

# Dose Reduction in Computerized Tomography Imaging

## A Team Approach: Reduce the Risk, Keep the Benefit

### Radiologists

- Ensure that the exam is the correct one to obtain the required information and/or diagnosis.
- Educate providers on the appropriate exam for each circumstance. Certain exams, such as a MRI or an ultrasound, may provide the information needed without the use of X- rays.
- Reduce the number of multiple scans, i.e. pre, during And post injection exams.
- Teach your technologists how to properly adjust the scanning protocols for the patient's size, body habitus, and area of interest.
- Review post exam patient dose information on the images.
- Participate in all in-services provided by application specialists.
- Communicate any protocol concerns to your physicist and make appropriate judgments.



### Technologists

- Reduce the technique (kVp and/or mAs) whenever possible, particularly for small patients or children.
- Increase pitch if using helical scanning or increase table increment if using axial scanning.
- Collimate (use a smaller Field of View) closest to the area of interest.
- Scan only the requested anatomical region.
- Consider the image quality needed for the diagnosis.
- Use mA modulation setting or the automatic exposure control options if appropriate for exam.
- Record patient post exam dose measurements.
- Send post exam dose measurement and images to the radiologists.

### Physicists

- Review exam protocols to determine if it is appropriate.
- Examine AEC or mA modulation parameters if used.
- Educate the technologists and radiologists in regards to DLP and CTDI dose values.
- Assist in developing an acceptable dose range for exams performed.
- Assist in developing a protocol manual using optimal technique settings.

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## Quality Control

- Create and maintain an exam protocol.
- Limit access to protocol changes.
- Perform daily or weekly calibration testing.
- Perform preventative maintenance as recommended by the manufacturer.
- Collaborate with team members to review protocols.

## For More Information

American College of Radiology - [www.acr.org](http://www.acr.org)

Conference of Radiation Control Program Directors - [www.crcpd.org](http://www.crcpd.org)

American Registry of Radiologic Technologists - [www.arrt.org](http://www.arrt.org)

Impact CT Scanner Evaluation Group - [www.impactscan.org](http://www.impactscan.org)

American Society of Radiologic Technologists - [www.asrt.org](http://www.asrt.org)

Image Gently - [www.imagegently.org](http://www.imagegently.org)

American Association of Physicists in Medicine - [www.aapm.org](http://www.aapm.org)

Federal Drug Administration - [www.fda.org](http://www.fda.org)

California Department of Public Health - [www.cdph.ca.gov/rhb](http://www.cdph.ca.gov/rhb)

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*California Code of Regulations, title 17, sec.30305(b) – The user shall assure that all X-ray equipment under his jurisdiction is operated only by persons adequately instructed in safe operating procedures and competent in safe use of the equipment.*

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[www.publichealth.lacounty.gov/eh/about/radiation-management-program.htm](http://www.publichealth.lacounty.gov/eh/about/radiation-management-program.htm)

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