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Letter to the Editor

Heart Failure in the COVID-19 Pandemic: Where Has All New York's Congestion Gone?

To the Editor:

Coronavirus disease 2019 (COVID-19) is caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and was declared a pandemic by the World Health Organization on March 11, 2020. The first confirmed case of COVID-19 in New York City was found on March 1, and as of April 24, there were 895,766 cases and 50,439 deaths across the United States due to COVID-19.¹ With nearly one-third of all US cases in New York, it remains an epicenter of the pandemic.

Although COVID-19 has profoundly impacted hospitals in New York City, there has been a dramatic reduction in patients hospitalized with heart failure (HF) at our institution. Furthermore, in order to mitigate continued spread of COVID-19, ambulatory care visits and elective procedures were postponed or canceled, and New York Governor Andrew Cuomo issued a mandatory stay-at-home order for all nonessential workers beginning on March 22.

This raises a question: where has all the heart failure gone? Certainly, the reduction in nonurgent procedures, including ablations, coronary interventions, device implantations, and transcatheter valve interventions, also reduces the number of patients with HF admitted to the hospital. We speculate that self-quarantine may interact with common triggers for HF decompensation as well as HF physiology to reduce decompensation through several mechanisms.

First, dietary indiscretions may have lessened, given a significant reduction in the number of restaurants remaining open for business. It is well known that the average sodium content of restaurant food is higher than home-cooked (even canned) food items.² Despite this, the restaurant and fast-food industry has not closed down completely, and continuation of some delivery and take-out options make this factor less likely to account for a large reduction in admissions due to HF.

Second, medication adherence may have improved. Several factors could have contributed to an increased likelihood of medication adherence, including near elimination of travel; patients rely heavily on public transportation in New York City, and patients may skip medications, particularly diuretics, when they know they have long travel times. With stay-at-home orders in place, patients may be more likely to take their medications. Perhaps there is an

increased awareness and desire to avoid the hospital, which may indirectly affect medication and dietary adherence.

Third, follow-up care has continued through the use of a new model of outpatient-care delivery. Our institution rapidly deployed virtual visits as a way of providing longitudinal care while also reducing patient exposure and slowing the spread of disease. The feasibility of this approach was recently demonstrated in a randomized controlled trial³ and endorsed by the Heart Failure Society of America.⁴ Although this may be helpful in preventing readmission in the short term, there is uncertainty about the mid- and long-term implications of employing this technology. Will guideline-directed medical therapy up-titration suffer due to the limited ability to monitor blood pressure, heart rate and laboratory values? Will we see a rebound increase in emergency department visits and hospitalizations due to HF? How will vulnerable patients, such as the elderly and those of lower socioeconomic status or residing in long-term care facilities, be affected by this transition of care?

Fourth, there has almost certainly been reduced energy expenditure. From a physiological standpoint, self-isolated patients may experience a significant reduction in daily energy expenditure. It has been demonstrated by invasive hemodynamic monitoring that patients hospitalized with HF placed on bed rest experience the equivalent of a vasodilatory response, with reductions in mean arterial pressure and left ventricular filling pressures and increases in cardiac output.⁵ Perhaps a similar phenomenon is occurring at home. Has matching between energy supply and demand improved? And is this why fewer patients are admitted because of HF?

Last, but most concerning, is the possibility that patients have developed worsening symptoms but are hesitant to seek medical attention because of concerns about COVID-19 exposure. If this were true, one might expect an increase in the number of phone calls or emergency department visits, but anecdotally, this is not happening.

The challenge now is to anticipate what will happen to HF care over the ensuing months as the numbers of COVID-19 cases decrease, and ambulatory care and elective procedures resume. The exacerbation of chronic conditions has been described in observations of natural disasters, and these experiences can be extrapolated here.⁶ Will we see negative long-term effects of telehealth and lack of in-person assessment of volume status, afterload reduction, and guideline-directed medical therapy titration? What about the psychosocial stressors of unemployment, childcare and access to food? Will there be a rebound

increase in restaurant food intake and a subsequent increase in congestion? At this juncture, it is prudent to assume that we will see a surge of cases of HF, and we must prepare for this next phase of care.

Supplementary materials

Supplementary material associated with this article can be found in the online version at doi:[10.1016/j.cardfail.2020.04.016](https://doi.org/10.1016/j.cardfail.2020.04.016).

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