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The Evolving Pandemic of COVID-19 and Interventional Cardiology

Ehtisham Mahmud MD, FSCAI

President, Society for Cardiovascular Angiography and Interventions, Professor and Division Chief, Cardiovascular Medicine, University of California, La Jolla, California

The past month has been among the most tumultuous in modern American and world history. The spread of COVID-19 has developed into a worldwide pandemic, and our way of life has been dramatically altered. This national emergency has shuttered schools and restaurants, sports games, and music festivals. Here in California, an eerie quiet has taken over the streets, punctuated only by the rare child riding a bike or a couple walking their dog.

I want to express solidarity with our colleagues who are on the front lines, addressing the response to the COVID-19 pandemic. Physicians, nurses and allied health care professionals in the emergency departments, intensive care units and inpatient wards are dealing directly with the sickest patients and are, in turn, greatly exposed. We in the interventional and invasive cardiology world are immensely grateful for their efforts and are here to offer support and help.

This has been extraordinarily stressful for us as physicians, our families, and for the patients that we have taken an oath to take care of and treat. There are many unknowns, but the universal learning based on the China, Italy, Europe and now California experience is that personal hygiene, social distancing, appropriate personal protective equipment (PPE) (https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-risk-assesment-hcp.html), and isolating the highest risk group (age > 65, immunocompromised and/or those with medical comorbidities) have the greatest potential to mitigate the risk of COVID-19 spread and the associated morbidity/mortality.

At times like this, we are forced to ask larger questions than those that pertain to just ourselves and determine the best way to move forward. There is a paucity of adequate data to guide our next steps, especially as they relate to the care of cardiovascular patients and those who require management in the catheterization laboratory (Cath Lab). We can leverage the lessons from China and determine how we might want to apply them to our health care systems.

The decision-making process is multifactorial for the treatment of COVID-19 patients, possible COVID-19 patients, and all other patients presently undergoing procedures in the Cath Lab. A proportion of patients with COVID-19 develop sequelae of cardiovascular disease, including acute coronary syndromes, focal or diffuse cardiomyopathy and myopericarditis.[1] Optimal treatment options depend on local prevalence of the disease, and the resources and expertise available. Currently, the following approach seems prudent:

1 ***Confirmed COVID-19 patients***. Although there are suggestions of a thrombolysis-first approach for ST segment elevation myocardial infarction (STEMI) patients from the Chinese experience,[2] I do not think that it is appropriate with the current COVID-19 disease burden in the United States. In the presence of a STEMI or non-STEMI (NSTEMI) with ongoing ischemic symptoms/hemodynamic compromise, patients should be taken to the Cath Lab for angiography/primary PCI with appropriate PPE for the entire Cath Lab team. Post-transfer patients who have received fibrinolysis should still be taken for rescue PCI if clinically appropriate. For NSTEMI patients who are otherwise stable, to minimize the risk of staff exposure, medical management with coronary angiography for recalcitrant symptoms only may be the most logical approach. Elective coronary angiography can then be pursued at a future time when the patient is less infectious.
2 ***Possible COVID-19 patients***. When these patients present with a STEMI, they should be treated with primary PCI with appropriate PPE as presently, there is no widely available rapid test to exclude the diagnosis of COVID-19. When presenting with an NSTEMI,

these patients should await coronary angiography until a negative COVID-19 test has been confirmed.

3 ***Elective Cath Lab patients***. This group of patients requires an approach that is evolving. In California, there is self-isolation for the elderly (age > 65 years) and the state is residing in a "shelter-in-place" order. As most patients undergoing elective structural heart disease, stable coronary artery disease, and peripheral vascular disease treatment are elderly, these patients should probably not undergo elective procedures until we have better assessment of the evolving situation nationally. If social distancing and isolation of the high-risk cohort is to be effective, delaying these elective procedures seems the most prudent approach. The only patients who should be treated are those with accelerating symptoms or those felt to be unstable for deferral. The Centers for Medicare and Medicaid Services (CMS) has (March 18, 2020) (http://www.cms.gov/files/document/31820-cms-adult-elective-surgery-and-procedures-recommendations.pdf) issued a statement regarding delaying all nonessential surgeries and procedures to ensure that as a nation, we have adequate PPE and hospital resources to take care of the expanding COVID-19 patients who will need medical care.

