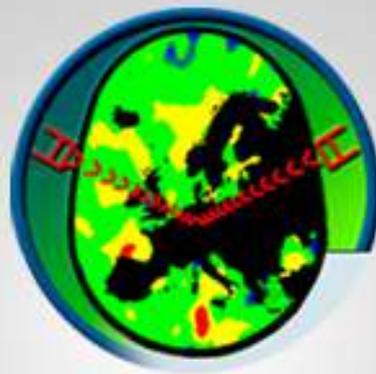


# ESNCH Guidance for Neurosonology Laboratories during COVID-19 Pandemic

News



# ESNCH

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The European Society of Neurosonology and Cerebral Hemodynamics (ESNCH) would like to provide a guide to Neurosonographers on how to work safely in their laboratories and protect their patients during the Coronavirus-19 (COVID-19) pandemic, in agreement with recommendations issued by the World Health Organization (WHO),<sup>2</sup> the European Center for Disease Prevention and Control,<sup>3</sup> and/or the Center for Disease Control and Prevention (CDC).<sup>4</sup> Each ultrasound laboratory should also follow guidelines recommended by local health authorities.

## GENERAL RECOMMENDATIONS

- During stage 1 (lockdown), only emergent or urgent ultrasound examinations should be performed. Elective ultrasound examinations should be cancelled and postponed to minimize spread of COVID-19 infection.

- All patients should be screened using standardized checklists for symptoms (fever, cough, chest pain, dyspnea, anosmia, ageusia, headache, myalgias, and gastrointestinal symptoms including vomiting and diarrhea, etc).
- Only patients should be allowed into the examination room unless they require assistance (e.g. language, mobility) from a caregiver. In this case, the caregiver should be screened as well.
- In order to reduce the risk of transmission, important considerations include: (i) respecting appointed times of scheduled visits, (ii) lengthening the appointment intervals in order to prevent crowding in the waiting room and (iii) minimizing the number of patients in the waiting area, and (iv) spacing the seats to at least 6 feet (2 meters) apart. (v) Patients and caregivers may be given a mask on their arrival to the facility if supply is available.
- During the pandemic, it is also reasonable not to allow trainees or students to participate.

#### PREPARE AND CLEAN THE ULTRASOUND ROOM AND EQUIPMENT

- The Ultrasound Room should be cleaned thoroughly each day and all contents (ultrasound monitor, computer keyboard and mouse, stretcher rails, transducer holder, gel container, door handles, cabinet knobs, light switches, chairs and all other furniture or equipment) should be wiped with a compatible disinfectant. At the end of the day, soiled linen should be handled using two pairs of gloves and disposed of in the appropriate container without shaking the linen. The room and equipment should undergo terminal cleaning using appropriate disinfectant. Hands should be washed for 20 seconds afterwards and disinfected with appropriate disinfectant (containing medical alcohol of at least 70%).
  - Transducers and ultrasound equipment must be cleaned with a compatible disinfectant after each patient, in accordance with local guidelines. For external procedures, low-level disinfection (LLD) is effective in agreement with CDC guidelines.<sup>4</sup>
  - External transducers that only come into contact with clean, intact skin are considered non-critical devices and should be cleaned after every use.
  - External transducers that come into contact with contaminated skin (such as skin infections) should be covered with a single-use transducer cover.
- Cleaning of all transducers: Disconnect the transducer from the ultrasound scanner as appropriate. After removal of the transducer cover (when applicable), remove bulk gel or debris from the transducer. Consider the use of a small brush, especially for crevices and areas of angulation, depending on the design of the particular transducer. Use a damp gauze pad or other soft cloth and a small amount of mild nonabrasive liquid soap, e.g. household dishwashing liquid or use a wipe to remove any remaining gel (film).

Disinfection can be low-level (LLD) or high-level (HLD). Disinfection of all transducers in external procedures should undergo LLD. If the transducer came in contact with mucous membranes or any body fluids then HLD is required (see Table 1). If a transducer cover was required and becomes compromised, the transducer must undergo HLD.

Currently, EPA-approved disinfectants for use against COVID-19 (SARS-CoV-2) can be found online.<sup>5</sup>

Common LLD agents include quaternary ammonium compounds, alcohols, and phenols available as sprays and disinfectant wipes. Ensure that the chosen LLD method is compatible with the transducer. Alcohols are often contraindicated due to material incompatibility.

