

#ASEchoJC Twitter Chat

Tuesday, March 14, 2023 – 8 PM ET

- [Recommendations for Cardiac Point-of-Care Ultrasound in Children: A Report from the American Society of Echocardiography](#) (JASE, January 2023)

Authors

- Jimmy C. Lu, MD, FASE (@Jimmy_C_Lu)
- Neha Soni-Patel, MEd, RCCS, RDCS, FASE (@nehasonipatel)

Moderators:

- Kelly Boegel, ACS, RCCS, RCS, FASE (@boegel_kelly)
- Kanwal M Farooqi, MD (@Kfarooqi)
- Enrique Garcia-Sayan, MD, FACC, FASE (@EGarciaSayan)

Kelly Boegel, ACS, RCCS, RCS, FASE, Clinical Lead Cardiac Sonographer Tweakorial: 3-12-2023

https://twitter.com/boegel_kelly/status/1634815026400985089

Introduction and Welcome: 📢 Welcome to tonight's

#ASEchoJC! 🌟 We'll discuss @ASE360 recommendations for #POCUS in Children w/ authors @Jimmy_C_Lu @nehasonipatel & moderators @Kfarooqi & @boegel_kelly

🌟 10 ? for discussion will follow

🌟 Use #ASEchoJC in all Tweets

👉 Guideline: <https://bit.ly/3T7YkER>

GUIDELINES AND STANDARDS

Recommendations for Cardiac Point-of-Care Ultrasound in Children: A Report from the American Society of Echocardiography*

Jimmy C. Lu, MD, FASE, Alan Riley, MD, FASE, Thomas Conlon, MD, Jani C. Levine, MD, Christine Knox, MD, Wanda C. Miller-Hose, MD, FASE, Neha Soni-Patel, MEd, RCCS, RDCS, FASE, and Timothy Skene, MD, FASE, Ann Arbor, Michigan; Houston, Texas; Philadelphia, Pennsylvania; Boston, Massachusetts; London, Ontario, Canada; Cleveland, Ohio; and Atlanta, Georgia

*Endorsed by the Society of Critical Care Medicine

Cardiac point-of-care ultrasound has the potential to improve patient care, but its application to children requires consideration of anatomic and physiologic differences from adult populations, and corresponding technical aspects of performance. This document is the product of an American Society of Echocardiography task force composed of representatives from pediatric cardiology, pediatric critical care medicine, pediatric emergency medicine, pediatric anesthesiology, and others, assembled to provide expert guidance. This diverse group aimed to identify common considerations across disciplines to guide evolution of indications, and to identify common requirements and infrastructure necessary for optimal performance, training, and quality assurance in the practice of cardiac point-of-care ultrasound in children. The recommendations presented are intended to facilitate collaboration among subspecialties and with pediatric echocardiography laboratories by identifying key considerations regarding (1) indications, (2) imaging recommendations, (3) training and competency assessment, and (4) quality assurance. (J Am Soc Echocardiogr 2023;36:265-77.)

Keywords: Point-of-care ultrasound, Pediatrics

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ASE'S TWITTER JOURNAL CLUB

ASE AMERICAN SOCIETY OF ECHOCARDIOGRAPHY
EST. 1963

Tuesday, Mar. 14, 2023
8:00 to 9:00 PM (ET)

JOIN THE DISCUSSION ON:

Recommendations for Cardiac Point-of-Care Ultrasound in Children: A Report from the American Society of Echocardiography

Earn CME! 1 AMA PRA Category 1 Credit®

Guest Authors Jimmy Lu, MD, FASE (@Jimmy_C_Lu); and Neha Soni-Patel MEd, BSME, RCCS, RDCS (AE/PE), FASE (@nehasonipatel) will join ASE Twitter Journal Club Moderators Kelly Boegel, ACS, RCCS, RCS, FASE (@boegel_kelly); and Kanwal M. Farooqi, MD (@Kfarooqi); and Enrique Garcia-Sayan, MD, FASE (@EGarciaSayan)

The ASE Twitter Journal Club will answer your questions! Follow @ASE360 and use hashtag #ASEchoJC for all tweets!

Q1:

Question 1 #ASEchoJC

ASE American Society of Echocardiography
Pulse. Every. Time.

How does this guideline differ from the previous ASE statements on POCUS?

03/14/23 @Jimmy_C_Lu @nehasonipatel @boegel_Kelly @Kfarooqi @EGarciaSayan

A1 Notable Responses:

@EGarciaSayan: ▲ #POCUS is not defined by the equipment used but by the technique and goals of the study

▲ Focused problem-oriented & physiology-based evaluation of the heart performed by non-cardiology clinicians

@EnsingGreg: Are there specific pearls or pitfalls that we should be especially aware of when we start figuring out best uses of pocus in children?

@Jimmy_C_Lu: Prior @ASE360 statements on focused cardiac US (<https://pubmed.ncbi.nlm.nih.gov/23711341/>) and the role of echo labs in training (<https://pubmed.ncbi.nlm.nih.gov/32122742/>) did not address or specifically excluded children – many differences in this population.

@EGarciaSayan: @ASE360 guideline for #POCUS in children: How does this guideline differ from the previous @ASE360 statements on POCUS?

@SIwa23288585: Recommended scan time is no more than 5 to 7 min, with the study typically consisting of no more than 10 stored images. Limited cooperation in children and technical limitations when imaging cardiac structures at higher heart rates also limit the sensitivity of #POCUS

@SIwa23288585: Thanks sharing 🙏

@Kfarooqi: This document discusses #POCUS in 🧒 🧒 🧒 !

👉 training in #pediatrics is limited

👉 not standardized

👉 takes spatial and temporal considerations into account

👉 have to 😞 about #CHD

@iamritu: Children are not small adults

large sector probes can't scan between those small rib spaces

@nehasonipatel: And basic physics...higher frequency leads to shallow depth scanning. 3MHz probe may go straight through a baby...you'll be scanning the bed! You need 8-12 MHz

@EGarciaSayan: Equipment for #POCUS in children is different than in adults. Requires higher frequency transducers, for shallow depth scanning.

