

Supplementary Table 1: American Society of Echocardiography (ASE), European Association of Cardiovascular Imaging (EACVI) and British Society of Echocardiography (BSE) recommendations on triaging echocardiography requests.

ASE	EACVI	BSE
<ul style="list-style-type: none"> <li>▪ Determine which studies are “elective” and reschedule them, performing all others.</li> <li>▪ Identify “non-elective” (urgent/emergent) indications and to defer all others.</li> </ul> <p>In cases considered for deferral, there is no significant risk to patients in terms of morbidity or mortality and no expected benefit in terms of avoiding the use of medical resources (such as emergency department visits or hospitalizations) Next, it is important to determine the clinical benefit of echocardiography for symptomatic patients whose SARS-CoV-2 status is unknown. Knowing the status of a patient allows for the appropriate application of personal protective equipment (PPE) and its conservation when not needed,</p>	<p>Key point 1</p> <p>Important considerations in patients with suspected or confirmed COVID-19</p> <p>Cardiac imaging should be performed if appropriate and only if it is likely to substantially change patient management or be lifesaving</p>	<p>full PPE should be provided to sonographers as per the following consensus pathway.</p> <p>Aim is to reduce potential exposure of operator to high viral load Put on all appropriate PPE before you enter the bay Have the patient wear a surgical mask as well Aim to reduce</p>

<p>in addition to reducing the exposure risk to echocardiography personnel.</p> <p>TEEs carry a heightened risk of spread of the SARS-CoV-2 since they may provoke aerosolization of a large amount of virus due to coughing or gagging that may result during the examination.</p> <p>. These tests should be postponed.</p>	<p>Use the imaging modality with the best capability to meet the request, but also consider the safety of medical staff regarding exposure</p> <p>Elective non-urgent and routine follow-up exams may be postponed or even cancelled</p>	<p>scanning time, avoid breath holding</p>
<p>Similarly, treadmill or bicycle stress echo tests on patients with COVID-19 may lead to exposure due to deep breathing and/or coughing during exercise. These tests should generally be deferred or converted to a pharmacological stress echo.</p> <ul style="list-style-type: none"> <li>▪ Echocardiographic exams be planned ahead, based on indications, clinical information, laboratory data and other</li> </ul>	<p>Risks of contamination in patients with suspected or confirmed COVID-19 include</p>	<p>Establish the risk of the patient: confirmed, suspected, low risk</p> <p>Minimise patient exposure to non-ward staff: Is there a</p>

<p>imaging findings to allow for a focused sequence of images that help with management decisions.</p> <ul style="list-style-type: none"> <li>▪ The use of UEAs should be considered prior to the exam to avoid the need to prolong scan time while awaiting preparation of the agent.</li> <li>▪ Scan times should be minimized by excluding students or novice practitioners from performing imaging.</li> <li>▪ Imaging team should ensure rapid review and reporting of key findings in the patient's record and communicating them with the primary care team</li> </ul>	<p>Possible/significant risk of infection for professionals (technicians, physicians, nurses, other personnel)</p> <p>Possible/significant risk of contamination of equipment and facilities</p> <p>Risk of widespread contamination due to transportation of critically ill or high-risk patients—the echo</p>	<p>suitably accredited clinician /sonographer on the ward of the patient who can undertake some scans?</p> <p>Keep a secure departmental log of patient and sonographer details in case contact tracing is needed.</p> <p>Limit imaging to answer clinical question A Level 1 BSE scan should be sufficient in most cases (biventricular function and major structural valve disease)</p>
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	<p>machine should be brought to the patient</p> <p>Prolonged duration of a cardiac imaging study will increase the likelihood of contamination</p>	<p>No ECG. Record time loops. Do not measure during scan.</p>
<ul style="list-style-type: none"> <li>▪ Standard care involves handwashing or hand sanitization and use of gloves. The use of a surgical face mask in this setting may also be considered.</li> <li>▪ Droplet precautions include gown, gloves, headcover, facemask and eye shield.</li> <li>▪ Airborne precautions add special masks (e.g. N-95 or N-99 respirator masks, or powered air purifying respirator – PAPR systems), and shoe covers.</li> </ul>	<p>Key point 3</p> <p>Advice for cardiac imaging</p> <p>Echocardiography should not routinely be performed in patients with COVID-19 disease</p>	<p>Echo Request -Requested by consultant - Triage: will echo alter immediate management / can it be deferred? (discuss with cardiologist on call if needed). - Plan your scan ahead. What views are key? - All requests for repeat echo should be consultant to consultant</p>

