

Q&A—Transducer Cleaning and Personal Protective Equipment

Below you will find a list of questions submitted by webinar participants, along with answers from the webinar presenters.

***Q: My center is limiting 'limited obstetric ultrasound' for those women who pass pre-screening and are at 8 weeks EGA per LMP. We use the revital-ox in our GUS system. Since we are not in the hospitals where the risks are much, much greater, please include your recommendations for the smaller clinics as well during the webinar.**

A: Guidelines for cleaning transducers are based on the usage classification. Ultrasound devices that only come in contact with intact skin are considered 'non-critical' and require cleaning with removal of all gel followed by low-level disinfection. Ultrasound transducers that come into contact with non-intact skin or mucous membranes are considered semi-critical and require cleaning with removal of all gel followed by high-level disinfection. Refer to the AIUM "Guidelines for Cleaning and Preparing External-and Internal-use Ultrasound Transducers and Equipment Between Patients as well as Safe Handling and Use of Ultrasound Coupling Gel" (03/27/20). While the prevalence of the disease differs based on geographic location, many patients who test positive for COVID-19 are asymptomatic or presymptomatic, thus one should consider all patients as potentially having COVID-19 and potentially able to pass it along!

***Q: I know proper cleaning of the exterior surfaces of ultrasound machines are essential at this time, however, have internal mechanisms of machines been considered as well? In instances where COVID-19 can become airborne (intubation, for example) and a bedside ultrasound is performed, is there a risk of the ultrasound machines becoming a mode of transmission via the vent and fan for the machine? In other words, is it possible for an airborne virus to be sucked in during the bedside exam and kicked back out when the machine is brought back to the lab and turned on?**

A: This is a theoretical consideration and the potential impact on spreading the SARS-CoV-2 is speculative. Fans in ultrasound units do not contain HEPA filters. It is not recommended that any self-designed filtering system be attempted as this may interfere with the cooling function within the ultrasound system. In patients who are PUI or known COVID-19 positive, consideration of using a laptop, tablet or other portable system without a fan could be theoretically advantageous and potentially easier to clean.

Q: If a patient's skin is intact and they have screened (not tested) negative for COVID-19 is it necessary to wear exam gloves to scan? My practice has been told to glove up for every patient, but I am getting signals from affiliated medical centers that routine care of patients where there is skin contact, exam gloves are not required....Found the verbiage our facility has given employees about exam gloves. States that exam gloves are not needed where there is intact skin and "no potential for exposure to blood, body fluids, or contaminated environment." This leads me to believe that routine transabdominal scanning should not require gloving up in most cases. The examples they use where gloves do not need to be worn are "taking blood pressure, temperature, and pulse; performing SC and IM injections; bathing and dressing the patient; transporting patients; caring for eyes and ears (without secretions); and vascular line manipulation in absence of blood leakage." Nothing specific to ultrasound scanning.

A: If you have them, use them. While gloves may not be required on a patient with normal intact skin, they do provide a degree of protection in cases that the skin surface or nail bed is disrupted. Furthermore, many providers prefer utilizing a glove on the scanning hand to prevent contact with gel. Asymptomatic patients may test positive for SARS-CoV-2 and therefore be able to spread the virus.

Q: Do you recommend applying all disinfection protocols after each ultrasound examination or is that just for suspected or confirmed patients with COVID-19? We are concerned about possible damage to the probe by repeated use of disinfectants.

A1: The ultrasound system (keyboard, transducers, cords, and any items touched during the examination such as gel bottles, beds, etc.) must be cleaned and disinfected between each patient under all circumstances. More comprehensive cleaning (cart, doorknobs, light switches, etc.) may be required when a patient is suspected of having an infectious process such as COVID-19. [QUICK GUIDE](#)

Q: Did I understand correctly that US-guided IV placements don't need HLD as long as they are not near the infection site? How far is considered "near"? Covers recommended? Can you please expand on this?

A: If the transducer touches blood or an infection, HLD is required even with a transducer cover. A transducer cover is always needed, and "far" is about a centimeter.

Q: How can the filters be cleaned when an ultrasound is being done on a positive COVID-19 patient. Also in a small rural area how do we clean the systems without UV light or a decompression room. Since we don't have access to those?

A: Consult with your company representative about their ultrasound system air filter. Do not attempt to block the filters by innovative techniques, as this may cause your ultrasound system to overheat. The ultrasound system should be wiped down in its entirety after each patient with a low-level disinfectant, regardless of COVID-19 status. UV light and a special room are not necessary to clean your ultrasound system. <https://www.aium.org/officialStatements/57>

Q: Do you see a benefit in creating/making a "sneeze" shield for separation between the sonographer and the patient? I work in an MFM setting and we are still seeing a lot of patients that may or may not be infectious.

