



Guy's and St Thomas'
NHS Foundation Trust **NHS**



Members' Health Seminar Prostate Cancer

Radiotherapy

Tuesday 8th March 2016

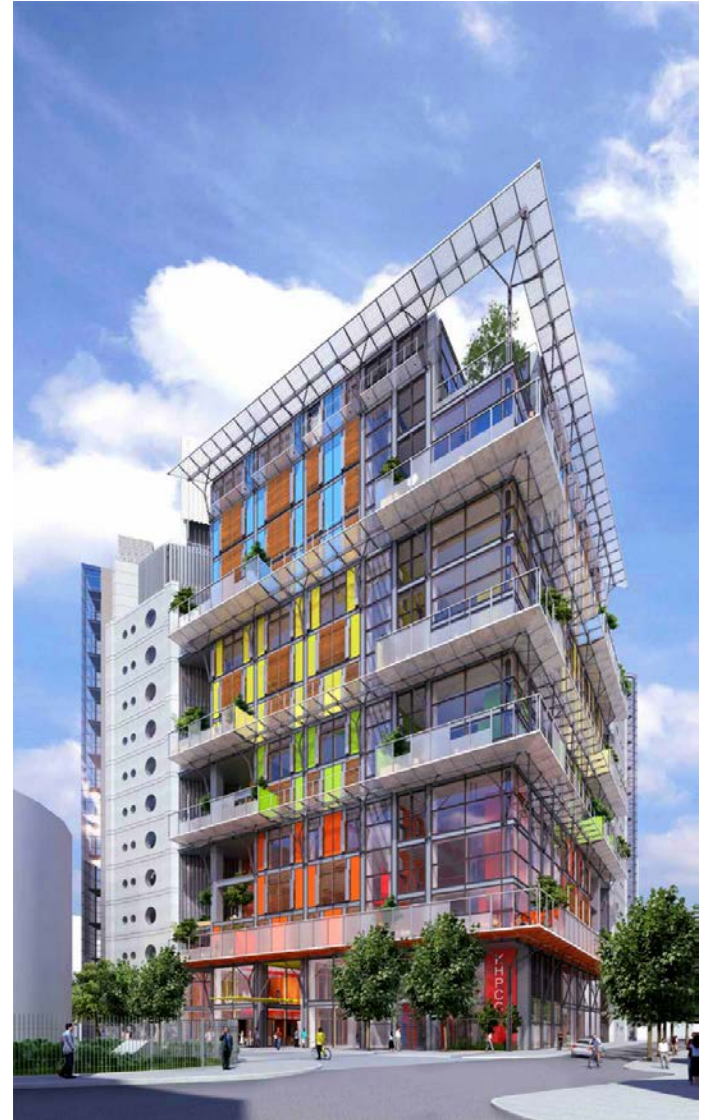
Simon Hughes

Consultant Clinical Oncologist
Guy's & St. Thomas NHS Trust

Honorary Senior Lecturer
King's College London

Overview

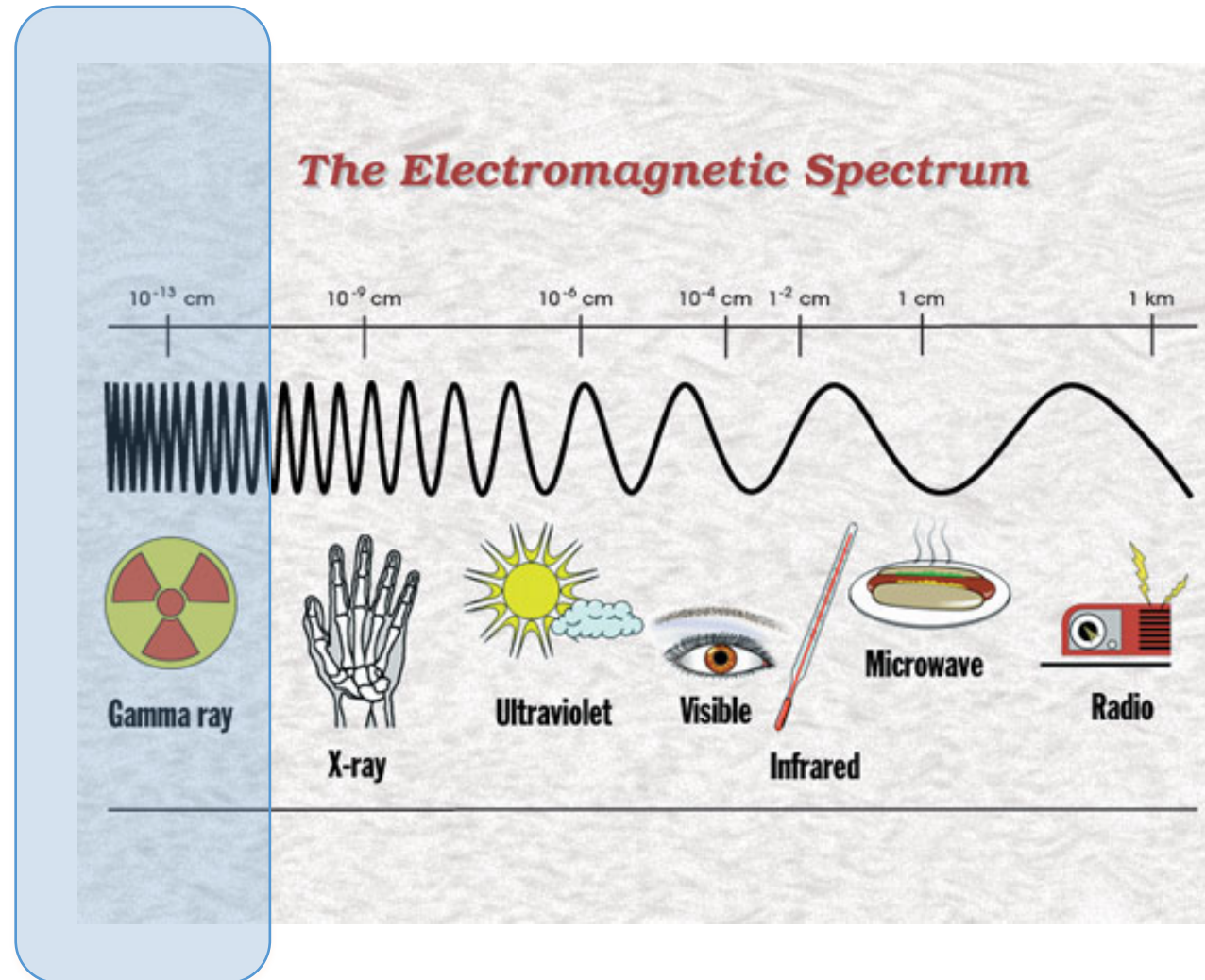
- What is Radiotherapy?
- Intensity Modulated Radiotherapy
- Image Guided Radiotherapy
- HDR Brachytherapy



