Australasian College for Emergency Medicine

Provision of focused ultrasound training and governance

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Document Review

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Revision History

Version	Date	Pages revised / Brief Explanation of Revision
V1	November 2019	Approved by Council of Education
V2	September 2020	Revisions to ensure consistency with P733
V3	November 2021	Minor updates throughout
V4	December 2022	Section 4.1, Selection Criteria
V5	March 2023	Section 4.3, Documentation
V6	August 2023	Section 4.1 Clinical lead in ultrasound (CLUS), Selection Criteria

1. Supporting documents

ACEM *Policy on the use of focused ultrasound in emergency medicine (P21)*

ACEM *Recommendations for Health Service Credentialing – EM Ultrasonography (P733)*

ACEM *Statement on Cleaning and Disinfection Of Ultrasound Transducers That Are Used For Needle-Based Procedures (S686)*

ACEM *Guidelines on minimum criteria for ultrasound workshops (G25)*

ACEP *Policy Statement on Emergency Ultrasound Ann Emerg Med. 2009;53:550-570*

ASUM *Guidelines for Reprocessing Ultrasound Transducers*

2. Purpose and background

This guideline relates to the provision of emergency department-focused ultrasound services and training. This guideline aims to provide advice and guidance to emergency departments about what is necessary to provide quality ultrasound training and services.

This includes guidance on how to:

- provide the resources, personnel and infrastructure needed to ensure an environment where trainees and FACEMs can perform ultrasound on Emergency patients, safely and accurately.
- implement a peer review and feedback process with image archiving and logbook maintenance.
- integrate scans with medical records for general clinical usage.

The policy is applicable to both public and private hospital emergency departments throughout Australia and Aotearoa New Zealand.

3. Terminology

ACEM/the College

means the Australasian College for Emergency Medicine.

College member

means a person admitted as a member of the College pursuant to the provisions of the ACEM Constitution and associated regulations.

Governing body

means the ACEM Board, the Council of Advocacy, Practice and Partnerships (CAPP), or the Council of Education (COE).

FACEM

means Fellow of the Australasian College for Emergency Medicine

Trainee

means trainees enrolled in and undertaking the FACEM Training Program and, for the purposes of this policy, also includes Emergency Medicine Certificate, Emergency Medicine Diploma, Emergency Medicine Advanced Diploma and Diploma of Pre-Hospital and Retrieval Medicine (DipPHRM) trainees, and Specialist International Medical Graduates (SIMGs) undertaking College requirements for the purpose of attaining eligibility for election to Fellowship of the College.

ASUM

Australasian Society for Ultrasound in Medicine

CCPU

Certificate in Clinician Performed Ultrasound (Australasian Society for Ultrasound in Medicine)

DDU

Diploma of diagnostic ultrasound (Australasian Society for Ultrasound in Medicine).

DMU

Diploma of Medical Ultrasound

FRANZCR

Fellow of the Royal Australian and New Zealand College of Radiologists

EFAST

Extended Focused Assessment with Sonography for Trauma

AAA

Abdominal Aortic Aneurysm

FELS

Focused Echo in Life Support

SEED

Sonographer Educator in the Emergency Department

4. Role of ultrasound in emergency medicine

The role of ultrasound in the field of emergency medicine is continually evolving. The original descriptions and focus of practice in the unstable trauma patient are still relevant but have also changed significantly in the last decade or more. It is no longer a specialist-only skillset, but now extends all the way through from undergraduate to postgraduate study to incorporation within specialist training programs. This topic is the subject of significant texts, and a full and detailed discussion is beyond the purpose of this document. The focus of ultrasound training during progression through the ACEM training program is targeted to the basic modalities utilised within the resuscitation room, as well as using ultrasound to improve the safety of ED procedures.

4.1 Definition of Focused Ultrasound

Focused Ultrasound, also called 'Point of Care Ultrasound' (PoCUS) and previously 'bedside ultrasound', has expanded significantly in utility, scope and accessibility over the last couple of decades. An Australasian Society for Ultrasound in Medicine (ASUM) standards of practice discussion paper provides a definition.

ASUM recommends the terms 'comprehensive ultrasound', 'limited ultrasound' and 'focused ultrasound' be used to capture the differences in the range of ultrasound examinations.

