

November 2002

CCPM Statement on Guidelines for ^YDosimetry Training and Assessment

Introduction

The current organisation of radiation therapy treatment planning and dose calculation (dosimetry) services varies widely within Canadian cancer treatment centres. Furthermore, the professional and academic prerequisite qualifications of individuals designing treatment plans, generating dose distributions and calculating monitor units are not standardised. In many centres across Canada, dosimetry training is provided “*on-the-job*” and may be offered to incoming staff with a wide range of initial skills and experience[¥]. There is currently no Canadian accreditation or certification program for dosimetry.

In all applications of radiation for therapeutic purposes, a medical physicist ultimately bears responsibility for the accuracy of the predicted dose and for the calculated beam-on time which will deliver the dose prescribed by the radiation oncologist to the identified target volume. Thus, the physics aspect of the preparation of treatment plans is normally carried out under the supervision of a radiation therapy Medical Physicist whose responsibility and authority extends to the provision of training and continuing education in the physics content of treatment planning.

For these reasons, the CCPM, as the Canadian organisation concerned with accreditation of competency of Medical Physicists, has been requested by physicists, oncologists and administrators to provide a policy statement on the training of dosimetrists.

The CCPM has issued this document to fill this requirement. This document outlines recommended procedures and standards for appropriate training of medical dosimetrists employed in Canadian cancer centres. The assessment of individual skills and experience must remain the responsibility of the institution employing the dosimetrist.

^Y The use of the terms “dosimetry” and “dosimetrist” in this document refers to the computerised generation of customised dose distribution treatment plans for radiation therapy and not the measurement of dose.

[¥] A survey carried out by the American Association of Medical Dosimetrists (Fanlines, Spring 2002) found that 82% of respondents with the job title of Medical Dosimetrist reported that they obtained their training *on-the-job*.

Objective

The aim of these guidelines is to describe the essential features of an *on-the-job* training program designed to develop the appropriate skills and experience required of an independently functioning radiation therapy dosimetrist.

The CCPM recommends that a dosimetry training program should address five distinct parameters:

- Appropriate supervision of training,
- Appropriate selection of trainees,
- Knowledge and understanding of the fundamentals of dosimetry,
- Demonstration of competency in the complete process of radiation therapy treatment planning and dose distribution production with the tools, processes and techniques currently available at the institution and
- Continuing education.

➤ ***Appropriate supervision of training***

To address this requirement, the CCPM recommends that:

- 1. *An individual providing supervision, training and assessment of a dosimetrist is either a certified Medical Physicist or a suitably qualified and experienced Medical Dosimetrist.***

Rationale: an “*on-the-job*” training program requires close supervision from experienced and knowledgeable staff.

➤ ***Appropriate selection of trainees***

To address this requirement, the CCPM recommends that:

- 1. *An individual accepted for a dosimetry training program should demonstrate analytical and problem solving skills commensurate with the task.***

Rationale: the efficient autonomous practice of dosimetry requires a good understanding of basic radiation therapy physics and a high level of problem solving skills.

➤ ***Knowledge and understanding of the fundamentals of dosimetry***

To address this requirement, the CCPM recommends that:

- 1. *A syllabus be drawn up at the training institution by a multidisciplinary group which includes a Medical Physicist.*** The syllabus should define the scope of the program, list the topics to be studied, give references to appropriate didactic material and outline expectations in terms of a schedule.

Rationale: both the training institution and the trainee require a clear understanding of the scope of the program and the expected timelines.

- 2. *There be sufficient appropriate reference material available to the trainee.***

Rationale: some material is best approached through personal study prior to practical training.

- 3. The trainee have access to a formal series of tutoring/seminars given by appropriately experienced Medical Physicists which addresses the theoretical and analytical aspects of dosimetry.**

Rationale: an autonomously functioning dosimetrist requires a good understanding of the physical principles of medical dosimetry to make appropriate decisions during plan development rather than relying on recipe-type instructions.

- 4. The trainee be mentored by appropriately experienced Medical Physicists and/or Medical Dosimetrists.**

Rationale: an “on-the-job” training program requires adequate personal contact with experienced and knowledgeable staff.

➤ **Demonstration of Competency**

To address this requirement, the CCPM recommends that:

- 1. A trainee gain experience in a wide range of dosimetry tasks prior to being recognised as a fully-functional autonomous Medical Dosimetrist.** As a guideline, it has generally been accepted that this may take two or three years, the length of time being somewhat dependent on the qualifications of the individual accepted into the program.
- 2. The training include: observation of plan development; a site based review of planning strategy and rationale; plan development with assistance; independent plan development; dose distribution review with a radiation oncologist; independent monitor unit calculation methods and a review of dose distribution checking procedure.**
- 3. Trainee experience be documented appropriately in terms of range and scope.**
- 4. Trainee progress be monitored at regular intervals by a set of objective competency-based criteria.**
- 5. Prior to an individual being recognised as a fully-functional, autonomous Medical Dosimetrist, an appropriate assessment is carried out by a suitably qualified person or persons which would include a Medical Physicist.** This may be done incrementally if the training program is divided into graduated levels.

➤ **Continuing educational aspects of medical dosimetry**

To address this requirement, the CCPM recommends that:

- 1. A mechanism be in place to ensure ongoing continuing education** which should include the availability of:
 - qualified Medical Physicist(s)
 - appropriate journals and reference materials
 - resources for attendance at conferences and courses

Rationale: radiation therapy treatment planning is a rapidly evolving, knowledge based field where both equipment and techniques are continuously being upgraded and modified.