

## Radiographs Linked to Increased Rates of Cancer

Twenty-one studies have found a correlation between dental diagnostic X-rays and overall health, with many finding a **correlation between X-rays and brain/thyroid cancer**.<sup>1</sup>

The American Cancer Society **affirms that x-rays cause cancer**. They also cite a study which found that the people who had brain tumors were more likely to have had a dental x-ray.<sup>2</sup>

“There is **no safe limit or “safety zone” for ionizing radiation exposure** in diagnostic imaging. Every exposure cumulatively increases the risk of cancer induction.”<sup>3</sup>

A Yale study found that **dental X-rays also increased the risk of developing a meningioma**, the most common and potentially debilitating type of non-cancerous brain tumor.<sup>4</sup>

## Treating Dentists Must Determine if Radiographs are Clinically Justified on a Patient by Patient basis

The FDA and ADA released guidelines stating that “Radiographs should be taken **only when there is an expectation that the diagnostic yield will affect patient care**.”<sup>5</sup>

“The **dentist is the one who decides if the radiographs are needed** ... They are an important diagnostic tool and it is the responsibility of the treating dentist to determine how often they are needed.”<sup>6</sup>

“The clinical decision about the need to radiography is influenced by many factors. [E]ach radiograph *must* be clinically justified... it is **unethical to take radiographs for medico-legal, administrative reasons** or ‘just in case’ if there is no clinical need.”<sup>7</sup>

The International Commission on Radiological Protection (ICRP) recommends that activities which cause exposure to radiation should be **scrutinized and must be justified by a benefit to risk analysis**.<sup>8</sup>

Delta Dental’s Utilization Review Guidelines for 2020 state that radiographs “**should only be taken for clinical reasons as determined by the patient's dentist**.”<sup>9</sup>

## Radiographs are Not Clinically Necessary for all Orthodontic Cases

“**No benefit for radiography has been demonstrated** for patients referred for dental crowding.”<sup>10</sup>

Upon the review of several studies that examined the efficacy of radiography, “researchers reported the **limited effect radiography has on changing orthodontic diagnosis or treatment plans**... questions whether the present use of radiography may be excessive.”<sup>11</sup>

“Diagnostic value of orthodontic radiographs and indications for their use are still debatable ... the **minimum set of records required for orthodontic diagnosis and treatment planning has never been solidly established** or defined in the literature. Consequently, the use of radiation by orthodontists is accompanied by a responsibility to ensure appropriate indication. It must **always be justified** and delivered in doses ‘as low as reasonably achievable.’”<sup>12</sup>

<sup>1</sup> “Clinical recommendations regarding use of cone beam computed tomography in orthodontics. Position statement by the American Academy of Oral and maxillofacial radiology.” *American Academy of Oral and Maxillofacial Radiology, Vol. 116 No. 2 (2013)*.

<sup>2</sup> Do x-rays and gamma rays cause cancer? American Cancer Society. [cancer.org/cancer/cancer-causes/radiation-exposure/x-rays-gamma-rays/do-x-rays-and-gammarays-cause-cancer.html](https://www.cancer.org/cancer/cancer-causes/radiation-exposure/x-rays-gamma-rays/do-x-rays-and-gammarays-cause-cancer.html)

<sup>3</sup> “Clinical recommendations regarding use of cone beam computed tomography in orthodontics. Position statement by the American Academy of Oral and maxillofacial radiology.” *American Academy of Oral and Maxillofacial Radiology, Vol. 116 No. 2 (2013)*.

<sup>4</sup> Claus EB, Calvocoressi L, Bondy ML, Schildkraut JM, Wiemels JL, Wrensch M. Dental x-rays and risk of meningioma. *Cancer* 2012, 118:4530-7.

<sup>5</sup> FDA/ADA, DENTAL RADIOGRAPHIC EXAMINATIONS: RECOMMENDATIONS FOR PATIENT SELECTION AND LIMITING RADIATION EXPOSURE (2012)

<sup>6</sup> Oregon Board of Dentistry, *Clarification on Radiographs*, [https://www.oregon.gov/dentistry/Documents/Clarification\\_on\\_Radiographs.pdf](https://www.oregon.gov/dentistry/Documents/Clarification_on_Radiographs.pdf)

<sup>7</sup> Isaacson KG, (2015), “Guidelines for the Use of Radiographs in Clinical Orthodontics,” *British Orthodontic Society*.

<sup>8</sup> ICRP – International Commission on Radiological Protection, Radiological protection in medicine, Ann. ICRP (2008) ICRP Publication 105

<sup>9</sup> Thomas Correia, DDS – Dental Director, Delta Dental, “Utilization Review Guidelines,” Jan 1, 2020.

<sup>10</sup> “Clinical recommendations regarding use of cone beam computed tomography in orthodontics. Position statement by the American Academy of Oral and maxillofacial radiology.” *American Academy of Oral and Maxillofacial Radiology, Vol. 116 No. 2 (2013)*.

<sup>11</sup> “Use of Ionising Radiation,” Selection Criteria for Dental Radiography, Faculty of General Dental Practice, 2020.

<sup>12</sup> Aldin Kapetanović, *Orthodontic radiology: development of a clinical practice guideline*, Head, Neck and Dental Radiology, April 2020.