Cone Beam Computed Tomography:

Pre-Imaging Documentation

UNIVERSITY OF MANITOBA | Rady Faculty of Health Sciences

Documentation Lecture Objectives:

- UTILIZE APPROPRIATE PRE-IMAGING DOCUMENTATION FOR CBCT
  - Canadian Dental Association Position and Guidelines for Patient Protection
  - Referral form
  - Malpractice insurance coverage

Presenter Disclosure

- **Faculty Member:** Dr. Meredith Brownlee

- **Relationships with commercial interests:**
  - None to report

Justification Review

- Although I have presented the cases in which practitioners are justified in requesting imaging, there will be abuses to this imaging modality, as there have been with panoramic and intraoral radiographs
- Please review the ethics and jurisprudence of your licensing body with regard to radiographic imaging
- Please remember that there are absolutely NO ROUTINE RADIOGRAPHS!

Standard of Care

- Standard of Care can only be mandated by legislation, a court, and a dental board
- Specialty groups do issues “guidelines for use” and “position papers” regarding acceptable applications, but these do not enforce laws
- Literature emphasizes adequate knowledge of both technical parameters of the machine for best image acquisition, as well as the responsibility of interpretation of the acquired images

Friedland and Miles (2014)

Canadian Dental Association Position:

1. All x-ray equipment, and its accessories, must conform to the Federal requirements of the Radiation Emitting Devices Act and the Food and Drugs Act.
2. All equipment installation and room design criteria must conform to provincial regulations. In the absence of existing provincial regulations in any particular jurisdiction, the dentist should refer to Health Canada Safety Code *30*.

https://www.cda-adc.ca/en/about/position_statements/xray/

Canadian Dental Association Position:

3. All operators should possess an adequate knowledge of the physics and potential hazards of x radiation, and be able to produce consistent radiographs of diagnostic quality, keeping the dose to the patient as low as reasonably achievable (ALARA). All operators should be licensed or certified according to the standard recognized by the provincial licensing body.
4. A quality assurance program should be established in all aspects of radiological practice in the dental office on a regular basis in accordance with provincial regulations.

https://www.cda-adc.ca/en/about/position_statements/xray/

Canadian Dental Association Position:

5. It is highly desirable that the operator/owner request a radiology technologist, radiation physicist or similarly qualified person to perform a regular inspection of the x-ray equipment to assess radiation output and "normalize" the x-ray taking system. This is to ensure that existing exposure and processing conditions are producing clinically acceptable radiographs with an acceptable exposure range.
6. An exposure guideline chart should be fixed near the control panel of the x-ray machine describing the exposure factors to be used on that machine for children, adults and edentulous patients.

https://www.cda-adc.ca/en/about/position_statements/xray/

Canadian Dental Association Position:

7. The dentist should view radiographs under optimal conditions. A magnifying glass with a variable intensity viewer is desirable. Extraneous light should be minimized.
8. It is highly desirable that dentists enrol in continuing education in the many aspects of diagnostic radiology, physics of radiology and radiation biology.

https://www.cda-adc.ca/en/about/position_statements/xray/

Canadian Dental Association Guidelines to Protect the Patient:

1. A room must not be used for more than one x-ray procedure simultaneously, unless adequate shielding is provided between x-ray machines.
2. Persons not essential to the radiologic procedure must not be in the room during patient exposure.
3. Operators should not be in the room at the time of exposure. If an operator must be in the room with the patient during the exposure, appropriate shielding should preferably be used. If an operator must stay in the room and cannot otherwise use a shield, the operator should stand between 90° and 135° to the primary beam and at least 3 metres from the subject being radiographed. In a dental office, continual and routine use of a lead apron for an operator is not indicated.

https://www.cda-adc.ca/en/about/position_statements/xray/

Canadian Dental Association Guidelines to Protect the Patient:

4. The dental film should be fixed in position by the patient or by use of a holding device. Operators should not hold the film in position or be in the room during exposure unless there is no other way to obtain the radiograph. If operators must hold the film in position, they should use appropriate shielding.
5. If parents or escorts are called to assist, appropriate shielding should be worn by those persons.
6. The x-ray housing should not be held by the operator during operation.

https://www.cda-adc.ca/en/about/position_statements/xray/

Canadian Dental Association Guidelines to Protect the Patient:

7. All dental personnel involved in the taking and processing of radiographs should wear personal dosimeters to ensure that the current radiologic practice is not exposing them to radiation exceeding acceptable limits as defined in Safety Code *30*. If continuous use is not felt to be necessary, periodic use is recommended.
8. Under normal circumstances there should be no radiation recorded on the dosimeter badge. Where personnel are recording radiation levels on a regular basis, steps must be taken to investigate and correct the situation.

https://www.cda-adc.ca/en/about/position_statements/xray/

Prescription of CBCT Imaging

- Form should include basic patient information:
  - Full name, spelled correctly
  - Date of Birth
  - Gender
- Region of Interest detailed, including:
  - teeth specified
  - additional areas of interest (graft harvest sites)
  - justification for the imaging of the site(s)

