

Cone Beam Computed Tomography in Dentistry Practice Standard

May 2011

Dental Council
Te Kaunihera Tiaki Niho

Introduction

Cone Beam Computed Tomography (CBCT) represents an advance for dental and maxillofacial radiology and is becoming increasingly popular in dental practice. The three-dimensional information appears to offer the potential of improved diagnosis for a wide range of clinical applications with the possible benefit of improved clinical outcomes.

Dental Council notes from the literature that, in addition to general risks around x-ray irradiation;

- there is a risk of inappropriate examinations being performed;
- that CBCT usually gives increased radiation doses to patients compared with conventional dental radiographic techniques; and
- the amount of information gathered by the technique may be outside of a practitioner's expertise or scope of practice though for patient safety this information should be reported.

Council Practice Standard

Dental practitioners using CBCT must be adequately trained in the safe use of CBCT and must abide by the requirements of the Radiation Protection Act 1965 and amendments, and its Regulations 1982; the National Radiation Laboratory Code of Safe Practice for the use of X-rays in Dentistry; Section 8 of the Health Practitioners Competence Assurance Act 2003; the Dental Council's Policy on Advanced and new areas of practice and Informed Consent Practice Standard; and any other legislation or standards applicable to medical devices.

In view of Dental Council's purpose to protect the health and safety of the public by ensuring that oral health practitioners are competent and fit to practise their professions, Council considers that for dentists and dental specialists who use this technology the following principles represent current best practice.

Principles:

1. CBCT examinations must be justified for each patient to demonstrate that the benefits outweigh the risks
2. CBCT examinations should potentially add new information to aid the patient's management
3. CBCT should not be repeated routinely on a patient without a new risk/benefit assessment having been performed
4. CBCT should only be used when there is a question as to whether traditional radiography will provide adequate outcomes
5. CBCT images must undergo a radiological report of the entire image dataset
6. Where it is likely that diagnostic evaluation of potential soft tissue pathology will be required as part of the patient's radiological assessment, the appropriate imaging should be conventional medical CT or MRI rather than CBCT
7. CBCT equipment should offer a choice of volume sizes and the smallest size that is compatible with the clinical situation must be used if this provides less radiation dose to the patient
8. Where CBCT equipment offers a choice of resolution, the resolution compatible with adequate diagnosis and the lowest achievable dose should be used
9. All those involved with CBCT must have received adequate theoretical and practical training for the purpose of radiological practices and relevant competence in radiation protection
10. Continuing education and training after qualification are required, particularly when new CBCT equipment or techniques are adopted

11. For dento-alveolar CBCT images of the teeth, their supporting structures, the mandible and the maxilla up to the floor of the nose, a radiological report should be made by an adequately trained general dental practitioner or dental specialist
12. For non-dento-alveolar small fields of view (e.g. temporal bone) and all craniofacial CBCT images, a radiological report should be made by a suitably trained specialist
13. Any practitioner who provides a radiological report must hold an appropriate current Annual Practising Certificate under the Health Practitioners Competence Assurance Act 2003