TOWARDS UNIFORM STANDARDS OF RADIATION PROTECTION IN HEALTH CARE IN EUROPE

P P Dendy
Dept of Medical Physics, Addenbrookes Hospital, Cambridge UK
(Chairman of the Professional,Education and Training Committee of the European Federation of Organisations of Medical Physics)

ABSTRACT

In 1984 the Commission of the European Communities (CEC) issued a Directive for Protection of the Patient (84/466 Euratom). Article 5 of this Directive states that *"A qualified expert in Radiophysics must be available to Sophisticated Departments of Radiotherapy and Nuclear Medicine"*.

This paper describes work carried out by the European Federation of Organisations of Medical Physics (EFOMP) on the interpretation and implementation of this Article.

INTRODUCTION

When Directives are issued by the Commission of the European Communities (CEC), Member States are required to introduce legislation, within a reasonable timescale, embodying the articles of the Directive. A Directive for Protection of the Patient (84/466 Euratom) issued in 1984 is specifically related to health care. Article 5 of this Directive states that *"A qualified expert in radiophysics must be available to sophisticated departments of Radiotherapy and Nuclear Medicine"* and to assist with the implementation of this Article, CEC Officers initiated a study to answer the following questions:

1. Do suitably qualified medical physicists, experts in radiophysics, exist in the Member States?
2. Are such experts available in radiotherapy, nuclear medicine and diagnostic radiology?
3. Is the basic education and training of the medical physicist in European Countries, a) consistent with the requirements of the proposed Directive of the Community on a general system for the recognition of higher education diplomas (89/48/EEC), b) equivalent in all countries, c) recognised by the appropriate government body?
4. What further education and hospital in-service training is required for the medical physicist to be designated as a qualified expert?

This paper reports on progress and developments resulting from the enquiry.

DESCRIPTION OF A QUALIFIED EXPERT IN RADIOPHYSICS (QE(R))

The first major problem was to define a QE(R). EFOMP has now proposed the following description:

"The Qualified Expert should normally be a suitably experienced physical scientist who would be responsible for the safe

application of radiological techniques in respect of the protection of the patient. This person would normally work in a hospital, or in a recognised analogous institution and would have knowledge and training in radiation physics appropriate to services where the quality of the diagnostic image or the precision of treatment is important and the doses delivered to patients undergoing these medical examinations or treatments must be strictly controlled"

This description has been accepted by the representatives of the National Authorities of Member States.

THE COMPETENCIES EXPECTED OF THE QE(R)

EFOMP is working towards a framework where 5 levels of competency will cover the whole of the career structure of the medical radiation physicist. A good honours degree or equivalent diploma in physics (competency level 1) will be followed by a period of training (competency level 2), then a period of experience. This will result in a qualified medical physicist (competency level 3) who will have an adequate span of practical knowledge, be able to perform given or routine professional tasks without supervision, and communicate with colleagues in related disciplines.

Because of the very advisory nature of the work of the QE(R), often requiring judgment in new or non-standard situations, EFOMP is now considering the view expressed by some Member Organisations that a further period of experience is required, to competency level 4, before becoming a QE(R). Competency level 5 would be appropriate for a Head of Department who was managing a range of routine services.

The duties and responsibilities of the medical radiation physicist in radiotherapy or nuclear medicine can now be assigned competency levels. The example in Table 1 is taken from draft proposals for a radiotherapy physicist.

Table 1
Radiation protection - Source control

	Responsibility	**Competency**
a)	Maintain source calibration certificates	2-3
b)	Maintain records of contamination monitoring	3
c)	Maintain source register with records of source purchase, movement and disposal	3
d)	Assess adequacy of source storage facilities	2-3
e)	Pack sources appropriately for transport with radiation hazard category and transport index correctly labelled	3
f)	Arrange authorisation for waste disposal, by discharge to drains, incineration etc. as appropriate	2-3
g)	Action to be taken in the event of source loss	2
h)	Assessment of hazards and preparation of contingency plan for failure of teletherapy source return mechanism or fire	3-4

TRAINING FOR THE QE(R) IN THE VARIOUS EFOMP COUNTRIES

In 1984, EFOMP issued a policy statement on medical physics education and training[1] and more recently (1990) has conducted a survey of training programmes, with particular reference to training in radiation physics.