@DavidWienerMD: And the larger footprint of probes meant for adults may not fit tiny intercostal spaces

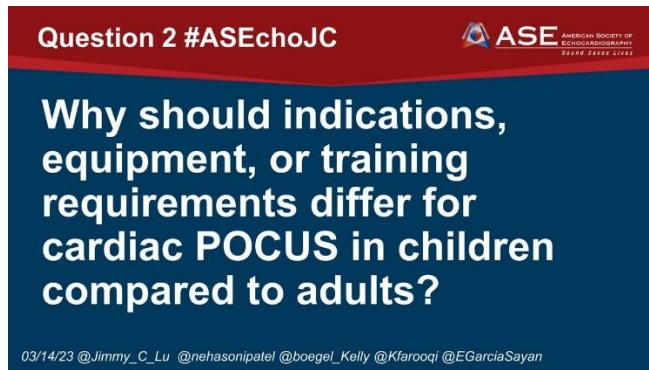
@boegel_kelly: Those larger footprint are sometimes too big for adults 😞

@DavidWienerMD: True!!

@nehasonipatel: Kids come in all sizes. Ballerinas to football players. Neonates to little chunky monkeys :-) #ASEchoJC Care must be taken with this population.

@EGarciaSayan: New @ASE360 guideline for #POCUS in children applies to all patients <18 years of age, a broad age range, and size.

Question 2:



A2 Notable Responses:

@Kfarooqi: Remember 👉

Kids are not small adults!

Technical differences should be taken into account when imaging 🧐 🧐

⬆ ⬆ ⬆ heart rates

➡ range of imaging depths

@EGarciaSayan: Why should indications, equipment, or training requirements differ for cardiac POCUS in children compared to adults? @Kfarooqi reminds us that kids are not small adults, different physiology, patient size, imaging depth.

@kgzimmerman: Tips for heart rates?

@Jimmy_C_Lu: To some extent limited by the available equipment in this context. But it certainly impacts what we can (or should expect to be able to) evaluate - function and effusion, for example.

@EGarciaSayan: @Jimmy_C_Lu highlights challenges of #POCUS in children, in the context of higher heart rates and differences in available equipment

@kgzimmerman: Is there a recommended basic protocol? to make sure bases are covered?

@Jimmy_C_Lu: Too many bases to cover - focus is on answering the question at hand (e.g. function, effusion). Important that the family understands the child did not get a "normal echocardiogram".

@EGarciaSayan: excellent question @kgzimmerman. Answers are coming up next!

@Slwa23288585: Indeed 🙌 🙌 🙌

@nehasonipatel: Some times anatomy can be taken for granted. When I was new....I didn't know you could be born without a left ventricle...now I do.

@boegel_kelly: There's so much that variety in peds and just because you have one defect doesn't mean there aren't others

@nehasonipatel: Acquired disease is rare. CHD can be simple to complex. Not all is caught in fetal echo. Recently saw a 16 year old undiagnosed truncus! The eye cannot see what the mind does not know. Complex CHDs take a long time to master by echo.

@boegel_kelly: So true! Love this statement by @nehasonipatel "The eye cannot see what the mind does not know"

@LanqiHua: Love it!- #the eye can not see what the mind does not know!

@Jimmy_C_Lu: 1. Range of depths and HR in kids (varying size and age); one probe doesn't fit all

2. Cardiac disease rarer in kids than adults; if there is cardiac dz, more likely congenital heart disease, which is too complex for cardiac POCUS

@EGarciaSayan: Why should indications, equipment, or training requirements differ for cardiac POCUS in children compared to adults? Different patient population, size and type of pathology.

@boegel_kelly: Important reminder that peds cardiac #POCUS is NOT for CHD screening


@iamritu: If only a lower frequency transducer is available are subcostal views most helpful?

@Jimmy_C_Lu: Definitely a useful tool, but other views (parasternal, apical) still useful depending on the target

@nehasonipatel: Always depends on the child...but subcostals and notch imaging are the hardest for new congenital sonographers. LOTS of training is needed to recognize all of the anatomy. You can't take anatomy for granted.

Question 3:

Question 3 #ASEchoJC

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Sound Saves Lives

Who made up the writing group? Were other specialties represented?

03/14/23 @Jimmy_C_Lu @nehasonipatel @boegel_Kelly @Kfarooqi @EGarciaSayan

A3 Notable Responses:

@Kfarooqi: SO much representation!!

Not just #pediatric cardiologists, ❤️ but sonographers, anesthesiologists 🩺 emergency medicine 🚑 and critical care oh my!

#RepresentationMatters

@nehasonipatel: The new age of medicine...collaboration. No more silos. We all have to speak the same language for our patients. This is why we need experts from all areas 😊

@Jimmy_C_Lu: We had representatives from Peds ER, Ped Crit Care, and Ped Anesthesia in addition to Ped Cardiologists (with experience in POCUS and/or education) and a Sonographer. A multidisciplinary team with everyone focused on doing the right thing for the patient.

@EGarciaSayan: A stellar writing group with broad representation worked on the new @ASE360 #POCUS in children guidelines

GUIDELINES AND STANDARDS

Recommendations for Cardiac Point-of-Care Ultrasound in Children: A Report from the American Society of Echocardiography*

 Check for updates

Jimmy C. Lu, MD, FASE, Alan Riley, MD, FASE, Thomas Conlon, MD, Jami C. Levine, MD, Charisse Kwan, MD, Wanda C. Miller-Hance, MD, FASE, Neha Soni-Patel, MD, RCCS, RDCHS, FASE, and Timothy Slesnick, MD, FASE, *Ann Arbor, Michigan; Houston, Texas; Philadelphia, Pennsylvania; Boston, Massachusetts; London, Ontario, Canada; Cleveland, Ohio; and Atlanta, Georgia*

*Endorsed by the Society of Critical Care Medicine

Cardiac point-of-care ultrasound has the potential to improve patient care, but its application to children requires consideration of anatomic and physiologic differences from adult populations, and corresponding technical aspects of performance. This document is the product of an American Society of Echocardiography task force composed of representatives from pediatric cardiology, pediatric critical care medicine, pediatric emergency medicine, pediatric anesthesiology, and others, assembled to provide expert guidance. This diverse group aimed to identify common considerations across disciplines to guide evolution of indications, and to identify common requirements and infrastructure necessary for optimal performance, training, and quality assurance in the practice of cardiac point-of-care ultrasound in children. The recommendations presented are intended to facilitate collaboration among subspecialties and with pediatric echocardiography laboratories by identifying key considerations regarding (1) indications, (2) imaging recommendations, (3) training and competency assessment, and (4) quality assurance. (J Am Soc Echocardiogr 2023;36:265-77.)

