#ASEchoJC Twitter Chat
Tuesday, December 19, 2023 – 8 PM ET

- **American Society of Echocardiography**
  **COVID-19 Statement Update: Lessons Learned and Preparation for Future Pandemics** *(JASE, November 2023)*

**Authors:**

- James N. Kirkpatrick, MD, FASE (@Kirkpatj1)
- Madhav Swaminathan, MD, FASE (@mswami001)
- David H. Wiener, MD, FASE (@DavidWienerMD)

**Moderators:**

- Enrique Garcia-Sayan, MD, FASE (@EGarciaSayan)
- Nadeen N. Faza, MD, FASE (@NadeenFaza)

**Introduction and Welcome:**

@EGarciaSayan: Welcome to tonight's #ASEchoJC on the new #COVID19 guideline update. Thrilled to have guest authors @Kirkpatj1 @mswami001 @DavidWienerMD & co-moderator @NadeenFaza join us.

✔️ Get ready to comment, ask questions, or just follow along

✔️ Remember to use #ASEchoJC in all your posts
Q1:

A1 Notable Responses:

@EGarciaSayan: Question 1 #ASEchoJC:

What are common echocardiographic findings in acute COVID-19 infection?

@EGarciaSayan: LV & RV dysfunction, wall motion abnormalities, diastolic dysfunction, and pericardial effusion are common in patients with #COVID19 and myocardial injury. See @JACCJournals paper by Giustino et al:

👉https://sciencedirect.com/science/article/pii/S073510972036589X#undfig2

@iamritu: LV or RV dysfunction

acute coronary syndrome with LV dysfunction

Stress (takotsubo) cardiomyopathy

Myocarditis
@NadeenFaza: In acute #COVID19 infection use #EchoFirst to check
- LV and RV function
- Pericardial effusion
- US be used to image the lungs esp prior to CT being performed

@iamritu: Saw #McConnell sign with RV involvement early in #Covid19

@mswami001: 55% of the examined cohort in this study had echo abnormalities: https://academic.oup.com/ehjcimaging/article/21/9/949/5859292?login=false

@mswami001: LV dysfunction most common (39%) plus a host of other issues

@DavidWienerMD: #COVID can cause:
- LV systolic dysfunction (ACS, stress CM, myocarditis, MIS)
- LV diastolic dysfunction
- RV dysfunction including PHRN and Cor pulmonale
- Pericardial effusion

@EGarciaSayan: What are common echocardiographic findings in acute COVID-19 infection?

@DavidWienerMD reviewed the variable #EchoFirst findings in #COVID19 infections, including LV systolic & diastolic dysfunction, RV dysfunction, pericardial effusion.

@Kirkpatj1: Great question! Many findings center on right heart findings, likely related to effect of lung pathology, but myocarditis, stress cardiomyopathy and worsening of underlying diseases happen. Cardiac findings common and a bad prognostic sign in initial wave.

@EGarciaSayan: What are common echocardiographic findings in acute COVID-19 infection?
@Kirkpatj1 discusses frequency and prognostic value of cardiac findings on #COVID19 infection

@NadeenFaza: How prevalent are LV thrombi in this patient population?

@iamritu: High esp in hospitalized patients with acute Covid19
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8715711/
@EGarciaSayan: What are common echocardiographic findings in acute COVID-19 infection? @mswami001 highlights global study demonstrating >50% of #COVID19 patients had #EchoFirst abnormalities. https://academic.oup.com/ehjcimaging/article/21/9/949/5859292?login=false
Question 2:

A2 Notable Responses:

@EGarciaSayan: Question 2 #ASEchoJC:

What are the characteristic echocardiographic findings of post-COVID-19 vaccine myocarditis?

@iamritu: Uncommon by #echofirst

may see rarely by #whyCMR as incidental inflammation with no clinical sequelae

@SIwa23288585: This one 😊


@EGarciaSayan: What are the characteristic echocardiographic findings of post-COVID-19 vaccine myocarditis? @SIwa23288585 highlights pediatric case and the role of LV strain

@mswami001: Rare and infrequent, but seen most often in males 16-18 within 3 days of 2nd vax dose

@mswami001: WASE study from @ASE360 also reviewed post #COVID19 myocarditis

@DavidWienerMD: Link to the #WASE #COVID study

https://onlinejase.com/article/S0894-7317(21)00817-8/fulltext

@DavidWienerMD: Lung imaging is a rapid POC modality for pulmonary pathology in COVID.

