

**WAC 246-226-010 Definitions, abbreviations, and acronyms.** The definitions, abbreviations, and acronyms in this section, WAC 246-220-010 and 246-225-010, apply throughout this chapter unless the context clearly indicates otherwise.

(1) "CT" or "computed tomography" means technology that uses computer-processed X-rays to produce tomographic images (virtual slices) of specific areas of the patient's body or scanned object.

(2) "CTDI" or "computed tomography dose index" means the integral of the dose profile along a line perpendicular to the tomographic plane divided by the product of the nominal tomographic section thickness and the number of tomograms produced in a single scan that is:

$$CTDI = \frac{1}{NT} \int_{-\infty}^{\infty} D(z) dz ,$$

Where:

Z = Position along a line perpendicular to the tomographic plane;

D(z) = Dose at position z;

T = Nominal tomographic section thickness;

N = Number of tomograms produced in a single scan.

And:

The dose profile is centered around z and that, for a multiple tomogram system, the scan increment between adjacent scans is nT.

(3) "CTDI<sub>vol</sub>" means the product of the CTDI<sub>w</sub> and NT, divided by the table increment I and expressed as milliGray.

$$CTDI_{vol} = \frac{N \times T}{I} \times CTDI_w$$

(4) "CT dosimetry phantom" means an object used to determine the dose delivered by a CT X-ray system.

(5) "CTN" or "computed tomography number" means the number used to represent the X-ray attenuation associated with each elemental area of the CT image:

$$CTN = \frac{k(\mu_x - \mu_w)}{\mu_w}$$

Where:

k = A constant, a normal value of 1,000 when the Hounsfield scale of CTN is used;

μ<sub>x</sub> = Linear attenuation coefficient of the material of interest;

μ<sub>w</sub> = Linear attenuation coefficient of water.

(6) "CT procedure" means an activity directed at or performed on a patient necessary to make a diagnosis using a CT X-ray system in-

cluding, but not limited to, setting, modifying, or applying parameters or protocols.

(7) "CT simulator" means a CT unit that allows for precise cancer treatment planning by demonstrating the relationship between the target tumor and healthy tissues while the patient is in a treatment position.

(8) "CT X-ray system" means a gantry-style X-ray system that generates a tomographic image through acquisition of cross-sectional image slices perpendicular to the plane of travel of the gantry.

(9) "Department" means the Washington state department of health.

(10) "Dose profile" means the dose as a function of position along a line.

(11) "DLP" or "dose length product" means the product of the  $CTDI_{vol}$  and the scan length of a single or group of scans performed on the same body part. This number can be calculated over the entire CT procedure to give an estimate of the total dose. The value is expressed in milliGray centimeters.

(12) "Filtration" means material placed in the beam to preferentially absorb low energy photons that contribute no diagnostically meaningful data to the image.

(13) "Fixed CT X-ray system" means a CT X-ray system that is permanently mounted in the building in which it is used or a portable CT X-ray system that is permanently stationed in one location.

(14) "Joint commission" means the independent, not-for-profit organization that accredits and certifies health care organizations and programs in the United States.

(15) "kW" or "kilowatts" means peak power, which is the highest rated kilovoltage of a CT X-ray system multiplied by the maximum rated amperage multiplied by the power factor.

(16) "Lead CT technologist" means the radiologic technologist licensed under chapter 18.84 RCW and designated by the registrant to perform the duties identified in this chapter. A licensed health care professional listed in RCW 18.130.040 acting within their scope of practice may also be designated by the registrant to perform the duties identified in this chapter.

(17) "Lead interpreting CT physician" means a physician licensed under chapter 18.71 or 18.57 RCW designated by the registrant to perform the duties identified in this chapter. A licensed health care professional listed in RCW 18.130.040 acting within their scope of practice may also be designated by the registrant to perform the duties identified in this chapter.

(18) "Medical physicist" means a physicist who meets the requirements of WAC 246-226-065.

(19) "Mobile CT X-ray system" means a CT X-ray system that is permanently mounted in a vehicle or trailer.

(20) "Noise" means the standard deviation of the fluctuations in CTN expressed as a percentage of the attenuation coefficient of water. Its estimate ( $S_n$ ) is calculated using the following expression:

$$S_n = \frac{100 \cdot \bar{\mu} \cdot s}{\mu_w}$$

Where:

$\bar{\mu}$  = Linear attenuation coefficient of the material of interest;

$\mu_w$  = Linear attenuation coefficient of water;

s = Standard deviation of the CTN of picture elements in a specified area of the CT image.

(21) "Nominal tomographic section thickness" means the full width at half-maximum of the sensitivity profile taken at the center of the cross-sectional volume over which X-ray transmission data are collected.

(22) "Operator" means a Washington state licensed health care professional whose scope of practice includes CT diagnostics which includes choosing the appropriate scan protocol, appropriately adjusting parameters when necessary, and administering the CT procedure.

(23) "PACS" or "picture archiving and communication system" means a medical imaging technology that provides economical storage of and convenient access to images from CT.

(24) "Parameter" means settings on the CT X-ray system that can be modified including, but not limited to, peak tube potential in kV, filtration thickness, the tube current in mA and the exposure time in milliseconds, and the product of tube current and exposure time in mAs.

(25) "Physician" means an individual licensed under chapter 18.71 or 18.57 RCW.

(26) "Portable CT X-ray system" means a CT X-ray system that is not permanently mounted in a building, vehicle, or trailer and is able to move between locations of use.

(27) "Protocol" means the collection of settings and parameters affecting CT dose and image quality that specify how data collection and reconstruction, patient positioning, and contrast administration are performed.

(28) "Radiologic technologist" means an individual licensed under chapter 18.84 RCW.

(29) "Scan" means the complete process of collecting X-ray transmission data for the production of a tomogram.

(30) "Scan increment" means the amount of relative displacement of the patient with respect to the CT X-ray system between successive scans measured along the direction of such displacement.

(31) "Sensitivity profile" means the relative response of the CT X-ray system as a function of position along a line perpendicular to the tomographic plane.

(32) "SSDE" or "size specific dose estimate" means a patient dose estimate which takes into consideration corrections based on the size of the patient using linear dimensions measured on the patients or the patient images.

(33) "Tomogram" means a two dimensional image representing a slice or section through a three dimensional object using a CT X-ray system.

(34) "Tomographic plane" means the geometric plane which is identified as corresponding to the tomogram.

(35) "Tomographic section" means the volume of an object whose X-ray attenuation properties are imaged in a tomogram.

[Statutory Authority: RCW 70.98.050 and 70.98.080. WSR 16-23-030, § 246-226-010, filed 11/8/16, effective 1/1/17.]