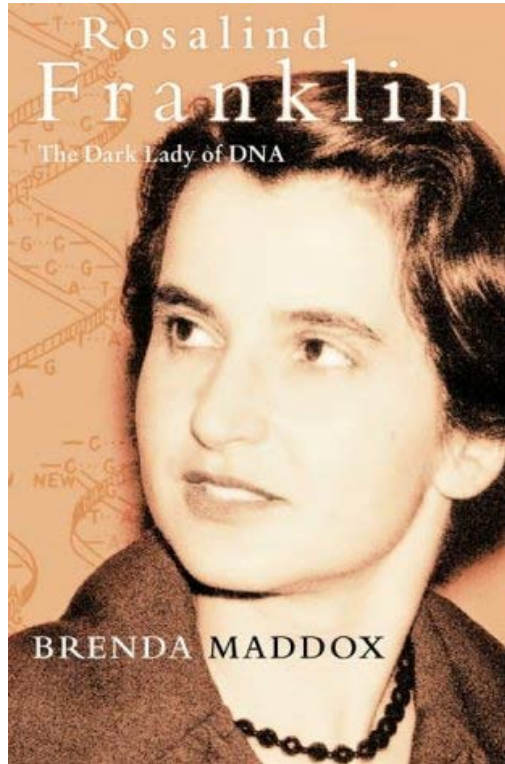
Energy



Therapeutic Radiation



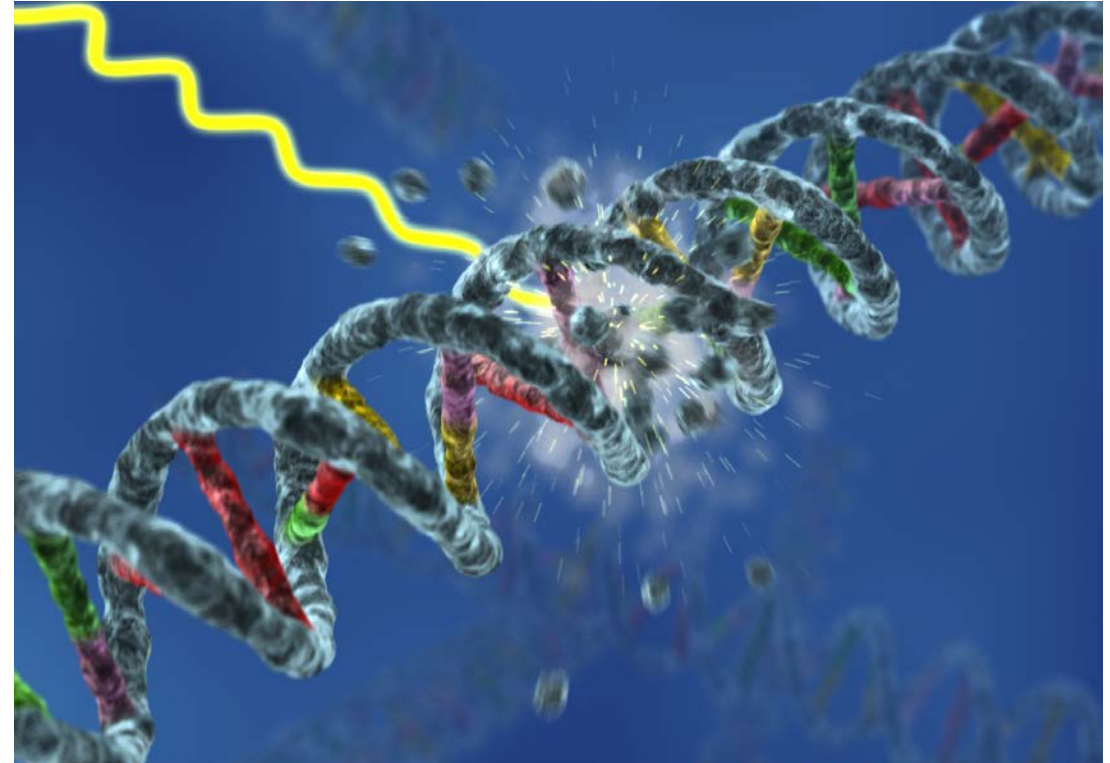
Therapeutic Radiation



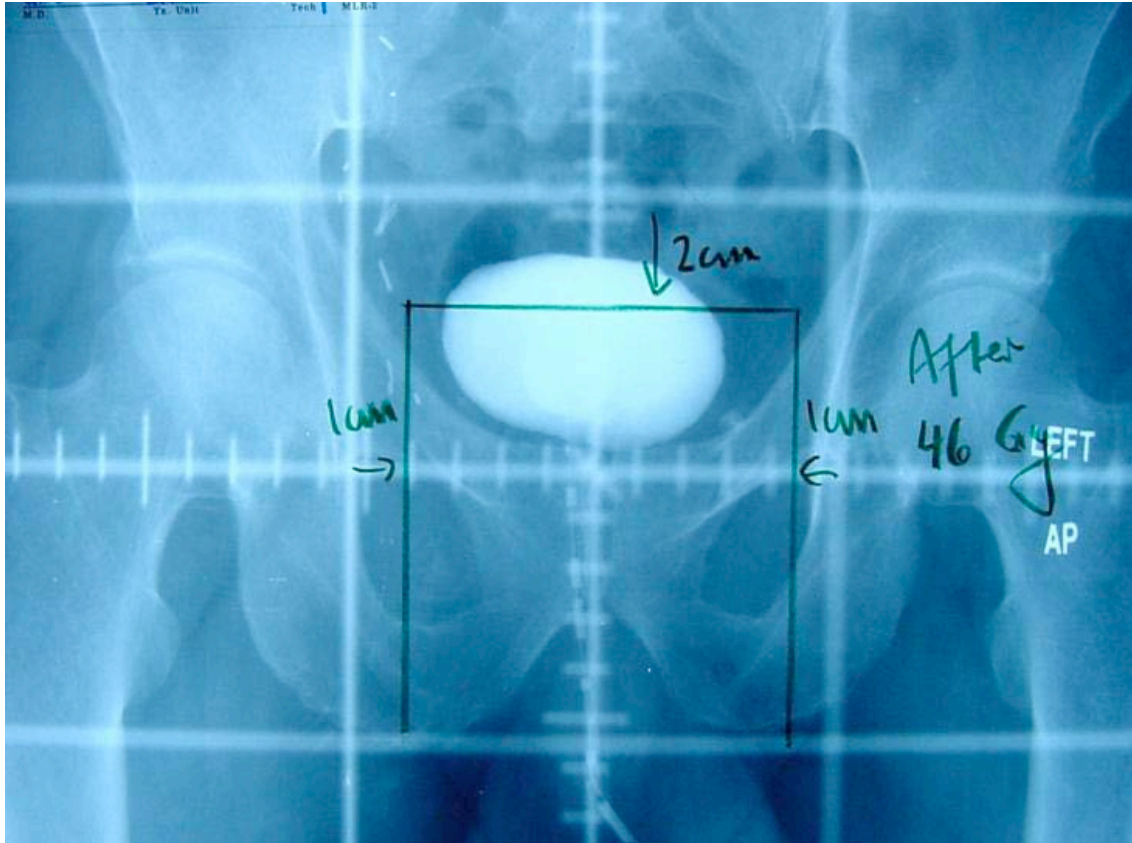
Died 1958



