



**Manitoba
Dental
Association**

Practice Directions for Cone Beam Computed Tomography (CBCT) Scanners use in the Province of Manitoba



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The following Clinical Guidelines are a means of providing a framework for the optimal use of Cone Beam Computed Tomography scanners in Dentistry.

Acquisition and Examinations:

- CBCT imaging should be considered on a case-by-case basis and must be utilized in a responsible way that maximizes diagnostic value given the clinical context, but without exposing patients to unnecessary amounts of ionizing radiation. In addition, clinicians should consider using CBCT imaging when the clinical objectives cannot be met by other lower dose conventional radiography (ex. periapical, bitewing, panoramic, lateral cephalometric).
- Previously obtained CBCT scan images should be reviewed, and, should be used judiciously to minimize cumulative radiation exposure to the patient.
- The smallest available field of view setting that will meet the clinical objective must be used to minimize the dose to the patient.
- Each CBCT examination should be tailored to the individual patient and the lowest available resolution setting and exposure parameters (mA, kVp, voxel size) that will meet the clinical objective must be used, as it can significantly reduce the dose to the patient.
- For patient safety and to ensure the patient has not moved prior to or during imaging, the operator must be able to observe the patient during the exposure.
- For operator safety, appropriate shielding requirements must be used. Distance alone without intercepting shielding is typically not sufficient due to increased scatter radiation that is produced from CBCT exposures.
- The entire field of view of the CBCT imaging volume must be examined and systematically reviewed in all three planes for the presence of disease, regardless of the specific reason for which it was ordered and taken.
- The prescribing dentist bears full professional responsibility and accountability for the interpretation of the entire field of view captured in the CBCT scan. An appropriate referral (see section on scan interpretation for 'appropriate referral') must be made if the dentist identifies an abnormality that falls beyond their competence or ability to interpret, regardless of where in the field of view it appears, or if the field of view exceeds their ability to interpret properly.
- All CBCT imaging volumes must have a proper written interpretative report that is stored in the patient's chart that includes the following information:
 - Patient identification and rationale for procedure;
 - Name of the prescribing and interpreting dental provider;
 - CBCT scan information: including date of acquisition and reporting, field of view of imaging volume, location of facility, equipment and scan parameters used, and image quality;
 - Findings from the CBCT scan interpretation: including any relevant interpretations or diagnoses;

- Recommendations for follow-up: including further diagnostic imaging or additional clinical procedures.
- The owner and operator(s) shall maintain the exposure and retake logs for all of the radiographic examinations taken at their facility, including CBCT.
- Dentists are legally required to keep dental records, including all radiologic examinations.
- These records must be maintained for at least ten years after the date of the last entry in the patient's record. In the case of a minor, these records must be kept for at least ten years after the day the patient turned 18, even if this is more than 10 years after the last entry in the patient's record.

Interpretation of Dental CBCT Scans for Written Report

It is imperative that the entire field of view generated is examined and systematically reviewed for the presence of anomalies and/or pathology. Should the dentist have any uncertainty regarding the interpretation—based on their knowledge, skill, and judgment—the scan must be referred in its entirety to a dentist who holds a recognized specialty license in Oral and Maxillofacial Radiology or Oral and Maxillofacial Surgery, and who is licensed and registered with the Manitoba Dental Association.

Facility Requirement

- The responsibility for the radiation safety of a dental facility rests with the owner.
- The owner must register any x-ray producing equipment with [Radiation Protection, CCMB](#),
- There are mandatory requirements for new or renovated facilities and installation of new equipment under the Manitoba Safety Regulation 341/88R.

Education / Training

All dentists who prescribe or operate a Cone Beam Computed Tomography (CBCT) scanner must complete a dedicated continuing education course, as approved by the MDA Registrar by February 1, 2027. This requirement ensures that dental professionals are adequately trained in the safe and effective use of CBCT technology, including the accurate interpretation of diagnostic images. By adhering to this standard, the MDA aims to maintain high levels of patient care and safety, while promoting ongoing professional development within the dental community. Requests for modifications of this educational requirement must be submitted in writing to the Registrar for formal review and consideration.

Recommended Learning Objectives to be covered during the CE Course

The biological effects of ionizing radiation and radiation dosimetry
 Resolution settings and exposure parameters (mA, kVp, voxel size)
 Patient selection criteria and the radiographic examination
 Review of normal anatomy in CBCT scans
 Image interpretation of oral and maxillofacial pathoses including cases
 Reporting of findings in the image data
 Medical legal issues and risk management

References

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- 2- American Academy of Oral and Maxillofacial Radiology. Clinical recommendations regarding use of cone beam computed tomography in orthodontics. Position statement by the American Academy of Oral and Maxillofacial Radiology. *Oral Med Oral Pathology Oral Radiology*. 2013 August; 116(2): 238-57
- 3- Horner K, O'Malley L, Taylor K, Glenn AM. Guidelines for clinical use of CBCT: a review. *Dentomaxillofac Radiol*. 2015;44(1):20140225.
- 4- Patel S, Brown J, Semper M, Abella F, Mannocci F. European Society of Endodontology position statement: Use of cone beam computed tomography in Endodontics: European Society of Endodontology (ESE) developed by. *Int Endod J*. 2019 Dec;52(12):1675-1678.
- 5- Bhatt M, Coil J, Chehroudi B, Esteves A, Aleksejuniene J, MacDonald D. Clinical decision-making and importance of the AAE/AAOMR position statement for CBCT examination in endodontic cases. *Int Endod J*. 2021 Jan;54(1):26-37.
- 6- Radiation Protection in Dentistry. Safety Procedures for the Installation, Use and Control of Dental X-ray Equipment. Safety Code 30 (2022).