A: Different innovative methods of separating patients from health care providers have been designed and are used in some areas such as COVID-19 respiratory testing units. These are generally not widely available and would have to be custom-made with specifications that would prevent dispersal of aerosolized or droplet infectious agents. Wearing a face mask and eye protection should function as an adequate physical barrier. The type of face mask worn (surgical or N95, or equivalent) will depend on your supply chain and the clinical situation. It is recommended that patients be triaged based on respiratory symptoms and recent contact with a known COVID-19 positive patient. There are several algorithms available to triage patients including those developed by the CDC and ACOG. There may also be institutional protocols recommended for your triage use. Patients who are symptomatic or have had contact with a COVID-19 positive patient within the preceding 14 days should have their clinical situation assessed remotely and imaging should be postponed for 14 days if not essential. If imaging is essential for a PUI or COVID-19 positive patient, it should be performed away from patients who do not have risk factors for COVID-19.

Q: Is it recommended to cover the US machine while in a room with COVID+ or PUI patients? I have heard the use of c-arm covers. Any thoughts on this subject, and how long would this machine be "out of use" after cleaning it?

A: To our knowledge, there are no cart covers commercially available and you would need to improvise. With extensive coverage, removal may be associated with a risk of personal contamination and should be done in full PPE with a focus on proper doffing. No shaking should occur. Use a damp cloth/wipe with LLD to clean the surface of the ultrasound unit in its entirety. Transducers, cords, and all surfaces will need to be cleaned and disinfected between each patient, regardless of covers. The type of transducer disinfectant used will depend on the clinical situation <https://www.aium.org/officialStatements/57>. Unfortunately, the cleaning process takes time and may be a reason to consider laptop-, tablet-based, or portable ultrasound units when scanning a patient with COVID-19 or a PUI. Once the system is cleaned, it is ready for use.

Q: It has been shown to possibly use portable C-arm covers from radiology to cover the entire ultrasound machine. The question is, when taking this large piece of plastic off of the machine, could there be a risk of contaminating the user by trying to take off this large cover vs. using smaller plastic covers to keep the machine as clean as possible?

A1: Larger covers could present as a larger risk; covering the keyboard and other control panels (high touch areas) may be a reasonable compromise. But note that wraps like food wrap may or not be a physical barrier for viruses. They will, however, prevent physical penetration of larger droplets and gel. LLD after cover removal could be a compromise as the cover decreases penetration of nooks between keyboard keys.

A2: Yes. I would remove with full PPE and not shake the plastic; dispose of it properly. You will still need to clean the console and everything else with LLD. Proper doffing of PPE.

Q: What level of disinfection is required for probes that are covered by a sheath after US-guided vascular access procedures?

A: After an US-guided procedure in which a sheath is intact, the sheath should be removed and all gel removed from the transducer. The transducer should undergo LLD if no contamination has occurred. If contamination has occurred, HLD is required. The transducer may need to be rinsed after disinfection. There should not be residual virus at this point. Following the high-level disinfection, it is placed on a rack to dry. Storage in a plastic bag might prevent dust from accumulating if the probe is not used frequently. It is noted that the virus lives longer on plastic. <https://www.aium.org/officialStatements/57>

Q: Are providers cleaning probe/machine inside the room or outside or both? If we are short on wipes and cannot do both, which is recommended?

A: Ultrasound systems with their transducers and cords are cleaned in the room after the patient has left. If LLD wipes are not available, look at the AIUM and EPA guidelines for other LLD such as 70% alcohol. Soap and water may also be used according to AIUM and CDC guidelines (<https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/cleaning-disinfection.html>). Do not allow dripping water onto the keyboard and do not use a spray bottle.

Q: Should we be continuing ultrasounds that include medical students/residents? Or should only the attending scan the patient to limit the number of providers in the room and the time that providers are in the room?

A: Follow your institutional policies. It is recommended that the number of health care providers be kept to a minimum. The exact type of HCP performing the ultrasound examination will depend on the clinical situation. An experienced sonographer who is usually able to complete the study expeditiously and without risk factors for severe COVID-19 complications is likely the optimal choice. Some MFM prefer to scan themselves. Many institutions are not permitting students and less experienced trainees to be involved with the ultrasound examinations in an effort to minimize risk to the workforce and conserve PPE.

Q: Does an ultrasound machine need to be unplugged to effectively clean the keyboard and buttons without potentially harming the electronic system of the machine?