Nobel Prize 1962



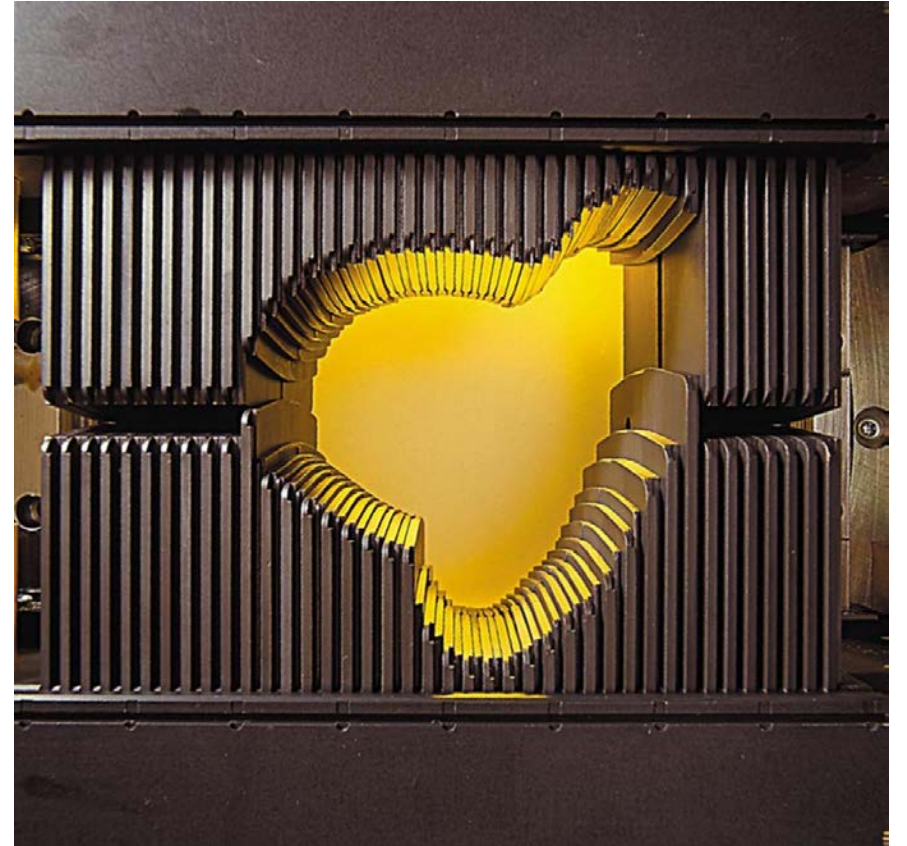
Radiotherapy Past



Radiotherapy Evolution

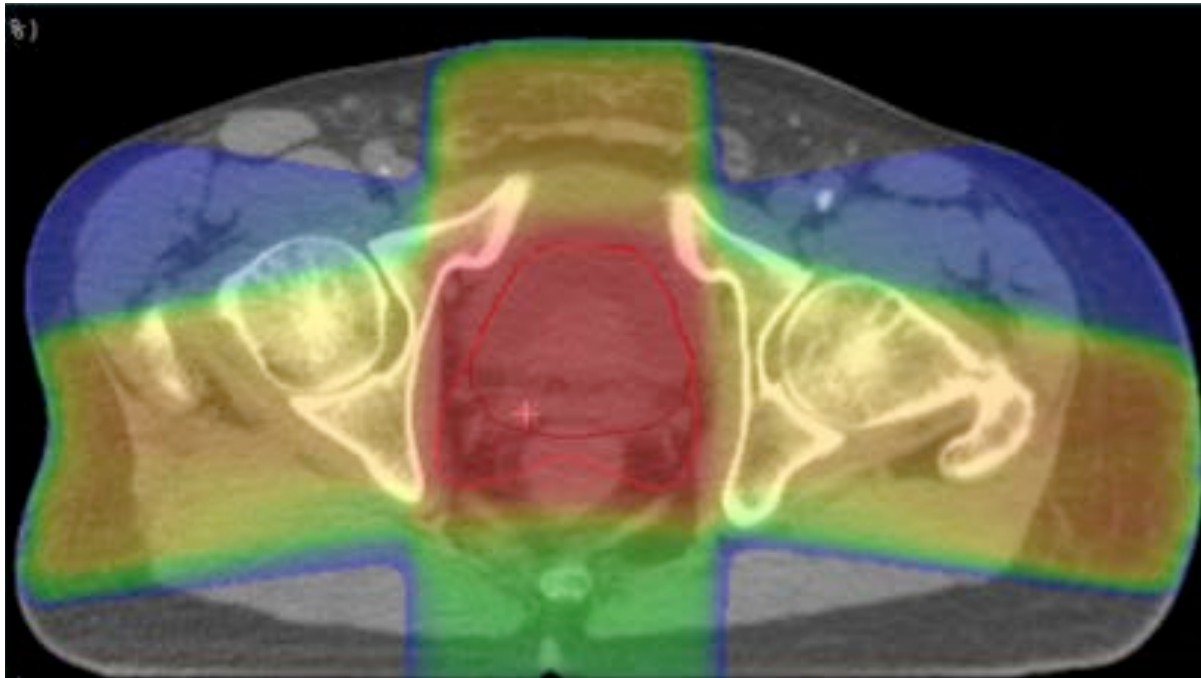


Radiotherapy Evolution

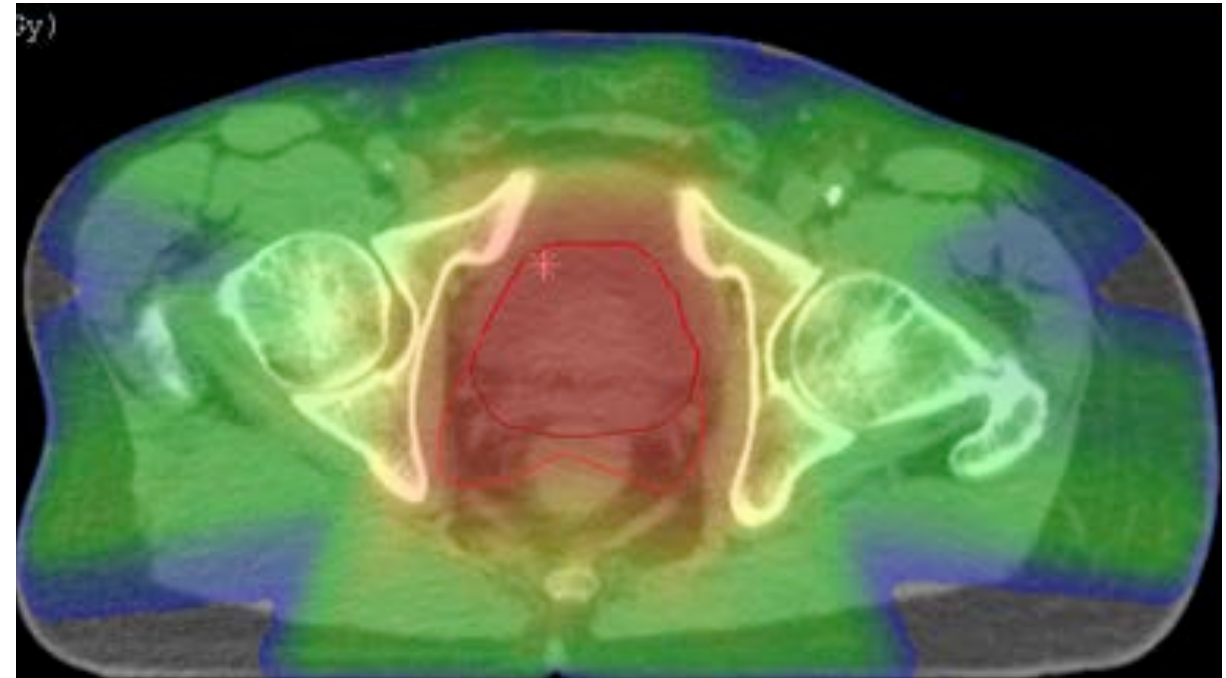


