Update on Lead Shielding in Dental Offices

ADA issued recent recommendations to improve radiation safety in dental radiography and cone-beam computed tomography (CBCT). A key takeaway advises discontinuing the routine use of lead abdominal aprons and thyroid collars during dental imaging.

ADA's guidance was based on recommendations from the American Academy of Oral and Maxillofacial Radiology in an article titled *Patient shielding during dentomaxillofacial radiography* published in JADA 2023:154(9):826-835. It applies to all patients, regardless of age or health; on the basis that radiation doses from modern digital X-ray systems and techniques such as limiting the beam to only the necessary area, provide sufficient protection thereby eliminating the need for lead shielding.

ADA recommendations to reduce unnecessary radiation include:

- Ordering radiographs to optimize diagnostic information and making an effort to use images acquired at previous dental exams
- Using digital technology instead of conventional film for imaging
- Restricting the beam size to the area of interest (rectangular collimation)
- Proper patient positioning
- Incorporating CBCT only when lower-exposure options will not provide the necessary diagnostic information
- Adhering to all applicable federal, state and local regulations on radiation safety

Notwithstanding ADA recommendations, many states continue to require shielding by law.

In Pennsylvania, PDA has confirmed that lead aprons are not required for dental radiography, although thyroid collars are still recommended as an industry standard unless they interfere with the diagnostic procedure. *See* NCRP Report No. 177; Recommendation #18. PDA has been informed that an update to the recommendation will be issued in the near future.

Guidelines for Exception-Based Use of Lead Body Shielding in Dental Radiography

While ADA and the Food and Drug Administration now advise against routine use of lead aprons and thyroid collars (**PDA recommends the use of thyroid collars as an industry standard unless they interfere with diagnostic procedure**) during dental X-rays due to safety of modern digital imaging and beam restriction techniques, certain clinical scenarios warrant thoughtful exceptions to uphold patient safety and trust.

These exceptions are consistent with the ALARA (As Low As Reasonably Achievable) principle, which encourages clinicians to:

- Minimize exposure when justified by clinical need
- Use shielding selectively to reduce anxiety and enhance patient trust
- Balance diagnostic benefit with patient-specific risk factors

Exception 1: Patients receiving recent high-dose radiation treatment

Clinical Context: Patients who have undergone high-dose radiation therapy (e.g. for cancer treatment) within the past two to three months may have heightened sensitivity to ionizing radiation

Recommended Action:

- Evaluate cumulative radiation exposure and clinical necessity of imaging
- Consider lead shielding as a precautionary measure, especially if multiple radiographs are required

Document rationale for shielding in the patient's chart to support ALARA compliance.

Exception 2: Patients Expressing Apprehension – Pediatric & Pregnant Patients

Clinical Context: Despite low radiation doses in dental imaging, pediatric and pregnant patients may often express concern about radiation safety

Recommended Action:

- Respect and validate patient concerns
- Offer lead shielding for reassurance, even if not clinically necessary
- Educate patients on the safety of modern imaging while emphasizing your commitment to minimizing exposure

Document rationale for shielding in the patient's chart to support ALARA compliance.

In accordance with the outlined guidelines, all clinicians should retain:

- Thyroid collars for routine use
- One properly maintained lead body shield for use during clinical exception scenarios

Any additional shielding equipment beyond these items may be disposed of in compliance with proper waste disposal regulations.

Lead Shielding Maintenance Guidelines for Dental Offices/Clinics

For facilities that retain lead aprons and thyroid collars to address exceptional clinical scenarios, the following care and inspection standards must be upheld to ensure safety and effectiveness:

Storage

- Hang aprons flat on heavy-duty, garment-specific hangers or wall-mounted hooks
- Avoid folding, creasing, or draping over chairs or equipment, as this can damage the internal lead layer
- Hang by both shoulder panels to evenly distribute weight and prevent tears

Cleaning

- Clean aprons daily or after each use using a soft-bristle brush and mild soap
- Do not use bleach or harsh chemicals, which can degrade the outer material
- Allow to air dry completely before storing

Inspection

- Conduct annual fluoroscopic inspections to detect cracks, tears, or attenuation flaws
- Document inspection results and retire any shielding with compromised integrity
- Follow manufacturer-specific guidelines for testing and replacement intervals

PDA will continue to monitor and share any changes to regulations or guidance.

Note: Lead aprons are considered hazardous waste due to their toxicity. Lead aprons must be recycled or disposed of as hazardous waste by a licensed waste hauler. Please see PDA's Waste Management Guidelines for disposal options.

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