Keywords: Point-of-care ultrasound, Pediatrics


@boegel_kelly: Impressive 😊

@DavidWienerMD: @ASE360 embraces and advocates for all CV US users



Question 4:

Question 4 #ASEchoJC

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TRUST. EXPERT. LIVE.

What can be assessed by cardiac POCUS in children?

03/14/23 @Jimmy_C_Lu @nehasonipatel @boegel_Kelly @Kfarooqi @EGarciaSayan

A4 Notable responses

@Kfarooqi: Make sure 👍

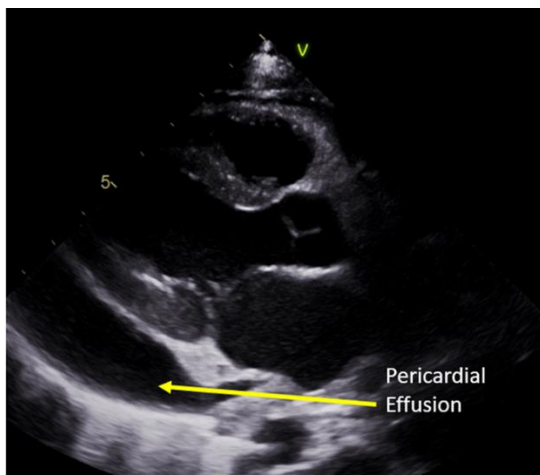
- ✓ data you need is amenable to #POCUS
- ✓ target physiology that is frequently encountered
- ✓ urgent decision making needed
- ✓ Non-cardiology docs can be trained and then reliably perform

@Jimmy_C_Lu: (1/2) Preload and volume responsiveness, qual LV systolic fxn, presence of pericardial effusion, and qual RV size and systolic pressure.

@EGarciaSayan: What can be assessed by cardiac POCUS in children?

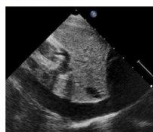
@Jimmy_C_Lu: (2/2) Think of cardiac POCUS as problem-oriented, physiology-based imaging to complement clinical assessment. Specific questions, typically yes/no answers (e.g. dysfunction, effusion), not evaluation of symptom with differential dx (e.g. chest pain)

@nehasonipatel: You don't need color to see an effusion :-)



@SIwa23288585: CVP 😊

Subcostal IVC



Subxiphoid, indicator at
12 o'clock (toward the head)

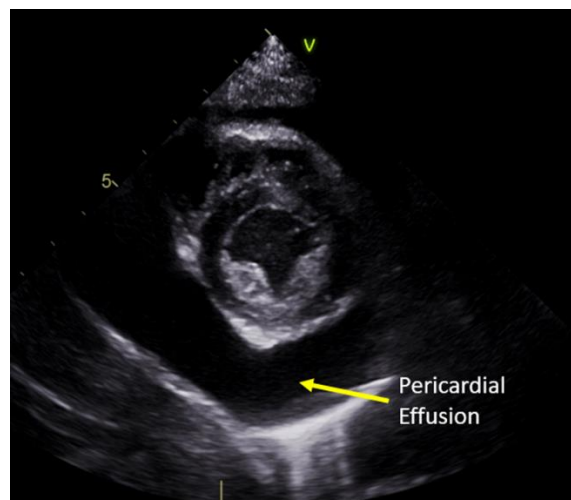
Centered over the intrahepatic IVC entering
the right atrium (displayed on the right side
of the screen)

@nehasonipatel: The goal is for the user to know normal...then they will spot if something is qualitatively abnormal. Practice Practice Practice!

@boegel_kelly: Can't recognize abnormal til you are familiar with normal

@Jimmy_C_Lu: And collaboration - pediatric cardiologists and sonographers are available to do complete echocardiograms when there is any concern.

@nehasonipatel:




@boegel_kelly: Great use for cardiac #POCUS demonstrates here

@iamritu: see the effect of adenosine on a SVT in pediatric ER



Question 5:

Question 5 #ASEchoJC

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PEDIATRIC ECHO LIVE

Can cardiac POCUS assess for congenital heart disease?

03/14/23 @Jimmy_C_Lu @nehasonipatel @boegel_Kelly @Kfarooqi @EGarciaSayan

A5 Notable responses

@SIwa23288585: Point of care ultrasound👉 #POCUS

「的を絞った短時間のエコー検査」

🔊 #CHD #ACHD 疑われたらすぐに #先天心医 連絡詳細診断を

デモソナニクサナイ□

@EGarciaSayan: ▲ #POCUS appropriate to assess causes & effects of hypotension, shock, and circulatory arrest

▲ Not appropriate to evaluate signs or symptoms suggesting CHD

▲ Clinical suspicion of CHD should be referred for pediatric cardiology consultation & standard #EchoFirst

@Jimmy_C_Lu: (1/2) No, and multiple statements agree with this:

<https://pubmed.ncbi.nlm.nih.gov/32093763/>

<https://pubmed.ncbi.nlm.nih.gov/24951446/>

@Jimmy_C_Lu: (2/2) Further, many potentially cardiac presenting symptoms in children (e.g. murmur, chest pain, cyanosis) should include CHD in the differential, and a normal POCUS study alone is not adequate to evaluate.

@SIwa23288585: Yes, can do. #PH #CHD #ACHD



Figure 3 Parasternal short-axis view demonstrating RV dilation with bowing of the septum into the left ventricle, indicating pulmonary hypertension in this child with shock and pertussis.

@Slwa23288585: If #CHD is suspected, a pediatric cardiology call is made as early as possible 📞

@nehasonipatel: The goal of POCUS is to give quick information to help triage. Hemodynamics, complex CHD, and cyanotic defects are tough for POCUS alone. We need a full machine for that.