Intensity Modulated Radiotherapy

3D-CRT



Static-Gantry IMRT



Side Effects: Prostate Radiotherapy

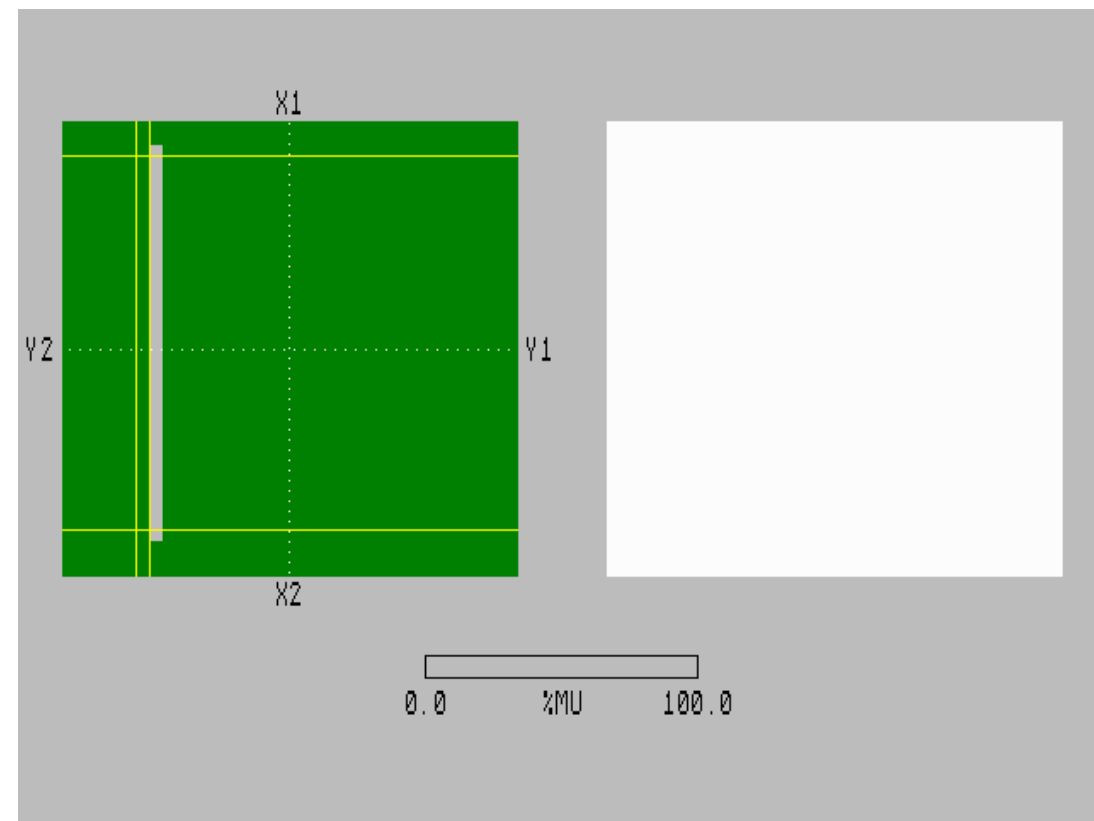
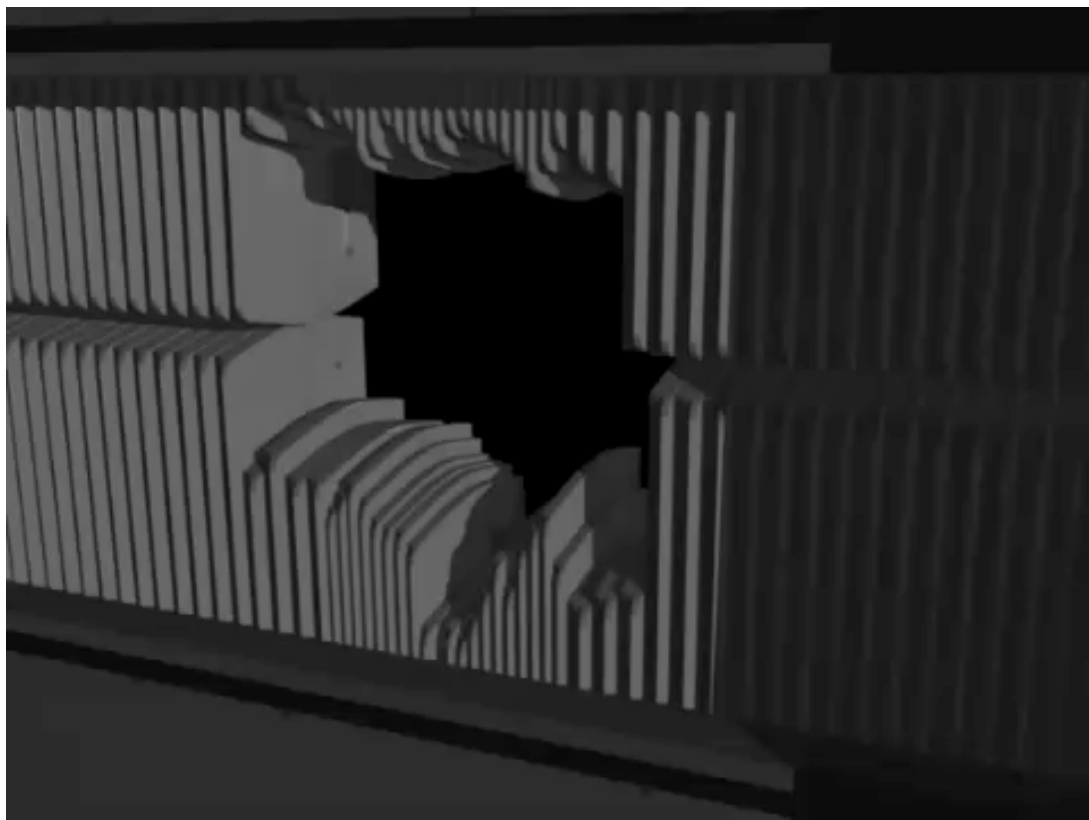
Acute