Summary Recommendations for Policies/Procedures During COVID-19 Outbreak

- Defer/Reschedule Options
  - Identify and defer all elective exams
  - Identify and perform only urgent/emergent exams
- Assess patient COVID-19 status
  - None
  - Suspected
  - Confirmed
- Provide for appropriate levels of self-protection
- TEEs are high risk – defer whenever possible, perform in suspected / confirmed cases with airborne PPE precautions
- Institutional PPE conservation
  - Defer non-urgent/emergent exams in suspected/confirmed cases
  - POCUS: Imaging by trained clinician already caring for a patient
- Limiting exposure during exams
  - Problem-focused, limited examinations
  - Guided by prior studies, other imaging (including POCUS findings)
- Reading room methods to reduce transmission
  - Facilitate remote report generation and echo consultation
  - Frequent disinfection of computer keyboard, mouse, surfaces, chairs, doorknobs
  - Discourage congregating in the echo lab reading room
- Identify and appropriately re-assign special at-risk personnel (>60 yrs, immunosuppressed, chronic disease / cardiopulmonary conditions, pregnancy, etc.)

A range of different cardiovascular manifestations can be found in COVID-19 which may require cardiac imaging, including a bedside echocardiographic study

A focused cardiac ultrasound study (FoCUS) is recommended to reduce the duration of exposure

The risk of contamination of equipment and personnel is very high during TOE—consider

	<p>repeat TTE, CT scan, or CMR as alternatives</p> <p>Chest CT is frequently used to confirm COVID-19 pneumonia and might provide possible synergies and opportunities of cardiac imaging</p> <p>Coronary CT angiography can exclude or confirm an acute coronary syndrome in COVID-19 pneumonia where elevated troponins are common</p>	
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LV function can be assessed by  
LV angiogram in patients with  
acute coronary syndromes  
during the invasive  
revascularization procedure

Positive troponins and  
myocardial dysfunction or  
severe arrhythmia suggestive of  
Tako-tsubo or myocarditis may  
be an indication for acute CMR if  
it is of vital importance for  
treatment, and patient can be  
safely transferred for imaging

	<p>Indications for foetal echocardiography remain the same as outside the COVID-19 pandemic</p>	
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## Supplementary Table 2: Recommendations during TTE and foetal echo

Risk of contamination	Handwashing	Surgical mask and gloves	Protective clothing, eye protection	Head cap	Study completeness	Equipment protection
Lower risk	Obligatory	Preferable	Probably not	No	Full	None
Moderate risk	Obligatory	Obligatory	Preferable	No	Preferably full/depending on severity of the cardiac pathology	Intermediate/protection of probe, leads, and other parts near the patient
Severe risk/ confirmed COVID-19	Obligatory	Advanced mask: FFP2/FFP3/N95/N99	Obligatory	Obligatory	Problem focused, adjusted for clinical importance of the cardiac pathology	Full cover/dedicated scanners



Lower risk, patients with no symptoms, no increased risk behaviour, a recent negative virus test, or in areas with low risk of COVID-19. Moderate risk, patients with non-specific/unclear symptoms or patients without symptoms in an area with moderate or high risk of COVID-19. Severe risk, patients with typical symptoms or confirmed COVID-19. FFP2, Filtering Facepiece Particulate class 2 (FFP2 corresponds to US N95, FFP3 corresponds to US N99).