PJSS Vol. 75, No. 1, January-June, 2020

PJSS PHILIPPINE JOURNAL OF SURGICAL SPECIALTIES

PSUS Recommendations for Ultrasound Use for Surgeons in the Era of the COVID-19 Pandemic

Philippine Society of Ultrasound in Surgery

Introduction

Movement restrictions have been in place since the Philippine national government has placed majority of the country on enhanced community quarantine. Because of this, several diagnostic examinations classified as non-urgent have been cancelled or rescheduled to a later date. As we prepare ourselves for the coming easing of restrictions, the Philippine Society of Ultrasound in Surgery has prepared several recommendations in the use of these diagnostic imaging tests in surgical practice.

We have reviewed several existing guidelines from international ultrasound societies and have adapted several recommendations that could be applied to our setting. These guidelines are mostly consensus agreements on expert opinions as limited evidence-based studies are available.

These recommendations aim to ensure a consistent and uniform approach in decreasing the risk of transmission between patients and clinical practitioners during the performance of an ultrasound examination.

These recommendations only serve as a guide to protect both patients and surgeons. They do not supersede any existing institutional protocol. We also recognize that the circumstances surrounding this pandemic are dynamic and this document's recommendations are subject to change. They can be applied until this situation is under control and should be re-evaluated based on the prevailing conditions.

Risk Factors While Performing an Ultrasound Examination

The ultrasound has been used as a point of care diagnostic tool in the management of patients, especially in those classified as acutely-ill. The potential for acquiring infections during the examination has been recognized and may be due to the following risk factors:

1. Examinations are done in a small and enclosed room.
2. Examination rooms have absent or restricted natural ventilations with majority of them having closed vents and central air conditioning without HEPA filters.
3. Insufficient distance between patient and sonologist during the examination with non-compliance with the recommendations for social distancing.
4. Examination may take some time resulting to extended periods of exposure.
5. The chance that the patient coughs, sneezes or exhales heavily during the examination.
6. Frequent handling of ultrasound equipment.
7. Invasive procedures sometimes may be needed
8. There is a gap in the knowledge of basic infection prevention measures among personnel involved.

Due to these factors, it is necessary to instill safety precautions when performing these examinations. The ensuing recommendations are thus focused on protecting the surgeons and patients and ensuring the equipment used is properly cleaned and disinfected.

Recommendation Prior to Performing Scans

For the examination room:

1. The room should be cleaned thoroughly at the start and end of the day. It is advised that items, furnitures and fixtures found in the room be wiped with a disinfectant.
2. Remove all unnecessary equipment in the room.

3. Replace fabric covered furnitures with hard surfaced ones.
4. Ensure adequate ventilation. For rooms without HEPA filters, turn off air conditioners and open windows if available.
5. Have hand sanitizing stations installed at the entry.

For the surgeon:

1. Individuals with specific health problems or co-morbidities should also be excluded from performing ultrasound examinations.
2. All individuals performing the scan should have undergone infection control training including proper donning, doffing and disposal of PPE and disinfection protocols.

For clinic/unit workflow:

1. Ensure adequate time in between scheduled procedures in order not to have a lot of patients in the waiting room.
2. Strictly enforce the scheduled appointment times.
3. Promote social distancing by having a space between, seating at least 2 meters apart.
4. Limit number of individuals inside the examining room preferably to the examiner, patient and examiner's assistant (or parent if the patient is a child) who would be of the same sex as the patient.
5. Encourage the use of cell phones or tablets for communication with the patient's relatives or physicians.
6. For patients confirmed to have the infection, a separate room for isolation would be ideal. If not available, schedule patient at the end of the day.
7. Have a unidirectional workflow inside the clinic to decrease person-to-person contact.
8. Staff may be given shorter working hours and asked to work in rotation.

For clinic processes:

Scheduling of outpatients:

1. Each patient is screened upon scheduling of appointment. They are screened for symptoms and history of travel, occupation, contact and cluster.
2. As much as possible advanced scheduling over the phone or online for non-urgent and non-emergency cases should be instituted. Discourage walk-in patients.
3. Time intervals between appointments should depend on the ff: a) number of staff; b) number of rooms for scanning available; c) type of examination; d) available space in the waiting area; e) turn around time for each patient.
4. If possible, advise patients to come alone.
5. Patients should be contacted one day prior to scheduled appointments to screen for symptoms. For patients who developed symptoms, appointments should be rescheduled at least two weeks later.
6. Patients should be advised to wear surgical masks on day of examination.

Scheduling of inpatients:

1. Patients should be classified based on priority.
2. Classify as to the following options: a) patients who has to undergo scans without delay; b) patients whose scans may be delayed without affecting clinical care; and c) patients whose scans may be cancelled in the interim.
3. Patients with confirmed infection should be placed in an isolation room if possible and should be wearing surgical masks.

Recommendations During Performance of Ultrasound Scanning:

It is prudent to assume that every patient is a potential source of infection because of the incidence of asymptomatic carriers. Appropriate precautions are therefore needed to decrease risk of transmission.