As we face the COVID-19 pandemic, The Society for Cardiovascular Angiography and Interventions (SCAI) is committed to ensuring the health, safety, and well-being of our members, healthcare teams and the patients they treat. SCAI and the American College of Cardiology Interventional Scientific Council have issued a joint statement regarding the management of COVID-19 patients who need Cath Lab services.[3] Additionally, SCAI has launched the COVID-19 Resource Center to provide our members updated information for the management of patients with cardiovascular disease during this pandemic. In partnership with the Canadian Association of Interventional Cardiology (CAIC), we have also launched a series of webinars to educate our membership regarding the relevant issues. Furthermore, SCAI and CAIC have launched the North American COVID-19 Myocardial Infarction (NACMI) registry to investigate outcomes among COVID-19 patients who present with ST elevation.

Although I did not have a national prescription to follow, I took the following steps over the past few weeks at UC San Diego and am modifying the strategy for the division of cardiovascular medicine as new information becomes available:

1 The cardiology clinic patient visits deemed to be nonessential (routine follow-up, medication refill), or patients with any upper respiratory infection symptoms in the previous 14 days have been rescheduled. A format for virtual online visits has been implemented. New consults or urgent clinical issues are still evaluated in the clinic after screening for COVID-19 symptoms and deemed to be essential based on the virtual visit.
2 The majority of elective Cath Lab and EP procedures have been deferred. Procedures felt to be essential are those that if delayed, might lead to adverse clinical outcomes in the next 8 weeks and are proceeding. However, all atrial septal defect and patent foramen ovale closure, left atrial appendage closure, percutaneous mitral valve repair, or outpatient coronary/peripheral angiography/intervention procedures for stable symptoms have been postponed. Critical aortic stenosis patients with advanced symptoms are receiving transcatheter aortic valve replacement procedures.
3 All faculty are available and being assigned clinical responsibilities on a rotating basis to ensure redundancy of coverage with the exception of those in the high-risk cohort for COVID-19.
4 Nonclinical staff in the division work by telecommuting.
5 In-person divisional conferences (educational and administrative) are canceled with an alternative strategy for providing education and information utilizing an online platform.

I am providing the above anecdotal example based on the decisions made due to the steadily increasing COVID-19 inpatients being managed at UC San Diego and newly issued state mandates. There are many reasons to reschedule elective procedures in the Cath and EP labs, but the primary driving force is the anticipated surge of patients infected with COVID-19. Each institution and administration will have to determine the best way to approach these decisions in concert with the Centers for Disease Control and Center for Medicare and Medicaid Services guidelines, and both infectious disease experts and critical care intensivists.

This is an unprecedented medical challenge for all of us, and there are many questions for which we do not have immediate answers but have the tools and reach within SCAI to find them. Additionally, we cannot be effective physicians and interventionalists unless we take care of ourselves, our families, children, and senior colleagues. Collectively, we are all facing the anxiety of the unknown and will best be able to address it by remaining calm, organized and systematic in our approaches. We have to work together as an interventional cardiology community by supporting each other, remaining adaptable, and providing the best possible care for our patients.

REFERENCES

1. Huang C, Wang Y, Lin X, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. Lancet 2020;395:497-506.
2. Zeng J, Huang J, Pan L. How to balance acute myocardial infarction and COVID-19: the protocols from Sichuan Provincial People's Hospital. Intensive Care Med. 2020;46:1111-1113. https://doi.org/10.1007/s00134-020-05993-9.
3. Welt FGP, Shah PB, Aronow HD, et al. Catheterization laboratory considerations during the Coronavirus (COVID-19) pandemic: from ACC's Interventional Council and SCAI. J Am Coll Cardiol. 2020;75:2372-2375.

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