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TO THE EDITOR

Performing Structural Heart Disease Interventions During the COVID-19 Pandemic



But What Are the Downsides?

We read with interest the American College of Cardiology and Society for Cardiovascular Angiography and Interventions consensus statement on triage considerations for patients referred for structural heart disease (SHD) intervention during the current coronavirus disease 2019 (COVID-19) pandemic by Shah et al. (1). The paper provides useful guidance regarding triage and timing of interventions for patients awaiting SHD treatment during this global crisis. However, we believe that the possible downsides of performing (high-risk) cardiovascular interventions during this period require additional discussion. These considerations should be more explicitly incorporated in any framework addressing interventions during the COVID-19 pandemic.

It is clear that time is not a luxury most patients with symptomatic cardiovascular diseases can afford, especially regarding SHD. For inpatients who cannot be discharged due to medical reasons, it is rational to perform necessary interventions during the COVID-19 pandemic, analogous to recommendations from the consensus statement (1). Conversely, for outpatients, risks for sudden cardiac death or irreversible cardiac deterioration while awaiting intervention should be weighed against the risks of nosocomial COVID-19 exposure and associated morbidity and mortality. Although the chances of nosocomial COVID-19 transmission in this setting are largely unknown and are

being investigated (NCT04290780), the possibility is factual and well reported (2,3). Furthermore, the phenomenon of asymptomatic carriers of COVID-19 has become increasingly important, inciting an absolute (but still unmeasurable) risk that COVID-19 positive patients, albeit without any symptoms, will undergo high-risk cardiovascular interventions. Although it is uncertain how COVID-19 will influence the periprocedural period, these cardiovascular patients commonly share similar risk factors (i.e., elderly patients with pre-existing concurrent cerebrovascular conditions, diabetes, or chronic kidney diseases) to patients who have the highest risks for mortality after being hospitalized for COVID-19 pneumonia (4).

Unfortunately, there are currently insufficient data available to properly guide us in this difficult balancing act. Updated regional and national epidemiologic data on COVID-19 prevalence are sorely needed. Moreover, we eagerly await further reports with case series detailing selection criteria, outcome data, and risks of nosocomial COVID-19 transmission for (out)patients undergoing cardiovascular interventions during this pandemic. Also, the expansion and improvement of testing to identify asymptomatic COVID-19 carriers will be crucial for optimal case selection. Until then, the dilemma of choosing the lesser evil will remain a challenge for the clinician and the patient on a daily basis.

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REPLY: Triage Considerations for Patients Referred for Structural Heart Disease Intervention During the Coronavirus Disease 2019 (COVID-19) Pandemic



An ACC/SCAI Consensus Statement

We read with interest letters from Shreenivas et al. (1) from The Christ Hospital in Cincinnati and Li et al. (2) from Radboud University in the Netherlands regarding triage of patients with aortic stenosis for transcatheter aortic valve replacement (TAVR) during the COVID-19 pandemic. Both groups agree with the American College of Cardiology/Society for Cardiovascular Angiography and Interventions consensus statement that hospitalized patients with severe aortic stenosis should undergo urgent treatment despite the pandemic. However, Shreenivas et al. (1) have modified their TAVR practice in 2 important ways during the pandemic.

First, they use $V_{\max} \geq 5.0$ m/s or mean gradient ≥ 50 mm Hg on echocardiography as criteria for urgent TAVR, independent of symptom status. Because this remains an issue for ongoing investigation even before the COVID-19 pandemic, the writing group was hesitant to offer strict hemodynamic criteria for urgent TAVR during COVID-19, deferring to local judgement on a case-by-case basis.

Second, they have moved to performing TAVR with general anesthesia rather than conscious sedation during the COVID-19 pandemic to minimize risk of staff exposure during unexpected intubation. The benefits of avoiding general anesthesia for TAVR include rapid recovery, avoidance of the intensive care unit, and rapid discharge. Furthermore, a recent TVT registry analysis suggests that conscious sedation is associated with reduced mortality in patients undergoing TAVR (3). It is understood, however, that physician and staff safety must be considered, and balancing these goals is challenging. This decision is best made locally and will be easier with widespread COVID-19 testing. We do believe, however, the net benefit is toward avoidance of general anesthesia.

Li et al. (2) raise an important concern regarding the potential risk for outpatients referred for

intervention. There is recognition of the risk of transmission from asymptomatic carriers of the novel coronavirus, insufficient local epidemiological data, variable availability of widespread testing, and a poor understanding of immunity. Furthermore, given the age and comorbid conditions of many patients with structural heart disease, the consequence of COVID-19 infection may be more severe than in the general population. We recognize that for each patient requiring intervention, a balance must be struck between the risk of exposing the patient to COVID-19 during hospitalization against the cardiovascular risk of delaying intervention. A threshold to offer intervention that is set too high during the pandemic will expose these patients to increased risk of adverse cardiovascular events (4). Shreenivas et al. (1) suggest that patient perception and avoidance of hospitalization potentially led to delays in treatment and sudden death in patients with aortic stenosis in their own practice.

During these unprecedented times, heart teams have to adjust their practice to ensure patient safety and optimal outcomes. We endorse the practice of weekly contact with deferred patients (potentially using telehealth options) and consideration of urgent intervention for clinical deterioration. Heart teams also have to adjust their consent process for patients in need of urgent intervention to document that the known risks of continued procedure deferral outweigh the unknown risks of contraction of COVID-19 during hospitalization.

As COVID-19 patients are increasingly being cohorted and testing becomes more widely available for patients and staff, the risk of COVID-19 acquisition in the hospital can be minimized. These difficult treatment decisions are best made by local health care delivery teams accounting for all of the previously mentioned variables. As more data are generated during the pandemic, clinicians will be further informed when making this complex decision.

Given the regional variation in COVID-19 prevalence and severity, guidance documents must avoid an overly prescriptive nature, and allow for physicians to adjust practice based on local disease prevalence. As such, hearing about local practices, such as those at The Christ Hospital and Radboud University, is informative and may be helpful to guide others in similar circumstances.

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