Link to "Lung Ultrasound Imaging: A Primer for Echocardiographers" from which the graphic was made in

@JournalASEcho: https://bit.ly/3RM4kUO
@EGarciaSayan: What are common echocardiographic findings in acute COVID-19 infection? It's not about the heart! @DavidWienerMD highlights the importance of learning the key parameters of lung ultrasound. Understand difference between A-lines & B-lines

https://onlinejase.com/article/S0894-7317(21)00652-0/fulltext
Question 3:

Can long COVID-19 syndrome result in cardiac abnormalities detected by echocardiography?

@EGarciaSayan: Question 3 #ASEchoJC:

Can long COVID-19 syndrome result in cardiac abnormalities detected by echocardiography?

@iamritu: Tough to tell who recovered depending on baseline Fxn & which pt population studied hospitalized vs ambulatory patients, mild vs severe acute disease, and how long the follow up period was

@mswami001: Often hard to distinguish de novo heart disease from pre-existing myocardial disease

@NadeenFaza: Further studies are needed for characterization of echo features of long #COVID19.

@mswami001: Important also to differentiate "long covid syndrome" from "post-covid syndrome"

@mswami001: With almost everyone being exposed to #COVID19, cardiac disease from covid in patients is tricky...

@Kirkpatj1: We need more data! Studies have been limited and heterogenous to date. But we should have more data on how long abnormalities persist. It may depend a great deal on underlying pathology and perhaps even effects on other organ systems.

@durstenfeld: In our JCI insight paper, Long COVID was not associated with echo abnormalities except possibly pericardial effusions (not statistically sig): https://pubmed.ncbi.nlm.nih.gov/35389890/
Question 4:

What strategies are implemented to decrease the risk of viral transmission during a transthoracic echocardiogram?

@EGarciaSay: The new #COVID19 guideline update recommends specific strategies to minimize transmission and protect #EchoFirst staff based on a disaster-response planning model involving 3 phases.

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<tr>
<th>Conventional</th>
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<th>Crisis</th>
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<td>* AUC</td>
<td>* Delir non-urgent</td>
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<td>* Standard</td>
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<td>* Remote as default</td>
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@mswami001: This is an extremely useful graphic to illustrate differing strategies based on situation:

@iamritu: Bring #UEA with for every patient as a means to preserve #PPE & improve evaluation of LV function. Patients may have difficult suboptimal windows don’t want sonographers taking too much time to optimize images Give #UEA get your images & get out of the room

@mswami001: And keep the #UEA ready to administer

@rajdoc2005: Agree!!

Catching up on these posts now!

@mswami001: * minimal contact

* No EKG dots if not needed (use timed capture)

* PPE

* Limited exam/images

@NadeenFaza:

🌟 Vaccination of medical personnel

🌟 ECGs can be imported from telemetry
UEAs should be readily available, when needed

Measurements can be done after image acquisition

Limited studies should be performed, if they can answer the clinical question

@EGarciaSayan: What strategies are implemented to decrease the risk of viral transmission during a transthoracic echocardiogram?

@DavidWienerMD: Well said @NadeenFaza. And these "hacks" can be used during ordinary times and make image acquisition and lab function more efficient

@DavidWienerMD: Many labs vary their response following a standard disaster planning model

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@Kirkpatj1: PPE, vaccines, etc., but also practical means to reduce exposure time: time-based acquisitions withouth ECG leads, no measurements on machine in room, etc., planned focused/limited studies. but can also defer, if appropriate, until COVID –

@NadeenFaza: Key points from the updated @ASE360 COVID-19 guidelines!

#EchoFirst in acute infections 🎧, post vaccine myocarditis 🎧, and long COVID19 syndromes.