@Slwa23288585: 小児新生児 #POCUS 📌 主目的は迅速トリアージ

👉 血行動態、複雑 #CHD およびチアノーゼ原因診断 📌 POCUS だけでは困難 I learn a lot 🙏🙏🙏

@boegel_kelly: #POCUS is not for everything

@boegel_kelly: This ↓

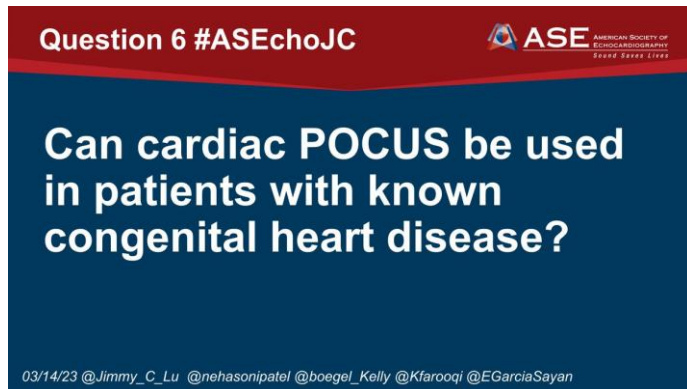
@Kfarooqi: Please!! 😬 Don't use #POCUS to diagnose #CHD

Of course you may visualize 👁️ some ❤️ malformations but call up 📞 your neighborhood friendly #pediatric cardiologist if you need to assess for #CHD in detail 🙏

@EGarciaSayan: #POCUS is not appropriate for evaluating signs or symptoms that suggest CHD (e.g., cyanosis, heart murmurs). Refer for pediatric cardiology consultation & #EchoFirst

@iamritu: Cardiac POCUS is brief/rapid to answer clinical question for medical management with qualitative or semiquantitative (normal vs abnormal vs un- known) "eyeball" methods

Question 6:



A6 Notable responses

@Jimmy_C_Lu: (1/2) STRONG caution is recommended in pts with known CHD. Typical dx targets may be invalid (e.g. how to eval fxn in systemic RV, or signs of tamponade in a single ventricle). Complex physiology + limited imaging = trouble

@boegel_kelly: Cautions for #POCUS

@Jimmy_C_Lu: (2/2) Possible role in initial stabilization, but must keep eval limited and consult with cardiology.

@nehasonipatel: Honestly... this is a tough question. What are you looking for? A quick function check...sure...but full assessment requires Team Cardiology (doc and sonographer) to be a part of this.

@nehasonipatel: If CHD in question contact team peds cardiology

@SIwa23288585: I agree 😊

@Kfarooqi: ⚠️ ❌ Proceed with Caution when utilizing #POCUS in patients with known #CHD !! if you are not a pediatric cardiologist.

Typical diagnostic assessment criteria may not apply!

📞 📱 Have a #pediatric cardiologist on speed dial in this situation 🙌

@nehasonipatel: There is a reason why congenital heart scanning takes another 2 years of training after adult echo...there is that much more out there. Proceed with caution if scanning CHD. You need the right team involved. CHD is more than just 2D and color.

@ZakkisMom: #CHD #ACHD why Echos need to be done by certified congenital heart only!

@DrRazi4: Difficult 😊

@iamritu: Don't use POCUS for congenital heart disease #ASEchoJC unless for stabilization in an emergency ie to assess fluid status quickly or tamponade


@SIwa23288585: #CHD = #POCUS 利用不可 #ASEchoJC

⚠️ 緊急時安定化、ショック時、心タンポ時除外

@lobhammCHD: Not useful here

Question 7:

Question 7 #ASEchoJC

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Sound Bytes Live!

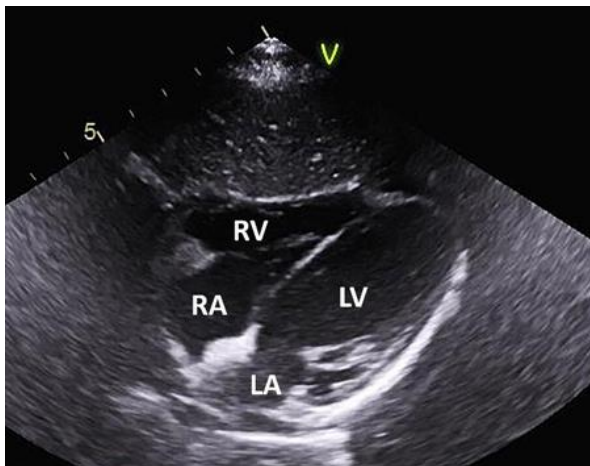
Which views should be used in cardiac POCUS?

03/14/23 @Jimmy_C_Lu @nehasonipatel @boegel_Kelly @Kfarooqi @EGarciaSayan

A7 Notable responses

@EGarciaSayan: excellent question @kgzimmerman. Answers are coming up next!

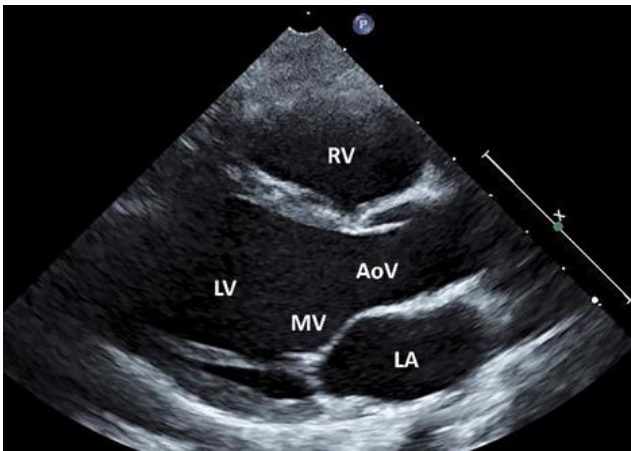
@Jimmy_C_Lu: (1/5) subcostal long-axis: assess for pericardial effusion, ventricular function



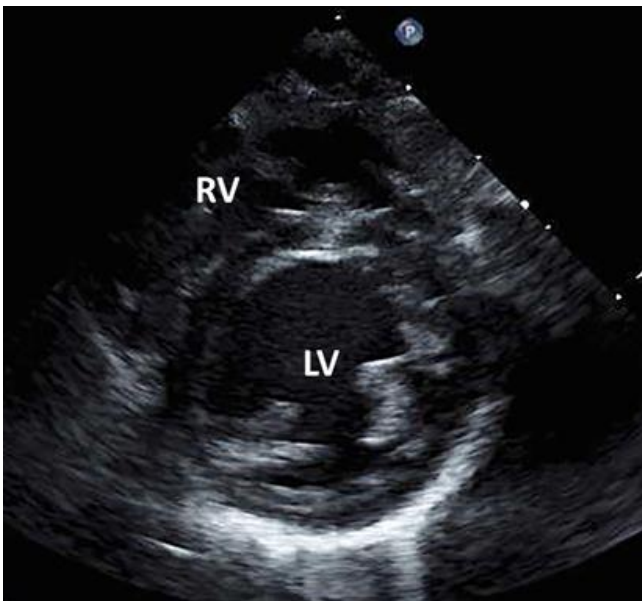
@Jimmy_C_Lu: (2/5) subcostal IVC: can be used for volume status