Replies have been received from 17 countries, 9 within the European Community and 8 outside it. All had introduced a training scheme in accordance with the EFOMP policy statement but 6 were not entirely happy with existing arrangements for the provision of lectures/seminars/tutorials and 4 felt that current arrangements for on-the-job practical training were unsatisfactory.

Current estimates of the number of physicists completing basic training with the approximate percentages in the ionising radiation related subject areas are shown in Table 2.

Table 2

Estimate of medical physicists completing training by country

Country	Total	Percentage				
		Radthy	Nuc Med	Radlgy	Prot	Non Ion
Belgium	0.5	80%	20%	-	-	-
Denmark	3-4	60%	20%	10%	-	-
France	30	40%	20%	20%	15%	5%
Germany	?					
Ireland	3-4	-	-	-	-	-
Netherlands	17	60%	-	20%	20%	-
Portugal	?					
Spain	8-10	50%	10%	20%	20%	-
UK	5-10	25%	25%	10%	-	40%
Austria	4	-	-	-	-	-
Czechoslovakia	8-10	60%	20%	20%	-	-
Finland	4	25%	25%	25%	-	25%
Norway	1-2	-	-	-	-	-
Poland	10-12	40%	30%	-	20%	10%
Sweden	10-20	-	-	-	-	-
Switzerland	1	-	-	-	-	-
Turkey	8	80%	15%	5%	-	-

EFOMP has also published, a policy statement on the training of a medical physicist as a QE(R)[2]. In addition to the basic training covered in the previous policy statement, it recommends additional specialist training and a period of practical experience.

ADVANCED TRAINING BY EUROPEAN SUMMER SCHOOLS

With financial support from the European Community, the first Summer School for the QE(R) was held in Dublin in July 1991 to cover the advanced material required by the QE(R) in nuclear medicine. The school was very successful with 42 participants (6

lecturers, 2 observers, 5 associate lecturers/demonstrators and 29 students) from 17 different countries. Responses from the participants after the School showed that, in their opinion the objectives of the course were achieved. Following written and oral examination 16 persons were awarded EFOMP certificates of competence in the advanced course for training the QE(R).

INTERPRETATION OF THE TERM "SOPHISTICATED DEPARTMENT" IN ARTICLE 5

EFOMP has suggested that "Sophisticated Departments" should be those departments using ionising radiation routinely on patients, where complex equipment and/or complex procedures and/or frequent radiological examinations/treatments are involved. A meeting with Officers of the Commission in December 1991 acknowledged that this definition still contained subjective terms such as "complex procedures", but agreed that in any revision of the Directive the emphasis should be on the types of work undertaken.

EXTENSION TO DEPARTMENTS OF DIAGNOSTIC RADIOLOGY

Finally, representatives of National Medical Physics Organisations have argued strongly that diagnostic radiology should be included in Article 5. This is based on a number of factors - (i) the source of the highest radiation dose to the population is the use of X-rays in diagnosis, (ii) a number of complex high dose procedures are now in use, iii) surveys have shown a wide range of doses for the same examination, (iv) the need for proper training of radiologists. Representatives of National Authorities are currently less supportive, some on the basis that the case of need has not been adequately demonstrated, some on grounds of cost and some because a significant proportion of the work is already covered by radiation protection services.

CONCLUSION

EFOMP has already been able to make a significant input to the thinking of Officers of the CEC on the right way to provide medical radiation physics support for the proper protection of the patient. More work remains to be done but an important route of communication from medical physics staff in hospitals through National Organisations of Medical Physics and EFOMP to the Commission has been established.

REFERENCES

1. EFOMP Policy Statement (1984). Medical physics education and training: The present European level and recommendations for its future development.

2. EFOMP Policy Statement (1988). Radiation protection of the patient in Europe: The training of the Medical physicist as a Qualified Expert in Radiophysics.

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