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EUROPEAN FEDERATION OF SOCIETIES FOR ULTRASOUND IN MEDICINE AND BIOLOGY
'Building a European Ultrasound Community'

MINIMUM TRAINING REQUIREMENTS FOR THE PRACTICE OF MEDICAL ULTRASOUND IN EUROPE

Appendix 5: Gastroenterological Ultrasound

This curriculum is intended for clinicians who perform gastroenterological ultrasound scans. It includes standards for theoretical knowledge and practical skills. At least Level 1 competence should be obtained by anyone performing gastroenterological ultrasound unsupervised

Level 1

- It is recommended that at least 5–10 examinations are performed by the trainee (under supervision) per week and that a minimum of 300 examinations in total are undertaken. However different trainees will acquire the necessary skills at different rates and the end point of the training programme should be judged by an assessment of competencies
- Examinations should encompass the full range of pathological conditions listed below
- A log book listing the types of examinations undertaken should be kept
- Training should usually be supervised by a level 2 practitioner.
- In certain circumstances it may be appropriate to delegate some of this supervision to an experienced level 1 practitioner with at least two years of regular practical experience.
- Trainees should attend an appropriate theoretical course and should read appropriate textbooks and literature
- It is recommended that a medical practitioner performing level 1 ultrasound should continue to perform at least 300 examinations each year on a regular basis and attend regular ultrasound meetings
- During the course of training the competency assessment sheet should be completed as this will determine in which area(s) the trainee can practice independently

Knowledge Base

Physics and Technology, Ultrasound Techniques and Administration: see Appendix 2

Sectional and Ultrasonic Anatomy

- Liver
- Gallbladder
- Bile ducts
- Pancreas
- Spleen
- Kidneys, Bladder and Adrenal Glands
- Other structures (uterus, ovaries, lymph nodes, vessels, hollow digestive tube)



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Pathology in relation to ultrasound

- Liver: Cysts, benign and malignant tumours, metastatic disease, fatty change, cirrhosis.
- Biliary system: Gallbladder stones, acute and chronic cholecystitis,
- gallbladder tumours, bile duct obstruction including level of obstruction, intra hepatic duct gas and stones.
- Pancreas: Pancreatitis (acute and chronic), duct stones, duct dilatation, pancreatic tumours.
- Portal venous system and spleen: Splenic enlargement, portal venous distension, varices, thrombosis, ascites and loculated fluid collections
- Kidneys: Size, hydronephrosis and masses
- Other structures: Gastrointestinal masses and masses of gynaecological origin including cysts, tumours, fibroids and unexpected pregnancy.

Competencies to be acquired

Liver

To be able to:

- Perform a thorough ultrasound examination of the liver in different scan planes.
- Recognize normal hepatic anatomy and variants.
- Recognize normal and abnormal liver texture such as fatty change and anatomical variants.
- Recognize focal lesions and be able to determine those requiring further investigation.
- Recognize normal hepatic and portal venous anatomy within the liver.
- Perform ultrasound controlled biopsy for the evaluation of parenchymal liver disease.

Biliary System

To be able to:

- Perform a thorough evaluation of the biliary system
- Recognize normal ultrasonic anatomy of the biliary system and its frequent normal variants.
- Recognize abnormalities of the gallbladder wall
- Recognize gallbladder stones
- Be able to assess bile duct dilatation at intra hepatic and extra hepatic levels

Pancreas

To be able to:-

- Perform a thorough examination of the pancreas
- Recognize the limitations of pancreatic ultrasound because of bowel gas
- Recognize solid and cystic tumours within the head and body of the pancreas
- Recognize the changes seen in pancreatitis (acute and chronic)
- Recognize pancreatic duct dilatation and pancreatic duct stones



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Portal Venous System and Spleen

To be able to:

- Evaluate the size of the spleen and recognize focal lesions.
- Evaluate the portal vein and its diameter and the presence of portal venous thrombosis

Bowel

To be able to:

- Recognize normal stomach, small and large bowel
- Recognize focal intestinal abnormalities and understand the principles of further investigation.
- Recognize intestinal obstruction.

Other

To be able to:

- Recognize abdominal aortic aneurysm
- Recognize hydronephrosis and other renal abnormalities
- Recognize free and loculated fluid collections
- Recognize lymphadenopathy
- Recognize gynaecological and other pelvic abnormalities

Level 2

- Competencies will have been gained during training for level 1 practice and then refined during a period of practice, which will involve at least one year of experience at level 1 with a minimum of one ultrasound clinic per week.
- A further 500 examinations should have been undertaken in order to encompass the full range of conditions and procedures listed below.
- Supervision of training should be undertaken by someone who has achieved level 2 competence in gastrointestinal ultrasound and has had at least 2 years experience at that level.
- The trainee should be competent to accept referrals from level 1 practitioners

Knowledge Base

Sectional and Ultrasonic Anatomy:

- Detailed understanding of gastrointestinal, mesenteric, peritoneal, omental, vascular and retroperitoneal anatomy.