- Focused: used in specific clinical settings to recognise a narrow list of potential diagnoses. As such, these examinations may have lower requirements for training and equipment and can often be performed more quickly.
- Limited: an examination performed using the skill and equipment suitable for a comprehensive examination, but not undertaking the full protocol of a comprehensive examination.
- Comprehensive: following a recognised protocol to obtain good quality images that are interpreted by a physician who has undertaken advanced training in ultrasound. Usually, would be associated with a comprehensive report.

ACEM supports these definitions.

5. Developing ultrasound programs in emergency departments

The development of a focused ultrasound program in emergency medicine departments includes:

- Defining the scope of practice within your department
- Designing a program plan
- Initial basic-level training – in-house workshops, courses and external providers
- Peer review, proctored scanning and logbooks
- Credentialing and Assessments
- Faculty requirements for accredited emergency departments
- Special Skills Placements (SSPs)
- Fellowships
- Documentation
- Image saving, archiving, reviewing, logging and integration into the medical record
- Quality Assurance (QA) processes
- Machine characteristics including purchasing and matching the scope of practice

5.1 Defining the scope of practice within your department

ACEMs *The Use of focused ultrasound in emergency medicine* (P21) policy states that emergency physicians and/or trainees who perform and interpret focused ultrasound should possess appropriate training and hands-on experience. It is recognised that the current scope of practice of clinicians who already perform and interpret scans should not be limited. In addition, emergency physicians and/or trainees should also be competent in the interpretation of images related to additional ultrasound applications.

Each accredited department should provide the mechanisms to achieve this scope. It is recognised that some departments may not have the capacity to train staff in all the modalities within the ACEM curriculum. These sites are strongly encouraged to seek assistance from appropriately trained clinicians or within their personal, professional, departmental or hospital networks to achieve this goal.

5.2 Designing the program plan

Any focused ultrasound training program should include the minimum ACEM ultrasound applications for emergency medicine practice, EFAST (extended focused assessment with sonography in trauma), AAA (abdominal aortic aneurysm), FELS (Focused Echo in Life Support), lung, and procedural guidance techniques. Further modules may be included by individual departments or practitioners as the skillsets increase. Without limiting more advanced practice for individual practitioners, ACEM recommends department training programs initially concentrate on building competence in these modules.

In developing the program plan, departments may wish to collaborate with other emergency departments, other specialties, medical imaging departments, other groups in the hospital or external providers. Local modifications are encouraged to meet the underlying goals and principles outlined in this document.

5.3 Teaching plan

Initial basic didactic training may include internal, external or remote access learning. There are a growing number of online providers for these topics. ACEM has developed a series of ultrasound modules that are available via ACEM Education Resources. Trainees on the revised FACEM Training Program are required to complete specific online ultrasound modules throughout their training. All other trainees and FACEMs are encouraged to complete these modules, and FACEMs will gain CPD hours for this activity. These modules form the didactic element of any emergency ultrasound education program for the core ED Ultrasound modalities. There are pre and post quizzes for each module to ensure adequate knowledge acquisition from each of the modules.

5.4 Credentialing

ACEM does not credential practitioners to perform emergency medicine ultrasonography. This is the responsibility of the health authority. ACEM does not act as a credentialing body. In the absence of such a service, it would be reasonable for clinicians to follow a similar structure in their advanced ultrasound training as detailed in the ASUM CCPU or DDU modules or equivalent. ACEM recognises that the possession of these qualifications (or equivalent) should imply minimum competency in the relevant areas.

The credentialing and maintenance requirements for ED trainees and specialists are outlined in the ACEM *Recommendations for Health Service Credentialing – EM Ultrasonography* (P733).

It is recognised that many clinicians are unable to complete credentialing in a timely manner (if at all) unless it is considered mandatory by either their department, hospital organisation or College. It is recognised that local factors, including the support of the ED Director, are critical to the success of credentialing. ED Directors are encouraged to make this process mandatory for their department(s).

Once the training and assessment requirements are satisfied, the emergency medicine practitioner will be credentialed for the appropriate ultrasound module. The emergency medicine sonologist may then document the results of his/her ultrasound scans in the medical record and incorporate the results into clinical decisions according to health service protocols.

5.5 Proctored examinations

Ultrasound is fundamentally a practical, user dependent skill and time spent acquiring these skills can be prolonged and individualised. It is advised that practical skill acquisition should be supported by peer review in real time (proctored) to assist with machine manipulations and optimisation techniques. Credentialing and assessment processes are essential for quality and standards purposes.

