

CASE REPORT

GLOBAL HEALTH REPORT

Management of Acute Coronary Syndrome in the COVID-19 Era

Voices From the Global Cardiology Community



Alessia Gambaro, MD,^a Hee Hwa Ho, MD,^b Thomas E. Kaier, MD, MBA, PhD,^c Gustavo Pires-Morais, MD,^d Jignesh A. Patel, MD,^e Mohammad Mostafa Ansari Ramandi, MD^f

The coronavirus disease-2019 (COVID-19) pandemic, caused by severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2) infection, has greatly disrupted our professional and personal lives. Six early career cardiologists comment briefly on their personal experiences.

PROCESSES OF CARE

ITALY: ALESSIA GAMBARO. Everyone in the hospital has to wear surgical masks, and no relatives are allowed to visit the patients; they are updated by telephone calls. The hospital and the emergency department have been reorganized into COVID-19 and non-COVID-19 units. COVID-19 patients needing urgent treatment are admitted to the cardiac catheterization laboratory (CCL) directly and subsequently transferred to COVID-19 units, according to their needs. Patients with suspected COVID-19 infection are admitted to the emergency department, where the SARS-CoV-2 test is performed immediately, and then transferred to the CCL. They are then admitted to the cardiology unit but isolated in a single

monitored room and are considered to be “infected” until SARS-CoV-2 test results are available. If the results of the first test are negative, a second test is repeated after 72 h. Patients who are infected are transferred to COVID-19 units, whereas those whose results are negative remain in the cardiology unit. If urgent interventional procedures are not needed, patients with suspected COVID-19 are cared for by on-call cardiologists and the ED physicians, who use personal protective equipment (PPE) in the emergency department until the SARS-CoV-2 test results are available (4 to 8 h).

If possible, cardiology consultations are performed remotely. Otherwise, the cardiologist with PPE assesses the patients at the bedside. Dedicated echocardiography machines are used in COVID-19 wards. All the necessary cardiology procedures are performed in COVID-19 patients with adequate PPE and sanitation of the machines and rooms. Elective procedures have been temporarily halted to reduce the contagion risk. Patient follow-up is done remotely (Skype, telephone calls) when possible; those needing direct assessment and treatment—such as diuretic infusion and implantable cardioverter defibrillator reprogramming—are seen in the clinic.

SINGAPORE: HEE HWA HO. Chinese physicians facing the first wave of patients with COVID-19 advocated for fibrinolysis as first-line therapy for ST-segment elevation myocardial infarction (STEMI) instead of primary percutaneous coronary intervention (PPCI). In Singapore, PPCI is the first-line reperfusion therapy. We are also treating patients with non-ST-segment elevation acute coronary syndrome (NSTEMI-ACS) with invasive coronary angiography and PPCI. All catheterization laboratory staff must use maximal personal protective equipment (PPE) during

From the ^aCardiology Division, Department of Medicine, University of Verona, AOU Verona, Verona, Italy; ^bDepartment of Cardiology, Tan Tock Seng Hospital, Singapore; ^cKing's College London BHF Centre, The Rayne Institute, St. Thomas' Hospital, London, United Kingdom; ^dCardiovascular Intervention Unit, Department of Cardiology, Gaia Hospital Center, Porto, Portugal; ^eMaimonides Medical Center, Brooklyn, New York; and the ^fCardiovascular Diseases Research Center, Birjand University of Medical Sciences, Birjand, Iran. The authors have reported that they have no relationships relevant to the contents of this paper to disclose.

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ABBREVIATIONS AND ACRONYMS

ACS = acute coronary syndrome

CCL = catheterization laboratory

COVID-19 = coronavirus disease-2019

ICD = implantable cardioverter defibrillator

NSTE = non-ST-segment elevation

PCI = percutaneous coronary intervention

PPCI = primary percutaneous coronary intervention

PPE = personal protective equipment

SARS-CoV-2 = severe acute respiratory syndrome coronavirus 2

STEMI = ST-segment elevation myocardial infarction

the procedure and re-establish a sanitary environment when the case is over. We strongly advocate a prophylactic early-intubation strategy if the patient demonstrates significant signs and symptoms suggestive of acute respiratory distress or has a high likelihood of respiratory deterioration. An airway team with full PPE and powered air-purifying respirators ideally should be on standby for stable patients who were not intubated prophylactically.