A: No. Use a damp cloth to clean the keyboard including the buttons and crevices. Do not allow dripping water onto the keyboard and do not use a spray bottle.

Q: I have searched the worldwide medical literature (OVID Medline, twice using multiple search strategies) and have found zero evidence of transmission of enveloped respiratory viruses such as coronavirus or influenza by ultrasonography machines or probes. Being fully in agreement with the need for probe disinfection after each use (as well as standard PPE use and hand hygiene), are we creating a tempest in a teapot with this concern about U/S as fomite for SARS-CoV-2?

A: The cleaning guidelines for ultrasound systems/transducers for SARS-CoV-2 are the same as for other potentially infectious agents. Just because a patient has COVID-19 does not mean they can't have other infectious bacterial or viral agents. Kampf (2020) does not address US scanners but plastic. See: 2020 Kampf et al. "Persistence of coronaviruses on inanimate surfaces and its inactivation with biocidal agents." *Journal of Hospital Infection*. The PPE is specific to prevent the medical staff from getting infected with the SARS-CoV-2.

Q: Are gowns needed for scanning asymptomatic patients?

A: Gowns are currently limited based on supply chain availability and are not required for scanning asymptomatic patients. HCP should be vigilant about not leaning into the patient beds or otherwise touching the patient or other surfaces with their bodies. Complete hand washing should be performed before and after each patient examination.

Q: Is it recommended to run the transabdominal probe through Trophon after using it on a positive COVID-19 patient even if you used a transducer cover?

A: The transabdominal transducer surface should have the surface gel removed completely by a cloth. If there is difficulty removing all gel, the transducer and attached cord should be detached from the ultrasound system and cleaned with running water and soap. After complete gel removal, the transducer should undergo LLD. If you have Trophon available, you can use it for HDL if desired, though there is no data to justify the higher level of cleaning. <https://www.aium.org/officialStatements/57>

Q: How are you accomplishing HLD in the ED?

A: HLD can be accomplished in almost any setting. There are numerous solutions and systems that can be used for HLD. Options include Trophon, TEEClean, Revital-Ox, UV-C, GUS Disinfection Soak Stations, CIDEX OPA, and Metricide OPA. <https://www.aium.org/officialStatements/57>

Q: Where can I find information, per state, for which outpatient setting exams should be performed or postponed at this time?

A: We are not aware of this degree of granularity with respect to outpatient exams at the state level. Some states have 'closed' outpatient facilities and prohibited screening studies. With respect to OB-GYN, SMFM and ISUOG, as well as various academic institutions, have provided guidance as to what examinations are considered essential and timing of antenatal testing for fetal well-being. Some of the societal guidelines are listed on the AIUM COVID-19 webpage. Institutional guidelines are available upon request. The American College of Radiology (ACR) recommends: <https://www.diagnosticimaging.com/coronavirus/acr-publishes-resources-covid-19-pandemic>

Q: Is there any Sonographer or Sonologist affected so far?

A: HCPs have been infected with SARS-CoV-2 with some developing severe complications including death. The specialty area and exposure levels for sonographers or sonologists, in particular, would be speculative at this point.

Q: Do you recommend the tablet-based systems over the laptop systems since they are easier to clean?

A: This might indeed be an advantage as the 'keyboard' is easier to clean.

Q: What is the role of Gel Warmer in killing the viruses during the ultrasound procedures?

A: Gel warmers do not kill viruses or bacteria. In fact, heated gel can support pathogen growth. Use only if medically indicated such as peripheral vascular imaging, i.e. vascular contraction could be a concern.

Q: I'm having difficulty controlling the trackball with the plastic snapcover. Have you discovered any tricks?

A: No, unfortunately not. You could leave the trackball exposed and take the ball out to clean it. Despite a snapcover, the keyboard must be cleaned with a LLD between patients.

***Q: I work at a hospital with a clinic and nursing home attached. My providers are wanting me to do certain exams that I do not consider essential, for instance, thyroid ultrasounds because labs are elevated. Or early ob ultrasound just because they always order a first-trimester ultrasound and the patient is not experiencing any complications. I would appreciate feedback or if you could tell me where I can find some information on this.**

A1: This is often dictated by the state medical board.

A2: SMFM and ISUOG have guidelines that are posted on the [AIUM COVID-19 Resources](#) page. In outpatient- and radiology-based imaging practices, the decisions are left to the referring clinical providers who are hopefully practicing in compliance with current recommendations as to 'essential' scans.

*Individual hospital/practice issues, therefore answers vary based on that particular situation and are not applicable to everyone



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