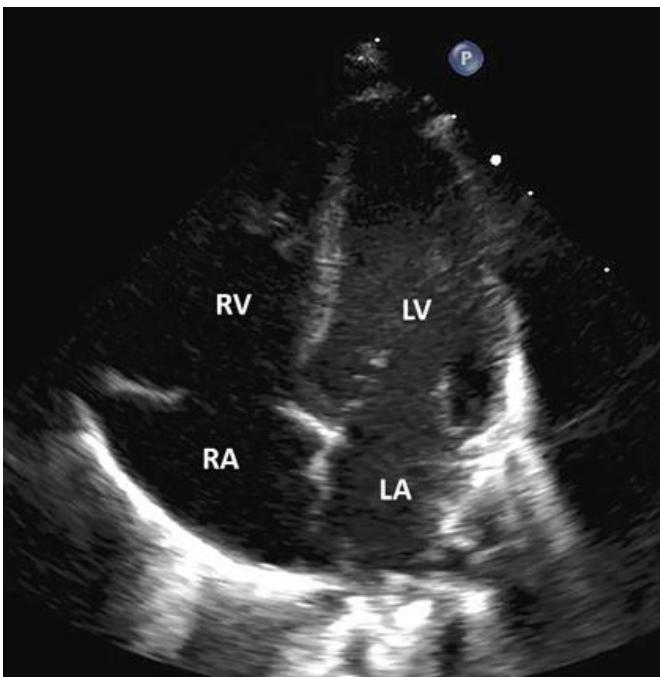
@Jimmy_C_Lu: (3/5) parasternal long-axis: LV function, pericardial effusion



@Jimmy_C_Lu: (4/5) parasternal short-axis: ventricular function, septal position, pericardial effusion



@Jimmy_C_Lu: (5/5) apical 4-chamber: ventricular function, pericardial effusion



@EGarciaSayan: 5 recommended imaging views for #POCUS in children are presented in Table 1 of the new guideline:











▲ Subcostal or subxiphoid LAX

▲ Subcostal IVC

▲ PLAX

▲ PSAX

▲ A4Ch

View	Transducer position	Image orientation	Potential goals
Subcostal long axis 	 Subxiphoid, indicator at 3 o'clock (toward left flank)	Centered over crux of the heart, with apex of the heart toward the right side of the screen	<ul style="list-style-type: none"> Assess for pericardial effusion Overall assessment of biventricular systolic function Assess for pleural effusion (with increased sector width and depth)
Subcostal IVC 	 Subxiphoid, indicator at 12 o'clock (toward the head)	Centered over the intrahepatic IVC entering the right atrium (displayed on the right side of the screen)	<ul style="list-style-type: none"> Qualitative assessment of IVC size (measured just below the diaphragm) and hydration status
Parasternal long axis 	 To the left of the sternum, indicator at 10 to 11 o'clock (toward the right shoulder), with patient in left lateral decubitus position if possible	Centered over the mitral valve, with LV apex on the left side of the screen	<ul style="list-style-type: none"> Assessment of LV size and systolic function Limited assessment of RV size and systolic function Presence of pericardial effusion, differentiate pericardial vs pleural effusion Allows color Doppler assessment of mitral or aortic regurgitation
Parasternal short-axis 	 To the left of the sternum, indicator at 1 to 2 o'clock (toward the left shoulder), with patient in left lateral decubitus position if possible	Centered over the LV papillary muscles, including the right ventricle anteriorly	<ul style="list-style-type: none"> Assessment of LV size and systolic function Assessment of RV size and systolic function Assessment of interventricular septal configuration Presence of pericardial effusion; presence of RV collapse
Apical four chamber 	 At the point of maximal impulse, indicator at 3 o'clock (toward the left axilla), with patient in left lateral decubitus position if possible	Centered over the cardiac apex, with the left heart displayed on the right side of the screen; all four chambers of the heart and both atrioventricular valves should be visualized	<ul style="list-style-type: none"> Assessment of LV size and systolic function Assessment of RV size and systolic function Assessment for gross left and/or right atrial dilation Presence of pericardial effusion; presence of RV/right atrial collapse Allows color Doppler assessment of mitral and tricuspid regurgitation

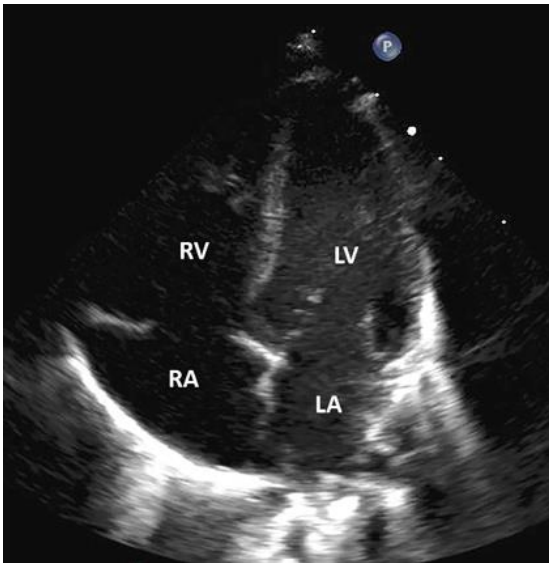
@Slwa23288585: 📺 小児新生児 #POCUS 重要断面

実際画像サンプル

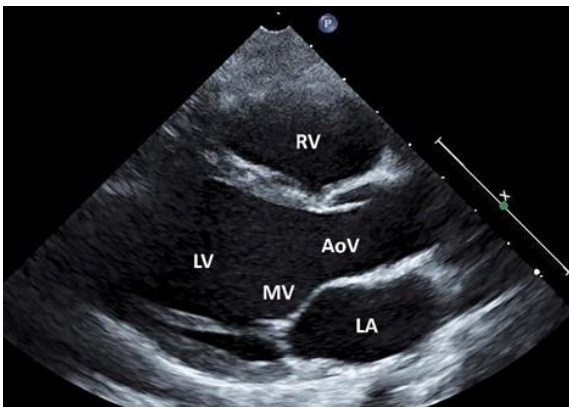
📄 https://neocardiolab.com/tnecho_1/normal-neonatal-echocardiography/subcostal-view

@Jimmy_C_Lu: As a pediatric cardiologist, it pains me that this is apex up, but remember this is intended for patients with normal anatomy, normal AV connections, etc.