**Key Points**
- Echocardiography in acute COVID-19 infection should assess LV and RV systolic function, pericardial effusion, and lung imaging (particularly in the setting of an unremarkable CXR when no CT scan has been performed).
- Echocardiography to evaluate suspected myocarditis from COVID-19 or postvaccination should assess LV and RV systolic function, wall thickness, diastolic function, GLS, and pericardial thickness and effusion with imaging for constriction as clinically indicated.
- Echocardiography in patients with long COVID syndromes requires further study.

@DavidWienerMD: Suggested responses to COVID-19 and other crises follow the Institute of Medicine’s 3-tier model for crisis standards of care and preparedness
@DavidWienerMD: The online supplements contain real-world examples of #EchoFirst triage protocols from 3 medical centers in different regions. They can help clinicians prioritize patients and indications.

@EGarciaSayan: What strategies are implemented to decrease the risk of viral transmission during a transthoracic echocardiogram? @DavidWienerMD reviewed real-world #EchoFirst triage protocols included in the new #COVID19 guideline update 👉 https://asecho.org/guideline/american-society-of-echocardiography-covid-19-statement-update-lessons-learned-and-preparation-for-future-pandemics/
Question 5:

What is the role of Point of Care Ultrasound (POCUS) in the setting of a highly transmissible disease?

@NadeenFaza: points from the updated @ASE360 #COVID19 guidelines addressing the use of #POCUS.

Key Points

- Cardiac and chest POCUS may guide the need for further imaging and limit exposure to as few individuals as possible.
- If cardiac POCUS or CCE answers the clinical question, it is usually not necessary to perform a confirmatory formal echocardiogram.
- Routine cardiac POCUS/CCE application is not meant to shift the burden of exposure to infectious agents from echocardiography laboratory personnel to POCUS/CCE users but rather to facilitate best use of resources. Cardiac POCUS should not be performed when CCE or comprehensive echocardiography is clearly indicated.
- An adequate number of POCUS/CCE machines, POCUS that allow uploading of images and the ability of echocardiography laboratory personnel to view the images, adequately trained clinicians, and overall integration into a system of cardiac imaging should be implemented ahead of future pandemics.
- In addition to having clear standards for training and credentialing, a multidisciplinary body that includes representatives from a diverse group of POCUS/CCE experts should be involved in hospital-level decisions to optimize POCUS/CCE integration into clinical care.
- Cardiac POCUS/CCE exams should be formally interpreted, documented, and archived in the medical record.

@EGarciaSayan: must-read @ASE360 #POCUS statement during #COVID19 by @amerjohri et al provides guidance on cardiopulmonary protocol & device-cleaning checklist. 👉 https://asecho.org/wp-content/uploads/2020/06/COVID-POCUS_June-2020.pdf

@iamritu: Use pocus to triage the need for more testing to reduce exposure time & transmission, specifically targeting pocus to answer the clinical question https://bit.ly/2UTM4v2
@mswami001:
* Helpful in ICUs
* Rapid diagnostics
* Existing trained ICU staff (additional staff may not be needed
* Limited exam and pertinent info
* Machines at POC readily available


@mswami001: Valuable lessons learned during pandemic. Centers prepared with POCUS capability were better able to tackle ICU imaging needs

@EGarciaSayan: @mswami001 reviews the role of Point of Care Ultrasound (POCUS) in critical care in the setting of a highly transmissible disease such as #COVID19

@Kirkpatj1: Important not to shift exposure on to POCUS users. Need to assess the situation and be efficient about exposure. And depends on who is capable of doing cardiac POCUS and how difficult patient is to scan.

@iamritu: important point from @Kirkpatj1

@EGarciaSayan: What is the role of Point of Care Ultrasound (POCUS) in the setting of a highly transmissible disease? @Kirkpatj1 highlights the importance of not shifting burden and exposure risk to POCUS users

@mswami001: Key point. ICU staff frequently felt that POCUS use was being shifted to them to avoid exposure yet with the risk of an insufficient exam. Hard choices...
Question 6:

A6 Notable responses

@EGarciaSayan: Question 6 #ASEchoJC:
How can competence in scanning be achieved within the constraints of a pandemic?

