A Review of UK Guidelines for Prostate Brachytherapy

Sarah Aldridge
Head of Brachytherapy Physics
Guy’s & St. Thomas’ NHS Foundation Trust
Overview

- Review of current guidelines for LDR & HDR prostate brachytherapy
- Incident at GSTT requiring physics advice
- How this changed our practice
- Discussion points
Guidelines

• Fall under different categories:
  – NHS commissioning board guidance
  – Treatment planning recommendations
  – Quality assurance guidelines
  – Radiation protection advice

• Not all are published in the UK but have the involvement of UK authors and are widely accepted as the standard
NHS Guidance

• 2013/2014 NHS Standard Contract – for brachytherapy and molecular radiotherapy
• This is interim guidance and a review is yet to be finalised
• All brachytherapy treatments not just prostate
• For prostate discusses LDR & HDR
• This document refers to other published recommendations & guidance
NHS Guidance

Interstitial LDR Prostate Brachytherapy

• In line with the RCR publication in 2012, plans should be in place to concentrate this activity to meet the expectation that each oncologist should be performing 25 cases per year

• It is expected that centres delivering brachytherapy will develop plans during 2013 to meet this requirement
It is expected that:

- At least 10 patients per year are treated per centre
- Individual clinicians and physics staff should ensure continued practical experience
- All forms of radiotherapy are part of an overall cancer management and treatment pathway
- Decisions on the overall treatment plan must relate back to an MDT discussion and decision
ESTRO Guidelines

• Not published in the UK but UK authors involved and are widely accepted as the standard to follow

• LDR prostate brachytherapy:
  – ESTRO/EAU/EORTC recommendations on permanent seed implantation for localised prostate cancer, Rad Onc 2000, 57:315-321

• HDR prostate brachytherapy:
Updated Guidelines

- LDR prostate brachytherapy (2007):

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**Guidelines prostate brachytherapy**

Tumour and target volumes in permanent prostate brachytherapy: A supplement to the ESTRO/EAU/EORTC recommendations on prostate brachytherapy

Carl Salembier\textsuperscript{a}, Pablo Lavagnini\textsuperscript{b}, Philippe Nickers\textsuperscript{c}, Paola Mangili\textsuperscript{d}, Alex Rijnders\textsuperscript{a}, Alfredo Polo\textsuperscript{e}, Jack Venselaar\textsuperscript{f}, Peter Hoskin\textsuperscript{g,\ast}, on behalf of the PROBATE group of GEC ESTRO

\textsuperscript{a}Department of Radiation Oncology, Europe Hospitals, Brussels, Belgium, \textsuperscript{b}Department of Radiation Oncology, MultiMedica Institute, Milan, Italy, \textsuperscript{c}Department of Radiation Oncology, Domaine Universitaire du Sart Tilman, Liège, Belgium, \textsuperscript{d}Department of Medical Physics, IRCCS, S-Raffaele, Milan, Italy, \textsuperscript{e}Department of Radiation Oncology, Catalan Institute of Oncology, Barcelona, Spain, \textsuperscript{f}Department of Radiotherapy, Dr B. Verbeeten Institute, Tilburg, The Netherlands, \textsuperscript{g}Mount Vernon Cancer Centre, Northwood, UK
The aim of this paper is to supplement the GEC/ESTRO/EAU recommendations for permanent seed implantations in prostate cancer.

Recommendations on target and organ at risk definitions.

Provides dosimetry parameters related to prescription dose for optimal treatment planning.

Provides dosimetry parameters to be reported on post implant planning.
Updated Guidelines

- HDR prostate brachytherapy (2013):

**GEC/ESTRO recommendations on high dose rate afterloading brachytherapy for localised prostate cancer: An update**

Peter J. Hoskin\textsuperscript{a,*,1}, Alessandro Colombo\textsuperscript{b,1}, Ann Henry\textsuperscript{c,1}, Peter Niehoff\textsuperscript{d,1}, Taran Paulsen Hellebust\textsuperscript{e,1}, Frank-Andre Siebert\textsuperscript{f,1}, Gyorgy Kovacs\textsuperscript{g,1}

\textsuperscript{a} Mount Vernon Cancer Centre, Northwood, UK; \textsuperscript{b} Department of Radiotherapy, Manzoni Hospital, Lecco, Italy; \textsuperscript{c} St. James Institute for Oncology, Leeds, UK; \textsuperscript{d} Department of Radiotherapy, City Hospital Cologne, Germany; \textsuperscript{e} DNR Norwegian Radium Hospital, Oslo, Norway; \textsuperscript{f} Universitätsklinikum Schleswig-Holstein, Kiel; and \textsuperscript{g} University Hospital Schleswig-Holstein Campus Lübeck, Germany
GEC ESTRO HDR (2013)

- Update of the 2005 GEC/ESTRO-EAU recommendations
- Updated to reflect emerging roles of HDR afterloading BT in prostate cancer
- Recommendations for patient selection, treatment facility, implant technique, dose prescription and dosimetry reporting are given
Current Guidelines