- Lethargy
- Flatulence
- Diarrhoea / mucus
- Cystitis symptoms

Late

- Impotence
- Mild change in bowel habit
- Rare:
 - Rectal bleeding
 - Poor urinary flow
 - Secondary cancers
 - 1% at 10 years

Intensity Modulated Radiotherapy



Radiotherapy Present



Image Guided Radiotherapy



Image Guided Radiotherapy

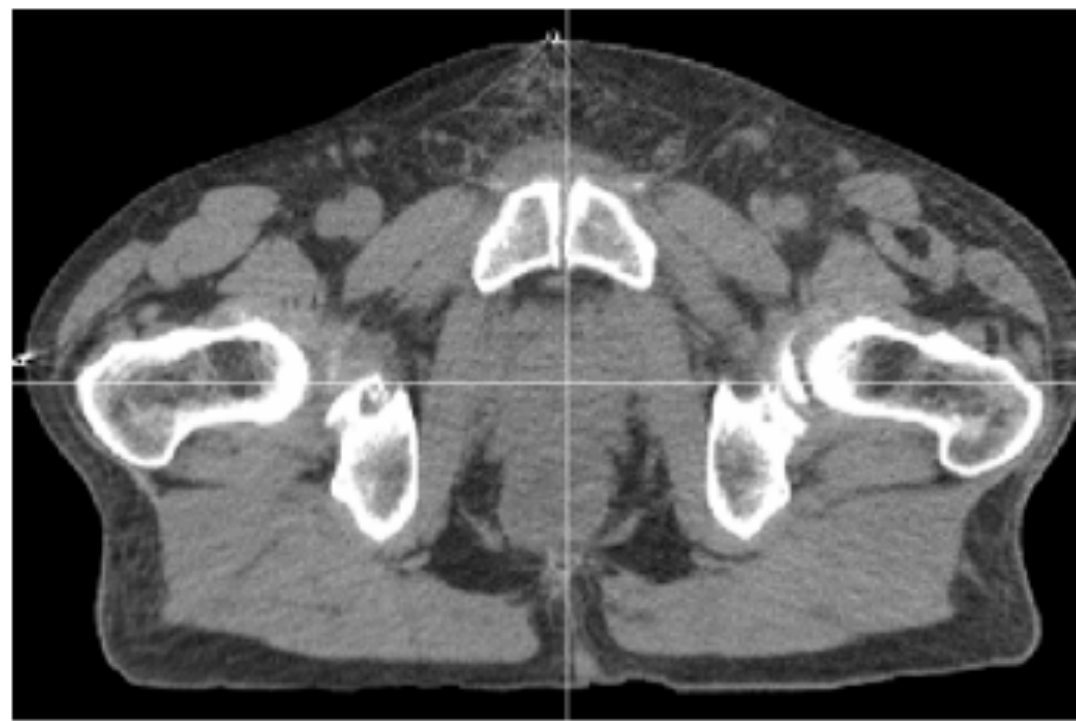
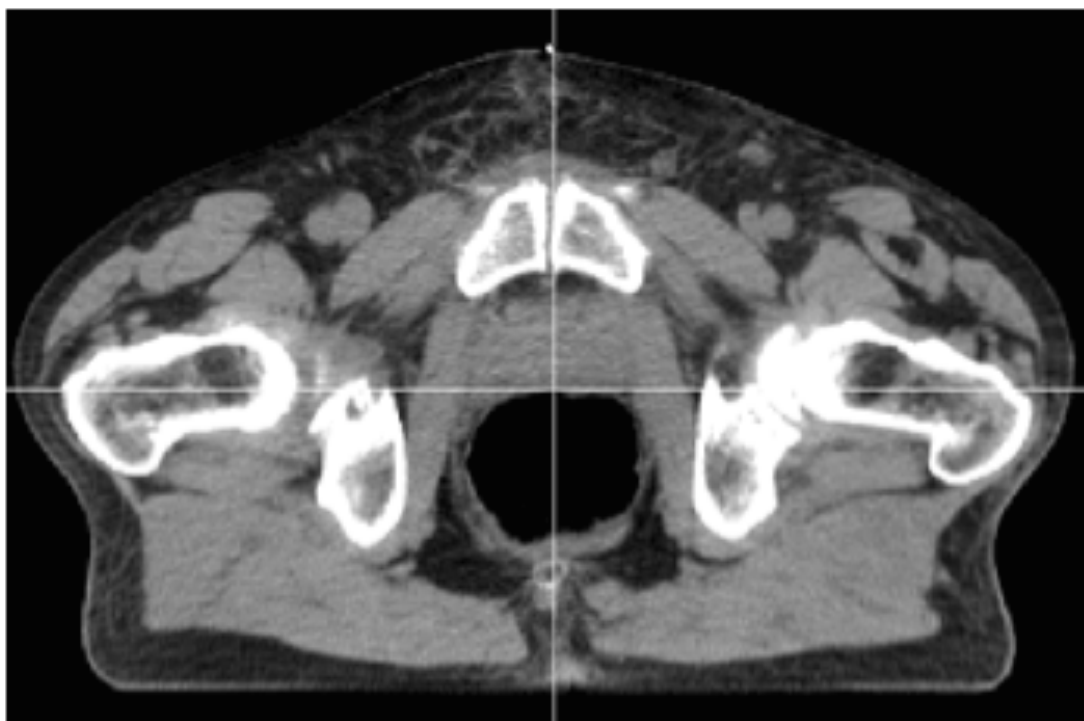


