



Emergency General Surgery and Mental Health in the COVID-19 Syndemic: In Search of the Double-Edged Blade

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The COVID-19 pandemic has been characterized as a syndemic, or multiple synergistically acting epidemics, where the interaction of multiple health epidemics produces vulnerable populations subject to increased incidence, morbidity, and mortality from COVID-19. Social factors are important contributors to these health disparities. In the aftermath of the COVID-19 syndemic, we are witnessing an ‘awakening’ to the importance of public health and the social determinants of health. The impact of COVID-19 on mental health has been particularly alarming, with the COVID-19 Mental Disorders Collaborators estimating a global increase of 27.6% in major depressive disorder worldwide [1]. A large retrospective study examining the effect of mental health on elective surgical outcomes in Medicare patients found patients with depression and anxiety to have significantly increased risk for surgical complications (OR 1.44, 95% confidence interval (CI) 1.42–1.46), extended length of stay (OR 1.45, 95% CI 1.44–1.46), and higher 30-day readmission (OR 1.87, 95% CI 1.85–1.90) [2]. Thus, these societal concerns are of interest to the General Surgeon and provide a context for Maroof and colleagues’ investigation of the impact of depression on 210 patients undergoing common emergency general surgical operations [3]. They found a 17% prevalence of depression, a non-significant trend of increased postoperative delirium, a longer duration of parenteral pain management, and an increased 30-day readmission rate. However, on multivariate analyses, depression was not

found to be an independent risk factor for these outcomes. The authors point out that, as the first study evaluating depression on emergency surgical outcomes, it is a small exploratory study to inform future areas of study. Despite its limitations, including the nonspecific nature of depression ascertainment, the study nonetheless lays the groundwork for an important area in need of further study. Let us further examine the background and biological rationale for this line of investigation.

Recent trends have witnessed both increasing surgeon specialization in large, urban academic centers, as well as more precision medicine treatments. These “reductionist” approaches impose significant system constraints where we strive to understand cause and effect so that we can finely tailor our treatment approaches. In contrast, public health research often occurs in a context where we cannot control and constrain contributing factors. Recognizing these different yet equally important perspectives, in 2003, the World Journal of Surgery Editorial Board added the journal section “ethical, social, and policy issues,” and provided the following rationale: “Our world is changing rapidly and becoming more complex. Surgeons are faced with new ethical, regulatory, and political challenges for which our background and training provide little preparation.” [4]. As a consequence, both reductionist and holistic methods are useful to advance surgical science within a rapidly changing world.

Studies support the association of depression with oxidative and nitrosative stress states; both are also seen in response to chronic psychosocial stress. Chronic activation of these pathways, observed in mood disorders along with chronic psychosocial stress, increases the allostatic load confronting our patients. Increased allostatic load, or overload, has many adverse effects impacting the brain, cardiovascular system, metabolic pathways, immune

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system, and even the telomeres on our chromosomes thought to promote premature aging. Guidi et al. provide a clear overview, mechanisms and pathophysiology describing how excess allostatic load produces these harmful biological effects [5]. Clinical depression has been found to be an independent risk factor for poor outcomes in patients with cardiac and cerebrovascular disease, diabetes, osteoporosis, cancer, traumatic brain injury, and other medical conditions. Similarly, morbidity and mortality disparities seen in numerous chronic diseases are generated by the higher allostatic load seen in populations more effected by adversity arising from variations in social determinants of health. Therefore, clinical and basic science data provide a coherent pattern supporting the hypothesis that chronic psychosocial stress, such as experienced in depressive illnesses, generates increased allostatic load, producing adverse systemic pathophysiologic effects and worsening clinical outcomes.

A major challenge faced by our health care system is the cost-effective detection and treatment of mental health conditions within routine medical and surgical care. While screening for common conditions such as depression and suicidal ideation has become commonplace in primary care settings, screening is much less common in specialty medical and surgical settings, where the prevalence of mental health conditions is particularly high. Furthermore, multiple studies have documented the effectiveness of integrated stepped psychosocial delivery models, such as the Collaborative Care Model, for improving access to evidence-based mental health care and improving outcomes and patient experience within medical populations such as cancer, cardiac disease, diabetes and respiratory disease [6]. Such integrated models should be tested in surgical settings.

Mental disorders, including depression, generate a significant global burden of disease [1] and have been stigmatized in many countries, including the USA. There remain large gaps in providing essential mental health services, despite passage of the Paul Wellstone and Pete Domenici Mental Health Parity and Addiction Equity Act of 2008 (MHPAEA). With continuation of current trends, mental disorders and the effects from health and health care disparities will increasingly affect our patients. Evaluating these interactions on our patients undergoing emergency general surgical procedures may reveal significant vulnerabilities affecting our patients for which we need to be prepared to address. We expect investigators using large

databases may provide an estimate regarding the attributable impact of underlying mood disorders on outcomes, whereas through large multicenter studies evaluating more specific patient subpopulations will provide a greater understanding of the potential impact of mood disorders on postoperative outcomes. Prospective studies might identify the relative effects of disease, medications, and interaction with the health care setting and coordinated care management on outcomes. As patient care continues to become more complicated, increasing surgeon understanding of patient susceptibilities and system improvements with coordinated care management will likely benefit our patients. Moreover, the austerity policies that reduce or eliminate Government funded social support programs, which gained popularity in the UK and US in the 1980s, must be abandoned; we encourage policy-makers to prioritize health equity regarding mental health services and policies addressing the systemic inequities that then generate disparities in the social conditions that contribute to our patients' health outcomes.

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