THE ALARA (As Low As Reasonably Achievable) principle has long applied to radiological protection. In fact, the International Commission on Radiological Protection has developed a new concept intended to promote better control of patient exposure, and to reduce the doses to which they are exposed, collective doses and risks.

In dentistry, this means avoiding unnecessary imaging procedures, optimizing the operating parameters of imaging equipment, using techniques suited to the type of patient (adult or child) and protecting patients from unnecessary exposure during prescribed procedures.

CLASSIFICATION OF 3D CBCT SCANNERS
1. Small field of view: dentoalveolar 3D CBCT with a field of view of 8 cm x 8 cm or less.
2. Large field of view: craniofacial 3D CBCT with a field of view of more than 8 cm x 8 cm.

3D CBCT radiation doses are greater than those from conventional dental radiology (with silver films or digital sensors), but less than from medical CT (computed tomography) scans for studying the mandible and maxilla.

QUALIFICATIONS REQUIRED FOR GENERAL PRACTITIONERS OR SPECIALISTS
Dentists, general practitioners or specialists, using 3D CBCT must have the proper qualifications for taking dentoalveolar or craniofacial 3D CBCT scans, as applicable, and have an attestation of the appropriate technical and theory training (see sidebar) giving them the required skills to operate the scanner safely and to interpret and prepare a written report on the images obtained.

INSTALLATION OF EQUIPMENT
When planning for and installing a new 3D CBCT scanner, and under the Act respecting medical laboratories, dentists, general practitioners or specialists, must be sure that they can obtain a valid operating permit for a radiology laboratory specific to dentistry, if this has not already been done.

Dental radiology facilities must be verified by a physicist before use and before obtaining a new operating permit (adequate shielding plans, inspections and work required). This also applies to 3D CBCT equipment.

The Ordre des dentistes du Québec suggests that 15 hours of training be given to dentists, general practitioners or specialists, using 3D CBCT equipment with a small field of view (8 cm x 8 cm or less), and 30 hours to those using 3D CBCT equipment with a large field of view (more than 8 cm x 8 cm).

The program should include theory and practical aspects covering:
- the physics of radiation
- operating principles of 3D CBCT equipment
- indications and contra-indications for 3D CBCT examinations
- the pathology of maxillaries and other structures scanned
- patient protection
- patient positioning
- the selection and influence of different exposure parameters (kV, mAs, FOV, resolution)
- calibrating equipment
- preparing and applying examination protocols
- reconstructing images
- saving and interpreting images, including artifacts, and preparing a report

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N.B.: The transition period for members who had a 3D CBCT device when these Guidelines were published in September 2013 expired in September 2014. Any generalist or specialist dentist using a 3D CBCT device must now comply with their requirements.

1 Act respecting medical laboratories, organ and tissue conservation and the disposal of human bodies, RSOI, L-0.2.