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## THE EMORY CRITICAL CARE CENTER

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# PROTOCOLS FOR LUNG ULTRASOUND AND FOCUSED TRANSTHORACIC ECHOCARDIOGRAPHY

*Last updated April 5, 2020*



### FOCUSED LUNG ULTRASOUND



### FOCUSED TRANSTHORACIC ECHOCARDIOGRAPHY



### CRITICAL CARE ECHOCARDIOGRAPHY EXAMINATION





**FOCUSED TRANSTHORACIC ECHOCARDIOGRAPHY**

Initial exam or Repeat exam

Indication(s) for exam: cardiac arrest, post-cardiac arrest resuscitation, hypotension, circulatory shock, volume assessment, dysrhythmias

View	Image Quality	Findings
Parasternal Long Axis	Good Limited Poor/Unable to obtain	LV function: normal, reduced, severely reduced LA enlargement: size greater than RVOT and ascending aorta RVOT: normal shape, dilated, unable to determine Pericardial effusion: present or absent EPSS: <8mm, >8 mm AV maximal opening: distance in mm Pleural Effusion: Present/none
Parasternal Short Axis (Midpapillary Level)		LV function: Normal, reduced, severely reduced RV size: >LV, <LV Pericardial effusion: present or absent IVS: Septal bowing, septal flattening If able to obtain PSSAX at the aortic valve level: amplitude of interatrial septum (<1 cm, >1.5 cm)
Apical 4 Chamber		LV function: normal, reduced, severely reduced LA enlargement RV enlargement RV function RV: LV ration: RV<LV, RV=LV, RV>LV Pericardial effusion: present or absent
Parasternal Long Axis		LV function: normal, reduced, severely reduced LA enlargement RV enlargement: RV: LV ration: RV<LV, RV=LV, RV>LV RV function Pericardial effusion: present or absent      Ascites: (Present)
Subxiphoid 4 chamber	IVC Size: >2.1 cm, <2.1 cm, intermediate Respiratory Variation: >50%, <50%, intermediate	IVC collapsibility index % (patient ventilated or spontaneous breathing)

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**CRITICAL CARE ECHOCARDIOGRAPHY EXAMINATION**

Initial exam or Repeat exam

Indication(s) for exam: cardiac arrest, post-cardiac arrest resuscitation, hypotension, circulatory shock, volume assessment, dysrhythmias

Image Quality:

· Parasternal Long Axis:	Good	Limited	Unable to obtain
· Parasternal short axis:	Good	Limited	Unable to obtain
· Apical 4-chamber:	Good	Limited	Unable to obtain
· Subcostal 4-chamber:	Good	Limited	Unable to obtain
· IVC:	Good	Limited	Unable to obtain
· Any additional views:			
· Apical 5-chamber:	Good	Limited	Unable to obtain
· RV inflow:	Good	Limited	Unable to obtain
· Apical 2-Chamber:	Good	Limited	Unable to obtain
· Suprasternal:	Good	Limited	Unable to obtain

Findings:

Measurements:

LV Dimensions:

Calculated EF

LV Function: normal, hyperdynamic, reduced (mild, moderate, severe), indeterminate

LVEDA (optional): <8 cm<sup>2</sup>, 8-14 cm<sup>2</sup>, >14 cm<sup>2</sup>, unable to obtain

Stroke Volume (optional):

LVOTd \_\_\_\_\_

LVOT VTI \_\_\_\_\_

RV Function: Normal or reduced

RV Size: Normal, dilated, or indeterminate

LV to RV ratio:

RV Strain: Any of these present or absent

RV free wall (optional): <5mm or >5mm

McConnell's Sign

Interventricular Septal bowing

Septal bounce

D-Sign at the level of short axis mid-papillary view

Tricuspid Regurgitation: Yes/ No, unable to assess

If Yes PGr\_\_\_\_\_, estimated RVSP\_\_\_\_\_

Pericardial Effusion:	Present	Absent	Indeterminate Size
If present:	Small	Large	
Signs of Tamponade:	Yes	No	
If yes: plethoric IVC, R atrial collapse, R ventricular collapse, mitral inflow variation			
IVC Assessment: IVC (Pt on spontaneous or mechanical ventilation):			
Normal, collapsed, dilated, unable to visualize			
IVC Respiratory variation	>50%	or	<50%
Maximum Diameter _____			
Minimum Diameter _____			
If spontaneous breathing			
IVC collapsibility index:	<43%		>43%
If mechanically ventilated			
$\Delta$ IVC: <12%, or >12%			
Distensibility Index: <18% or >18%			
Estimated RAP _____			
VTI Variation: <12%, >12%			

Valvular Assessment:

Hemodynamically Significant  
or non-significant Regurgitation:                      Yes    No    or    Unable to determine

    If yes, specify valve and view(s) in which regurgitation identified:

Hemodynamically Significant or  
non-significant Stenosis:                                      Yes    No    or    Unable to determine

    If yes, specify valve and view(s) in which stenosis identified:

Interpretation and clinical relevance:

- No evidence of significant cardiac dysfunction on this limited TTE
- No evidence of significant pericardial effusion on this limited TTE
- Pericardial effusion: moderate or large
  - Pericardial effusion with evidence of pericardial tamponade
- Global ventricular function: hyperdynamic, normal, reduced (mild, moderate, severe)
- No cardiac activity/ Cardiac standstill
- No evidence of RV dilation
- RV dilation/RV strain
- Evidence of hypovolemia
- No evidence of hypovolemia
- Possible valvular abnormality identified for further evaluation on comprehensive TTE/limited evaluation of valvular function on this limited TTE due to patient s/p MVR, AVR, TVR (etc.)