RPC WEBPAGE NEWSLETTER

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Water or muscle - does it matter?

The RPC has received a number of comments about the question on our TLD forms that asks if the institution calibrates to water or muscle. Several callers were concerned that they needed to report their calibration in the same medium as is used by the RPC to report dose. Others asked for the converse; for the RPC to report dose in the same medium as used by their institution for calibration.

The medium used for reporting dose is not necessarily the same as the medium in which the beam output is measured. TG-51 requires that beam output be measured in water, and many institutions report the calibration that way. In other words, they describe the output as 1.00 cGy to water per MU under reference conditions. However, quite a few institutions apply a 1% correction at the time of calibration, and adjust the treatment unit output to 1.00 cGy to muscle per MU under reference conditions. The RPC database indicates that 35% of the institutions report their calibration to muscle and the remaining 65% to water.

We would like institutions to indicate on the TLD forms how their beams are calibrated, not how patient doses are described. If a 1% correction is applied at the time of beam calibration, you should check the box for “muscle”. Otherwise you should check “water”, even if you apply the 1% correction when calculating MU settings for patient treatments.

It is also important that the values you report for MU setting and beam output, when multiplied together, equal the value you enter for dose delivered to the TLD. Some institutions try to conceal their muscle/water correction leaving us to guess what was really done. We’d prefer to know.

Finally, the RPC always reports the dose to muscle, because the cooperative study groups, such as RTOG, have asked that all patient doses be reported in terms of dose to tissue. We’d be happy to explain how this affects individual TLD results by telephone. In general, and after any necessary correction for calibration protocol is applied, the RPC measured dose should agree with the stated dose from institutions that calibrate to muscle, and should be 1% smaller than the institution’s stated dose from institutions that calibrate to water.

For previous issues of the RPC Newsletter, please visit the FAQ page.

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