This month’s feature highlights three articles that appear in the current issue of Mayo Clinic Proceedings. These articles are also featured on the Mayo Clinic Proceedings’ YouTube Channel (https://youtu.be/oMohMnstETE).

OH SLEEP, IT IS A GENTLE THING THAT PROTECTS AGAINST CARDIOVASCULAR DISEASE
The risk of cardiovascular disease (CVD) is critically shaped by lifestyle-related factors such as physical inactivity, smoking, poor dietary habits, and excessive alcohol consumption. The health benefits - including the cardiovascular health benefits - of adequate sleep patterns is increasingly recognized. In the present issue of Mayo Clinic Proceedings, Song et al questioned whether sleep may modulate lifestyle-associated cardiovascular risk. Their analysis was based on data from the UK Biobank on approximately 400,000 participants without CVD at baseline and in whom there was a median follow-up of 9 years. A lifestyle score was calculated based on physical activity, smoking, alcohol consumption, and diet; the lifestyle score was categorized as favorable, intermediate, or unfavorable. A score for the sleep pattern was calculated based on duration of sleep, insomnia, snoring, daytime dozing, and chronotype (essentially a reflection of an individual’s preferred hours of sleep and preferred hours of productive activity while awake); sleep patterns were then classified as healthy, intermediate, or poor. The primary outcome of the study was CVD, and the secondary outcomes were myocardial infarction (MI) and stroke. The data of Song et al demonstrate that a healthy sleep pattern can diminish the risk for CVD and MI that attend unfavorable lifestyles. These findings were recapitulated when a sensitivity analysis was performed. A resource of the UK Biobank data is the availability of genetic determinants of disease. Capitalizing on such data, Song et al demonstrated that in individuals with genetic factors that presaged poor sleep patterns, the risks of CVD caused by unfavorable lifestyle were accentuated. In Samuel Taylor Coleridge’s 18th century masterpiece “The Rime of the Ancient Mariner,” sleep gives the mariner temporary respite from his angst (“Oh Sleep, it is a gentle thing, Beloved from pole to pole! To Mary Queen, praise be given! She sent the gentle sleep from heaven, That slid into my soul.”). Sleep is not only a balm that, at least temporarily, relieves us from the toil and troubles of the passing day, but, as shown by the study of Song et al, sleep, when healthy in its patterns, can counteract and mitigate the increased risk of cardiovascular disease imposed by inimical behaviors and lifestyle.


THE COST OF INSULIN IN THE UNITED STATES: WHY SO HIGH AND RISING FOR A 100-YEAR-OLD THERAPY?
In a prior issue of Mayo Clinic Proceedings in January 2020 that highlighted the discovery of insulin a century ago, a landmark contribution by Rajkumar brilliantly discussed the underpinnings of the high cost of insulin in the United States and the possible solutions that reside at varied levels: state and federal policies, institutional policies, and physician practices. The present issue of Mayo Clinic
Proceedings returns to this topic with the study by Schneider et al that evaluates the spending on insulin and insulin’s cost in the United States relative to those metrics in Canada. Their analysis utilized data from IQVIA, a major health care data science company, pertaining to prescription volume and cost data. The essential findings of Schneider et al reveal stark differences between the two countries: in 2018 the United States spent $28 billion on insulin whereas Canada spent $484 million, spending that reflected in that year $85,490 per 1000 population in the United States and $12,998 per 1000 population in Canada; the insulin user in the United States spent almost 5 times more than the insulin user in Canada ($3490 versus $725). Moreover, over the 3-year span of their analysis, the increase in the cost of insulin was trivial in Canada, whereas such cost increased by just over 10% in the United States. In discussing their findings, Schneider et al underscore, among other considerations, that the lower cost of insulin in Canada likely reflects regulatory insulin pricing policies that exist in Canada in contrast to the relative lack of such policies in the United States; the general therapeutic approach of prescribing the least expensive insulin in achieving the desired and optimal therapeutic objectives; and the relative easier market access for lower priced biosimilars. The much higher cost of prescription drugs in general in the United States compared with other countries continues unabated, and the case of insulin is a striking example. This 100-year-old therapy mitigates the complications of diabetes and saves lives — surely, the collective experience of 100 years should have led to declining and constraining costs for this essential therapy.


DISTANT ADVERSE SEQUELAE OF COVID-19

As for many diseases, acute and chronic phases exist, and in this regard, COVID-19 is no exception. In the current issue of Mayo Clinic Proceedings, Joshee et al provide a comprehensive review of the long-term effects of COVID-19 based on their PubMed search of the English literature published by July 17, 2021. These authors provide a summary of the epidemiology, pathophysiology, clinical predictors, management recommendations, and unanswered and future directions as these salient issues pertain to: the pulmonary, cardiovascular, neurologic, and hematologic systems; multisystem inflammatory syndromes; and other systems that are much less commonly involved such as renal, endocrine, integumentary, and gastrointestinal systems. Helpful tables summarize the essential considerations pertaining to these system-specific issues, and are preceded by a detailed table that compares and contrasts the key features of acute COVID-19 and post-acute COVID-19. The authors emphasize a management approach that is comprehensive and multidisciplinary in nature, integrating such expertise with approaches that are attentive to and incorporate nutritional considerations, physical medicine and rehabilitation, psychological counseling, mindfulness/meditation, and appropriate drug therapy. The authors also emphasize that management recommendations may be tailored to the specific needs of a given patient, and that as knowledge of post-acute COVID-19 evolves, approaches to management may evolve as well. Also in this issue is the original article by Ganesh et al that analyzes clinical data from the first 108 patients seen in the post-COVID-19 care clinic at Mayo Clinic and the clinical phenotypes so observed; this original work is broadly discussed by the insightful editorial by Durstenfeld et al. The upending and blindsiding challenges of the COVID-19 pandemic have elicited innovative responses in so many areas. It is to be earnestly hoped that the same creativity would elucidate the still mysterious post COVID-19 condition, and how patients may derive relief and recovery from what can be crippling symptoms and debilitations.


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