially limited by the challenges associated with the implementation, delivery, and adaptation of oftentimes intensive intervention components to the

Abbreviations and acronyms: CVD, cardiovascular disease; HL, healthy living; HLM, healthy living medicine.

☆ Statement of conflict of interest: see page 2.

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"real-world" settings, such as primary care clinics, workplace health and wellness programs and community-based programs. In addition, individuals in a "real-world" setting each present their own unique set of diverse factors in terms of individual biology, health status, motivations, perceptions, surrounding environment, etc. To improve long-term compliance with a healthier lifestyle, the tenants of precision medicine should be incorporated into the promotion and practice of HLM.[14] Something is better than nothing in terms of HL behaviors and even more is better. This fact, supported by an abundance of scientific evidence, allows for a great deal of flexibility and individualization in how we get more individuals to acknowledge, adopt, and maintain HL behaviors. With expectations of the formidable forecasting of modifiable chronic diseases, worldwide[17], there is now a need to rethink how we relay this message to individuals in need of HL behavior change as well as prescribe individualized and optimally effective interventions. This edition of Progress in Cardiovascular Diseases will address key precision medicine considerations with respect to the field of HLM for the prevention and treatment of chronic diseases, in particular CVD.

Statement of conflict of interest

None of the authors have any conflicts of interests with regard to this publication.

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