Recommendations for Quality Control of prostate brachytherapy with I-125 seeds, based on a survey of current practice in the Netherlands and Belgium.

1) After a written survey (34 hospitals), teams formed by members of a Working Group of the Dutch Commission on Radiation Dosimetry (NCS) visited 31 hospitals in the Netherlands and Belgium, where they measured 2-4 seeds with traceably calibrated equipment. Seeds were either loose seeds or randomly taken from strands.

Example results: ratio of measured source strength to manufacturer’s stated value for IBt InterSource 125I1L determined with the SI IVB1000 (left) and the PTW SourceCheck (right).

2) With locally used TPS’s, calculations were done for 5 different representative configurations and compared with calculations based on the AAPM TG-43 formalism.

Dose deviations encountered for the combination of Oncura 6711 seeds and the Variseed treatment planning system at different institutes (n=14, missing data for 3 institutes) in a number of points at different distances perpendicular to the seed axis in the 2D calculation test. Total dose delivered (black lines and left y-axis) and deviations from reference values (blue lines and right y-axis).

3) Samples from a total of 22 recommendations included in the Dutch Commission on Radiation Dosimetry report (in press, 2012):

- The local medical physicist should perform source strength measurements in terms of reference air kerma rate with traceably-calibrated equipment on a sample of sources taken from every batch of sources prior to clinical use.
- Certificates of a manufacturer or vendor should state the source strength of a batch of sources in terms of reference air kerma rate or air kerma strength.
- Commissioning of the TPS should include verification of the dose calculation algorithm and source data according to TG-43 (and updates). This should be repeated after every (major) software update.