CT Dose Monitoring Policy

**Purpose:** Radiation dose for CT scan protocols will be monitored before and after each scan to ensure patient doses are within acceptable ranges.

1. **Have your CT Protocols reviewed** by your MPC Physicist. Post the reviewed protocol sheet next to your CT console.

2. **Check the expected patient dose** (CTD\text{vol} value in mGy) on our acquisition display before every scan to ensure it doesn’t exceed the Notification Values on the Protocol sheet.

3. **Review the dose after the scan.** Most scanners display a dose summary page that includes CTD\text{vol} (mGy) and Dose Length Product (mGy-cm). If the CTD\text{vol} value for a given scan exceeds the AAPM reference value, the dose must be logged for review by the physicist or physician. CTD\text{vol} values are specified for a single scan. Each CTD\text{vol} value is assessed independently of the other phases. For example, for a head exam that includes a phase with and without contrast, the phase without contrast should be less than 80 mGy and the phase with contrast should be less than 80 mGy. Dose Length Product (DLP) values will not be used at this time as a basis for reporting doses for review.

4. The “excessive” CT doses will be logged for reviewed by the physician and or physicist on a routine basis. If necessary, corrective action will be taken to reduce the protocol dose and the chance of scanning with protocols that exceed the reference levels.

Please note the following:

- The dose values in the CT Dose Table are Notification Values that are trigger levels for review of patient doses and are well below levels that would cause injury to the patient.
- The doses that exceed those in the CT Dose Table are “doses for review”. These are logged in the Excessive CT Dose Log. These doses are not excessive enough to cause harm to the patient and are not “CT Medical Events” that are reportable to the state of Michigan. A CT medical event is an event where a physician determines that actual damage has occurred to an organ or physiological system of an individual exposed to diagnostic radiation from a CT scanner. A CT medical event is highly unlikely because scan protocols are set with dose values well below levels that could injure the patient. For example, with a head dose of 60 mGy, one would have to scan the same patient 17 times with the same protocol to deliver a dose that could cause skin injury (erythema).
- Review of the Excessive Dose Log will be the basis for determining if a dose is reportable as a CT Medical Event. As noted above, the doses logged, are highly unlikely to be CT Medical Events. The procedure for determining and reporting CT Medical Events is outlined in a different policy.
- As noted above DLP will not be used at this time for reporting doses for review. DLP values are determined by multiplying the CTD\text{vol} by the length of the scan. For example, if the CTD\text{vol} for a brain scan is 60 mGy and the length of the scan was 10 cm, the DLP value would be 600 mGy-cm. Although DLP is an important factor in determining the effective dose to a patient there is variability in values due to different scan lengths, especially in chest, abdomen, and pelvis scans. In addition, the Notification Values reported by the AAPM and the American College of Radiology dose Reference Levels are based on CTD\text{vol}. 