

Fact Sheet Regarding Gonadal Shielding for Dental Applications

Overview

The Bureau of Radiological Health has recently amended rules specific to requirements related to technique chart content and shielding of the reproductive organs (gonads) during diagnostic abdominal imaging. These rule changes have resulted in many questions related to overall shielding requirements, and this fact sheet provides information to help guide facilities in reviewing their current radiation protection and shielding practices.

Radiation protection during patient imaging can be accomplished through a combination of efforts to include; collimation, proper selection of exposure factors, and shielding of sensitive areas of the patient's body. Deciding what is appropriate for patient shielding is specific to each individual patient and exam conditions.

For most dental facilities, these rule changes would not require a significant change to the radiation protection practices that are in place. We recommend you review your facility procedures to ensure your radiation protection requirements are protecting your patients in alignment with As Low As Reasonably Achievable (ALARA) practices.

Clinical Application Guidelines

For dental exams specifically, the primary x-ray beam is focused in the head/neck area and the amount of scatter radiation reaching the patient's abdomen is minimal, so full abdominal shielding is likely not necessary in dental imaging. However, patients may request abdominal shielding as they have come to expect that a lead apron will be used during x-ray exams.

However, the thyroid gland is sensitive to radiation and may be near the primary x-ray beam. It is recommended that more in-depth consideration be made when determining whether it is necessary to shield the thyroid. Thyroid shields can offer protection when the primary x-ray beam passes near or through the thyroid gland, but can also obscure important anatomy in the image. Dentists should determine the appropriateness of thyroid shields based on exam type and the anatomy of interest, as well as specific patient conditions.

For occupational exposure management, dental professionals and assisting personnel should continue to wear lead aprons as appropriate when present while x-ray exposures are made. Protective aprons should continue to be provided for personnel to wear while operating handheld dental equipment.

Scientific Background

The American Association of Physicists in Medicine (AAPM) released a position statement in April 2019 outlining grounds for limiting the routine use of gonadal and fetal shielding in medical imaging. Much debate and discussion has ensued since but this position statement has been endorsed by organizations such as the American College of Radiology (ACR) and the Health Physics Society (HPS). On January 12, 2021, the National Council on Radiation Protection and Measurements (NCRP) released Statement No.

13 entitled “NCRP Recommendations for Ending Routine Gonadal Shielding During Abdominal and Pelvic Radiography”. The Conference of Radiation Control Program Directors, Inc. (CRCPD) posted a position statement regarding gonadal shielding on May 20, 2021 endorsing the NCRP Statement No. 13. For more detailed information, please visit the following links.

<https://www.aapm.org/org/policies/details.asp?id=468>

<https://ncrponline.org/wp-content/themes/ncrp/PDFs/Statement13.pdf>

https://cdn.ymaws.com/www.crcpd.org/resource/collection/1B5B915F-2624-48A3-A809-09957F01C42F/POS-HA39-Gonadal_Shielding.pdf

IHHS Rule Change

The Bureau of Radiological Health has amended Iowa Administrative Code (IAC) Chapter 41 in numbered paragraph 41.1(3)“a”(3)“5” and subparagraph 41.1(3)“a”(6) to align with national consensus that demonstrates a need to change how gonadal shielding is applied due to new understanding of dose weighting factors for tissue and organs, as well as advances in radiation-emitting equipment and detector technologies.

These amendments remove a specific reference to the type and place of gonadal shielding to be used and replace it with more general radiation protection and shielding requirement based on diagnostic and clinical needs.

- The requirements of **IAC 641-41.1(3)“a”(3)** have been in place for many years, so facilities should already have technique charts as currently required. The revision in this rule replaced outdated wording to allow facilities to better align their current technique charts with newer units and the types of exposure settings the operators may need to use.
- The rule revision to **IAC 641-41.1(3)“a”(6)** removes the specific requirement for gonadal shielding when the gonads are in the primary beam imaging area. This does not apply to dental imaging and should not require any changes for radiation protection activities in dental facilities.

The remainder of the radiation protection rules throughout IAC Chapter 38-42 remain in place and facilities are encouraged to continually review their policies and procedures to ensure continued compliance with all rules. The chapters that relate to radiological health can be reviewed on the website. <https://hhs.iowa.gov/public-health/radiological-health>

Questions

Please direct questions to radhealthia@idph.iowa.gov or 515-802-6866.