Pathology in relationship to Ultrasound:

- An understanding of disease processes which affect the peritoneal cavity, its mesenteries, ligaments and compartments.



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- An understanding of the pathways of spread of intraperitoneal and retroperitoneal disease.
- An understanding of the role of ultrasound contrast agents in differentiating between different types of focal liver lesions
- Hollow digestive tube tumours and other masses

Competencies to be acquired

- Perform a comprehensive ultrasound examination of all of the solid organs within the abdomen.
- Be able to evaluate the small bowel for focal or diffuse disease
- Be able to evaluate the large bowel for the presence of diverticular disease and its complications, tumours and obstruction.
- Be able to evaluate the peritoneal cavity, its mesenteries, compartments and the omentum for the presence of infective or malignant disease.
- Be able to undertake ultrasound guided drainage of peritoneal fluid collections.
- Be able to evaluate the hepatic and portal venous systems using spectral, colour and power doppler ultrasound.
- Be able to undertake ultrasound guided biopsy of focal liver lesions.
- Be able to undertake endoscopic ultrasound
- Be able to undertake an ultrasound contrast examination of the liver
- Be able to undertake some percutaneous ultrasound guided therapeutic procedures such as radiofrequency ablation (RFA), percutaneous ethanol injection (PEI), laser and microwave tumour ablation.

Level 3

A level 3 practitioner is likely to spend the majority of their time undertaking gastrointestinal ultrasound or teaching, research and development and will be an 'expert' in this area.

Maintenance of skills:

Having been assessed as competent to practice there will be a need for continued professional development (CPD) and maintenance of practical skills.

Practitioners should:-

- include ultrasound in their ongoing continued medical education (CME)
- audit their practice
- participate in multidisciplinary meetings
- keep up to date with relevant literature



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EFSUMB is grateful to the Royal College of Radiologists, London, for their permission to adapt their 'Ultrasound Training Recommendations for Medical and Surgical Specialties' document published in 2005. Adaptations of these have been undertaken by Prof. Lucas Greiner, Prof. Ioan Sporea and Prof. Odd Helge Gilja, for use elsewhere in Europe.

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[The Minimum Training Recommendations for the Practice of Medical Ultrasound](#) were published under the EFSUMB Newsletter section in the *Ultraschall in der Medizin/European Journal of Ultrasound*, Volume 27, issue 1 February 2006 page 79-105.

APPENDIX 5: GASTROENTEROLOGICAL ULTRASOUND TRAINING COMPETENCY ASSESSMENT SHEET

Trainee

Trainer

Competencies/Skills to be acquired Level 1

To be competent to perform/diagnose etc. the following:

To be competent to perform/diagnose etc. the following:

	Trainer Signature	Date
LIVER AND BILIARY SYSTEM		
• Normal liver segmental anatomy	_____	_____
• Common variants of anatomy	_____	_____
• Atrophy and hypertrophy of lobes and segments	_____	_____
• Abnormal texture	_____	_____
• Fatty liver	_____	_____
• Cirrhosis	_____	_____
• Focal lesions	_____	_____
• Cysts, Haemangioma, Metastases	_____	_____
• Hepatic Veins, dilatation, thrombosis	_____	_____
• Normal gall bladder	_____	_____
• Intra and extra-hepatic ducts and variants	_____	_____
• Duct dilatation	_____	_____
• Level of obstruction	_____	_____
• Gall bladder stones	_____	_____
• Chronic Cholecystitis	_____	_____
• Acute Cholecystitis	_____	_____
• Complications of Acute Cholecystitis	_____	_____
• Benign inflammatory conditions of gall bladder and gall bladder tumours	_____	_____
• Undertake biopsy of parenchymal liver disease	_____	_____
PANCREAS		
• Normal pancreatic anatomy	_____	_____
• Duct dilatation	_____	_____
• Duct stones	_____	_____
• Pancreatic tumours	_____	_____
• Pancreatitis	_____	_____

	Trainer Signature	Date
PORTAL VENOUS SYSTEM/SPLEEN		
• Normal portal vein	_____	_____
• Dilated portal vein	_____	_____
• Varices	_____	_____
• Thrombosis	_____	_____
• Cavernous transformation	_____	_____
• Normal spleen	_____	_____
• Splenomegaly	_____	_____
• Focal splenic lesions	_____	_____
• Splenic trauma	_____	_____
OTHER STRUCTURES etc		
• Normal kidneys	_____	_____
• Uterus	_____	_____
• Ovaries	_____	_____
• Aorta	_____	_____
• Hydronephrosis	_____	_____
• Renal cysts	_____	_____
• Solid renal mass	_____	_____
• Uterine fibroids	_____	_____
• Pregnancy	_____	_____
• Ovarian cysts and masses	_____	_____
• Aortic aneurysm	_____	_____

