# Audit of radiographer led plan selection in imaged guided adaptive radiotherapy (IGART) for bladder cancer

**Descriptor:**

In accordance with NRAG recommendation to maximise use of a multi-skilled workforce, we have implemented radiographer led on-line verification and plan selection for those who have completed in-house training for bladder IGART [1]. This audit was performed to ensure that radiographers achieving initial competency maintained appropriate standards for treatment delivery.

**Background:**

It is recognised that variation in bladder shape and position significantly compromises target coverage during standard radiotherapy despite use of large population based expansions at planning [2]. The availably of cone beam CT (CBCT) allows soft tissue visualisation immediately prior to treatment delivery and offers adaptive planning solutions to compensate for this day-to-day variation with both improved target coverage and normal tissue sparing [3]. The commonest strategy used is a plan of the day (PoD) approach [3, 4]. A library of plans is generated using variable margins. The best plan to fit is chosen based on CBCT assessment prior to each fraction.

## The Cycle

**The standard:**

a) online radiographer plan selection used for treatment is matched with off line plan selection by clinical oncologistb) coverage of the bladder as assessed on cone beam CT is in accordance with ICRU planning guidelines [5, 6].

**Target:**

a) >90% agreement between radiographer plan selection and clinician plan selection [4]b) coverage of the bladder as assessed on cone beam CT achieves D98% >95% of prescribed dose if IMRT is used or D95% >95% of the prescribed dose if 3DCRT is used

## Assess local practice

**Indicators:**

To evaluate whether standards and competency are being maintained for radiographer led bladder IGART

**Data items to be collected:**

Following treatment CBCT images to be imported into the planning system.Clinical oncologist to carry out off-line PoD selection for all pre-radiotherapy CBCTs.Bladder to be contoured on each CBCT and the isodoses overlaid to determine coverage achieved (D98%, D95%) at treatment.Time between pre and post radiotherapy CBCTs where available to be determined, as can be used as surrogate for plan selection and treatment delivery time.

**Suggested number:**

All bladder PoD IGART patients treated over 3-month period

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

Present findings at local radiotherapy audit meetingIdentify deficiencies in in-house trainingDevelop advanced competency-training workbook, illustrating consistent and inconsistent plan selectionRe-audit to ensure competencies maintained

**Resources:**

n/a

**References:**

1. 1. Radiotherapy: developing a world class service for England Report to Ministers from National Radiotherapy Advisory Group. 2007.2. Lalondrelle S, Huddart R: Improving radiotherapy for bladder cancer: an opportunity to integrate new technologies. Clin Oncol (R Coll Radiol) 2009, 21(5):380-384.3. Lalondrelle S, Huddart R, Warren-Oseni K, Hansen VN, McNair H, Thomas K, Dearnaley D, Horwich A, Khoo V: Adaptive-predictive organ localization using cone-beam computed tomography for improved accuracy in external beam radiotherapy for bladder cancer. Int J Radiat Oncol Biol Phys 2011, 79(3):705-712.4. McDonald F, Lalondrelle S, Taylor H, Warren-Oseni K, Khoo V, McNair HA, Harris V, Hafeez S, Hansen VN, Thomas K et al: Clinical implementation of adaptive hypofractionated bladder radiotherapy for improvement in normal tissue irradiation. Clin Oncol (R Coll Radiol) 2013, 25(9):549-556.5. ICRU Report 83 Prescribing, Recording, and Reporting Intensity-Modulated Photon-Beam Therapy (IMRT). 2010.6. International Commission on Radiation Units and Measurements. Prescribing, Recording and Reporting Photon Beam Therapy Report 62 (Supplement to ICRU Report 50). 1999, Bethesda: International Commission on Radiation Units and Measurements.

**Editor's comments:**

n/a

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