Proctoring is the longest part of the process and can cause significant delays. Real-time proctoring involves a proctor sitting with and guiding the trainee through the examination and is the best way to learn. It is time-consuming and should be shared with a large cohort of credentialed operators and may include sonographers, SEEDs and echocardiographers in addition to emergency medicine trained practitioners. Delayed proctoring involving image reviews at a later time may also be employed but has disadvantages to the real-time proctoring and if employed should have some intermittent real-time proctoring included. The formative assessments will also form part of the proctoring process.

Individual departments may elect to incorporate ultrasound training within existing programs or develop alternatives to assist with managing the demand for training, which can be personnel intensive.

- Proctored logged examinations are a required part of the credentialing process. For each module, at least two directly supervised formative assessments must be completed prior to the final summative assessment.

- Patients must be informed that the ultrasound examination is being performed for credentialing purposes and appropriate consent obtained.

- All ultrasound examinations must be documented, preferably in a personal logbook. The findings and interpretation should subsequently be compared to other clinical data and a notation made as to whether the scan findings were accurate.

Minimum numbers of ultrasound examinations for each module are detailed below. Further details can be found in the ACEM *Recommendations for Health Service Credentialing – EM Ultrasonography* (P733).

- Extended Focused Assessment with Sonography for Trauma (EFAST) – a minimum of 25 accurate* examinations must be performed. At least 50% of these exams must be clinically indicated and at least five should be positive for either intraperitoneal, pleural, pericardial fluid, or pneumothorax.

- Abdominal Aortic Aneurysm (AAA) – a minimum of 15 accurate* examinations of the aorta must be performed. At least 50% of these exams must be clinically indicated and at least three should demonstrate an aneurysm.

- Basic Lung – a minimum of 25 accurate* examinations of the lung must be performed. At least 50% of these exams must be clinically indicated and at least five should demonstrate significant pathology e.g. pneumothorax, effusion, pneumonia, interstitial syndrome.

- Focused Echo in Life Support (FELS) – A minimum of 25 accurate* examinations of the heart must be performed. At least 13 (ie >50%) should be clinically indicated and of these, five should be in critically ill patients (i.e. shock/peri arrest/cardiac arrest) and must be reviewed by a sonologist credentialed in FELS. At least five examinations should be performed under the direct supervision of a sonologist credentialed in FELS, or cardiac sonographer.

  Evidence of review of clinical images/loops from a further (25) cases should be provided. The total 50 FELS cases (25 performed and 25 reviewed) must include at least two cases each of pericardial effusion, right heart failure / massive pulmonary embolism, hypovolemia or distributive shock and left ventricular failure.

  For the four modalities listed above, all logbook scans should be directly proctored, or the images reviewed later by one of the trainee's supervisors.

- Procedural Guidance – The candidate must perform 25 successful needle guided procedures on patients. Ideally, this will include a mix of procedures including peripheral vascular access, central vascular access, arterial lines, pleural or peritoneal aspiration and nerve blocks. Six (6) directly supervised procedures must be performed including at least three cases of out of plane and three cases of in plane needle guidance procedures. Up to three of the supervised cases can be on simulators or "phantoms", but the two formative and final summative assessments must be performed on patients.

  Up to 50% of logbook cases can be completed in a non-clinical environment, including a refresher workshop or finishing school. All scans performed in a finishing school environment must be directly supervised by a sonologist (for further details, refer to the ACEM Recommendations for Health Service Credentialing – EM Ultrasonography (P733)) or an appropriately qualified sonographer, and educational feedback provided to the candidate.

  *accurate – all views present and images interpretable

5.6 Summative assessment

The final summative assessments and credentialing process must be overseen by a clinician who is themselves credentialed in that modality. This will most likely be the CLUS. The candidate will be required to demonstrate the ability to create adequate ultrasound images of all the appropriate anatomical structures. The candidate must be able to identify any relevant artifacts or pathology present during real time scanning and/or on recorded scans and/or hard copies of scans. The candidate must be able to recognise an inadequate scan and must demonstrate an understanding of the indications and limitations of ultrasound examination for the condition in question.

6. Guidelines for training in accredited emergency departments

6.1 Clinical lead in ultrasound (CLUS)

It is recommended that sites appoint Clinical Leads in Ultrasound (CLUS) to assist with the supervision, assessment, ultrasound training and education of all ACEM trainees and FACEMs at their site(s).

