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Guest Editorial

The Image Gently in Dentistry Campaign: Partnering with Parents to Promote the Responsible Use of X-Rays in Pediatric Dentistry

Many parents seem increasingly concerned about exposure of their children to radiation during periodic oral imaging examinations, with credible scientific evidence to suggest a potential small increase in cancer risk in people exposed to radiation at levels that can be encountered during diagnostic imaging procedures.¹ This is a particularly important consideration for children, whose tissues are more radiosensitive in general and whose life expectancy provides a longer time to develop cancers resulting from radiation exposure.

Recent data suggest that health care providers, including dentists, are responsible for an increasing amount of x-ray exposure, accounting for up to 50 percent of annual per capita radiation dose in the United States.² While individual doses from radiographic procedures in dentistry are quite low, these are the most commonly performed x-ray examinations in the world and cover a broad range of exposures, according to studies of various dental populations.³ There is also evidence suggesting that dentists using digital radiography, particularly charge-coupled devices, may actually make a higher number of radiographs during a single exam than those using analog systems.⁴ Furthermore, lack of knowledge among some dental practitioners regarding the benefits of rectangular collimation and thyroid shields has been demonstrated.⁴ The most likely factor, however, contributing to the general rise of patient x-ray dose in dentistry is the availability and increased usage of cone-beam computed tomography (CBCT).⁵ This should be of concern in pediatric dentistry because CBCT unit doses to specific organs may be high and CBCT examinations are proposed by some practitioners as substitutes for conventional imaging. If dentists are going to partner effectively with parents in protecting their children from the risks of radiation, we must be mindful of the contribution of dentistry to the increase in radiation exposure for the child.

The medical community has been very proactive in promoting awareness of the responsible use of radiology. In 2007, the Society for Pediatric Radiology reached out to a diverse group of organizations representing members of the healthcare team in pediatric radiology, including the American College of Radiology, the American Society of Radiologic Technologists, and the American Association of Physicists in Medicine, to establish the Alliance for Radiation Safety in Pediatric Imaging.⁶ The mission of the Alliance is to improve the safety and effectiveness of the imaging care of children worldwide. More than 80 organizations, medical societies, agencies, and groups have joined the Alliance to impact patient care and change practice through an educational and awareness campaign called Image Gently. Many of the dental specialty organizations in the United States are members of the Alliance. Besides the American Academy of Pediatric Dentistry (AAPD), the list includes the American Academy of Oral and Maxillofacial Radiology (AAOMR), the American Academy of Periodontology, the American Association of Endodontists, the American Asso-

ciation of Oral and Maxillofacial Surgeons, the American Academy of Oral and Maxillofacial Pathology, the American Association of Dental Hygienists, the American Dental Assistants Association and The International Association of Dento-Maxillo-Facial Radiology. The European Academy of Dento Maxillo Facial Radiology and the Canadian Association of Oral and Maxillofacial Radiology are also member organizations. The American Dental Association (ADA), representing organized dentistry, and the American Dental Education Association are also members of the Image Gently Alliance.

The newest initiative, which launched in September 2014 at the Annual Session of the AAOMR and in October 2014 at the annual meeting of the ADA, has been named Image Gently in Dentistry.⁷ The Campaign consists of advertising, education, and outreach programs through various media to promote the responsible use of dental and maxillofacial x-ray imaging of children.

An important tool to address the mission of the Campaign is patient education. The Image Gently website⁸ has a link to an informational pamphlet for parents⁹ as well as a frequently asked question page.¹⁰ This pamphlet describes and defines dental x-rays and offers information regarding the safety of dental radiology along with information about dental radiation and risk reduction strategies.

For the dental provider, six simple steps are advocated to improve radiation safety for children in dental practice. The steps, based on the concepts of justification for use and reduction of radiographic exposures as low as diagnostically acceptable (ALADA), are consistent with the AAPD's guidelines on prescribing dental radiographs.¹¹ This six-step plan, intended to assist the dental care provider in providing the best quality images while minimizing patient and operator exposure, can be explored in greater detail in a recent review article by White et al.,¹² which describes the Image Gently in Dentistry Campaign.

Six-Step Plan to Minimize Radiation Exposure to Children in the Dental Office

1. **Select x-ray views that match a patient's individual needs, not merely as a routine.** The types of x-ray studies to be performed should be customized for each pediatric patient and based on individual need so that, for each exposure, the benefits to diagnosis and/or the treatment plan outweigh the potential risks of the associated radiation dose. Patients with open proximal contacts or no evidence of caries may not require imaging.
2. **Use the fastest image receptor possible.** The fastest dental x-ray film (E- or F-speed) or comparable digital system (CCD or storage phosphor sensors) available should be used for intraoral radiography to reduce exposure dose without compromising image quality. D-speed dental x-ray film should not be used.

3. **Collimate the x-ray beam to only expose the area of interest.** Intraoral radiographic equipment should provide rectangular collimation for exposure of periapical and bitewing radiographs. For CBCT, marked dose reductions can be achieved by reducing the field of view to the region of interest.
4. **Always use thyroid collars.** Protective thyroid collars should be used for all intraoral imaging and for extraoral radiography when they do not interfere with required diagnostic quality.
5. **Child-size the exposure.** Inadvertent use of adult exposure levels must be avoided when imaging children. Particular attention should be paid to reducing exposure times in offices using storage phosphor plates in digital radiography because the wide latitude of these systems will allow visually acceptable images to be acquired in children even when using adult exposure settings which are needlessly excessive for children.
6. **Use cone-beam CT only when necessary.** CBCT exposures should only be considered when lower-dose radiation techniques are unable to answer the clinical question that prompts the imaging study.

In light of the increased concern of parents regarding radiation risks, it is critical for practicing dentists to address the responsible use of radiology in dentistry for children. The proceedings of the 2013 AAPD Symposium on Behind the Guidelines: Factors Affecting Behavior Guidance drew attention to the societal changes that have influenced public perception of once-acceptable behavior guidance techniques and the resulting cautious attitude many parents have developed about the dental profession.¹³ The AAPD has committed to promoting activities that will revise the guidelines on behavior guidance, influence training, and improve public and media perception of behavior guidance techniques. Although the proceedings focus on behavior guidance techniques, those findings could easily apply to the contemporary parent's attitude toward dental radiography and this discussion of the need for dental professionals to respond appropriately. As healthcare providers, dentists need to take the lead in forming partnerships with parents to promote the responsible use of dental x-rays in children.

The medical community and organized dentistry are doing their part to educate health care providers and the public through the activities of the Alliance. Now it's up to individual dentists to join in the effort. Pediatric dentists are encouraged to evaluate the efforts of the Alliance and to commit to the Six-Step Plan to Reduce Radiation Exposure in their own practices. Join us in our advocacy and awareness efforts by taking the Image Gently Pledge online at the Image Gently website.⁸ Let us be proactive in protecting the overall health of our patients while promoting the radiographic techniques that give a diagnostic yield that affects patient care.¹¹

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