@iamritu: hybrid learning models are 👍
in-person
simulation
Asynchronous online education
Also extending amount of time allowed to acquire requisite number of cases may help

@EGarciaSayan: @iamritu highlights some examples of strategies for training and achieving competence in #EchoFirst during a pandemic.

@Slwa23288585:
👍ハイブリッド学習モデル 👍
👍対面
👍シミュレーション
👍非同期オンライン教育

yes 😊

@mswami001: Especially simulation in #echofirst with disease modules with automated feedback.

@mswami001: #ArtificialInteligence in #echofirst can also help

@mswami001: Really hard question. Competence versus simple observation. Limited contact may mean limited learning...

@EGarciaSayan: @mswami001 highlights the challenges in #EchoFirst scanning training & competence in the setting of a pandemic.

@mswami001: Remote learning may diminish learning quality, but likely better than no contact at all...

@DavidWienerMD: Training in #echofirst can take advantage of complementary pathways to achieve initial and continuing competence. The pandemic made us think out of the box about sonographers and physician training
**@EGarciaSayan:** @DavidWienerMD reviews different pathways and tools to achieve #EchoFirst training & competence for physicians and sonographers during a pandemic.
Question 7:

A7 Notable responses

@EGarciaSayan: Question 7 #ASEchoJC:

How did the pandemic adversely impact training in echo interpretation? How can this be mitigated?

@mswami001: Numbers not achieved for certification...

@EGarciaSayan: Good point @mswami001. Both certification and recertification, in particular for TEE and stress echo (depending on lab volume) could have been impacted. Same for lab accreditation, though @IACaccred was extremely accommodating in those years given the challenges.

@DavidWienerMD: Fortunately, @NBE_96 and @ABIMcert were flexible and extended the time during which certifiers or recertifiers could submit numbers

@iamritu: restrictions during pandemic & cyclical surges forced us to find alternatives like remote case review, using online educational resources ie @ASE360 Learning Hub Hands-on scanning w remote supervision & feedback & using clinical simulators even tele proctoring

@EGarciaSayan: @iamritu highlights creative #EchoFirst educational opportunities that developed during the #COVID19 pandemic

@mswami001: Limited exams and limited exposure to disease population during the height of the pandemic reduced exposure to a comprehensive spectrum of diseases that would otherwise have been seen

@DavidWienerMD: When we were isolating during the peak of the pandemic, the fellows and faculty would log onto the PACS remotely and do interpretations on Zoom

@Slwa23288585: Japan too 😊

@NadeenFaza: What strategies can be implemented to decrease the risk of #COVID19 infection spread during a #TTE? Key points 🍀 from the updated @ASE360 guidelines! Knowledge is power!
@EGarciaSayan: What strategies are implemented to decrease the risk of viral transmission during a transthoracic echocardiogram?
Question 8:

What are the indications for the performance of a TEE exam in a COVID-19-positive patient? How can the risk be minimized?

@iamritu: https://bit.ly/472Eujz
Aerosolization highest during TEE of nonintubated patients
But needed to identify mechanism of shock, assess preload w respirophasic variation SVC diameter, stroke volume changes after initiating or titrating vasopressors #ASEchoJC
Risk by only doing TEE if it will change management

@mswami001: Very few indications for TEE in a #covid pos patient over a TTE. Also, fundamental difference between ICU room and operating room in terms of air handling.

@mswami001: OR designed to have positive pressure. ICU rooms have negative pressure. Doing a TEE in an OR and ICU have different implications w.r.t. aerosolization risk

@mswami001: Aerosol precautions since patient often not intubated (unlike intraop) and operator is close to airway with cough potential

@DavidWienerMD: One lesson I learned and implement to this day is to wear an N95 for AGPs. I’m on the inpatient consult service now during virus season and can’t begin to count how many patients test positive for COVID or flu...2 days after I see them
What is the role of CT and CMR in cardiovascular imaging during a pandemic?

The new #COVID19 guideline update recommends the use of alternative imaging modalities for specific indications during a pandemic. Minimize the risk of aerosolization by avoiding TEE or exercise stress when other modalities are appropriate.

