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# Resuscitation

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## Letter to the Editor

# Coronavirus disease 2019 (COVID-19) and acute cardiovascular disease management: A Chinese perspective on striking the balance



The global spread of the coronavirus disease 2019 (COVID-19) has exploded. On March 11, the WHO officially announced that COVID-19 had become a global pandemic.<sup>1</sup> At the time of this writing, confirmed cases have been reported in over 200 countries, areas or territories, bringing the total deaths to over 230,000.<sup>2</sup> Although China has achieved zero in new domestic cases in over 30 provinces for days, Beijing is still registering intermittent imported cases and hence, continuing its unrelenting prevention efforts.

Nevertheless, under the strict control measures, the timely treatment for patients with acute cardiovascular disease (CVD) is currently challenging. These patients have particularly distinctive conditions, which mean that those with acute coronary syndrome (ACS) and acute aortic dissection (AAD) may experience rapid deterioration during a very short time.

Acute ST-segment elevation myocardial infarction (STEMI) is a good example of this. Due to the domestic experts' consensus,<sup>3</sup> most large general hospitals in Beijing have significantly reduced primary percutaneous coronary interventions (PCIs), with the STEMI patients being subjected to emergency intravenous thrombolysis. Similar conditions also occur in other life-threatening cardiac and aortic diseases.

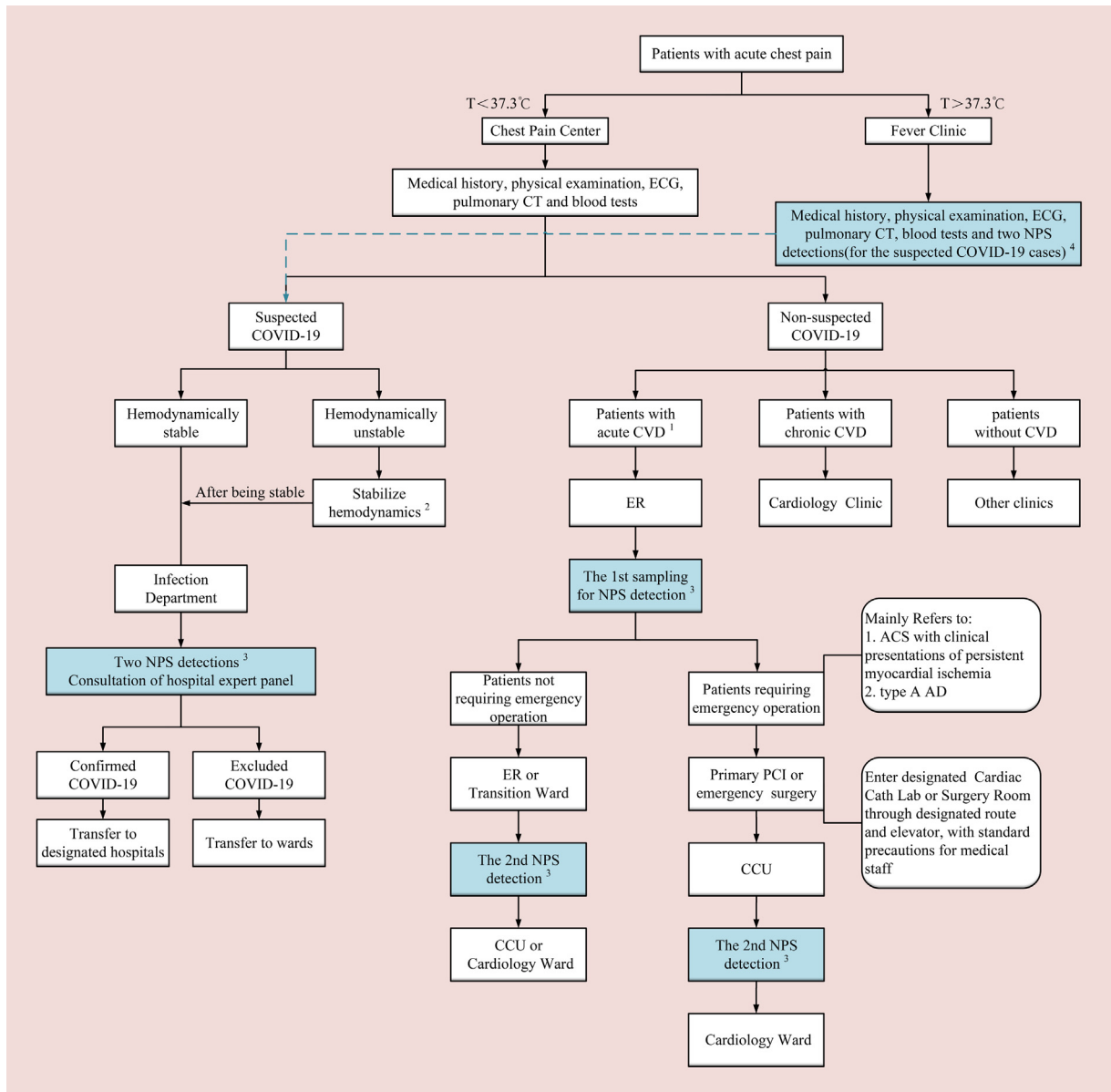
We have tried to strike a balance between COVID-19 and acute CVD. We took the Chest Pain Center as the first-visit unit for such patients, and performed classified screening and management according to the algorithm below (Fig. 1). Since the outbreak of COVID-19 in China, we have completed primary PCIs for 167 STEMI patients, making us the heart center that has completed the

