

EDITORIAL COMMENT

Expert Article Analysis for:

[Impact of COVID-19 pandemic on STEMI care: An expanded analysis from the United States](#)

Practice patterns for patients with ST-elevation myocardial infarction during the early phase of the COVID-19 pandemic—Valuable lessons learned

Xiaoming Jia MD  | Hani Jneid MD 

Section of Cardiology, Department of Medicine, Baylor College of Medicine, Houston, Texas, USA

Correspondence

Hani Jneid, Section of Cardiology, Baylor College of Medicine, Houston, TX, 77030, USA.

Email: jneid@bcm.edu

Key Points

- During the early phase of the COVID-19 pandemic in the United States, there was a significant reduction in cardiac catheterization lab activations and numbers of PPCI for STEMI as well as an increase in door-to-balloon time.
- The decrease in STEMI volume is likely multifaceted involving factors at the patient and health system levels.
- Longitudinal data on STEMI care beyond the early phase of the pandemic is needed to better understand how different health systems have been adapting to the ongoing pandemic.

More than a year since the start of the pandemic, coronavirus disease-2019 (COVID-19) continues to shape patient care delivery at all tiers of the healthcare system. Hard-earned experience has allowed us to adapt and protocolize clinical care strategies to accommodate this new “fact of life.” The management of patients

with ST-elevation myocardial infarction (STEMI) was immediately impacted by the spike of COVID-19 cases around the world. Reports from the early months of the pandemic indicated a decrease in STEMI volumes as well as a change in practice patterns at institutions located in regions with high rates of COVID-19 infections.

In this issue, Garcia et al. compared trends in STEMI care delivery in the 14 months preceding March 1, 2020, and the subsequent 2 months during the early phase of the COVID-19 pandemic.¹ The study included 18 primary percutaneous coronary intervention (PPCI) hospitals and healthcare systems representing four geographic regions within the United States and assessed the numbers of STEMI activations and activations leading to angiography and PPCI as well as mean door-to-balloon times. The authors observed significant reductions in the number of STEMI activations (29%), number of activations leading to angiography (34%), and number of activations leading to PPCI (20%) during the early phase of COVID-19. Moreover, the mean door-to-balloon time increased by 20% during this time period.

The decrease in PPCI rates and increase in door-to-balloon times observed in the present study from the United States were similar to trends observed in high-volume PCI centers in Europe.² A meta-analysis pooling multiple studies from Europe and Asia suggests that the time from symptom onset to first medical contact after STEMI did not change after the start of the pandemic. Importantly, that study found that there was no significant increase in-hospital mortality among patients presenting with STEMI.³

The cause of the decrease in STEMI activations is likely multifaceted involving patients' fear of exposure to COVID-19 and reluctance to go to the hospital combined with hospital oversaturation, shortage of supplies and staff, and in the hardest-hit areas the tremendous strain placed on emergency medical services to bring sick patients to medical centers. Meanwhile, the increase in door-to-balloon times likely reflected the change in STEMI protocols adopted by hospitals to accommodate COVID-19 patients, including infection screening and donning of personal protective equipment.⁴ Furthermore, it was recognized early on that COVID-19 infection often resulted in myocardial injury leading to troponin elevations and in some cases also ST-segment elevation on the electrocardiogram in the absence of obstruction to major epicardial coronary arteries.⁵ Thus, in more equivocal cases, utilization of noninvasive imaging (i.e., point of care echocardiography or cardiac computer tomography) prior to cath lab activation may have also contributed to an increase in the door-to-balloon time.

Interestingly, the authors noted heterogeneity in the change in STEMI volume at different centers between March and April 2020, with some sites returning to near pre-pandemic numbers while others experiencing a further decrease. The variation may be suggestive of evolving policies at individual hospitals and regionally as the pandemic progressed. Especially in the beginning of COVID-19 in the United States, a less centralized response was evident compared with many parts of Europe and Asia resulting in more individualized institutional or regional policies depending on local needs. As the authors pointed out, actions such as aggressive public messaging educating the public about the need to pursue care in emergent situations likely contributed to more patients with STEMIs seeking appropriate medical treatment in those communities. Finally, the present study reveals the necessity for more longitudinal follow-up data since the early phase of the COVID-19 pandemic as institutions implemented longer-term policies. These lessons learned and protocols developed by the individual hospitals and the healthcare system as a whole are invaluable and will better prepare us for the future.

DISCLOSURE OF INTEREST

The authors have nothing to disclose.

ORCID

Xiaoming Jia  <https://orcid.org/0000-0001-7949-6173>

Hani Jneid  <https://orcid.org/0000-0002-8754-358X>

REFERENCES

1. Garcia S, Stanberry L, Schmidt S, et al. Impact of COVID-19 pandemic on STEMI care: an expanded analysis from the United States. *Catheter Cardiovasc Interv.* 2021;98(2):29154.
2. de Luca G, Verdoia M, Cercek M, et al. Impact of COVID-19 pandemic on mechanical reperfusion for patients with STEMI. *J Am Coll Cardiol.* 2020;76:2321-2330.
3. Rattka M, Dreyhaupt J, Winsauer C, et al. Effect of the COVID-19 pandemic on mortality of patients with STEMI: a systematic review and meta-analysis. *Heart.* 2021;107:482-487.
4. Mahmud E, Dauerman HL, Welt FGP, et al. Management of acute myocardial infarction during the COVID-19 pandemic: a consensus statement from the Society for Cardiovascular Angiography and Interventions (SCAI), the American College of Cardiology (ACC), and the American College of Emergency Physicians (ACEP). *Catheter Cardiovasc Interv.* 2020;96:336-345.
5. Stefanini GG, Montorfano M, Trabattoni D, et al. ST-elevation myocardial infarction in patients with COVID-19: clinical and angiographic outcomes. *Circulation.* 2020;141:2113-2116.

How to cite this article: Jia X, Jneid H. Practice patterns for patients with ST-elevation myocardial infarction during the early phase of the COVID-19 pandemic—Valuable lessons learned. *Catheter Cardiovasc Interv.* 2021;98:223–224. <https://doi.org/10.1002/ccd.29843>