Must also balance resource availability and patient transport when critically ill.

Also many false negative PCR early in acute disease, use #Yessct to confirm if CXR negative.

Can play a significant role as alternatives to TEE. Not aerosolizing, but have to remember they require transporting a patient through hospital (with potential for exposure) and need to clean room after. TEE is bedside.
Question 10:

What are key lessons learned from this pandemic related to the practice of echocardiography?

@EGarciaSayan: Question 10 #ASEchoJC:

What are key lessons learned from this pandemic related to the practice of echocardiography?

@iamritu:

◆ apply appropriate use criteria and do not do if there’s not a new or changed sign or symptom of cvd or will not change management optimize ◆ Use UEAs for endocardial definition

◆ Do measurements offline on workstation afterwards


◆ Pay attention to clinical questions with focused protocols to be safe & effective

@mswami001:

* Be adaptable in your lab
* Keep hybrid learning options open
* Keep PPE and other resources handy
* Develop POCUS capability
* Consider #AI #echofirst devices to help automate processes

@KalagaraHari: ♥ POCUS statement ♥ .... Along with extending #POCUS resources to other specialties, especially ICU, ER & Anesthesia !

@mswami001: #echofirst always....

@EGarciaSayan: @mswami001 🎯 lesson learned from this pandemic related to the practice of echocardiography
@DavidWienerMD: 🤝 😊

#ASEchoJC #echofirst (literally)

@Slwa23288585: 😊😊😊

@iamritu: #echofirst started in 2017 when we choose it & then @mswami001 started #ASEchoJC so it’s been both these #hashtags for over 6 years! https://x.com/iamritu/status/932642311145754624?s=20

@NadeenFaza:

-Order the right test for the right patient. Follow the appropriate use criteria!

-Take excellent care of your patients and echo techs. Minimize the risk of infection during a study. Perform CT/CMR when appropriate.

-Seek virtual #EchoFirst learning opportunities.

@DavidWienerMD:

1. Plan ahead for different levels of threat. Triage
2. Protect self/staff
3. Be creative with training, using complementary modalities (POCUS, CCT, CMR)
4. Carry lessons learned forward to help your lab run better during "normal" times

@EGarciaSayan: 😊 And that’s a wrap! Thank you all for participating in tonight’s #ASEchoJC on X on the new #COVID19 guideline update w/ our guest authors @Kirkpatj1 @mswami001 @DavidWienerMD & co-moderator @NadeenFaza. If you missed anything, you can catch up by following the #ASEchoJC hashtag.

@DavidWienerMD: Great discussion as always. Thanks to @EGarciaSayan and @NadeenFaza for making it fun and interesting, and for inviting me

@EGarciaSayan: Thanks @DavidWienerMD. Privileged to have you @mswami001 and @Kirkpatj1 join our #ASEchoJC discussion tonight.

@DavidWienerMD: It was great working on the guideline with fabulous chairs @Kirkpatj1 and @mswami001 and the other authors. H/T to @ASE360 for its excellent and authoritative guidelines

@Kirkpatj1: Great job hosting! Thank you so much.

@mswami001: Thanks @EGarciaSayan and @NadeenFaza for hosting and to @ASE360 for a fabulous learning experience #ASEchoJC. Thanks @Kirkpatj1 and @DavidWienerMD and @iamritu!!! What a fab discussion!
@EGarciaSayan: Thank you so much @mswami001 for joining our #ASEchoJC and for your thoughtful comments on the new @ASE360 #COVID19 guideline update

@rajdoc2005: Sounds like another great #ASEchoJC from @ASE360 Catching up on all the discussion now .... 🙏 🙏

@iamritu: Thank you for another brilliant #ASEchoJC Time flies when you’re on Twitter with all your #echofirst friends discussing this!

@ase360: Thank you to EVERYONE who participated in tonight’s #ASEchoJC! ❤️

Huge shout-outs to our moderators, @EGarciaSayan and @NadeenFaza, and our guest authors, @Kirkpatj1, @mswami001, and @DavidWienerMD.
@iceman_ex: Lots of interesting pearls from #ASEchoJC

Am taking notes this morning