Appointment process

Suitably qualified FACEMs can be appointed to the role of CLUS. If no FACEM is available, a suitable equivalent can be appointed, for example, an ED doctors with a special interest in ultrasound or a CMO with ACEM Advanced Diploma.

A single CLUS may be appointed, or the role may be shared strongly encouraged for larger departments). It is strongly recommended that each FACEM is at least 0.2 FTE in their role as CLUS in the applicable department. Sharing of the CLUS role may enable individuals to take a particular focus to their respective roles and may also assist with succession planning.

FTE recommendation

The clinical support time required for the CLUS role will depend on the number of trainees locally as well as local infrastructure and the extent of the portfolio. The following minimum allocated clinical support time for CLUS duties is recommended:

Minimum allocated clinical support time for CLUS

ACEM Trainees	FTE	Additional faculty recommended	Number of machines suggested
Up to 10	0.1*	1–2	1–2
11 to 20	0.2*	2–6	2–4
20+	0.4	6+	4+

*Based on 10-hour shifts

Selection criteria

The ultrasound program CLUS is a FACEM, Advanced Diploma holder, or equivalent (e.g. FACRRM) as approved by ACEM with sufficient expertise in focused ultrasound that should include any of the following in preference order:

- DDU or equivalent
- A master's or higher degree in ultrasound
- Certificate in Clinician Performed Ultrasound (CCPU) in at least the minimum modules for ACEM trainees including EFAST, AAA, FELS, Lung and procedural guidance.
- Other higher qualifications in ultrasound education
- Evidence of credentialing (or maintenance) as recommended by ACEM in its Recommendations for Health Service Credentialing – EM Ultrasonography (P733).

  * Where a CLUS does not have the above ultrasound competencies, support via a SEED, or others in the department with appropriate ultrasound expertise is required.

Roles/responsibilities – education and training

The primary role of the CLUS is to ensure the highest quality of clinical governance and patient safety is developed and maintained. In order to achieve this, the CLUS will support fellows and trainees in achieving the specific learning outcomes as they relate to emergency ultrasound as described in the ACEM curriculum framework. In general, this will include providing the opportunity for trainees to reach CCPU standard in EFAST, AAA, FELS, Lung and procedural guidance by the completion of FACEM training. In addition, the role of the CLUS is to support other clinical staff, including non-ACEM trainees and EMET trainees, in utilising ultrasound in their daily practice.

The CLUS and faculty (which ideally may include SEEDs) will be involved in designing the program/teaching plan, will be responsible for image reviews, feedback and sign-off, and for formative and summative assessments. The CLUS is responsible for setting up or participating in local training courses and establishing/monitoring credentialing pathways for trainees. This process includes liaison with DEMTs, WBA coordinators, DEMS and medical imaging departments (radiology). There may be opportunities with external private providers including training organisations.

Local arrangements and resources will dictate whether a parallel (several modalities simultaneously) or serial (one ultrasound modality at a time) approach is taken to the training in ultrasound modalities.

Roles/responsibilities – assessment: Directly Observed Procedural Skills

The performance of EFAST, AAA, Lung or FELS is a core DOPS assessment in the FACEM Training Program. The assessment should be performed by a credentialed practitioner. A log of acceptable assessors should be kept for each department and available on request to ACEM training and examination staff and the regional censor (or delegate).

Policy development/ implementation local guidelines

The CLUS will ideally also be involved in local policy/guideline development and/or review for the use of ultrasound within the ED. In addition, the CLUS will create, review and maintain clinical governance and patient safety standards.

QA/audit/research

The CLUS will be expected to have a leadership role with local quality assurance processes, audit and research that relates to Emergency Ultrasound.

Advocacy/liaison

The role of the CLUS may also include advocacy for and liaison with local, state and national stakeholders with regards to the use of Emergency Ultrasound. These stakeholders may include local trainee representatives, DEMTs, SST supervisors, DEMS, departments of imaging, EMUGs, ASUM etc.

6.2 Administrative support

Adequate administrative support should be available to the CLUS and supporting faculty. A minimum of 4 hours per week is strongly recommended.

6.3 Documentation

All clinicians (whether credentialed in ultrasound or not) should appropriately document their ultrasound scans in written form, in hard copy format or within an electronic patient record accessible for subsequent review by the patient's treating team, or for clinical review and audit. As an additional step, non-credentialed clinicians should also keep a record in their logbook.