- Quality assurance practice guidelines for transperineal LDR permanent seed brachytherapy of prostate cancer, RCR Sept 2012
- These guidelines were written by a panel of clinicians and physicists who have a large experience of LDR permanent seed prostate brachytherapy
- Guidance on training and quality assurance to produce high quality implants
- Recommends each oncologist performs 25 implants per year after an initial 3yr period
Current Guidelines

- The role and development of afterloading brachytherapy services in the UK, RCR Sept 2012
- Review of resources for all brachytherapy treatments in the UK
- 3 areas: Gyn BT, interstitial & intraluminal and LDR seeds
- Sets out minimum standards (staffing levels, patient throughput, time frame to achieve, MDT involvement & audit)
- Refers to QA guidelines for LDR prostate BT
Current Guidelines

- UK Guidance on Radiation Protection Issues following Permanent Iodine-125 Seed Prostate Brachytherapy
- Purpose to give a common approach within the UK to radiation protection issues which may arise following brachytherapy to the prostate using permanent implantation of radioactive seeds
- Scenario calculations
  - Death of a patient <2yrs after implant
  - Surgical intervention
  - Doses to family members (pregnant spouse, children)
Future Guidelines

- Recent developments for LDR permanent seed prostate brachytherapy treatments include focal treatments
- No formal guidance
- What about HDR focal treatments?
Future Guidelines

• Would it be useful to have the same practice guidelines for HDR prostate brachytherapy now that its popularity has increased in the UK?

• Popularity of HDR is increasing. If centres are performing both LDR & HDR implants what should the recommended minimum number of implants per yr be?
Physics Advice

- Incidents that I have encountered where radiation protection advice was required after a prostate seed implant:
  - Surgical intervention advice given
  - Death after a seed implant (<2yrs)
  - Salvage treatment after seed implant
  - Sexually transmitted seeds
  - Estimation of foetal dose

- Most of these incidents are covered in:
GSTT offers prostate brachytherapy as a day case procedure which combines all aspects into a single hospital visit.

All patients treated receive radiation protection advice prior to their implant and also take home a card summarising this advice after the implant.
Sexually Transmitted Seeds

- A patient contacted our prostate cancer nurse practitioner 3 weeks after implant informing her a lady he had been intimate with had reported symptoms of vaginal bleeding and a sore throat.

- He had not used a condom as advised during sexual activities and could this be a result of an implanted seed being transferred?
Detecting a Single Seed?

- The patient & lady in question were asked to attend clinic the next day.
- Prior to the visit a mini experiment was carried out to ascertain if a single seed could be detected within a person.
- Used remaining seed (activity now ~11MBq) from the batch used for the actual patients implant.

**Measurements with Type 44B Radiation Monitor**

<table>
<thead>
<tr>
<th>Bolus Thickness (cm)</th>
<th>Bkg</th>
<th>5.5</th>
<th>7.5</th>
<th>8.5</th>
<th>10.5</th>
<th>12.5</th>
<th>15.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface (cps)</td>
<td>4</td>
<td>off scale</td>
<td>5000</td>
<td>4500</td>
<td>2000</td>
<td>850</td>
<td>300</td>
</tr>
<tr>
<td>20 cm (cps)</td>
<td>4</td>
<td>1250</td>
<td>700</td>
<td>600</td>
<td>300</td>
<td>150</td>
<td>70</td>
</tr>
</tbody>
</table>

Measurements (cps) showed a seed could be located up to 15cm deep in a person with the radiation monitor away from the surface of the body.
The lady attended clinic:

– team discussed the situation
– sweep of her body with radiation monitor
– urine sample monitored

No seed was detected with a high degree of certainty
No radiation was detected above background levels within the urine sample
Lessons Learned

- Raised the issue of signed consent - updated patient consent form
- Updated our patient information leaflet to explain the responsibilities patients have for others after implant
- Implemented patient seminars
Patient Seminars

- Seminar length 1hr, two presentations
- Physicist – technical aspects of procedure plus radiation protection advice
- Nurse – coping with the after effects
- Patients have time to ask questions through out
Patient Satisfaction Survey

- All responders said that they would recommend the seminar to other men.

- First rate seminar, informative and reassuring.

- I understand so much more about my treatment and feel much less scared now.

- I was too embarrassed to ask questions myself but I was able to listen to all the other men and learnt so much.

- It took the mystery out of the procedure for me.
Patient Satisfaction Survey (50pts)

- Confident before group seminar – 62%
- More confident after group seminar – 100%
- Satisfaction with seminar – 100%
- Information overload – 0%
- Preference of individual appointments – 2%
- Not comfortable asking questions in a group setting – 6%
- Providing this education in a group setting has saved our trust money as less patient telephone conversations and a reduction in nursing hours
- Happy confident patients
Any Questions?
sarah.aldridge@gstt.nhs.uk
Opinions Required

- Recommended number of LDR & HDR procedures?
  - 25 implants per oncologist 15 LDR & 10 HDR
- HDR quality assurance guidelines?
  - Training & staffing requirements
- Focal brachytherapy guidelines?
  - LDR & HDR? Dosimetry parameters