UNITED KINGDOM: THOMAS KAIER. PPCI remains the preferred option for patients with STEMI. Although fibrinolysis is an option, most patients will require coronary angiography within 24 h, and therefore the risks outweigh the benefits of reduced or delayed operator exposure. In patients with NSTE-ACS, the goal is risk stratification; we transfer high-risk cases to the CCL for coronary intervention and consider medical

therapy with an expedited outpatient test in low-risk cases. This facilitates the rapid discharge of patients to reduce the risk of contracting COVID-19. It is concerning that acute cardiovascular presentations have dropped by 50%.

Routine outpatient visits have been replaced by telephone triage. Those identified as requiring face-to-face assessment are reviewed in a dedicated outpatient clinic. Although surgical services have been centralized in non-COVID-19 hospitals, there is a clear preference for transcatheter valve implants over surgical replacement and PCI over coronary artery bypass grafting when patients cannot wait for flattening of the pandemic curve.

PORTUGAL: GUSTAVO PIRES-MORAIS. Pre-hospital care remains as usual. We have not changed patient care for ACS, as we believe it results in fewer complications and a shorter hospital stay. Patients with STEMI proceed emergently to the CCL, and patients with NSTE-ACS go within 24 h. The weekend activity does not differ from weekday activity. Samples for SARS-CoV-2 are collected, but results are only available after 8 h. Patients with confirmed or suspected infection are admitted to COVID-19 units.

The initial department plan divided the cardiology staff into 3 teams, each working for 7 days while providing full service (inpatient care, interventional cardiology, pacing/electrophysiology and cardiac imaging), whereas others stayed home. Following a 40% reallocation of staff to COVID-19 units, a second plan was set in motion, dividing the remaining staff into 2 teams, performing 7-day rotations. All routine

outpatient cardiology activity was cancelled. Secure, remote access to hospital software was created, allowing for at-home phone appointments, electronic prescription of medication, and review of medical imaging or data.

The CCL nursing staff was reinforced to speed up procedures. All noncritical equipment or supplies were removed from the CCL to facilitate cleaning and disinfection procedures. Availability of PPE is a concern, so we created 2 sets of PPE to best manage available resources: a mid-level kit and a full-protection kit for suspected and confirmed cases.

UNITED STATES: JIGNESH PATEL. In New York City, COVID-19 patients replaced the entire census of cardiac patients across all telemetry floors and cardiac intensive care units. Cardiology has had to manage mechanical ventilation, superimposed bacterial infections and resultant septic shock, deep venous thrombosis and pulmonary embolism, and prolonged hospitalization for patients with multiorgan failure. Telemedicine-based clinical encounters have become the new outpatient norm.

The use of fibrinolytic therapy versus PPCI for patients with COVID-19 and STEMI is guided by clinical status of the patient. Elderly patients with poor functional status and those with severe COVID-19 disease and concurrent septic shock or requiring intubation receive fibrinolytic therapy if not contraindicated. A sizable number of patients undergoing angiography have normal coronary arteries and represent STEMI mimics with myocarditis, microvascular injury or thrombosis, cytokine-mediated injury, or stress-induced cardiomyopathy.

IRAN: MOHAMMAD MOSTAFA ANSARI RAMANDI. There has been a significant drop in the number of outpatient and ED visits by cardiovascular patients. I have seen more patients with STEMI compared with the same period last year, which may be because patients with unstable angina are presenting late in fear of being infected at the hospital. Having no PPCI facilities in smaller cities has made it difficult to manage these patients who are afraid of being referred to a tertiary care hospital during the pandemic. I identified my high-risk patients through the hospital data system and contacted them by phone to raise awareness about important cardiovascular signs and symptoms and to answer their concerns. This was highly appreciated.

PERSONAL REFLECTIONS

ITALY: ALESSIA GAMBARO. I am a young cardiologist working in a COVID-19 intensive care unit. My social life is limited to phone and Skype calls. To

avoid the risk of reciprocal contagion with my partner (a physician as well) we decided to live in different flats; we are lucky to have this option. I commute from home to hospital with a car I have rented. There are still too many people using public transportation, and we are experiencing a shortage of masks. The last time I met my parents was 6 weeks ago. I could not meet my father when he was in the hospital. We are living a very stressful situation in solitude, with fear of falling sick, and experience the loss of patients every day. That said, more than 30% of registrars and young specialists have volunteered to work in COVID-19 units. People and newspapers say that we are heroes. It is not true. We simply do our jobs.

