Purpose: Giving guidelines and recommendations for Quality Control of prostate brachytherapy with I-125 seeds, based on an inventory of current practice in the Netherlands and Belgium.

Methods: A Working Group of the Dutch Commission on Radiation Dosimetry performed a written survey of current QC practice in 34 hospitals, of which 31 were also visited. For 2-4 of the locally used seeds Air Kerma Strength was measured with an SI IVB1000 well chamber and a PTW SourceCheck and compared with manufacturer's stated values and, if applicable, with a measurement with local equipment. With the locally used TPS's, calculations for 5 different representative configurations were performed and compared with calculations based on the AAPM TG-43 formalism.

Results: About 40% of the institutes responding to the written survey reported doing no verification measurements prior to clinical use of seeds. The remaining 60% only performed a constancy check, based on an average source strength value, obtained over a certain period of time. For lack of calibrated equipment, only few were able to perform measurements in terms of Air Kerma Strength. Three measurement devices were ADCL traceable, four were calibrated by the manufacturer.

For the two most frequently used seed types (Oncura Oncoseed 6711 and IBt Intersource 1251L) the lowest and highest measured ratio between manufacturer's stated value and value measured by the visiting team was 0.943 (Oncoseed/SourceCheck) and 1.047 (Intersource/Sourcecheck) respectively. The majority of measurements, however, showed a discrepancy <3%.

Four different TPS's were in use. The tests showed variations in dose calculations due to incorrect application of anisotropy models and application of obsolete source data.

Conclusions: In a report of the Dutch Commission on Radiation Dosimetry, the AAPM recommendations to perform seed measurements prior to the implantation procedure, using traceably calibrated equipment, are endorsed and QC recommendations for TPS's are formulated.