Image Guided Radiotherapy

Gold Seeds

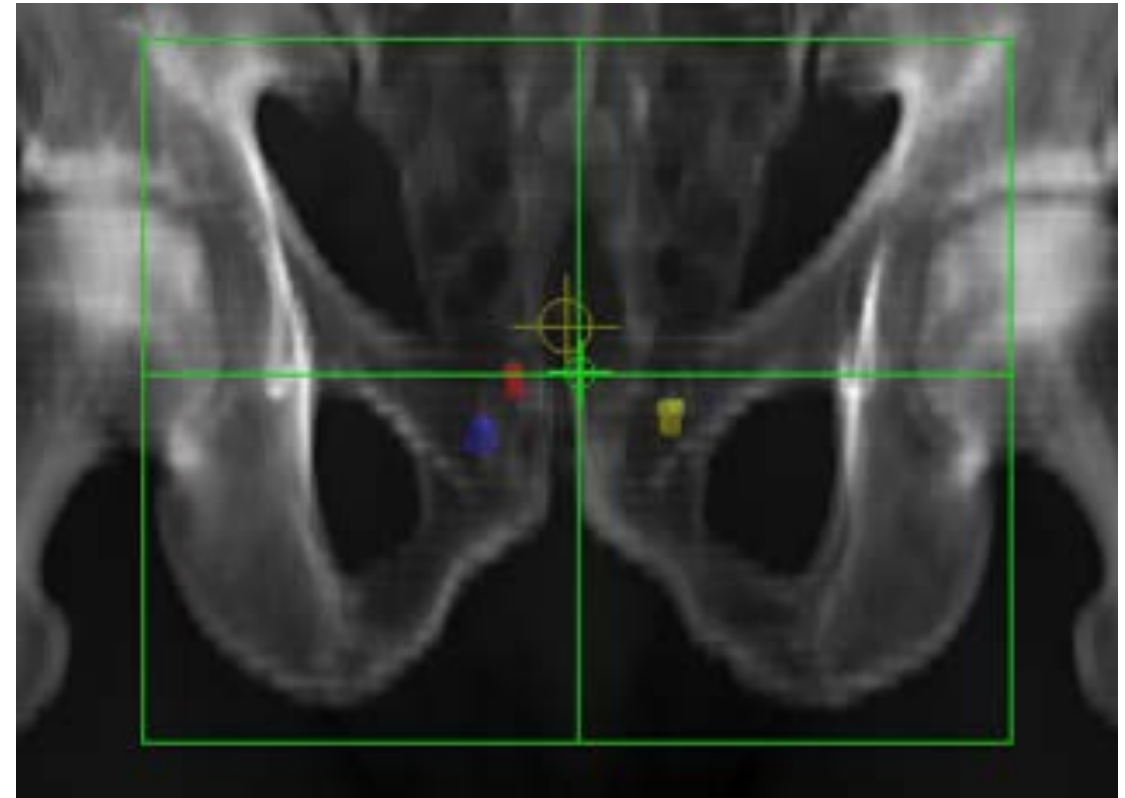
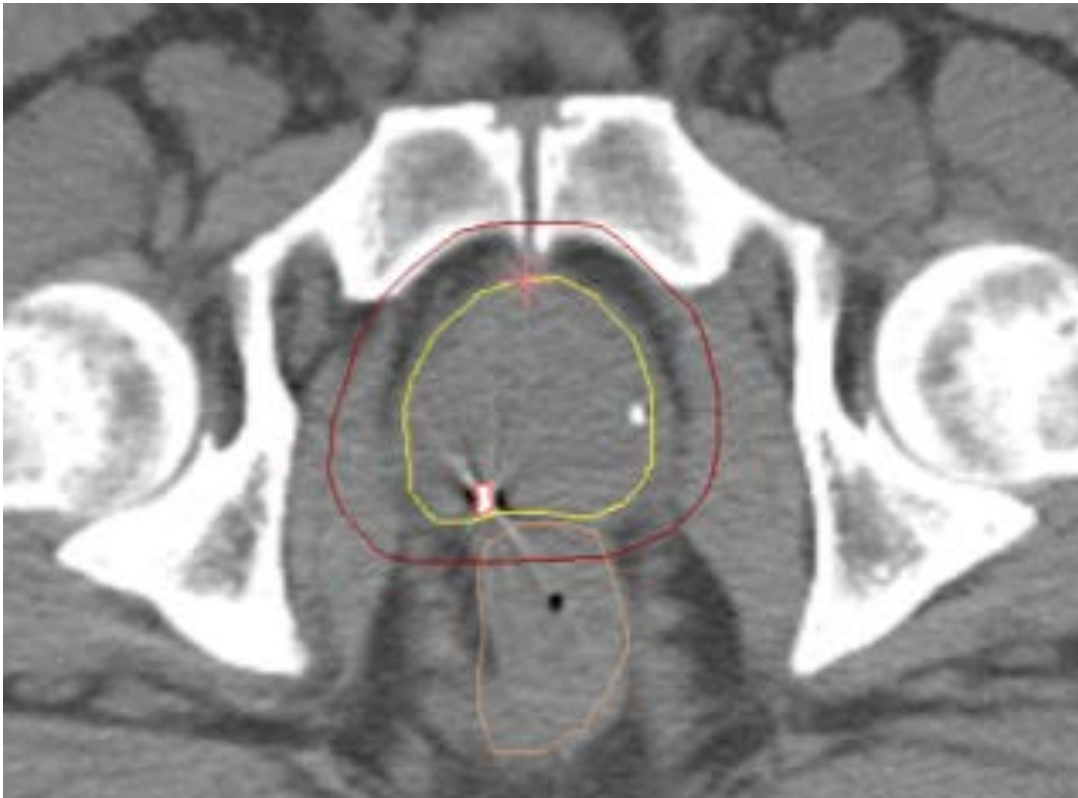
