# Audit of transperineal LDR Permanent prostate brachytherapy implant quality

**Descriptor:**

This audit aimed to assess the dosimetric quality of LDR prostate brachytherapy implants at Belfast City Hospital. This service was initially offered at our centre in 2010 and audit were performed to ensure that our implants were reaching the required standards as set out by the RCR guidance published in 2012.

**Background:**

Permanent prostate brachytherapy is an effective radical treatment option for men with localised prostate cancer with outcomes strongly correlated with post-implant dosimetric indices. Post-implant dosimetry allows assessment of implant quality with adaption of planning and implant technique to maintain and improve subsequent quality.

## The Cycle

**The standard:**

As per RCR guidance, post implant dosimetry is considered satisfactory if:

• The V100 is >80%

• The D90 is >90% of the prescription dose

• The CT:ultrasound volume ratio is >0.9

(Where V100 = the percentage of the post implant CT-based prostate volume that received at least 100% of the prescribed dose and D90 =the minimum dose received by 90% of the post-implant CT-based prostate volume)

**Target:**

Less than 5% of implants should be suboptimal.

## Assess local practice

**Indicators:**

A prospective collated dosimetric database of the first 100 patients treated at our centre to look at number of suboptimal implants and assess why these occurred, using the above three measurements of dosimetry for all patients.

**Data items to be collected:**

For all patients post implant dosimetry should be measured to include:

• V100

• D90

• CT:USS volume ratio

**Suggested number:**

100 patients or all patients treated at centre within one year time frame.

**Suggestions for change if target not met:**

• If target is not met all suboptimal implants are to be peer reviewed with the implanting team

• Sector dosimetric analysis should be utilised to identify regions of relative under dosing or over dosing within the target

• A change of practice to occur so that needles are implanted in rows and seeds are deposited under sagittal USS control rather than single needle placement and axial US use

• The prospective database should be maintained and the process reaudited

**Resources:**

• Medical physics department

• Radiologist with interest in transrecctal US

• Clinical oncologist with LDR brachytherapy

**References:**

1. The Royal College of Radiologists. [Quality assurance practice guidelines for transperineal  LDR permanent seed brachytherapy of prostate cancer. 2012](http://www.rcr.ac.uk/sites/default/files/publication/BFCO(12)4_QA_prostate.pdf)

**Submitted by:**

Laura Mooney

**Co-authors:**

Darren Mitchell

AB Mohamed Yoosuf

Eoin Napier

Suneil Jain

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