1. Strict hand hygiene practices should be implemented before and after contact with patients. Practices would be based on institutional requirements and guidelines.
2. Level of PPE required depends on the risk level of the patient. In general, at least Level III is needed

for suspected and confirmed infections. Otherwise protection against aerosol droplets would be required.
3. For patients with suspected and confirmed infections, a single-use sachet of ultrasound gel should be used. Any unused portion should be discarded. An alternative is to use syringes filled with ultrasound gel.
4. When performing scans, limit contact with the patient using only one hand with the other hand left free to manipulate the ultrasound machine.
5. Each study should be planned in advance to limit exposure and to allow a focused examination. However, a complete examination must be performed if circumstances call for it.
6. Rapid review of the findings should be done during the procedure and recorded immediately in the patient's chart. This should be communicated to the primary physician right away to allow management to be optimized.
7. Images should be saved and reviewed carefully after the procedure.
8. Training should be confined to reviews of archived scans and not during the performance of the procedure.
9. Use protective covers, like plastic, on your equipment. Cling wraps over the keyboard, frequently tapped buttons, transducer cable and/or the screen (if touchscreen unit) is recommended.
10. Limit the number of transducers connected to the machine only to those that will be used for the procedure.
11. For invasive procedures, sterile transducer covers are mandatory.

Recommendations for Intraoperative Use of the Ultrasound:

1. Treat all patients as COVID suspects as recommended in guidelines in performing surgery during this pandemic.
2. Wear appropriate levels of PPEs. In this case level IV PPEs.
3. Make sure the machine and its attachments have protective coverings.
4. Regardless of whether the transducer is used externally on intact skin, on a surface with a break in the skin, mucosal membrane or inside the operative field, clean and disinfect the transducer and machine using high-level disinfectants.
5. After the procedure, clean and disinfect the machine and its attachments in a designated area in the OR complex before bringing it out and storing it.
6. A hand-held device, if available, should be used in these situations.
7. Healthcare worker procedures on disinfection after performing surgery should be followed.

Recommendations After Performing the Scan:

Sanitizing the Room:

1. The examining table should be disinfected after every procedure. Soiled linen or disposable paper cover should be handled in accordance with institutional guidelines.
2. Maintain proper handling and disposal of waste to make sure there is a clean working environment between patients.
3. Frequently touched areas should be cleaned and disinfected after every procedure.
4. The use of wipes in potentially highly contaminated areas is favored over sprays.

Cleaning and Sanitizing the Equipment:

1. All surfaces that come into contact with the patient and the surgeon should be cleaned and sanitized.
2. All organic debris including excess ultrasound gel should be wiped off with a soft cloth after each use. Leaving it may limit the effectiveness of chemical disinfection.
3. For units with trackballs, apply disinfectant wipes before and after every patient (applying a protective covering may hinder its function).
4. Recommendations for cleaning transducers:
   a. Use a damp gauze or soft cloth and mild non-abrasive liquid soap to thoroughly cleanse the transducer.
   b. For crevices, use a small brush.

c. Clean the other parts of the transducer with a low-level disinfectant and dry afterwards.

5. Low-level disinfection (as defined by the CDC, please see CDC Infection Control Guidelines. Disinfection and Sterilization. cdc.gov.) is required when the transducers come into contact with intact skin. High-level disinfection are used when the transducers come into contact with a break in the skin, mucous membranes, blood and any other body fluids.
6. Check with the manufacturer's guidelines for disinfection prior to disinfecting the transducers.
7. If the machine has a protective cover, the cover should also be cleaned or changed after every procedure. The presence of a protective covering should not prevent you from following recommendations for periodic cleaning of the machine. Otherwise, the entire machine should be wiped with a low-level disinfectant especially areas that are frequently touched.
8. Strict wearing of gloves and proper hand hygiene upon removal of gloves should be followed.
9. Staff should have appropriate training for this activity.
10. A register or log should be kept for each use and scheduled cleaning of the machine.
11. Store the transducer in a clean closet or if available in a foam-lined case.

Specific Recommendations for COVID-positive or Suspected Patients:

1. Procedure should be deferred unless required for subsequent urgent intervention.
2. Ideally, these patients should be examined in a room with a negative-pressure. If unavailable, a dedicated room with proper ventilation should be identified and utilized.
3. The examination should be performed by an experienced surgeon.
4. A dedicated equipment should be used.
5. Scans should be comprehensive enough to prevent repeat examinations.
6. Practitioners should don appropriate levels of PPE.
7. Patients should always wear a surgical face mask especially for those who manifest with symptoms.
8. If possible, a barrier between the examining table or bed of the patient should be set up prior to imaging.
9. The equipment should be stripped to the bare minimum. All unnecessary items should be left out.
10. An ultrasound machine with touch screen features is preferred.
11. If available, handheld ultrasound devices should be used, especially for bedside procedures.
12. High-level disinfection should be performed.
13. Follow-up studies should be discussed and planned ahead of time.

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