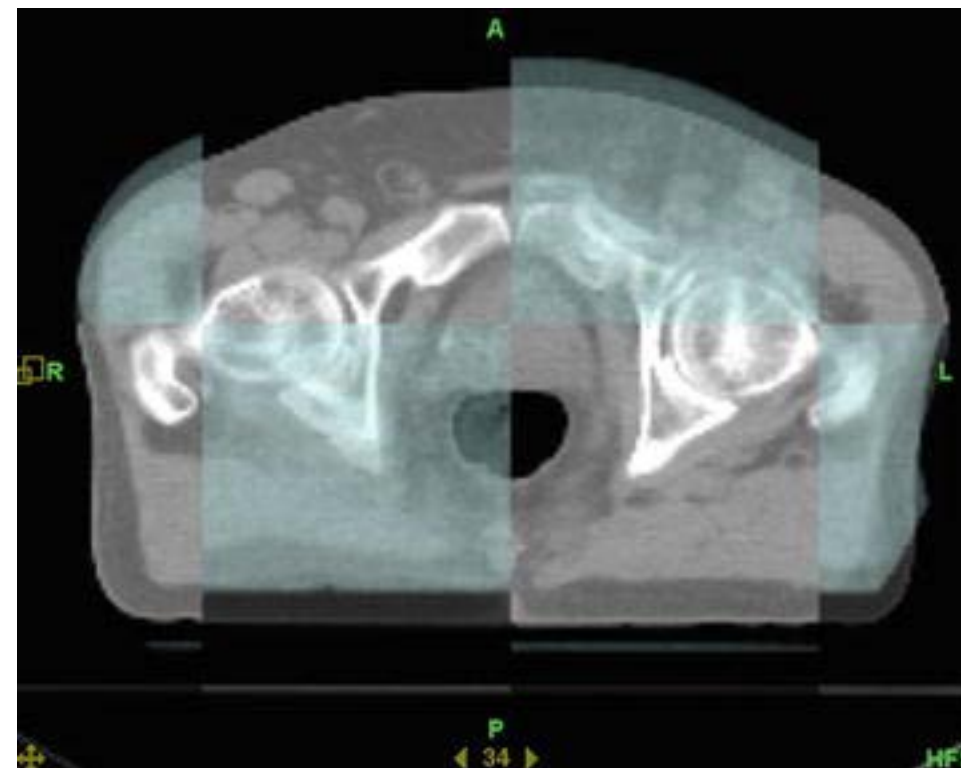
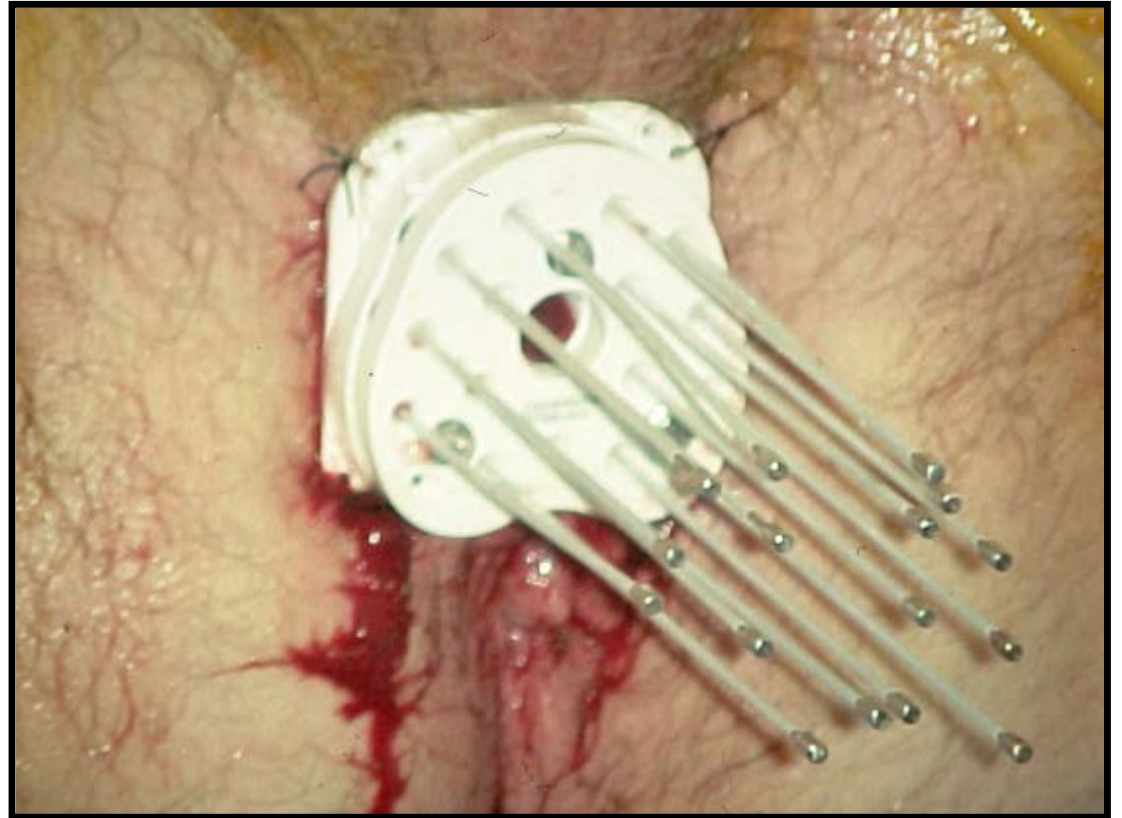
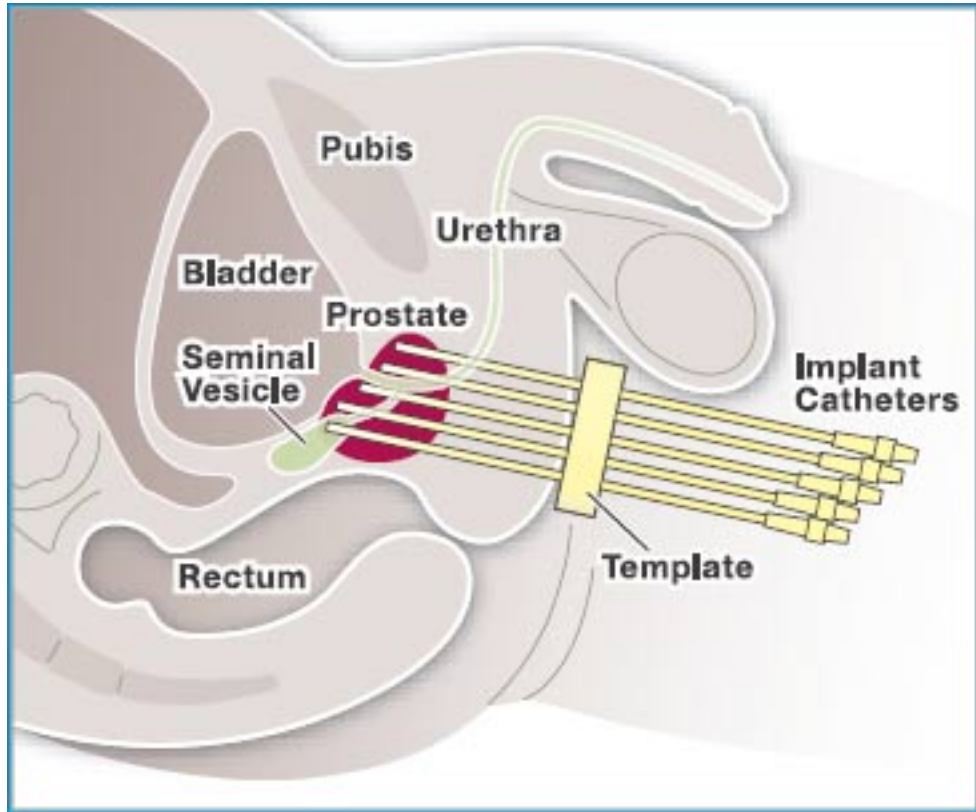