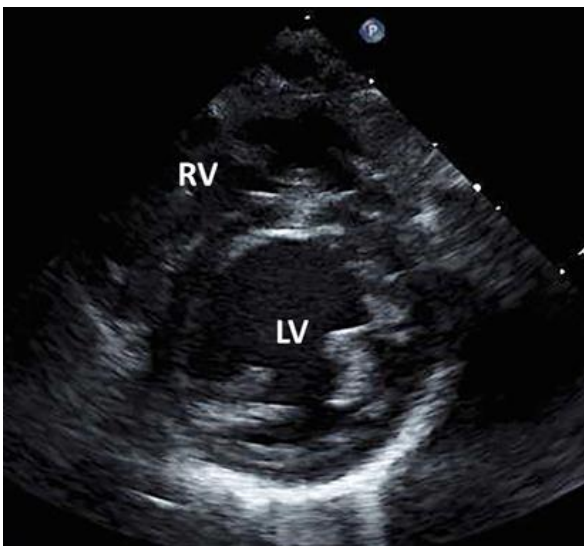
@nehasonipatel: apical 4-chamber: ventricular function, pericardial effusion



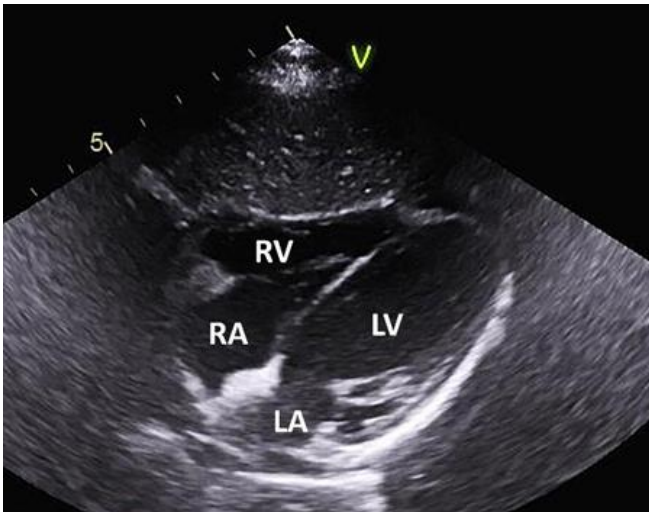
@nehasonipatel: parasternal long-axis: LV function, pericardial effusion



@nehasonipatel: parasternal short-axis: ventricular function, septal position, pericardial effusion



@nehasonipatel: subcostal long-axis: assess for pericardial effusion, ventricular function



@iamritu: subcostal view to check for pericardial effusion

@nehasonipatel: subcostal IVC: can be used for volume status



@nehasonipatel: 4 standard views to take a quick look: Subcostal, Parasternal Long, Parasternal Short, Apical

@Kfarooqi: 🖐️ FIVE views for ped ❤️ #POCUS

★ subxyphoid long axis - effusion

★ subcostal IVC view- estimate volume status with caution in this population

★ parasternal long axis

★ parasternal short axis- check septal position for RVp

★ apical 4 chamber - V size and fxn

@EGarciaSayan: The 5 recommended imaging views for #POCUS in children

@EcgOxford: I think this is simplistic & assumes that we would have the book view of every single pt (unrealistic)

I am a beginner but I got all possible views for all. Probably, Rt PLAX is the most time-consuming but it all doesn't take so long.


Speaking about POCUS not Echo obviously

@Stephan12230233: The one available in the specific patient

@iamritu: subcostal (subxiphoid in pediatrics) long-axis four-chamber, subcostal IVC view,

PLAX & SAX views, apical 4-chamber view w probe indicator position (image orientation) w transducer indicator pointing to patient's left except for PLAX view

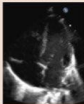
Parasternal short-axis



Centered over the LV papillary muscles, including the right ventricle anteriorly

- Assessment of LV size and systolic function
- Assessment of RV size and systolic function
- Assessment of interventricular septal configuration
- Presence of pericardial effusion; presence of RV collapse

Apical four chamber



To the left of the sternum, indicator at 1 to 2 o'clock (toward the left shoulder), with patient in left lateral decubitus position if possible

Centered over the cardiac apex, with the left heart displayed on the right side of the screen; all four chambers of the heart and both atrioventricular valves should be visualized

- Assessment of LV size and systolic function
- Assessment of RV size and systolic function
- Assessment for gross left and/or right atrial dilation
- Presence of pericardial effusion; presence of RV/right atrial collapse
- Allows color Doppler assessment of mitral and tricuspid regurgitation

At the point of maximal impulse, indicator at 3 o'clock (toward the left axilla), with patient in left lateral decubitus position is possible

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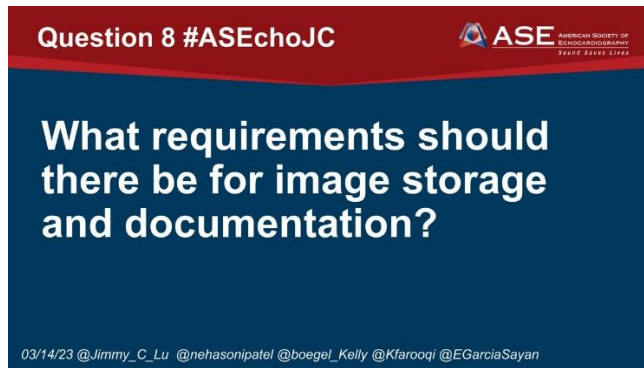
Table 1 Imaging views for cardiac POCUS