If LLD agents are depleted, soap and water should be used per CDC guidelines. If indicated but no transducer covers are available, medical gloves or other physical barriers (e.g. compatible medical dressings) should be used.

Table 1. High-Level Disinfectants

Name	Composition/Action Organic compound (CH <sub>2</sub> (CH <sub>2</sub> CHO) <sub>2</sub> )
Glutaraldehyde	Induces cell death by cross-linking cellular proteins; usually used alone or mixed with formaldehyde
Hydrogen peroxide	Inorganic compound (H <sub>2</sub> O <sub>2</sub> ) Antiseptic and antibacterial; a very strong oxidizer with oxidation potential of 1.8
Peracetic acid	Organic compound (CH <sub>3</sub> CO <sub>3</sub> H) Antimicrobial agent (high oxidation potential) Organic compound (C <sub>6</sub> H <sub>4</sub> (CHO) <sub>2</sub> )
Ortho-phthalaldehyde	Strong binding to outer cell wall of contaminant organisms
Hypochlorite/hypochlorous acid	Inorganic compound (HClO) Myeloperoxidase-mediated peroxidation of chloride ions
Phenol/phenolate Hibidil	Organic compound (C <sub>6</sub> H <sub>5</sub> OH) Antiseptic Chlorhexidine gluconate (C <sub>22</sub> H <sub>30</sub> Cl <sub>2</sub> N <sub>10</sub> ) Chemical antiseptic

- Equipment: Cleaning involves all ancillary equipment involved in the procedure at hand. A coversheet may be used as a physical barrier between the keyboard/console and the operator, in addition to LLD cleaning. If possible, use a dedicated system (scanner and transducers) for COVID-19, positive or suspected, patients. COVID-19 is viable on plastic surfaces for up to 72 hours.<sup>6</sup>
- At the end of each clinical session, the equipment and room should undergo appropriate cleaning and disinfection.

## PROTECTING THE PATIENT AND THE ULTRASOUND PROVIDERS

Preventing transmission of infection requires all healthcare professionals to implement the following precautions, regardless of suspected or confirmed COVID-19:

1. Every patient should be considered as possibly COVID-19 infected.
2. Ultrasound providers with specific health problems that place them at greater risk (as detailed by local occupational health guidelines) should be excluded from performing elective ultrasound examinations.
3. During the ultrasound examination, ultrasound providers should use a three-ply surgical mask, latex-free disposable gloves and changed after each patient. Appropriate hand hygiene is imperative before and after direct patient contact. If it is not possible to wash hands, hand sanitizer can be used.
4. If required to scan a patient in an isolation room, ultrasound providers should use appropriate protective equipment: N95 or FFP2 masks, goggles, face protective shield, full-sleeved gown and extended cuff gloves prior to entering the examination room.
5. A bedside scan with the patient in situ is strongly recommended, whenever possible applying the above mentioned procedure for transducers and equipment cleaning and disinfection.
6. If possible, it is recommended to have at least one dedicated ultrasound machine for patients with suspected/probable/confirmed COVID-19 infection.
7. If the patient must be scanned in the clinic, this should be done at the end of the session, as the room and equipment will subsequently require a deep clean.
8. Whenever possible, use telemedicine methods (i.e. for discussion of difficult or challenging cases, remote second opinion etc.).

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## References

1. Adapted from the WFUMB Position Statement: How to perform a safe ultrasound examination and clean equipment in the context of COVID-19
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3. European Center for Disease Prevention and Control [ecdc.europa.eu/en](https://ecdc.europa.eu/en)
4. Center for Disease Control and Prevention (CDC) [cdc.gov/coronavirus/2019-ncov](https://www.cdc.gov/coronavirus/2019-ncov)
5. Agency USEP. List N: Disinfectants for Use Against SARS-CoV-2. <https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2>. Published 2020. Updated April 9, 2020.
6. van Doremalen N, Bushmaker T, Morris DH, Holbrook MG, Gamble A, Williamson BN, Tamin A, Harcourt JL, Thornburg NJ, Gerber SI, Lloyd-Smith JO. Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1. *New England Journal of Medicine*. 2020 Mar 17.