most primary PCIs in Beijing after the COVID-19 epidemic (Typically, the total number of PCIs in our center is about 2000 per year, and that of primary PCIs is about 400). At the same time, a total of 9 confirmed COVID-19 patients were screened out in our hospital, with no medical staff infected. Moreover, the pulmonary CT is noted to be helpful. 3 cases that were then confirmed as COVID-19 were picked out due to the abnormal CT findings without fever or respiratory symptoms.

Based on the algorithm shown in Fig. 1:

- The use of a pulmonary CT in the first-round examination of all patients avoided missing some COVID-19 cases due to the failure of detecting virus nucleic acid in upper respiratory tract specimens in the early stage.
- Primary PCI was still our first option for STEMI patients in non-suspected COVID-19 cases with the indication of emergency revascularization recommended in the guidelines.<sup>4</sup>
- A transition ward was set up for patients with CVD who were critically ill and could not be diverted to the outpatient clinic.

The extension of Door to Balloon Time is inevitable ( $69.4 \pm 24.7$  min before COVID-19 vs  $100.2 \pm 29.3$  min after COVID-19). Is it worth the preoperative delay caused by the screening procedure for STEMI patients? For suspected COVID-19 cases, should we give up primary PCI for those with STEMI? For the vast number of chronic cardiovascular patients, the potential risks caused by failure to reexamine and take medicine also need more assessment.



**Fig. 1 – The algorithm for management of acute cardiovascular disease during the COVID-19 pandemic. COVID-19, coronavirus disease 2019. CVD, cardiovascular disease. ACS, acute coronary syndrome. NPS, nasopharyngeal swab. AD, aortic dissection. ER, emergency room.**

**1. Patients with acute CVD mainly refer to: ST-segment elevation myocardial infarction (STEMI), non-ST-segment elevation myocardial infarction (NSTEMI) with GRACE Score  $\geq 140$ , unstable angina, acute aortic dissection (AAD), acute pulmonary embolism (APE), acute decompensated chronic heart failure (ADCHF), fetal cardiac arrhythmia, hypertensive emergency.**

**2. STEMI patients with no contraindications to intravenous thrombolysis were given rtPA administration. Type A: AD patients were given drug therapy to stabilize their hemodynamics.**

**3. The patients with positive result of any NPS detection of SARS-CoV-2 nucleic acid should be transferred to designated hospitals, unless the clinical condition is unstable and life-threatening. The length of time between sampling and result of NPS detection is about 12 h. We just sampled but not waited for the result before emergency operations.**

**4. Patients with a suspicion of COVID-19 due to the results of blood tests and pulmonary CT would be asked to proceed two NPS detections with an interval of 24 h. Before the exclusion of COVID-19, the patients in Fever Clinic with an acute attack of chest pain would be transferred to the Chest Pain Center and included in the algorithm as suspected cases.**

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## Conflict of interest statement

No conflict of interest exists in the submission of this manuscript, and manuscript is approved by all authors for publication.

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