

Diabetes-related Amputations During COVID-19: A Pandemic Within a Pandemic

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The coronavirus disease of 2019 (COVID-19) pandemic has resulted in millions of infections and over 1 million deaths worldwide, but the toll of indirect effects of the pandemic are now being discovered. There have been an estimated 100,000 excess deaths in the United States since February 1, 2020.¹ Excess deaths are those that are not related to COVID-19 but above the predicted number of deaths from all other causes. The World Health Organization surveyed 155 countries during May of 2020 and found that half of the countries had partially or completely disrupted services for diabetes and diabetes-related complications and warned of the pandemic's global impact on noncommunicable diseases.²

In June of 2020, an editorial in *The New England Journal of Medicine* spoke of the "Untold toll [of the] pandemic's effects on patients **without** [*emphasis added*] COVID-19."³ Now, 4 months later, that toll is no longer untold, especially for patients with lower extremity complications of diabetes.

Early in the pandemic, the Alliance of Wound Care Stakeholders advised hospitals, policymakers, and governments not to close wound centers or delay necessary care to wound patients because it would result in an increase in infections, hospital admissions, emergency room visits, and amputations.⁴

In "A Tale of Two Cities," Shin et al⁵ described the approaches to the diabetic foot at centers of excellence in Los Angeles and Manchester, United

Kingdom. Both centers used telemedicine to reduce in-person contact with the health system, but the authors cautioned not to avoid necessary care. Appropriate triage was noted as a central necessity in the strategies to reduce severe diabetic foot infections and complications during epidemics to reduce amputation during epidemics.⁶ Rogers et al⁷ proposed the Pandemic Diabetic Foot Triage System, which helps determine the urgency and site needed for treatment. In the "Wound Center Without Walls,"⁸ Rogers et al later described strategies to reduce the COVID-19 exposure risk to the patient and still provide the best practices in wound care in lower risk settings.

Accompanying this editorial, Casciato et al⁹ report on the effect of the COVID-19 pandemic on those with diabetic foot problems in a Level I trauma center in Ohio. A comparison of patients admitted to the podiatric service before the pandemic versus during the pandemic found that those with diabetes were more likely to present with Infectious Diseases Society of America severe infections and more likely to present emergently. Patients with diabetes were 10.8 times more likely to undergo any level of amputation and 12.5 times more likely to receive a major amputation (transfemoral or transtibial) during the pandemic.

Three recent additional published reports found similar results in the United States and Europe. From Italy, Caruso et al¹⁰ found that patients admitted to the hospital in 2020 versus 2019 were more likely to be emergencies and have gangrene; the number of amputations doubled. From The Netherlands, Schuivens et al¹¹ compared pandemic period data with those of 2018 and 2019. They found that, in 2020, patients presented with more severe peripheral arterial disease (scored by the Rutherford classification) and that there were three times the number of amputations versus 2019.¹¹ In fact, there were more amputations performed in 2020 so far than in 2018 and 2019 combined. This is especially notable because The Netherlands has a strategy for team-based care that

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previously reduced diabetes-related amputations by 34% nationwide.¹²

From the United States, Lancaster et al¹³ compared pre-pandemic limb salvage service data in a university vascular practice from several affiliated hospitals with those of the “shelter-in-place” period. Using the wound, ischemia, and foot infection classification,¹⁴ they found a more severe presentation of patients during the pandemic, mostly because of increased severity of infections. The number of major amputations more than tripled during the pandemic and the high-to-low amputation ratio, a quality marker in limb salvage, more than doubled. All four reports note the pandemic’s negative effect on best practices in diabetic foot ulcer care resulting in delayed diagnosis and treatment. It is likely that patients’ reluctance and fear to seek medical care during this period created complications that resulted in these catastrophic results.

Amputations are not without their consequences either. Major limb loss affects quality of life and results in excessive costs to the health system. Major amputations are also associated with a 70% 5-year relative mortality rate.¹⁵ Best practices in diabetic foot care are both limb and life saving. We surmise that this increase in the rate of diabetes-related amputations will also contribute to the excess mortality resulting from the COVID-19 pandemic. *The New England Journal of Medicine* editorial cautioned us not to make “trade-offs [in care] we don’t have to make.” From these reports, it is clear that delays in care for diabetic foot ulcers have catastrophic effects. Increased awareness, proper prioritization, and efficiencies of care in lower risk settings are the first steps in mitigating this parallel pandemic of diabetes-related amputations.

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