



CLINICAL PRACTICE GUIDELINES

Joint position statement of the *Societat Catalana de Digestologia* and the *Societat Catalana de Radiologia* on gastroenterologist-led ultrasound in Catalonia[☆]



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Abstract Over recent years, ultrasonography has been used increasingly in various medical specialties and is now an indispensable diagnostic tool. In gastroenterology, bedside or point-of-care ultrasound allows the early diagnosis and monitoring of multiple intraabdominal conditions. Ultrasound guidance is also highly useful in certain therapeutic procedures, increasing procedural safety.

Ultrasound is a non-invasive technique but has the drawback of being very operator dependent. Therefore, it is necessary to ensure that the professionals who perform ultrasonography have a sufficient level of training in the technique.

In Catalonia, abdominal ultrasound is usually carried out by radiologists and has not yet been incorporated as an investigation performed by gastroenterologists. In view of this, the *Societat Catalana de Radiologia* and the *Societat Catalana de Digestologia* judged it necessary to develop a consensus framework document on ultrasound use and training for gastroenterologists.

The document establishes the suggested format for training, the appropriate indications, the minimum material requirements and appropriate documentation of the procedure to ensure that gastroenterologist-performed ultrasound is useful and safe.

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PALABRAS CLAVE

Ecografía abdominal;
Especialistas en
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Aprendizaje

Documento de posicionamiento de la Societat Catalana de Digestologia y la Societat Catalana de Radiologia: ecografía para especialistas en enfermedad digestiva en Catalunya

Resumen Desde hace años y de manera progresiva, la ecografía se ha incorporado en las diferentes especialidades médicas como una herramienta necesaria e indispensable. En patología digestiva la ecografía abdominal a pie de cama o inmediata permite el diagnóstico rápido y/o el seguimiento de distintas patologías intraabdominales. Por otro lado, la ecografía es muy útil como guía en determinados procedimientos intervencionistas dado que comporta una mayor seguridad.

A pesar de ser una técnica no invasiva, la ecografía tiene el inconveniente de ser muy operador dependiente, por lo que es necesario garantizar que aquellos profesionales que realicen ecografías dispongan del suficiente nivel de capacitación técnica.

En Catalunya, tradicionalmente la ecografía digestiva es una técnica que es llevada a cabo por el servicio de radiología y, todavía no se ha incorporado como herramienta en la especialidad en Ap. Digestivo. En este contexto, la Societat Catalana de Radiologia y la Societat Catalana de Digestologia han considerado necesaria la redacción de un documento marco, consensado, sobre la utilización y aprendizaje de la ecografía por especialistas en el aparato digestivo.

El documento establece: como debería ser la formación, en que indicaciones, que requerimientos mínimos de material y como debe documentarse la exploración para que la ecografía realizada por el especialista de digestivo sea útil y segura.

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Introduction and rationale

For some years, ultrasound has been steadily finding its way into various medical specialisations. Today, it is a transverse technique that is increasingly used in many specialities, both medical and surgical.

The speciality of gastroenterology has detected the need to be able to quickly and safely evaluate a number of clinical situations in which ultrasound might be helpful, not only in diagnosis but also in guiding certain diagnostic/treatment procedures and thus improving patient safety.

Diagnostic ultrasound is a harmless, non-invasive technique in which ultrasound waves are used as a system for identifying anatomical structures; however, it is a highly operator-dependent technique. This dependency on the operator's knowledge, skills, experience and competence is the greatest risk of indiscriminate use of a technique with such a high diagnostic capacity. Therefore, it is necessary to ensure that the professionals who perform ultrasounds have sufficient levels of training to be able to do so safely and effectively.

Training in ultrasound is included in the current training programme that must be completed by interns and resident physicians specialising in gastroenterology in Spain (ministerial order SAS/2854/2009 of 9 October 2009)¹; which specifies that resident physicians must acquire sufficient knowledge and skills to be able to perform ultrasound in their professional practice.

For this reason, the Societat Catalana de Radiologia [Catalan Society of Radiology] and the Societat Catalana de Digestologia [Catalan Society of Gastroenterology] have agreed upon this working document. The objective is to set out a framework with which to begin to meet some of

the needs of gastroenterologists in their day-to-day clinical practice.

Obviously, this document is not intended to meet every possible need that might arise, but it does propose a number of clinical situations in which having an immediate answer available from a bedside/office ultrasound would enable better and/or more rapid diagnostic and therapeutic approaches to be adopted. Under no circumstances would this examination eliminate the need for a formal ultrasound by specialists in radiology and diagnostic imaging when indicated. Neither would it lead to orders for more complex examinations such as computed tomography (CT) or magnetic resonance imaging (MRI) without prior consultation with the radiology department.

