

The Future of Cardiovascular Prevention: Unprecedented Times

Running Title: *Sperling; Future of Cardiovascular Prevention*

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I struggle with whether it's appropriate to share these thoughts at this time given the challenges of the uncharted moment regarding the future of global health, healthcare, and humanity in the setting of the escalating COVID-19 pandemic. Our oldest son is quarantined in the basement of our home in Atlanta with a new onset fever after arrival from Los Angeles yesterday, my 89 year old father is socially isolating, and my in-laws are sequestered in a small town in South Georgia, remote from potentially needed higher level medical care. Our reality today is that there are many unknowns, uncertainties, and these are tenuous unprecedented times. The future seems distant as we address the daily more immediate hurdles before us. There are unique demands and responsibilities for those serving our population through public health and healthcare. Cities, states, and countries are on progressive shelter-in-place lockdowns in an attempt to "flatten the curve," with today's worldwide coronavirus resource center sharing exponential progression to more than 2 million cases and almost 150,000 deaths worldwide to date (1).

In the midst of our multiple daily COVID-19 related concerns a trainee from Toronto posed a pivotal question on the interactive Doc Matters American Society for Preventive Cardiology community site regarding the future of specialties like preventive cardiology which have been deemed "non-essential" services. Although I had previously held back on directly commenting on this forum I was compelled to respond. When this unprecedented challenge to our country and the world hopefully settles down (we have a long journey ahead) what will be clear is that among the many lessons we have been blind to is that the burden of chronic disease (non-communicable diseases / NCDs) has led to a human civilization in great danger. What is notable from the early COVID-19 data is that the risk for severe manifestations and death are being driven by the interaction of an invisible viral pathogen with an unwell population. The need to invest more than ever in ESSENTIAL services like cardiovascular prevention, preventive

cardiology, population health initiatives, and robust public health programs is visibly apparent globally and in our communities everywhere in the U.S.

Although the evolving data from around the world and preliminary estimates among patients with COVID-19 in the U.S. have limitations and significant epidemiologic questions remain, what has been evident is the association between serious COVID-19 related morbidity and mortality to increasing age, as well as underlying chronic health conditions. Among the initial coronavirus cases reported in the U.S. 78% of those requiring intensive care unit (ICU) admission and 71% requiring hospitalization without ICU admission had at least one underlying health condition. The most commonly reported conditions identified in this preliminary data were diabetes (10.9%), chronic lung disease (9.2%), and cardiovascular disease (9.0%) (2). Cardiovascular disease is the leading cause of global mortality with almost 80% of this burden seen in low and middle income countries (3). In the U.S., trends in premature heart disease mortality are of significant concern as almost two-thirds of all counties are experiencing increasing cardiovascular mortality rates among adults age 35 to 64. The percentage of deaths attributable to heart failure are steadily increasing. Events both globally and in the U.S. are being driven by high rates of uncontrolled blood pressure, inadequately managed cholesterol, unacceptable rates of tobacco use, and the increasing prevalence of obesity, metabolic risk, and diabetes (4). Significant disparities are present related to social determinants of health and there are accelerating geographic gradients of health and access to quality healthcare seen locally, regionally, and globally.

The COVID-19 pandemic highlights the fragile state of human beings and our exiguous infrastructure in 2020. Rapid spread of a novel virus across an increasingly interconnected species has quickly uncovered our vulnerabilities, although it is unclear whether these

vulnerabilities are predominantly related to the severity of underlying health conditions versus the interplay between genetics, environmental factors, and behavior. Additional data are needed to better understand whether the severity or level of control of underlying chronic health conditions affects the clinical course associated with COVID-19. Moreover, it is uncertain whether the greater impact of chronic disease states on outcome with COVID-19 is unique to this pathogen or a more generalized susceptibility to illness. Although we often adopt a siloed approach to medical care, disease states are not in competition with one another. In fact, as we are witnessing, the interaction of an infectious disease with an unhealthy population living with a high burden of chronic disease can be catastrophic.

It is uncertain, but likely that the significant morbidity and impact on COVID-19-related mortality would have been lessened by greater focus and investment in population health.  What will be the future of cardiovascular prevention as we reflect on this unprecedented moment in modern times? There are proven public health, community oriented, and clinical interventions that can prevent and address the epidemics of many chronic diseases including cardiovascular disease. Targeting collective and modest improvements in population-based risk through greater investments in public health integrated with comprehensive approaches to clinical care can save millions of lives (5). In addition, a healthier population may be more resilient to future unplanned global threats. These strategies with a focus on widespread implementation must become a high level priority. Let's approach our current challenges together one day at a time with teamwork, compassion and genuine concern for others. Our future depends on it.

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