SINGAPORE: HEE HWA HO. My hospital is colocated with the National Centre for Infectious Disease (NCID), where most of the COVID-19 patients are hospitalized. The number of patients has increased significantly in the past few weeks. A large number of health care workers have been deployed to the NCID to help manage patients with COVID-19. Some of us have had previous experience with SARS in 2003, so we are mentally prepared to face the patients with COVID-19. Fear of infection, anxiety, and stress are feelings that we all go through, but as front-line physicians, we have to face the COVID-19 pandemic with courage and a calm mind. Mutual support among staff is very important to keep everyone's morale up and ensure mental well-being.

UNITED KINGDOM: THOMAS KAIER. Some of the long-term gains that often informed the outcome in a heart team discussion are not only being re-evaluated but pale in comparison with the perceived short-term risk from potential exposure to a viral pathogen. Cardiology trainee work now focuses on providing acute cardiovascular on-call care with backup in the case of sickness. Training opportunities had to be put on hold. The worry among colleagues and their households is palpable. With my wife a fellow health care worker, we felt that exposure was a question of *when* rather than *if*: a daunting prospect (and ultimately true). We are all more stressed than ever, and the social separation makes this harder still. What keeps us awake at night is the worry for our families, who live in different European countries; never have they felt so far away to us. When the lockdown is over, that basic human connection will be held in even higher regard.

PORTUGAL: GUSTAVO PIRES-MORAIS. I am an interventional cardiologist currently working in 1 of 3 intensive care units dedicated to patients with COVID-19, and I have not been with my parents or siblings for nearly 2 months. In a unique occasion, my

family met for Easter lunch using an Internet video platform. I am in close contact with a group of friends, although physically apart. All this "distant proximity" is invaluable.

A relevant number of colleagues at work have dramatically changed their lifestyles. Family care is a major concern, and some are living in hotels to prevent contact with families at home. Some who have tested positive for COVID-19 in a number of consecutive tests are anxious to test negative and receive permission to go back to work. Many young residents in cardiology had been studying for months when they saw the much-awaited date of the final residency examination postponed, and yet they joined the front line at the hospital.

Despite the concern of the medical community, we believe society has largely adhered to the social isolation recommendations, as we are looking at a constant drop in admissions to intensive care units and an increase in patients successfully discharged. The availability of masks for everyone is still not a reality as we are conceiving the first draft of a plan to reduce restriction measures.

UNITED STATES: JIGNESH PATEL. Many cardiovascular team members with young children and/or elderly parents at home decided to either send their families away or stay in hotels or garages in an attempt to avoid transmitting the virus to their loved ones. Those who live with their families remain under the constant stress of accidentally infecting their loved ones, and yet they show up to work to fulfill their moral and professional obligations. The emotional toll of COVID-19 deaths, especially those who were young or previously healthy, is indescribable. Yet, there is joy in reuniting patients with their families after treating them successfully, as well as with the few successful extubations, to lift our human spirit.

IRAN: MOHAMMAD MOSTAFA ANSARI RAMANDI. Many doctors and nurses are working away from home to care for patients around the country. Most of them had been away from families for months before the pandemic and were planning family reunions during the Iranian Nowruz Ceremony (Persian New Year holiday). However, most were so busy that they never got the chance. Some even prohibited their parents from visiting them in fear of this infection. Considering the work burden, loneliness, separation from families, and losing family members, the 1,399th Nowruz was like a premature cold autumn rather than a mature warm spring for many Iranians.

For some Iranian physicians, future career planning and training have also been touched. I was

recently awarded a training grant from the European Society of Cardiology to study heart failure in Scotland. I may face difficulty in moving to Scotland because of the cancellation of international examinations and the closure of administrative offices. The anxiety about this issue has cast a shadow over the excitement I had for being awarded the grant.

CONCLUSIONS

Fellows in training and early career colleagues are sacrificed on a daily basis for COVID-19. Different health care systems are represented here by 6 voices but with 1 theme: professionalism is embodied in

commitment, responsibility, sacrifice, courage, and personal and professional growth.

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ADDRESS FOR CORRESPONDENCE: Dr. Thomas E. Kaier, The Rayne Institute, 4th Floor, Lambeth Wing, St. Thomas' Hospital, Westminster Bridge Road, London SE1 7EH, United Kingdom. E-mail: thomas.kaier@kcl.ac.uk.

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