Fluoroscopy Imaging Systems & Imaging Safety
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Introduction

- To assure patient and operator safety, all Hartford HealthCare facilities require annual evaluation of each fluoroscopic device by a qualified Medical Physicist.
- HHC is required to verify and document that individuals (including physicians, non-physicians, and ancillary personnel) who use fluoroscopic equipment or direct others to use fluoroscopic equipment participate in ongoing education that includes annual training in
  - Radiation dose optimization techniques and tools for pediatric and adult patients as addressed in the Image Gently and Image Wisely Initiatives
  - Safe procedures for operation of the types of fluoroscopy equipment they will use
  - Annual radiation safety
HHC Fluoroscopy Imaging Systems & Imaging Safety

Training Objective

All individuals using fluoroscopic devices or directing others to use fluoroscopic devices will

• Review device options and device set-up as they relate to radiation dose reduction and radiation dose management

• Review documentation of radiation dose information [metrics] per patient procedure to assure dose data is documented and stored in a retrievable format.
Radiation dose management initiatives and the organizations that provide dose reduction guidance

The Image Gently Alliance is a coalition of health care organizations dedicated to providing safe, high quality pediatric imaging worldwide. The primary objective of the Alliance is to raise awareness in the imaging community of the need to adjust radiation dose when imaging children. [https://www.imagegently.org](https://www.imagegently.org)

The Joint Task Force collaborated with the American Association of Physicists in Medicine and the American Society of Radiologic Technologists to create the Image Wisely campaign with the objective of lowering the amount of radiation used in medically necessary imaging studies and eliminating unnecessary procedures. [https://www.imagewisely.org](https://www.imagewisely.org)

Image Gently in Pediatric fluoroscopy

[https://www.imagegently.org/Procedures/Fluoroscopy/ Pause-and-Pulse-Resources2011](https://www.imagegently.org/Procedures/Fluoroscopy/Pause-and-Pulse-Resources2011)
HHC Fluoroscopy: Fluoroscopy differs from other X-ray imaging in that the images produced appear in real-time

**STEPS TO REDUCE – PATIENT & OPERATOR EXPOSURE**

- Minimize patient-detector distance
- Minimize beam-on time
- Use lowest-dose fluoroscopy setting
- Collimate field size to the area of interest
- Use pulsed fluoroscopy mode
- Use last-image-Hold
- Avoid magnification modes
- Use the slowest frame rate
- Minimize Cine acquisition
- Minimize Run durations
- Maximize use of operator shielding
Understanding Fluoroscopy Dose Metrics

What is Dose-Area-Product?

Dose-Area-Product (DAP) is the total amount of radiation delivered to the patient. DAP is the same regardless of where DAP is measured. DAP close to x-ray tube exit and DAP far from x-ray tube exit is the same. DAP is reported in mGy-cm².

What is Air-Kerma?

Air-Kerma (AK) is the dose measurement at a specific and defined point along the beam path. AK is reported in mGy.
Reporting Fluoroscopy Dose Metrics

Fluoroscopy Dose Metrics may be presented in a variety of ways

The Joint Commission requires documentation of fluoroscopy exposure data for ALL fluoroscopy devices

For fluoroscopy equipment *that cannot display* or provide cumulative-Air-Kerma [mGy] or Dose-Area-Product [mGy-cm²], fluoroscopy time [seconds or minutes] *and number of images* acquired are to be documented.

Documentation of fluoroscopy dose metrics must be stored in a retrievable format, such as the picture archiving and communication system, dictated into the patients record etc.

This includes General fluoroscopy devices, Interventional fluoroscopy devices and Portable C-arm devices including the Mini-C-arm
In Summary

Remember to

✓ Minimize patient-detector distance
✓ Minimize beam-on time
✓ Use lowest-dose fluoroscopy setting
✓ Collimate imaging field size to the area of interest
✓ Use pulsed fluoroscopy mode
✓ Use last-image-Hold
✓ Avoid magnification modes
✓ Use the slowest frame rate
✓ Minimize Cine acquisition
✓ Minimize Run durations
✓ Maximize employment of operator shielding

✓ Know the radiation dose management initiatives and the organizations that provide dose reduction guidance to assure the exposure protocol you select is low in exposure to the patient while providing the needed diagnostic image quality for each procedure: The Image Gently Alliance and the Image Wisely Alliance.

✓ Document fluoroscopy exposure data for ALL fluoroscopy devices in a retrievable format for each patient procedure

Contact the Radiation Safety Officer with questions regarding radiation safety, low-dose fluoroscopy techniques, or device specific questions
Next Step

Complete the Fluoroscopy Device Use Attestation to receive approval to use Fluoroscopy equipment within Hartford HealthCare facilities.

Print the course completion certificate, for you to provide to the facility Medical Staff Office.