Provincial Dental Board
of Nova Scotia

GUIDELINES

for Prescribing and Taking Dental Radiographs

Introduction

The purpose of this document is to outline the expectations that the PDBNS has for dentists and dental assistants regarding dental radiation.

The frequency of a radiological examination is a matter of clinical judgment informed by established guidelines. The selection of equipment and techniques used is the decision of the dentist.

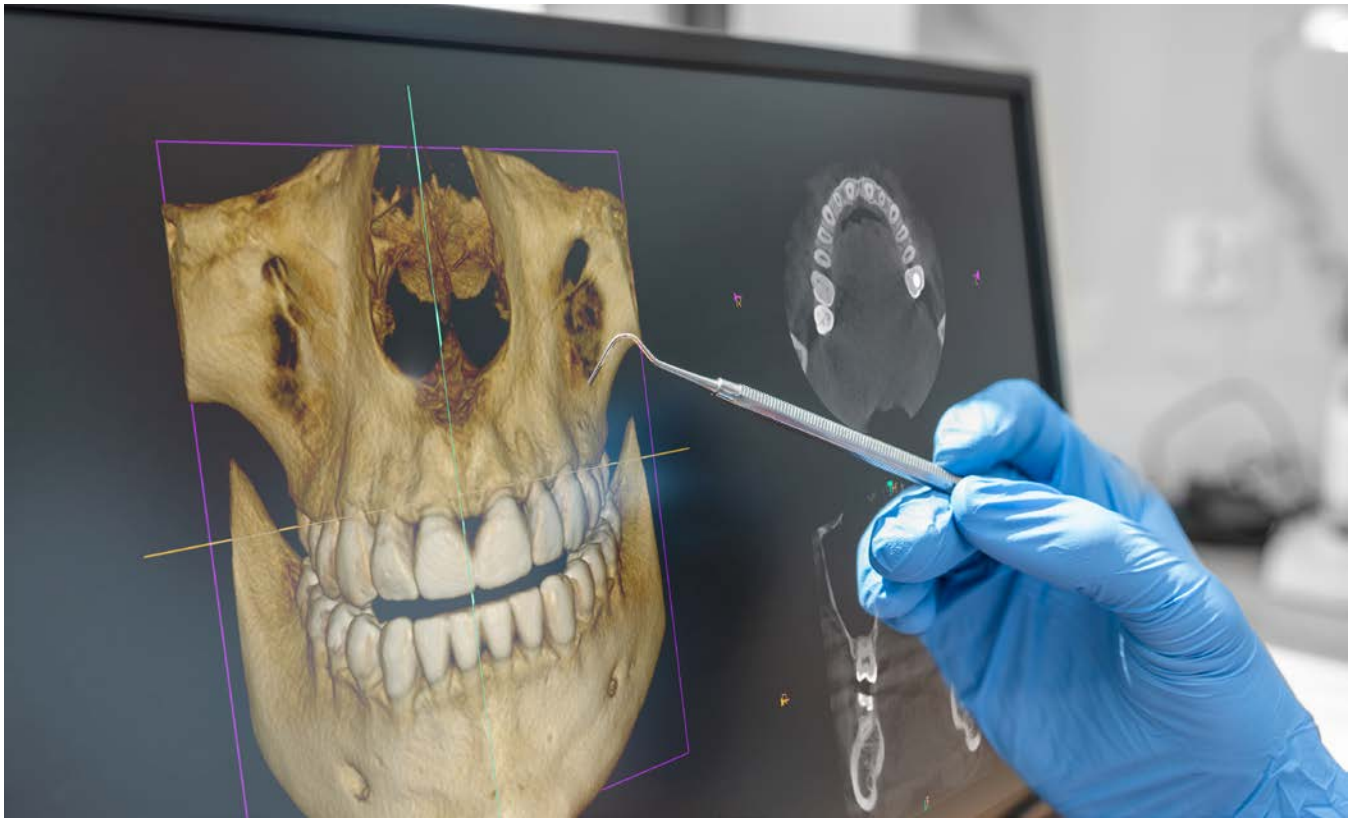
Dentists must follow the ALARA (As Low as Reasonably Achievable) Principle. The amount of patient radiation exposure must be kept as low as possible given current accepted radiological practice.