The results of scans performed by non-credentialed clinicians should be clearly differentiated from those performed by credentialed clinicians. The report should be included in the patient record with a notation, highlighted at the beginning of the report, that it is 'not verified by a credentialed clinician.' Phrases such as 'informal scan' are to be avoided, as they imply a lack of process that ensures a scan result will be verified.

Non-credentialed clinicians should seek a credentialed clinician to review their images and findings as soon as practicable. Non-credentialed clinicians should advise the patient that the results are 'pending review by a credentialed clinician'. Real-time review by a credentialed clinical is strongly encouraged for all scans performed by non-credentialed clinicians.

Where a scan has been performed for training purposes only and not for assessment or management of the patient, it should be noted in the patient record as 'training scan performed' without any results or interpretation of the scan recorded. The patient needs to be aware and consented for performance of such scans.

It is preferable to also include a mechanism of image capture and storage as part of the logbook and/or patient's record. This is covered in more detail below under ED IT support requirements.

Documentation of the ultrasound examination in the patient's medical record should be entitled appropriately as an 'EFAST' or a 'focused ED ultrasound for aortic aneurysm'. The notes should describe the views obtained, the adequacy of those views and indicate whether the findings were normal, abnormal or indeterminate. If the study was inadequate, this must be clearly stated as such studies should not be used to make clinical decisions.

Documentation should also be limited to the pertinent question being addressed by the focused ultrasound and remain within the scope of the practitioner. It is unlikely that a focused ultrasound can be considered a rule-out investigation in many ED clinical scenarios and further definitive imaging should be considered.

All departments and practitioners should have mechanisms to record incidental and/or important unexpected findings. Practitioners are strongly encouraged to seek input from credentialed or qualified practitioners in the first instance and obtain real-time review. Radiologists and Sonographers may also be of assistance but may defer formal comments until a diagnostic imaging study is complete.

6.4 Audit

Emergency departments in which focused ultrasound is performed are recommended to conduct annual (at a minimum) audits of the ultrasound examinations as part of the department's quality improvement process.

Departments are strongly encouraged to periodically review their focused ultrasound practice, compliance with governance standards in the fellowship training modalities and the need for additional modalities to be included in the scope of practice.

Clinically significant false positive or negative studies should form part of a clinical review process or morbidity and mortality review program as per each departmental governance.

6.5 Governance

Emergency Departments should have clear governance structures in place including representation and reporting lines to the departmental and hospital clinical governance and/or safety committees. The size and configuration of the governance structure can be locally designed and administered.

6.6 Special Skills Placement

ACEM supports the maintenance of and further progression of special skills terms in focused ultrasound. The local arrangements will dictate the exact design and duration of the term. The minimum period is three months if full time equivalent (1.0 FTE) and may extend to six months as part-time. Most terms are fractional with clinical emergency medicine time concurrently. Each department will design their program independently to include the core competencies, optional CCPU modules, core and extended, an education, audit and quality improvement element to the program. All trainees in a special skills term will complete a learning needs analysis for the term and receive specific in-training assessments every three months.

If additional support from non-emergency department sources are utilised in the program it is recommended that each additional person/group/unit/entity establish a memorandum of understanding with the emergency department to ensure the trainee is not disadvantaged by any abrupt change in circumstances.

ACEM's ultrasound SSP accreditation guideline is available here.

6.7 Ultrasound Fellowships

The development of ultrasound fellowships for the provisional fellow or newly qualified fellow is supported by ACEM. These roles will provide additional ultrasound portfolio time and responsibilities within the department including audit, research and support the CLUS and faculty. They will be transitioning from a learner role to an educator role and/or developing towards a higher qualification. These positions will have increased or specific portfolio time (approximately 0.5 FTE) and last for a minimum of six months up to a maximum of 24 months.

