# A Review of UK Guidelines for Prostate Brachytherapy


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# 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

# NHS Guidance

## Interstitial HDR Prostate Brachytherapy

- 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:**
  - GEC/ESTRO-EAU recommendations on temporary brachytherapy using stepping sources for localised prostate cancer, Rad Onc, Feb 2005, 74:137-148

# Updated Guidelines

- LDR prostate brachytherapy (2007):

Radiotherapy and Oncology 83 (2007) 3–10
www.thegreenjournal.com

*Guidelines prostate brachytherapy*

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

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

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# GEC ESTRO LDR (2007)

- 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):

Radiotherapy and Oncology 107 (2013) 325–332

Contents lists available at SciVerse ScienceDirect

Radiotherapy and Oncology

journal homepage: www.thegreenjournal.com


GEC/ESTRO recommendations

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

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

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# 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

- **IPEM Report 106, published 2012**
- 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

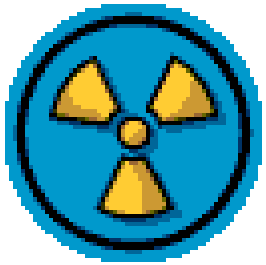
- Recent developments for LDR permanent seed prostate brachytherapy treatments include focal treatments
- No formal guidance
- Langley et al. *Report of a consensus meeting on focal LDR brachytherapy for prostate cancer*, BJUI 109, Supplement 1, 7-16, 2012
- What about HDR focal treatments?

# 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

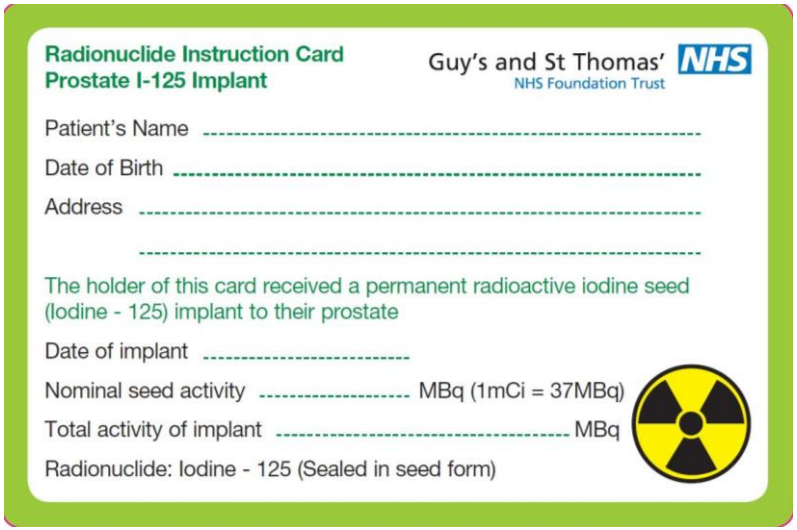
- Incidents that I have encountered where radiation protection advice was required after a prostate seed implant:
  - Surgical intervention advice given
  - Death after a seed implant (<2yrs)
  - Salvage treatment after seed implant
  - Sexually transmitted seeds
  - Estimation of foetal dose



- Most of these incidents are covered in:
  - IPEM Report 106, 2012

# GSTT Prostate Brachytherapy

- 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



**Radionuclide Instruction Card**
**Prostate I-125 Implant**

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Patient's Name ----------

Date of Birth ----------

Address ----------

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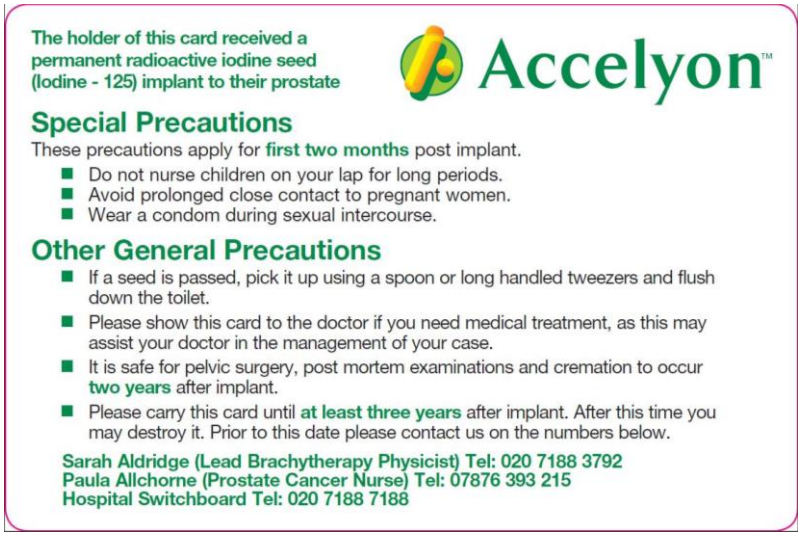
The holder of this card received a permanent radioactive iodine seed (Iodine - 125) implant to their prostate