This document is intended to provide guidance on how the physicians in our two specialities could work in a coordinated manner. However, this must be established and agreed upon at each hospital individually based on the characteristics and particularities of each radiology and gastroenterology department. The document is not executive in nature; rather, it consists of proposals and recommendations and has been approved by both boards of directors.

Objectives

This document is intended to achieve the following objectives:

Primary objective

To establish ultrasound as a supplementary tool for the diagnosis of certain diseases in the healthcare practice of gastroenterology specialists.

Specific objectives

- To determine the areas and types of ultrasound that could be performed by gastroenterologists.
- To propose the training programme that is necessary.
- To propose the potential training entities.
- To propose the minimal technical characteristics of the ultrasound systems.
- To propose a model for implementation.

Methodology

A working group was formed, consisting of three gastroenterologists and three diagnostic imaging specialists.

This working group began its task in July 2019 with an initial meeting to exchange opinions on healthcare needs, training needs, and areas of action.

After agreeing with the respective boards of the societies involved upon the need to prepare a working document, a first draft of this consensus document was written. This was initially prepared online, amended as necessary and shared with the working group to agree upon the document. Next, an in-person working meeting was held (in January 2020) to resolve the more complex points, primarily with regard to training.

Once all pertinent changes were finalised, the definitive document was submitted to both the Societat Catalana de Radiologia and the Societat Catalana de Digestologia and was approved by both boards of directors.

Definition of the scope of the project

The scope of application of ultrasound as performed by gastroenterologists aims to provide an immediate answer in the consulting room or at the bedside (when patients are hospitalised) in situations in which, *a priori*, they may offer a greater benefit to the patient in terms of capacity for resolution and efficiency. These situations may be summed up as follows:

- 1 In patients with jaundice, in whom it is important to be able to diagnose bile duct dilatation (whether inside or outside the liver/common bile duct) in order to triage emergency or priority orders for radiological examinations (formal ultrasound) and avoid emergency demand for ultrasounds in patients with intrahepatic cholestasis due to liver disease that is parenchymal or secondary to other causes not leading to bile duct dilatation.
- 2 In assessing for organomegaly (hepatomegaly or splenomegaly) and signs of portal hypertension (assessing the restoration of blood flow to the paraumbilical vein). We believe that the other signs of portal hypertension require extensive experience and that a formal ultrasound by a radiologist would be required to avoid false diagnoses.
- 3 In evaluating for ascites, as it will enable diuretic treatment to be adjusted or guide a possible diagnostic paracentesis.
- 4 In guiding interventional procedures: aspiration paracentesis, aspiration thoracentesis and liver biopsy (depending on the particularities of each centre).

- 5 In ruling out acute urinary retention, to avoid unnecessary catheterisation.
- 6 In cases in which FibroScan® is challenging or its values do not correlate with the patient's clinical context, an ultrasound can be performed in advance to assess the most suitable point for performing hepatic elastography (assessing distance to liver parenchyma, preventing cystic lesions and better assessing obese patients who will require an XL probe). Alternatively, shear wave elastography can be performed where the radiology department has this technique available.

Training of gastroenterologists in ultrasound

The training proposal will be agreed upon between the departments involved at each hospital so that it may be adapted to their needs and possibilities. In any case, this document advises starting the training of one or two physicians attached to the gastroenterology department and, at the same time, gradually enhancing the training of the residents in this speciality.

Regarding the training of gastroenterology residents, their training in ultrasound should be gradually adapted in accordance with the national programme for the speciality. This working group proposes making a rotation in the abdominal ultrasound unit, preferably during the second year of residency, and lasting about 2 months, so that they can perform around 200 abdominal examinations autonomously but under supervision.

To unify the minimum training, this tool proposes a set of knowledge and skills that should be acquired through the formation and training process.^{2–5}

Basic competencies

- 1 To complete the training in performing ultrasound examinations in the clinical situations described in the areas of action where they may be useful at outpatient clinics, day hospitals or at the patient's bedside. All the ultrasound examinations will be recorded, either in a report or in a case history (depending on the electronic resources available at each centre); it is necessary to clearly identify who performed the examination and its results, as this is a medical act that carries responsibility. It is recommended that images be digitally archived if possible.
- 2 To know the situations in which an ultrasound examination must be ordered to be performed by specialists in radiology and diagnostic imaging.
- 3 To acquire the technical skills to be able to correctly handle the ultrasound equipment in order to obtain diagnostic-quality images and to be able to perform the ultrasound-guided invasive procedures described above.
- 4 To participate in the necessary ongoing training activities to update knowledge and skills in order to maintain professional competency.

Specific objectives of the training programme

The set of knowledge and skills that should be acquired through the formation and training process are described below.