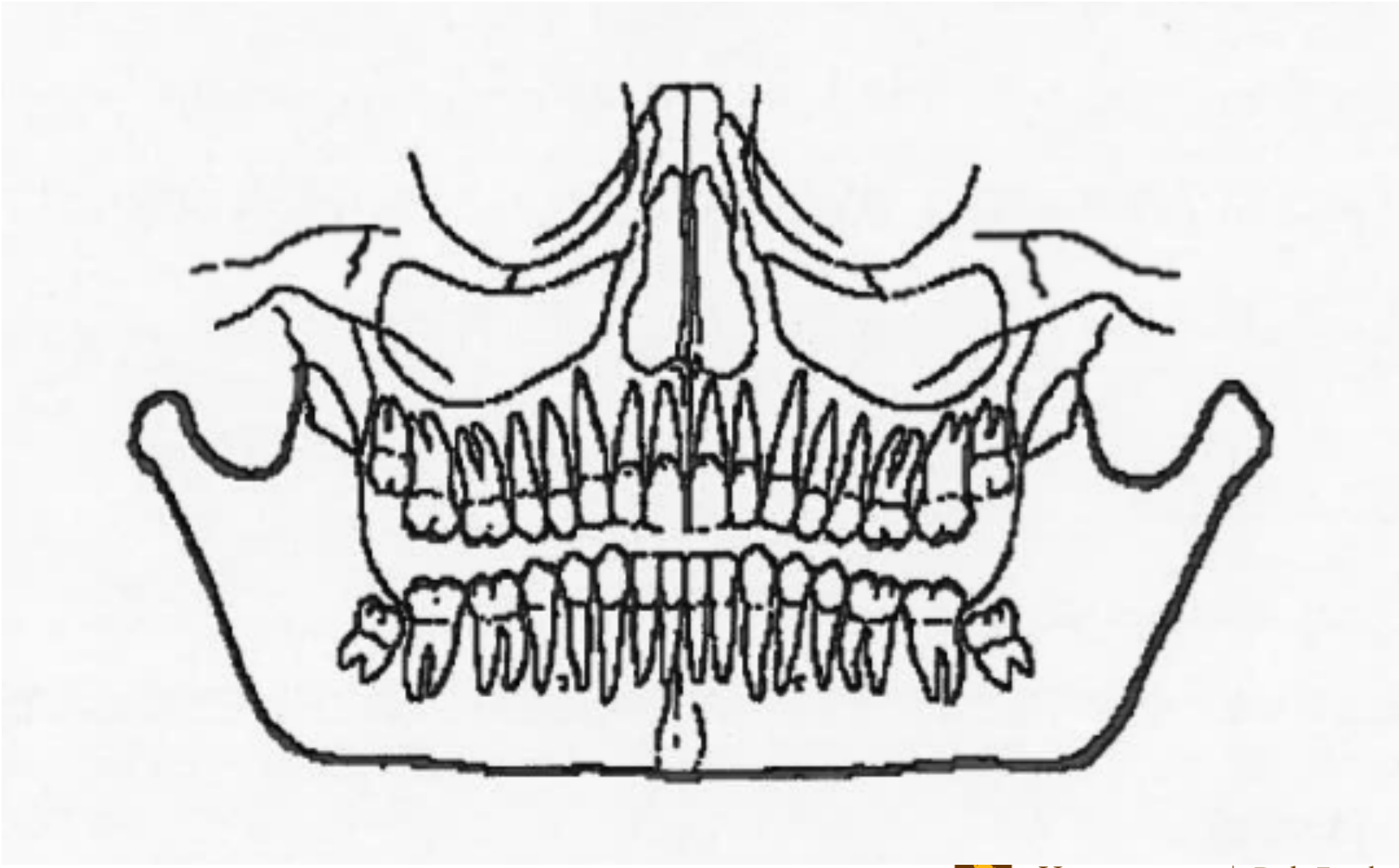
Prescription of CBCT Imaging

- Radiographic stent or guide:
  - will one be used for the imaging of the patient?
  - has it been tried in clinically?
  - is the patient bringing it with them? or sent?
- Relevant history:
  - clinical findings
  - relevant medical history
    - medications
    - disease history

Prescription of CBCT Imaging

- Additional imaging:
  - it is very helpful for referring dentists to include previous radiographic images with the referral to allow staff to visualize the region of interest
  - permits a timeline of the region of interest, especially if pathology is noted
  - also allows double referencing of the site
    - You would be surprised at how often the tooth number is written down, then the opposing side of the arch is circled on the odontogram

Odontogram



Source: Dr. M. Brownlee

Best Practice Regarding Fees:

- With regard to fees, probably the best idea to quote a price range rather than a specific price for CBCT imaging
- Based on the imaging request, it is the responsibility of the CBCT owner to determine the most appropriate FOV and resolution for the task

Malpractice Insurance for CBCT Owners

- If you are an owner of a CBCT machine and taking referrals for imaging, it is their responsibility to ensure that the justification for the imaging is appropriate and meets the criteria for imaging
- The owner should inquire with their insurance provider as to whether their malpractice coverage would cover imaging of externally referred patients medico-legally
  - an additional rider might be necessary

Further Documentation

- Read the Manufacturer's Manual prior to utilizing the machine purchased
- Know your FOVs and settings for acquisition and how they will affect your image quality
- An exposure log is to be kept by the radiation officer for the office, detailing:
  - patient name, chart number
  - FOV and acquisition settings used
- Document whether the radiographic stent/guide was sent home with the patient, or returned with the courier

Questions?

References

- Friedland B, Miles DA. Liabilities and Risks of Using Cone beam Computed Tomography. Dent Clin N Am 58 (2014) 671–685.
- Miles DA, Danforth, BA. Reporting Findings in the Cone Beam Computed Tomography Volume. Dent Clin N Am 58(2014) 687-709.
- https://www.cda-adc.ca/en/about/position_statements/xray/
- http://www.rcdso.org/Assets/DOCUMENTS/Professional_Practice/Standard_of_Practice/RCDSO_Standard_of_Practice__Dental_CT_Scanners.pdf
- Source: Dr. M. Brownlee picture