Radiographs are necessary for the evaluation and diagnosis of many oral conditions and diseases. Radiographs should be specific to the needs and requirements of each particular patient.

Radiographs cannot be exposed without a prescription, which may be either written or verbal.

It is recognized that both general and specialist dentists receive training in interpreting radiographs. A dentist who is prescribing the radiographs is professionally responsible/accountable for everything in the field of view. A referral must be made if the dentist notices an abnormality 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 properly interpret.

NOTE: ***If a dentist licensed in Nova Scotia refers the interpretation of an image to a dentist who is not licensed in Nova Scotia, the dentist licensed in Nova Scotia is deemed responsible/accountable for the interpretation of the image.***



Guidelines

Prescription of Radiographs

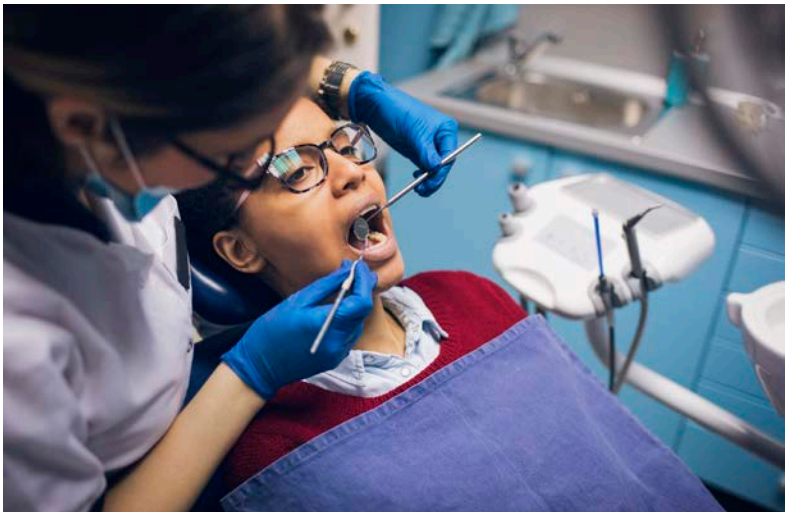
Dental radiographs must be prescribed by a person legislatively licensed to do so. In Nova Scotia, the only such persons are dentists (under The Dental Act) and registered dental hygienists "for dental hygiene purposes" only (under Section 25 of the Regulations Respecting Dental Hygienists 2009).

A prescriber's decision to prescribe radiographs must be justified. Accordingly, the authorized prescriber must review the patient's dental and health history and complete a clinical examination before prescribing radiographs. (In other words, a dental assistant must not take radiographs prior to the dentist examining the patient.)

A well-established guidance document published by the American Dental Association and the US Food and Drug Administration outlines the criteria for patient selection for dental radiographs. A helpful table from that document can be accessed at this link.

PRESCRIPTION OF RADIOGRAPHS FOR NEW PATIENTS (AS PART OF A COMPREHENSIVE CLINICAL EXAMINATION)

The fundamental concepts of justification and optimization, which encompass the ALARA principle (As Low as Reasonably Achievable), should be foremost when considering the use of ionizing radiation. In other words, the use of radiographs must be approached in a responsible way that maximizes diagnostic value given the clinical context, but without exposing patients to unnecessary amounts of ionizing radiation. This requires the dentist to exercise professional judgement to achieve the appropriate balance between these two considerations. Therefore, a dentist's decision about the number, type and frequency of radiographs should be based on each individual patient's dental history, clinical signs, and symptoms.



- Where possible, copies of recent radiographs should be obtained from other practitioners who have cared for the patient.
- A clinical examination must be performed.
- Once any recent radiographs have been assessed and a clinical examination has been performed, the dentist may exercise professional judgement to prescribe appropriate radiographs on an individualized basis to help formulate an initial diagnosis for the patient if indicated.

