



COLLEGE OF
DENTAL HYGIENISTS
OF MANITOBA

INTERPRETATION GUIDELINE: Cone Beam Computed Tomography (CBCT)

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The College of Dental Hygienists of Manitoba is responsible for developing professional resource documents for dental hygienists and in serving the public interest. Council approves these documents, of which, the purpose is to explain, enhance, add, or guide dental hygiene practice in accordance with The Dental Hygienists Act and Regulation. It is the responsibility of the dental hygienist to understand and comply with these documents.

The College of Dental Hygienists of Manitoba Interpretation Guideline on Cone Beam Computed Tomography (CBCT)

Purpose

This interpretation guideline is to inform registrants of the College of Dental Hygienists of Manitoba (CDHM) about the current guidance for exposing Cone Beam Computed Tomography (CBCT) images.

Background

- Cone Beam Computed Tomography (CBCT) is a 3-dimensional scanner that uses 2D digital arrays, combined with 3D cone beam radiation using volumetric tomography to capture a 3D image of the maxillofacial skeleton.¹
- CBCT scans emit more ionizing radiation than a single dental radiograph and 3.5-44 times the effective dose of a panoramic radiograph.^{1,2}
- Ionizing radiation exposure presents some degree of risk to the client receiving it, particularly pediatric clients, as well as individuals in the immediate vicinity.
- Current evidence does not support the use of CBCT images for measurement of periodontal bone levels; CBCT images are not necessary for dental hygiene periodontal treatment planning.^{1,2}
- The Dental Hygienists Act does not provide any legislative authority to Registered Dental Hygienists (RDH) to own radiography equipment or prescribe radiographs, however a RDH may operate x-ray equipment under the direction of, and in collaboration with, a dentist.³

Requirements

A dental hygienist, as a CBCT x-ray equipment operator:

- Must have completed theoretical and practical training that has been validated by an academic institution (University or equivalent) or by an appropriate regulatory body; ***training from a CBCT scanner manufacturer, online study, or self-study using evidence-based research alone are insufficient for safely applying this technology.***
- Must retain the proof of CBCT course completion
- Pursues re-qualification or continuing education training for safe operation of equipment and radiation protection procedures
- Applies the principle of ALARA (As Low As Reasonably Achievable) to all ionizing radiation procedures, given the circumstances of the procedure being performed.^{4,5}
- Provides protective equipment to each patient to whom the ionizing radiation is applied if it is appropriate to the clinical condition of that person, i.e., thyroid shield and lead apron.^{4, pgs 25-26}
- Wears a personal dosimeter when applying ionizing radiation unless discontinuation of use has been requested by the dental facility owner and approved by Cancer Care

Manitoba (CCMB). [[MDA E-Alert, Jan 2024 Safety Code 30 – Radiation Protection in Dentistry](#)]

- Assesses the quality of the CBCT image(s).
- Provides the following written evidence of the radiographic prescription and exposure in the client's chart:
 - Informed consent or refusal to radiographs by the client
 - Date of treatment
 - Type of radiographs (i.e., CBCT) exposed
 - Number of radiographs exposed , including retakes
 - Provider of radiographic prescription:
 - The dental practitioner should document and specify precisely the clinical indications and information required.^{4, pg 24}
 - The dentist's clinical findings:
 - A patient's clinical records must contain details of all radiographic examinations carried out, including clinical findings.^{4, pg 24}

*This interpretation guideline reflects current knowledge and is subject to periodic review and revisions with on-going research.

References

1. Eshraghi, V., Malloy, K. and Tahmasbi, M., 2019. Role of Cone-Beam Computed Tomography in the Management of Periodontal Disease. *Dentistry Journal*, 7(2), p.57.
2. Zhang, W., Rajani, S. and Wang, B., 2017. Comparison of periodontal evaluation by cone-beam computed tomography, and clinical and intraoral radiographic examinations. *Oral Radiology*, 34(3), pp.208-218.
3. The Dental Hygienists Act, 2005. Available at: <https://web2.gov.mb.ca/bills/38-4/b005e.php>
4. Health Canada, Radiation Protection in Dentistry, Safety Code 30 (2022). Available at: [https://www.canada.ca/content/dam/hc-sc/documents/services/environmental-workplace-health/reports-publications/radiation/radiation-protection-dentistry-recommended-safety-procedures-use-dental-equipment-safety-code-30/safety-code-30-\(2022\)-radiation-protection-in-dentistry-en.pdf](https://www.canada.ca/content/dam/hc-sc/documents/services/environmental-workplace-health/reports-publications/radiation/radiation-protection-dentistry-recommended-safety-procedures-use-dental-equipment-safety-code-30/safety-code-30-(2022)-radiation-protection-in-dentistry-en.pdf)
5. The Radiation Protection Act of Manitoba, 2015. Available at: <https://web2.gov.mb.ca/bills/40-4/b037e.php#:~:text=A%20person%20must%20not%20operate,or%20exempt%20from%20being%20registered.&text=The%20main%20function%20of%20the,medical%20radio nuclides%20or%20other%20sources>.
6. College of Dental Hygienists of Manitoba, 2007. Dental Hygiene Competencies. [online]. Available at: <https://cdhm.info/practice-resources/>