View	Transducer position	Image orientation	Potential goals
Subcostal long axis	Subxiphoid, indicator at 3 o'clock (toward left flank)	Centered over crus of the heart, with apex of the heart toward the right side of the screen	<ul style="list-style-type: none">Assess for pericardial effusionOverall assessment of biventricular systolic functionAssess for pleural effusion (with increased sector width and depth)
Subcostal IVC	Subxiphoid, indicator at 12 o'clock (toward the head)	Centered over the intrahepatic IVC entering the right atrium (displayed on the right side of the screen)	<ul style="list-style-type: none">Qualitative assessment of IVC size (measured just below the diaphragm) and hydration status
Parasternal long axis	To the left of the sternum, indicator at 10 to 11 o'clock (toward the right shoulder), with patient in left lateral decubitus position if possible	Centered over the mitral valve, with LV apex on the left side of the screen	<ul style="list-style-type: none">Assessment of LV size and systolic functionLimited assessment of RV size and systolic functionPresence of pericardial effusion, differentiate pericardial vs pleural effusionAllows color Doppler assessment of mitral or aortic regurgitation

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Question 8:



A8 Notable responses

@Jimmy_C_Lu: Best practice is storage of all studies (facilitate collaboration, QA). Clips > still images. Storing on machine alone is inadequate. Findings should be reported in the medical record to give basis for clinical decision-making.

@EGarciaSayan: Cardiac #POCUS studies must be stored, archived & reported in the medical record for clinical decision-making, collaboration and QI.

@kgzimmerman: Can you bill for these studies?

@Jimmy_C_Lu: Fantastic question. We intentionally avoided a statement on billing, This is controversial and practice varies. There is an ongoing @ASE360 task force on nomenclature, including differentiating echo and POCUS.

@EGarciaSayan: Guest author @Jimmy_C_Lu on controversies, challenges, and practice variability with nomenclature & billing for cardiac #POCUS

@Kfarooqi: KEEP A RECORD 🙌

Best practice is to record and store #POCUS images in the #EMR

👉 allows for comparison

👉 should be cloud based or institution picture archiving

👉 U/S devices should have wireless capabilities

@EGarciaSayan: What are the requirements for image storage and documentation in cardiac #POCUS in children?

@iamritu: storage with linkage to EHR is ideal so can share images, compare with prior cardiac studies & for quality improvement practices

@DavidWienerMD: I agree @iamritu. Our EHR and radiology PACs where ED POCUS images are stored are linked. I can review images when patients are seen, often quite helpful

@DmitryAbramovMD: I respectfully disagree that we should be routinely storing POCUS imaging. This takes time, which can discourage use. If it is stored, would need some instant way to link exam to chart. To me POCUS is part of physical exam and can be documented like the physical exam.

@DmitryAbramovMD: QI and scanning 20 patients a day may need to be distinguished. Putting in order and linking will take more than a minute. I think the field can and will grow similar to stethoscope and JVP assessment.

@jelevenson: Oh my! If we don't store POCUS images, we will never move this field forward! Routine storage is a must.



@DmitryAbramovMD: Stethoscopes have done well without having stored recordings, as has JVP assessment. Outside of QI, I don't see a reason to store. How long does it take you to store images per case (multiply by 20x I can use POCUS daily)?

@jelevenson: To store images? We just put in the order and it's connected. How long does it take to put in an order?

@DmitryAbramovMD: Too long, as I would have to leave the ED exam room, find a computer, then come back. How does that connect with the Butterfly?

@jelevenson: We set up our orderset to create a patient directly on our machine. If I wanna do a POCUS, I put in the EHR order, then I find the patient in our machine, select, and start scanning. one minute or less.

How can we improve our field without doing QI/QA? we can't.

@DmitryAbramovMD: QI and clinical care may need to be distinguished from each other. 20 patients per day, I think at more than an extra minute per, really affects workflow. Stethoscope and JVP assessment became standard without similar storage of images.

@jelevenson: Why do we need to do a pocus on all these patients ? Maybe lung water exam is an exception for storage (just report b lines). But a screening pocus ? Not helpful.


@jelevenson: (we have had this debate for years locally. I love this debate. I will win 🙌❤️)

@DmitryAbramovMD: I honestly doubt it, I doubt that in the future these will be routine stored when done clinically. They will be considered like physical exam.

@DmitryAbramovMD: Fair point. I use for chest pain risk stratification in ED, almost all acute HF patients, almost all a.fib admits. On a rounding/admitting service, that's almost all patients. More helpful in almost all cases then stethoscope which we use many more times per day, I think.

Question 9:

Question 9 #ASEchoJC

ASE
AMERICAN SOCIETY OF
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ECHO. EXCEL. EVERY. LIFE.

Who should define competency in pediatric cardiac POCUS?

03/14/23 @Jimmy_C_Lu @nehasonipatel @boegel_Kelly @Kfarooqi @EGarciaSayan

A9 Notable responses

@EGarciaSayan: ▲ As with adult #POCUS, it is key to establish pathways for training and competency assessment

▲ Additional training needed for those trained in adult #POCUS

▲ Multiple learning methods recommended

👉 See prior

@ASE360

POCUS training guideline: <https://bit.ly/3J9QjCw>

GUIDELINES AND STANDARDS

Recommendations for Echocardiography Laboratories Participating in Cardiac Point of Care Cardiac Ultrasound (POCUS) and Critical Care Echocardiography Training: Report from the American Society of Echocardiography

Check for

James N. Kirkpatrick, MD, FASE, Richard Grimm, DO, FASE, Amer M. Johri, MD, FASE, Bruce J. Kimura, MD, Smadar Kort, MD, FASE, Arthur J. Labovitz, MD, FASE, Michael Lanspa, MD, FASE, Sue Phillip, RCS, FASE, Samreen Raza, MD, Kelly Thorson, MSRS, ACS, RDCS, RCCS, FASE, and Joel Turner, MD, FRCP, *Seattle, Washington; Cleveland, Ohio; Kingston, Ontario and Montreal, Quebec, Canada; San Diego and Palo Alto, California; Stony Brook, New York; Tampa and Naples, Florida; Salt Lake City, Utah; Baltimore, Maryland; Plano, Texas*

Keywords: Cardiac POCUS, Critical care echocardiography, Training, Echocardiography laboratory

This document is endorsed by the following American Society of Echocardiography International Alliance Partners: Argentine Federation of Cardiology, Argentine Society of Cardiology, Australasian Sonographers Association, Canadian Society of Echocardiography, Cardiovascular Imaging Society of the Interamerican Society of Cardiology, Chinese Society of Cardiothoracic and Vascular Anesthesiology, Department of Cardiovascular Imaging of the Brazilian Society of Cardiology, Echocardiography Section of the Cuban Society of Cardiology, Indian Academy of Echocardiography, Italian Association of Cardiothoracic Anaesthesiologists, Japanese Society of Echocardiography, Korean Society of Echocardiography, National Society of Echocardiography of Mexico (SONECOM), Philippine Society of Echocardiography, Saudi Arabian Society of Echocardiography, Venezuelan Society of Cardiology, Vietnamese Society of Echocardiography.