Date of implant ----------

Nominal seed activity ---------- MBq (1mCi = 37MBq)

Total activity of implant ---------- MBq

Radionuclide: Iodine - 125 (Sealed in seed form)



The holder of this card received a permanent radioactive iodine seed (Iodine - 125) implant to their prostate

Accelyon™

## Special Precautions

These precautions apply for **first two months** post implant.

- Do not nurse children on your lap for long periods.
- Avoid prolonged close contact to pregnant women.
- Wear a condom during sexual intercourse.

## Other General Precautions

- If a seed is passed, pick it up using a spoon or long handled tweezers and flush down the toilet.
- Please show this card to the doctor if you need medical treatment, as this may assist your doctor in the management of your case.
- It is safe for pelvic surgery, post mortem examinations and cremation to occur **two years** after implant.
- Please carry this card until **at least three years** after implant. After this time you may destroy it. Prior to this date please contact us on the numbers below.

**Sarah Aldridge (Lead Brachytherapy Physicist) Tel: 020 7188 3792**
**Paula Allchorne (Prostate Cancer Nurse) Tel: 07876 393 215**
**Hospital Switchboard Tel: 020 7188 7188**

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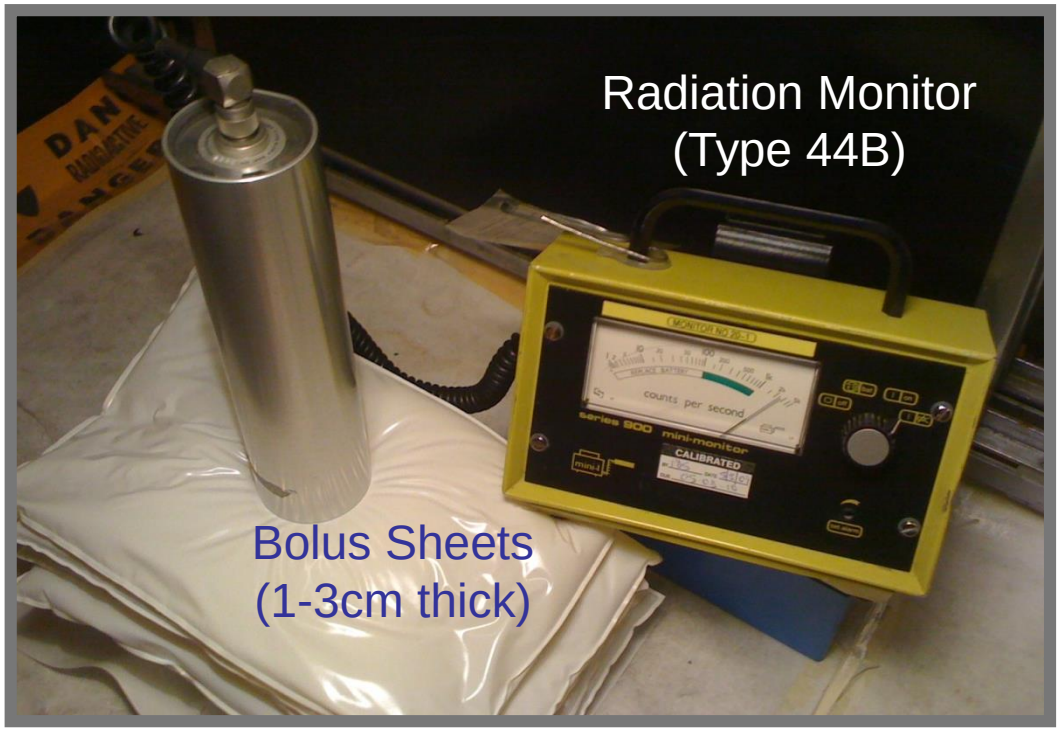
# Sexually Transmitted Seeds