7. Emergency department IT support requirements

IT support is required for Emergency Department ultrasound (EDUS) to enable efficient and practicable processes for:

- Adequate training for practitioners to ensure focused ultrasound images are saved and documented
- *Streamlined processes for the transfer of images from the ultrasound systems to a review portal or system.
    - Ultrasound systems are frequently able to transmit wirelessly or through ethernet/network ports to a specific server or drive.
    - USB devices are strongly discouraged owing to poor security, as they are easily lost or misplaced and the need for a second stage process to upload images to servers/drives. If USB devices are utilised, they should meet local security requirements for encryption.
- *Storage of clinical images as part of training and release of clinically significant images to the medical record.
- *Image review process for delayed proctoring for training – including image review by supervisors of scans performed without direct supervision.
    - This is a crucial step in the training process and particularly if delayed proctoring is a significant method of review for that department.
- Maintenance of training logbooks and credentialed practitioners' CPD requirements.
- Log of completed formative and summative assessments

- Log of credentialed practitioners in each department
- Audit, research and quality improvement capacity of the IT system.
- *Availability of clinically significant images to third party review, in/out-patient services and to be able to assess for change in condition of findings previously noted.
    - Medical record and/or imaging storage system e.g. PACS (Picture archiving and communication systems)

*Systems must comply with relevant jurisdictional health information and IT requirements and principles, particularly with regards to maintaining security, accessibility and patient confidentiality. The solutions may not be part of current IT systems in emergency departments and therefore some temporary solutions may be considered until an appropriate definitive system is established. However, permanent solutions for this must be a priority for each health service. Without IT integration of images and reports, a successful ED ultrasound training and credentialing program is significantly inhibited as is interdepartmental communication and most importantly patient safety and timely care.

7.1 Training, audit and QI requirements

The system should allow storage of images (both still and video clips or cine loops), clinician reports and offline review at a centralised station (i.e. not using the ultrasound machine itself). Automated image transfer which complies with relevant jurisdictional health information requirements is strongly recommended. The storage and transfer of images on physical memory devices (for example USB sticks) is strongly discouraged due to both confidentiality issues and inefficiency. The ability to transfer selected training images to the permanent medical record storage system is recommended if possible (for example images which are considered to contain important information that may be useful for future comparison or that major clinical decisions relied upon). Refer to the ACEM CLUS resources page for further information.

7.2 Medical record storage

The system should store images and clinician reports, including the interpretation of the US examination, in compliance with standard health information / IT requirements. Images, reports and interpretations should be available to other clinical teams and imaging departments for clinical and risk management purposes.

For clinicians who have completed credentialing it is recommended that clinical images/loops are retained with a report of the conclusions made. With current available technology it is recommended that this should occur electronically, with secure wireless data transfer. These images and report should be available to all clinicians involved with the patients care and for teaching/training purposes. This better allows reflective review of practice, to minimise duplication of process and to minimise misinterpretation errors. Recording of images and reports can allow for the detection and correction of errors (by both the initial clinician and others) but more often will help justify decisions that were based on images but subsequently questioned. Verbal reports and 'phantom scanning' (i.e. scanning without any record of the clinical interaction) are to be strongly discouraged.

8. Equipment

8.1 Machines

The availability of machines is crucial to assist Fellows and trainees in their clinical practice and their training in focused ultrasound. Each accredited department should seek to ensure an adequate suite of ultrasound systems that meet the needs of the patient cohorts they are being used for and the skills of the practitioner. Systems aimed at the novice, intermediate and advanced user may be required and many of the higher end machines can be detrimental to the experience of a novice user, thereby limiting their training and further uptake of this skill. Machines must be readily available for the emergent patient when required with appropriate transducers and consumables for timely use. Systems should have as short a start-up time as possible to ensure they are readily available to the critically ill patient.

8.2 Hygiene

All systems are considered essential to an emergency department's equipment and processes to support the cleaning, re-stocking and checking of hardware and consumables are required. The issue of machine and transducer hygiene and contamination has been highlighted by other agencies (see references) and ACEM supports the attainment of the highest possible standards in hygiene possible whilst also ensuring the process is not prohibitive to patient care and training. Further information about transducer reprocessing and cleaning can be found in the reference and supporting documents listed in the supporting documents at the beginning of this guideline.

8.3 Gels

Standard non-sterile gel is suitable for most situations where focused ultrasound is used on intact skin. Sterile gel should be used for procedural guidance and on irritated or non-intact skin, including exposure to mucous membranes.

8.4 Transducer covers

Sterile transducer covers to protect the transducer from contamination and the patient from cross-infection should be used for all invasive procedures and for contact with non-intact skin or mucous membranes. Transducer covers in various lengths with coverage of the transducer and trailing cables are commercially available. Care should be taken to ensure practitioners and patients with allergies such as latex are not exposed to transducer covers that may cause a reaction.

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