@nehasonipatel: It is important to involve your echo/cardiology team. #AskTheExperts Experience and collaboration is your best teacher.

@Kfarooqi: Competency may be specialty specific BUT should include

👤 technical and interpretive skill

👉 knowledge about ❤️ anatomy

👍 risks 😬 benefits 😊 limitations if pediatric #POCUS

🧠 understanding of U/S equipment

@EGarciaSayan: Training & competency requirements in pediatric cardiac POCUS

@Slwa23288585: I tried contacting ChatGPT. However, I got the incorrect answer without #ASE. I have to say I'm sorry.



Competency in pediatric cardiac POCUS (Point-of-Care Ultrasound) should be defined by a group of experts in the field, such as pediatric cardiologists, pediatric critical care physicians, or pediatric emergency medicine specialists, who have extensive experience in performing and teaching pediatric cardiac POCUS.

This group could develop guidelines and criteria for competency assessment, including both knowledge and technical skills, and oversee the training and certification of healthcare providers in this area. Additionally, it would be important to involve professional organizations, such as the American Academy of Pediatrics and the Society of Critical Care Medicine, to ensure that the competency standards align with current clinical practice and are widely accepted in the medical community.

@Jimmy_C_Lu: If I were more technically savvy, this might have made writing the guideline easier.

@DavidWienerMD: Nope @Jimmy_C_Lu; the Guidelines and Standards Committee would have caught on 😂😂😂

@Jimmy_C_Lu: With different uses among specialties, each specialty must identify competencies for their users. There are shared competencies, and methods of assessment vary by type of competency. # of studies performed or completion of a course is inadequate.

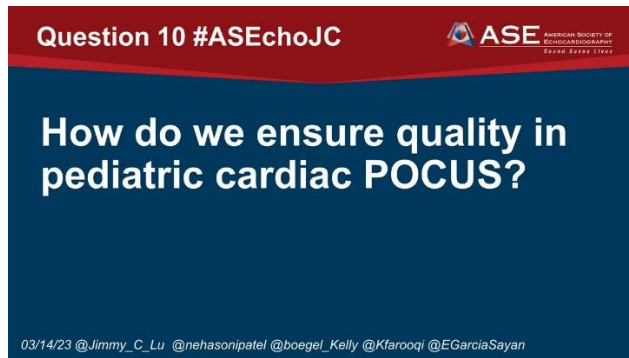
@EGarciaSayan: defining competencies in cardiac #POCUS in the context of new @ASE360 pediatric #POCUS guidelines

@nehasonipatel: Work with the Education Coordinator in your hospital's echo lab along with the cardiologist to discuss pathways and competency.

@iamritu: Just completing a minimum threshold of pocus exams does not equal competency #ASEchoJC #simulation can help improve competency

	Advantages	Disadvantages	Comments
Practice logs	Can assess volume and diversity of experience	Assesses exposure required to become competent, but not competency itself	Volume of studies is necessary but not sufficiency for competency
Objective structured clinical examinations	Allows direct observation of clinical skill and situational awareness	May not mimic the real world (e.g., variation in patient size and movement)	May use simulators, which can offer an idealized experience best for early learners
Written examinations	Easily standardized and objective	Can assess knowledge but not performance skills	Best for assessing fund of knowledge (e.g., cardiovascular physiology, ultrasound equipment, indications and limitations of cardiac POCUS)
Computerized image libraries	Can assess interpretive skills, as learners interpret curated, archived studies	Does not assess image acquisition	Cases must reflect the breadth and depth of sizes and physiologies in the pediatric population, not just adult-based libraries

Question 10:



A10 Notable responses

@Jimmy_C_Lu: 1. Ongoing QA process is essential: Regular review of complicated cases, discrepancies from other imaging – share knowledge

2. Collaboration: Utilize resources at your center (pediatric cardiology, radiology, etc) – share expertise

@nehasonipatel: It's not like riding a bike...practically constant practice will help and having a QA process set for continuous improvement and collaboration will help reach and maintain high quality.

@Kfarooqi: Quality Quality Quality 🙌

Open discussions allow for ongoing evaluation of #pediatric ❤️ #POCUS

- ✅ Archiving images allows for review
- ✅ Staff should be aware of goals
- ✅ Anonymous reporting of concerns
- ✅ Educational activities related to new skills procedures

@EGarciaSayan: strategies to ensure quality in cardiac #POCUS

@Slwa23288585: Indeed 🙌🙌🙌

@iamritu: Regular conferences, review of archived pocus studies performed & compare to corresponding reports, some pocus machines have AI gaming feature to see how fast you can acquire the images (red/yellow/green light indicator) need more simulators to teach/educate

@EGarciaSayan: ensuring quality in cardiac #POCUS in the context of new @ASE360 pediatric #POCUS guidelines, but strategies apply to adult labs as well

@EGarciaSayan: ensuring And that's a wrap for tonight's #ASEchoJC!

🙏 Thanks to the authors @Jimmy_C_Lu @nehasonipatel & the amazing co-moderators @Kfarooqi & @boegel_kelly

If you missed the live tweets, catch up on the discussion later by searching #ASEchoJC.

👉 Claim CME: <http://bit.ly/3Z0IC1K>



@iamritu: Thank you for another awesome #ASEchoJC @Jimmy_C_Lu @nehasonipatel @Kfarooqi @boegel_kelly covered a lot of this new pediatric pocus guideline w @EGarciaSayan chair of our #ASEchoJc & friends @DavidWienerMD karen zimmerman & all who joined us

