



Special Issue on
**Radiation Protection in Dental, Maxillofacial, and
Ear-Nose-Throat Imaging: Current State and Future
Prospects**

CALL FOR PAPERS

We have come a long way since the first dental radiograph has been acquired in 1896, mere days after the discovery of X-rays was announced. Exposure times for 2D radiography have come down from a whopping 25 minutes to a fraction of a second, panoramic radiography can provide an overview of the entire anatomy of the jaws using a narrow-beam technique, and 3D imaging has become accessible to smaller hospitals as well as private clinics through the introduction of cone-beam computed tomography (CBCT). Medical imaging of high-contrast tissues, including the use of cross-sectional images, is now considered indispensable for dentists and ear-nose-throat (ENT) specialists.

Despite continuous efforts to reduce radiation dose to patients and workers through adherence to the basic principles of radiation protection, the ever-increasing use of ionizing radiation for dental, maxillofacial, and ENT applications brings forward several concerns. Whereas doses to organs and issues are, in general, relatively small for imaging applications in the head and neck region, the large frequency of these examinations results in a considerable contribution to the collective dose. Direct access to CBCT has led to an increased use of this modality as a supplement to or replacement of 2D radiography; whereas it has been shown that the use of 3D imaging can lead to an improved patient outcome for certain clinical applications, the increased radiation dose and risk associated with CBCT cannot be ignored. In addition, the wide dose range seen for CBCT and the lack of standardization in terms of dosimetry and quality control complicates the determination of diagnostic reference levels or other objective criteria regarding radiation dose or image quality. Furthermore, recent innovations in multidetector CT (MDCT) hardware and software have led to ever-decreasing patient doses, bringing into question if, and in which cases, MDCT could be preferred over CBCT from a radioprotection point of view. Lastly, there is still great uncertainty and controversy related to the risk of stochastic effects at low absorbed doses (<100 mGy) and the risk of effects to the eye lens at high radiation doses (<500 mGy) and/or repeated exposures.

We solicit high quality, original research articles, and review articles focused on the protection of patients, workers, and public in dental, maxillofacial, and ENT imaging.

Potential topics include, but are not limited to:

- ▶ Radiation dose and risk to patients undergoing 2D or 3D imaging for dental, maxillofacial, or ENT purposes
- ▶ Justification of the use of 3D imaging (CBCT, MDCT) versus 2D imaging: diagnostic ability (e.g., detection of lesions) and patient outcome
- ▶ Radiation biology: effects of medical X-ray exposures at the cellular level and subcellular level
- ▶ Optimization of exposures through various methods (e.g., hardware and software developments, exposure control, and shielding)
- ▶ Protection of patients undergoing nonionizing imaging (i.e., ultrasound and magnetic resonance imaging)
- ▶ Occupational and public exposure. Design of facilities and shielding requirements.
- ▶ Training of workers: new challenges imposed by the increased use of CT
- ▶ Quality control and dosimetry for newly emerging technologies
- ▶ Specific radiation protection issues related to hand-held dental imaging systems

Authors can submit their manuscripts via the Manuscript Tracking System at <http://mts.hindawi.com/submit/journals/bmri/radiology/rpd/>.

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