- 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

| Bolus Thickness (cm) | Bkg | 5.5 | 7.5 | 8.5 | 10.5 | 12.5 | 15.5 |
|---|---|---|---|---|---|---|---|
| Surface (cps) | 4 | off scale | 5000 | 4500 | 2000 | 850 | 300 |
| 20cm (cps) | 4 | 1250 | 700 | 600 | 300 | 150 | 70 |

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

# Assessing the Lady

The lady attended clinic:

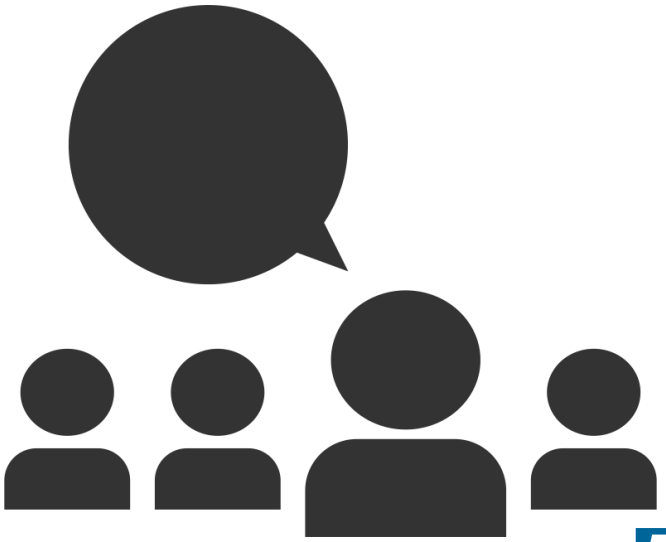
- team discussed the situation
- sweep of her body with radiation monitor
- urine sample monitored

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



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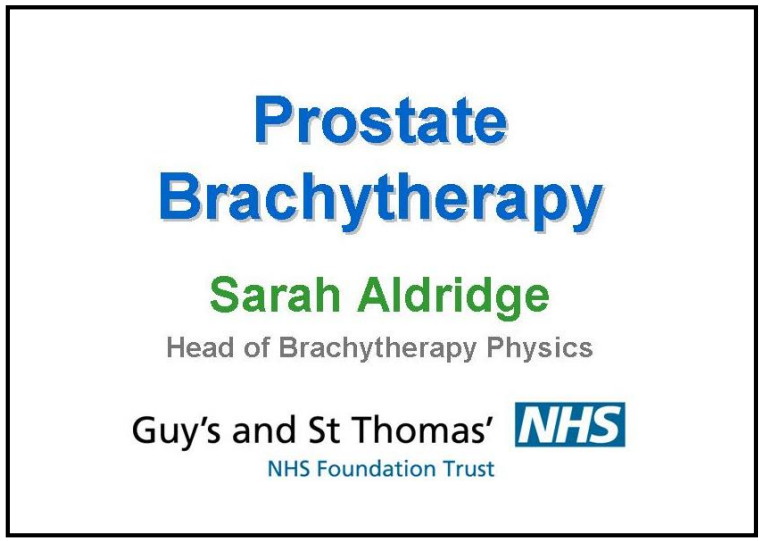
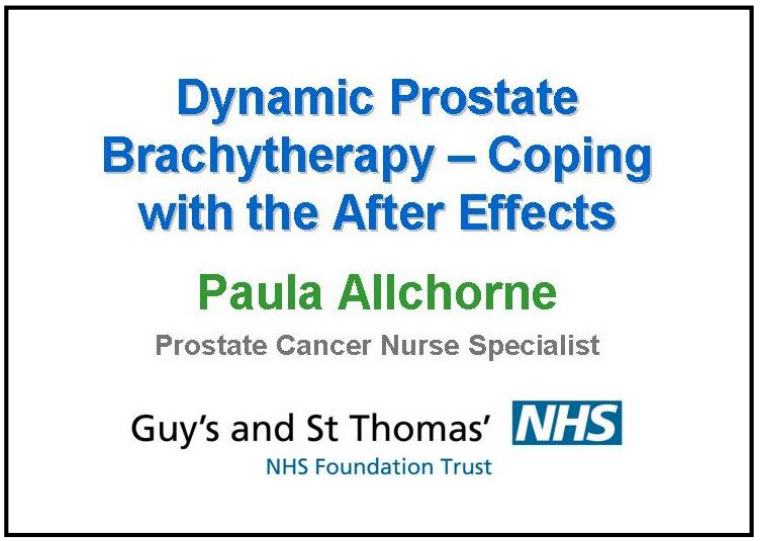
# Patient Seminars




- 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

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# 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*

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# 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?

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# 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