

## Appendix 1

### Guidance for triage of non-emergent outpatient transthoracic echocardiograms during the Covid-19 pandemic (March 2020)

Thomas Jefferson University, Philadelphia, PA

Tiers	Definition	Effect on treatment	Examples	Action
<b>Tier 1a</b>	<b>Low acuity/asymptomatic patient</b> Not life threatening	Results will not affect short-term treatment or outcome	<ul style="list-style-type: none"> <li>• All routine surveillance without change in clinical status, e.g., severe valve disease, prosthetic valves, aortic disease, or cardiomyopathy</li> <li>• Asymptomatic, abnormal ECG</li> </ul>	Postpone study
<b>Tier 1b</b>	<b>Low acuity/symptomatic patient</b> Not life threatening	Results will not affect short-term treatment or outcome	<ul style="list-style-type: none"> <li>• Syncope, low suspicion cardiac cause</li> <li>• New onset atrial fibrillation, asymptomatic</li> <li>• Pre-solid organ (non-urgent) transplant</li> </ul>	Postpone study
<b>Tier 2a</b>	<b>Intermediate acuity/asymptomatic patient</b> Not life threatening but potential for future morbidity and mortality	Results will affect medium-term treatment or outcome	<ul style="list-style-type: none"> <li>• Newly discovered murmur with need for urgent non-cardiac surgery</li> <li>• Follow-up severe valvular heart disease without symptoms</li> <li>• Follow-up RV function post pulmonary embolism; LV function post takotsubo; pericardial effusion</li> </ul>	Expert consultation*/consider need for study vs. postpone
<b>Tier 2b</b>	<b>Intermediate acuity/symptomatic patient</b> Not life threatening but potential for future morbidity and mortality	Results will affect medium-term treatment or outcome	<ul style="list-style-type: none"> <li>• Known heart or lung disease with new symptoms</li> <li>• HFrEF where EF determines medical or device therapy</li> <li>• Evaluation post OHT</li> </ul>	Expert consultation*/do not postpone study

			e.g., rejection	
<b>Tier 3</b>	<b>High acuity/symptomatic or asymptomatic patient Potentially life threatening</b>	Results will affect short-term treatment or outcome	<ul style="list-style-type: none"> <li>• New symptoms consistent with significant cardiopulmonary disease</li> <li>• Echo needed for continuation of chemotherapy</li> <li>• Concern for significant pericardial effusion/tamponade</li> </ul>	Do not postpone

ECG, electrocardiogram; EF, ejection fraction; HFrEF, heart failure with reduced ejection fraction; LV, left ventricle; OHT, orthotopic heart transplant; RV, right ventricular.





\*Expert consultation refers to review by an echocardiography attending physician and discussion with the referring health care professional if needed.

Adapted from the American College of Surgeons Elective Surgery Acuity Scale (ESAS) ref 89.

## Appendix 2

### Guidance for triage of non-emergent outpatient transthoracic echocardiograms during the Covid-19 pandemic (April 2020)

Lyndon B. Johnson General Hospital/University of Texas Health

Level of urgency	Clinical situations and diagnoses
<p><b>I: Do not delay, or schedule sooner</b></p> <p> <b>Green Dot</b></p>	<p><b>Intermediate acuity symptomatic patient, high acuity symptomatic or asymptomatic patient, potentially life threatening, results may affect outcomes in &lt;30 days.</b></p> <p>Examples:</p> <ul style="list-style-type: none"> <li>• Severe symptomatic valvular or myocardial disease</li> <li>• New symptoms c/w significant cardiopulmonary disease</li> <li>• Concern for significant pericardial effusion/tamponade</li> <li>• New HFrEF with EF &lt;35% and where decision for ICD is needed.</li> <li>• Recent MI or cardiac arrest when follow-up TTE is indicated</li> </ul>
<p><b>IIA: Delay, but should be future scheduling priority (message ordering physician in Epic, could potentially become urgent)</b></p> <p> <b>Yellow Dot</b></p>	<p><b>Intermediate acuity asymptomatic patient, results may affect medium to long term outcomes, potentially higher level of urgency depending on non-cardiac factors.</b></p> <p>Examples:</p> <ul style="list-style-type: none"> <li>• Cardio-oncology patients (chemo) not meeting criteria in I</li> <li>• Pregnant patients not meeting criteria in I</li> <li>• Severe valvular or myocardial disease, symptoms unclear</li> <li>• Preop for urgent surgery (discuss with ordering)</li> </ul>
<p><b>IIB: Delay, but should be future scheduling priority</b></p> <p> <b>Orange Dot</b></p>	<p><b>Intermediate acuity asymptomatic patient, results may affect medium to long term outcomes, level of urgency appears fairly clear from chart review.</b></p> <ul style="list-style-type: none"> <li>• Severe valvular or myocardial disease, clearly asymptomatic per chart review, no echo &lt;1 year</li> <li>• Moderate valvular or myocardial disease, no echo &lt;2 years</li> <li>• Follow-up RV function, PAH in patients with no echo &lt;1 year</li> </ul>
<p><b>III: Ok to delay for at least 60 days</b></p> <p> <b>Red Dot</b></p>	<p><b>Low acuity TTE, potentially inappropriate or uncertain indications, results unlikely to affect medium to long term outcomes.</b></p> <p>Examples:</p> <ul style="list-style-type: none"> <li>• Syncope, low suspicion for cardiac cause</li> <li>• New murmur, asymptomatic</li> <li>• Mild valvular disease</li> <li>• Arrhythmias, asymptomatic</li> <li>• HTN, DM, “preop” for clearly elective surgery</li> </ul>

DM, diabetes mellitus; EF, ejection fraction; HF<sub>r</sub>EF, heart failure with reduced ejection fraction; HTN, hypertension; ICD, implantable cardioverter-defibrillator; MI, myocardial infarction; PAH, pulmonary arterial hypertension; RV, right ventricular; TTE, transthoracic echocardiography.

### Appendix 3

#### Triaging of echocardiography procedure orders (January 2022)

#### University of Washington, Seattle, WA

Question	If yes
1. Is the indication considered “rarely appropriate” or “inappropriate” by appropriate use criteria?	Cancel
2. Even if appropriate, is the indication “routine”?	Postpone, unless there are extenuating circumstances (e.g., travel from distance or other patient hardships)
3. Can the echocardiogram wait until the patient is out of COVID quarantine?	Postpone
4. Is the order “stat”, “emergent”, or “urgent”?	Performed with appropriate PPE, limited protocol
5. Is the patient at risk of an adverse event (morbidity, mortality, including ED visit and hospitalization) in the next 2-6 weeks if: <ul style="list-style-type: none"> <li>• Echocardiographic <u>detection of suspected pathology</u> does not occur?</li> <li>• Echocardiographic <u>diagnosis of the cause of symptoms</u> is not made?</li> <li>• Echocardiographic <u>characterization of known pathology</u> does not occur?</li> <li>• Echocardiographic <u>follow-up of known lesion(s) to assess for worsening</u> is not performed?</li> </ul>	Perform
6. Is the exam necessary for the patient to receive a <u>life-sustaining or significant morbidity-reducing intervention</u> in the next 6 weeks (e.g., stress echo prior to organ transplant)?	Perform

COVID, coronavirus disease; ED, emergency department; PPE, personal protective equipment.

Note: TEEs, TEE-DCCV and stress testing will be performed for patients without known or suspected COVID, with appropriate pre-procedure screening and testing.

Note: For patients who are known to have COVID, current guidelines for return to ambulatory care will be applied to outpatient echocardiograms