



# EFSUMB

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 1

#### 1. Introduction

- 1.1 The increasing applications of ultrasound imaging throughout medical practice, together with the increasing availability of cheaper and smaller ultrasound scanners, mean that more medical personnel are using ultrasound equipment to perform and interpret ultrasound scans.
- 1.2 Ultrasound has an enviable safety record to date. Various bodies, including scientific societies and manufacturers associations have made recommendations concerning the safe and prudent operation of ultrasound equipment, but, unlike imaging equipment, which makes use of ionising radiation<sup>1,2</sup>, there is virtually no national or international regulation of ultrasound usage.
- 1.3 More than with any other imaging modality, the medical use of ultrasound is highly operator dependent and is fraught with scope for diagnostic error, the potential for which is magnified by the on-going development of more sophisticated equipment with extended applications.
- 1.4 In order to gain maximum clinical benefit, as well as to achieve optimal use of resources, there is a need for operators of ultrasound equipment to have the appropriate skills for the performance and interpretation of ultrasound examinations.
- 1.5 EFSUMB, (which is a federation of national ultrasound societies in Europe), has established that, in Europe, there is no standardisation of training requirements for ultrasound practitioners, either between different countries or between different medical disciplines<sup>3</sup>.

#### 2. Levels of Practice

- 2.1 Most national associations and speciality groups will recognise that Ultrasound can be practised at different levels.
- 2.2 However, because of variations in medical systems between countries and variations in the organisation of the different specialities in those countries, it is difficult to strictly define the different levels of practice, and hence the training requirements for each level.
- 2.3 In the document *'Training in Diagnostic Ultrasound: Essentials, Principles and Standards'*<sup>4</sup> a WHO Study Group have indicated that ultrasound training needs may be defined according to equipment availability, and suggest three levels of training requirement.



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2.4 In Europe, certain countries have pursued the multi-level concept of ultrasound practice, based on clinical experience, ultrasound experience, practical competencies, research record and ability to teach, and are introducing regulated training requirements for each level.

2.5 Whilst it would be unrealistic to expect every speciality group in every European country to agree upon the precise definitions of the levels of practice, abilities for each level may be accepted. Recommendations for the minimum training requirements for each level of practice can then be based on these principles

## **Level 1:**

Practice at this level would usually require the following abilities:

- a. to perform common examinations safely and accurately
- b. to recognise and differentiate normal anatomy and pathology
- c. to diagnose common abnormalities within certain organ systems
- d. to recognise when referral for a second opinion is indicated

Within most medical specialities, the training requisite to this level of practice would be gained during conventional post-graduate specialist training programmes.

## **Level 2**

Practice at this level would usually require the following abilities:

- a. to accept and manage referrals from Level 1 practitioners
- b. to recognise and correctly diagnose almost all pathology within the relevant organ system
- c. to perform basic, non-complex ultrasound-guided invasive procedures
- d. to teach ultrasound to trainees and to Level 1 practitioners
- e. to conduct some research in ultrasound

The training requisite to this level of practice would be gained during a period of sub-speciality training, which may either be within or after the completion of a specialist training programme.

## **Level 3**

This is an advanced level of practice, which involves the following abilities:

- a. to accept tertiary referrals from Level 1 and 2 practitioners
- b. to perform specialised ultrasound examinations
- c. to perform advanced ultrasound-guided invasive procedures
- d. to conduct substantial research in ultrasound
- e. to teach ultrasound at all levels
- f. to be aware of and to pursue developments in ultrasound



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## 3. Minimum Training Requirements

3.1 For each level of ultrasound practice, national and/or European speciality groups should formulate a detailed syllabus with comprehensive recommendations for necessary amounts of practical experience (target numbers).

3.2 Syllabuses should include, at the appropriate level, theoretical knowledge of:

- Ultrasound physics
- Safety of ultrasound and contrast agents
- Ultrasound instrumentation
- Scanning techniques
- Ultrasound artefacts
- Anatomy (of the relevant body systems)
- Pathology (of the relevant body systems)
- Ultrasound findings in the normal condition
- Ultrasound findings in pathological conditions
- Scan interpretation
- Indications for ultrasound and inter-relationship with other imaging modalities
- Ultrasound-guided procedures

3.3 Recommendations should include an indication of the minimum numbers of scans, which should be performed (at the appropriate level) as:

- Supervised scanning
- Independent scanning, with review by a designated trainer

3.4 Training programmes should include recommendations and/or regulations for evaluation/interpretive skills. In each country and/or speciality there should be a recognised competent authority with responsibility for the evaluation of training, using whatever methods are felt to be appropriate in that country and/or speciality. Similarly, methods for, and the implications of, accreditation of individuals who have completed training programmes will vary, and it is essential that there should be recognition of the necessity for limiting the use of ultrasound to suitably trained individuals.

3.5 Continuing professional education and development is essential for any individual practising ultrasound. Training recommendations and/or regulations should include consideration of minimum scanning practice in order to maintain skills and minimum levels of educational activities in order for individuals to remain up-to-date in the rapidly developing field of medical ultrasound.



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## 4. Sonographers

- 4.1 Sonographers are healthcare professionals without a medical degree who use ultrasound for medical purposes in some specialities in some European countries.
- 4.2 In virtually all countries and medical specialities in Europe where sonographers currently practice, there are comprehensive training programmes for sonographers which require high standards of knowledge and practical scanning skills, and they are strictly regulated with well developed schemes for the evaluation and accreditation of the trainees.
- 4.3 It is possible that the practice of ultrasound by sonographers will increase and will be introduced into more countries over the next few years. It is therefore important that consideration be given to the setting up of suitable training programmes in order to ensure that the sonographers are properly trained for their job.

## 5. Conclusions

- 5.1 The medical use of ultrasound can be practised at different levels
- 5.2 Those physicians and sonographers practising ultrasound should be properly trained for the appropriate level of practice.
- 5.3 There should be mechanisms in place to evaluate the theoretical knowledge and practical skills of ultrasound trainees.
- 5.4 National and European speciality associations are urged to subscribe to these concepts, and to recommend and supervise the theoretical and practical training that is requisite for the various levels of ultrasound practice.

## References

1. Council Directive 97 / 43 / Euratom of 30 June 1997. The Medical Exposures Directive (1997) Official Journal 180:22-27
2. Department of Health (2000) Ionising Radiation (Medical Exposure) Regulations IS 1999/3232. Norwich: Stationery Office
3. Training and accreditation: A report from the EFSUMB Education and Professional Standards Committee. EFSUMB Newsletter 2000: 14; 20.
4. Training in Diagnostic Ultrasound: Essentials, Principles and Standards: Report of WHO Study Group 1998. WHO technical report series: 875



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***This document is an attempt to stimulate national and pan-European speciality groups to consider training in ultrasound and to work towards the setting of minimum Europe-wide standards for such training.***

## **Footnote**

This document has been prepared by the EFSUMB Education and Professional Standards Committee, and has been approved by the EFSUMB Executive Bureau. As part of the consultation process, this committee organised a Workshop at the Euroson Congress, which was held in Edinburgh, Scotland on Thursday 13<sup>th</sup> December 2001, to which representatives of different medical specialties in Europe were invited to contribute.

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