Knowledge

- 1 To understand the ultrasound technique, which includes knowing the basic physics of ultrasound, how an ultrasound system works, the technical parameters that influence image quality and the possible artefacts, as well as how to correct them. It is also necessary to know the artefacts that aid in diagnosis.
- 2 To know the indications, non-indications, limitations and preparation for the examination to be performed.
- 3 To identify normal ultrasound anatomy.
- 4 To identify basic ultrasound semiology.
- 5 To identify the ultrasound findings possible within the clinical situations agreed upon in the scope of application of ultrasound by gastroenterologists.
- 6 To recognise lesions or images that require a more complex ultrasound performed by a diagnostic imaging specialist, who should also be the person to guide clinicians regarding recommendation of more complex tests.

Skills

- 1 To know how to technically handle the ultrasound system to obtain the best possible image.
- 2 To recognise ultrasound artefacts.
- 3 To know how to perform the following procedures: ultrasound-guided thoracentesis and paracentesis, and ultrasound-guided liver biopsy (depending on the particularities of each centre).

Training model

The training proposal presented is divided into two sequential levels.

Level 1: Normal anatomical ultrasound (20 h)

Person responsible: assigned attending radiologist.

This will take place face-to-face at each hospital; arranging a suitable time for this with the radiology department, in accordance with its training capacity.

It will include:

- A review of the functions of the specific ultrasound system that will be used in that session.
- A review of normal ultrasound anatomy on a real model.
- Students will steadily develop their ability to perform a basic abdominal ultrasound and resolve any possible questions that may arise. When students are capable of performing all ultrasound examination manoeuvres and obtaining clear images, they will be assessed to proceed to ultrasound examinations in real clinical practice (Level 2).

Level 2: Abdominal ultrasound under real clinical practice conditions

Once students are capable of correctly performing a basic ultrasound examination, at the discretion of the radiologist responsible, they will initiate progressive learning of pathological images in ultrasound. If possible, in order to increase their knowledge, provided that there is sufficient availability at the centre, it is recommended that they assess cases already recorded with a previously identified condition. In addition, they will learn how to perform puncture techniques (percutaneous liver biopsy [PLB], paracentesis, thoracentesis, etc.), and the indications for and use of the different types of material.

Finally, students will increasingly autonomously, but always under supervision, perform ultrasounds with patients referred to the ultrasound unit to have an ultrasound done for a clinical reason, with the student and the radiologist coming to an agreement on the findings of the examination; thus the ultrasound findings of students and their monitors are consistent for students to gradually achieve the required level. The students must show that the clinical/radiological information that they derive from the ultrasound examination is consistent with that of their monitors. In addition, it is advisable for the physicians in training to maintain a record of the examinations that they perform.

Regarding puncture techniques, the physician/gastroenterologist should eventually acquire the knowledge and skills to be able to autonomously perform them in their work setting (day hospital, ward, accident and emergency department, etc.).

Around 200 examinations overall are thought to be required to acquire this knowledge and skills. Regarding therapeutic techniques, it is considered necessary to perform at least 10 liver biopsies under supervision and another 10 autonomously (at the centres where gastroenterologists perform them), 5 paracenteses and 5 thoracenteses under supervision and the same number autonomously.

Ultrasound systems and technical characteristics

The characteristics of the ultrasound systems are important, in order to ensure that the images obtained are of suitable quality, as well as the management, storage and remote operation of these systems. Many high-quality systems are available today. To obtain a good image, systems should be less than 10 years old, with a multifrequency and colour Doppler convex probe (Appendix B See Annex 1).

Regarding consumable materials, in performing either paracentesis or thoracentesis, or in performing liver biopsy depending on the usual practice at each centre, it is desirable for both the gastroenterology department and the diagnostic imaging department to use the same materials and the same work methodology.

Working document follow-up evaluation

Given the initial difficulty of implementing changes in resident rotations, having ultrasound systems available and achieving interdepartmental coordination, we propose making a first assessment 2 years after approval of the working document.

This assessment will include the number of centres that have incorporated ultrasound at day hospitals, outpatient clinics and the patient's bedside, the number of attending physicians in the gastroenterology department who perform this type of examination in each department; and how the rotation in ultrasound has been implemented in the resident training period. Any difficulties that may have arisen and any suggestions put to us by hospitals will also be included.

This document proposes that subsequent follow-up be decided upon depending on the outcomes of the first assessment.

In addition, if the board of either of the two societies involved requests it, an assessment will be conducted as soon as possible after the request. In all cases, a report will be issued and sent to both boards.

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Conflicts of interest

The authors declare that they have no conflicts of interest.

Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:<https://doi.org/10.1016/j.gastre.2021.04.004>.

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