**absorbed dose to water ($D_W$):** energy released by ionising radiation in water per unit mass, measured in the SI-unit gray (Gy). This is the main physical quantity of interest in the context of radiotherapy dosimetry.

**beam quality specifier:** a quantity that is used to summarise the physical characteristics of a radiation beam such as the spectral distribution of photons at the point of measurement. Since measurements at hospitals have to be practical and robust, beam qualifiers must be measurable with simple equipment. In TRS-398, the quantity $\mathbf{TPR_{20,10}}$ is used as the beam specifier for high-energy photon beams since the response of ionisation chambers correlates well with $\mathbf{TPR_{20,10}}$ for a broad range of medical accelerators. Hospitals with chambers calibrated in $^{60}$Co can therefore measure the $\mathbf{TPR_{20,10}}$ for their linac beams and look up the required correction factors in TRS-398.

**code of practice (CoP):** Traditionally, radiotherapy dosimetry is carried out in accordance with a code of practice, which effectively has the same status as a norm in the sense that it is used by authorities, industry and hospitals. The IAEA TRS-398 is a code of practice that provides detailed guidance on how measurements of absorbed dose to water can be carried out in clinical beams with traceability to the $D_W$ primary standards.

**Fano test**: This is a test applied to Monte Carlo codes to evaluate the implementation of several algorithms when dealing with particle transport in a situation consisting of multiple geometric regions with different material densities.

**flattening filter free (FFF)**: The most frequent form of radiotherapy is delivered using a linear accelerator delivering beams of photons with a maximum energy in the range from 4 MeV to 25 MeV. Modern accelerators and treatment planning systems can now deliver the beam without the use of a flattening filter (i.e. effectively directly from the bremsstrahlung target). The absence of such a filter enables treatments with very high dose rates and inhomogeneous dose profiles. Flattening filter free beams are not covered in the present TRS-398.

**Half-Value Layer (HVL)**: The thickness of a (metal) slab that halves the value of the air kerma measured at a reference point. The HVL correlates with the mean energy of an x-ray filtered beam and, together with the generating potential applied to an x-ray tube, is used as a beam quality specifier for x-ray beams *in air*.

**ionisation chamber:** a detector with a gas-filled cavity. The main chambers are cylindrical or plane-parallel. The radiation ionises the air in the cavity and the resulting charge is collected at the centre electrode guided by a high voltage difference (e.g. 300 V) relative to the ionisation chamber wall. Ionisation chambers are the main transfer instrument in radiotherapy dosimetry due their very high stability and precision. However, because the cavity is not water, significant corrections are needed when ionisation chambers are used in different beams for measurements of the absorbed dose to water.

**$k_{Q,Qo}$ (short $k_Q$):** Factor to correct for the difference between the response of an ionisation chamber in the reference beam quality $Q_o$ used for calibrating the chamber and in the actual user beam quality, Q. The subscript $Q_o$ may be omitted if $^{60}$Co gamma radiation is used as reference quality (i.e., one may write $k_Q$ rather than $k_{Q,Qo}$).

**kV x-rays:** In this context, x-rays generated with a potential up to 250 kV. kV x-ray beams are used, for example, for skin cancer treatments and in intraoperative radiation therapy.

**linear accelerator (linac):** Typically this is an electron accelerator with a maximum energy of 25 MeV. Photons can be produced in the form of bremsstrahlung by letting the electron beam hit a high-Z target material.

**$N_{D,w}$**: A detector's calibration coefficient (i.e. the reciprocal of the detector's response) expressed in terms of absorbed dose to water, $D_W$.

**phase-space file**: A file containing a simulated sample of the radiation field emitted by a radiation source. Typically, phase-space files are computed for the generation and transport of radiation in the head of the treatment machine. These files can then be used as a starting point in later simulations of patient irradiations or detector responses. This saves time, as such simulations are highly computer intensive.

**primary standard of absorbed dose to water**: A primary standard of absorbed dose to water is an instrument that can be used to determine absorbed dose to water in absolute terms, and listed in the BIPM key comparison data base (KCDB).

**PSDL:** primary standard dosimetry laboratory.

**scanned proton beam**: a narrow proton beam is deflected and steered by magnets. Under computer control, the scanned beam “paints” dose spot by spot in successive layers in the treatment volume. The penetration depth is controlled by changing the proton beam energy.

**SSDL:** secondary standard dosimetry laboratory.

***s*<sub></sub>**

$s_{w,air}$: stopping power ratio water to air, defined as the ratio of the mean restricted mass stopping powers of water and air, averaged over the spectrum of electrons. The stopping power ratio is the main physical parameter needed for accurate measurements with gas-filled ionisation chambers in radiation dosimetry.

**TRS-398:** An international code of practice for dosimetry in radiation therapy of cancer, centred around the concept of traceability to standards of absorbed dose to water, $D_W$.

**$TPR_{20,10}$**: is tissue-phantom ratio in water at depths of 20 g/cm$^2$ and 10 g/cm$^2$ for a field size of 10 cm x 10 cm and a source-dosimeter distance of 100 cm. It can easily be measured as the ratio between ionisation chamber readings in two different phantom setups, and $TPR_{20,10}$ is used as the beam quality specifier for high-energy photons in the IAEA TRS-398 Code of Practice.

**$\%dd(10)_x$:** the measured photon beam percentage depth dose at 10 cm depth in a 10 cm x 10 cm field on the surface of a water phantom at 100 cm after removing the electron contamination in the beam. $\%dd(10)_x$ is used as the beam quality specifier for high-energy photon radiation in the AAPM TG 51 code of practice.