

General Introduction

Multislice computed tomography (MSCT) has been the major advance in the practice of computed tomography (CT) since this modality began. It has made existing applications easier and has extended the applications of CT into new areas, with significant impact on the clinical management of disease.

This change has created educational and practice challenges that are on going because the technological advance continues. The last six years have seen the successive introduction of systems capable of acquiring simultaneously 4, 8 or 16 slices, and systems with 32 or more detector arrays are on the point of introduction. So rapid has been the development that changes in examination technique have had difficulty keeping pace with technological advance.

The new technology also has significant implications to the radiation dose administered to the population from medical uses. For more than ten years it has been recognised that CT represents a progressively enlarging contribution to the dose to the population and that in some departments the modality may represent the largest single source of patient radiation in diagnostic radiology. The wider applications of MSCT contribute to this trend, increasing the scope of examinations and increasing the number of patients in whom CT becomes the investigation of choice.

For these reasons MSCT represents a powerful challenge to existing practice standards. Medical personnel using MSCT must be conscientious in practising to the highest possible standards and adapting these standards as developments progress. It is mandatory that practice concurs with national and international legislation and guidelines in justifying examinations and optimising practice. However MSCT continues to develop and it is essential that practice also takes account of evidence continually emerging from clinical experience and research studies.

In 1999 the European Commission published the European Guidelines on Quality Criteria for Computed Tomography (European Commission, ISBN 92-828-7478-8). Since this publication MSCT has changed practice in CT dramatically. It is timely, therefore, to re-examine the guidelines to take account of this advance.

The present document sets out the key elements of current MSCT, with particular regard to image quality, radiation dose and dosimetry, and makes recommendations on good examination approach in key areas. It is intended that these recommendations should inform good practice and also serve as a base for future knowledge growth as MSCT continues to develop.

These guidelines result from the cooperative effort of the following European study group of radiologists and physicists involved in diagnostic computed tomography:

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