RADIOGRAPHS PRESCRIBED FOR RECALL PATIENTS

A dentist's decision about the number, type, and frequency of radiographs at recall appointments must be patient-specific and should be based on recent disease history, existing disease, and the expected occurrence of disease. For example, the frequency of bitewing radiographs should be determined based on a risk assessment for caries or periodontitis.

A decision about radiographs should never be based on inflexible time periods alone (e.g., bitewing radiographs every six months or a panoramic radiograph every five years).

It is justifiable for dentists to prescribe posterior bitewing radiographs for patients in the absence of clinical findings. This is due to the probability of detecting interproximal caries before clinical signs or symptoms occur. Once again, the prescription (number and frequency) must be patient-specific.

Shielding

Appropriate shielding must be used when exposing patients to radiation.

If all other recommendations for limiting patient radiation exposure are respected (including appropriate prescribing, rectangular collimation, and the use of digital radiography or high-speed films) abdominal/gonadal shielding is not mandatory for intraoral and panoramic radiography but may be used for patient comfort/reassurance.

However, the thyroid gland is sensitive to radiation exposure during dental radiographic exams given its anatomic position, particularly in children. The patient must be provided with a thyroid shield when it will not interfere with the required diagnostic information of the examination.

For CBCT procedures, the patient should be provided with a lead apron when it will not interfere with the required diagnostic information of the procedure, as there is uncertainty and a lack of consensus regarding use of lead aprons for patients with CBCT.

Personnel

Only persons who are licensed and who have the knowledge, skills, and competency to take dental radiographs may do so.

The training required to prescribe, take, or interpret CBCT images is outlined in the Standard of Practice for the Use of CBCT in Dental Practice.

Dosimetry

While the use of personal radiation dosimeters in dental offices is strongly advised, it is generally not mandatory in dental offices. This is because in general personnel operating dental X-ray equipment are not declared "radiation workers" (as defined in Safety Code 30) as they do not typically receive annual radiation doses in excess of 1 mSv.

The use of radiation dosimeters can be reassuring to dental staff. Readings serve as a radiation exposure record and can help dentists minimize their staff's occupational exposure to radiation. Guidelines for their use are outlined in Section A.2.1 of Safety Code 30.

If a staff member specifically requests a personal dosimeter or is pregnant, then dentists should provide them with one. A new office is encouraged to monitor their workers for the first 6 months to a year to establish a baseline measurement and to confirm that shielding is adequate and safe work practices are being followed.

An alternative to personal dosimeters is the use of area dosimeters. These can be placed at particular locations in the clinic (e.g., outside the door of every operatory that has an x-ray device).

Personal dosimeters are required for workers who operate a cone-beam CT in a dental office.

Dosimeters are also required for special circumstances or specific practice environments where some staff members may have to remain in the operatory (e.g., to hold the patient or sensor/film in place during an exposure). They may also be deemed required for a facility following the report of a biomedical engineer who has performed a radiography inspection.

Patient Refusal of Radiographs

Patients have the right to consent to, or decline, radiographs. Whenever a patient, patient's guardian or substitute decision-maker refuses recommended radiographs, the prescriber should explain the rationale for their recommendation and the consequences of not taking them.

If the patient, guardian, or substitute decision-maker still refuses, then the prescriber should document the informed refusal in the patient's chart.

If the prescriber feels that the refusal compromises their ability to make an accurate diagnosis and/or provide appropriate treatment according to the standards of practice, the prescriber is well within their rights to refuse to provide compromised care as dictated by the patient.

Inspections of Radiograph Equipment

All radiation-emitting devices must be inspected at a 3–5 year interval by a qualified expert who has the competencies consistent with a medical or health physicist as they relate to shielding design and radiation metrology.

References

Safety Code 30 (2022) - Canada.ca

Dental Radiographic Examinations: Recommendations for Patient Selection and Limiting Patient Exposure (ADA/FDA)

Lam, Dr. E, *Considerations for the Use of Ionizing Radiation in Dentistry*, RCDSO PEAK 2011

Lam, E., *Is Routine Radiography for a New Patient Considered Overtreatment?* J Can Dent Assoc 2010; 76:a59

Gillies et al, *Radiograph Prescription Practices of Dentists in Ontario, Canada* JADA 2021

Acknowledgements

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