Image Guided Radiotherapy

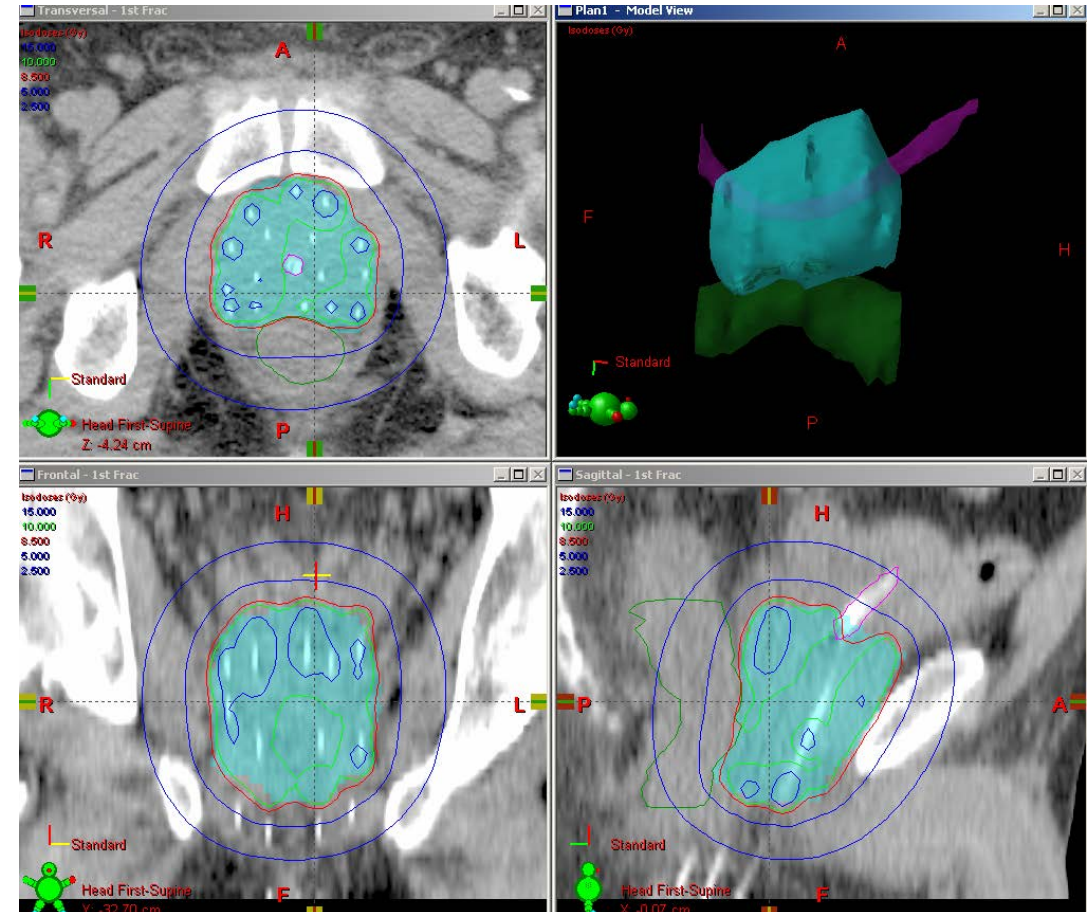
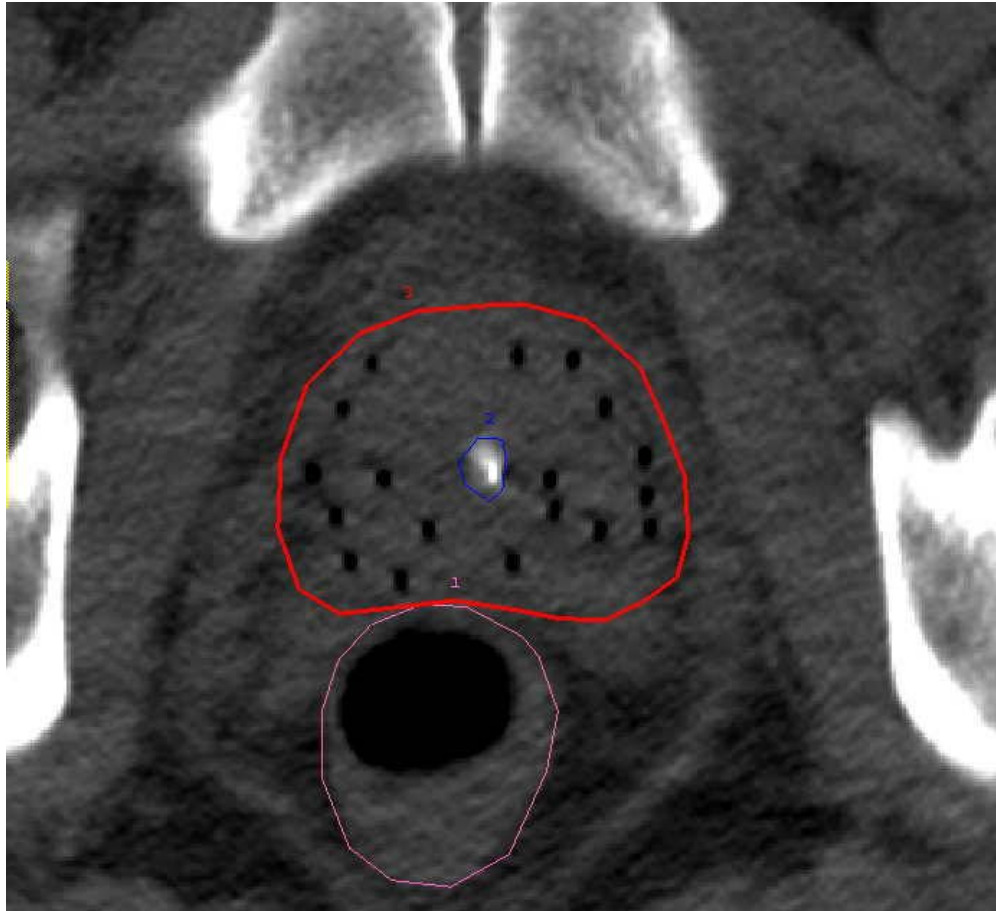
kV cone-beam CT



HDR Brachytherapy



HDR Brachytherapy

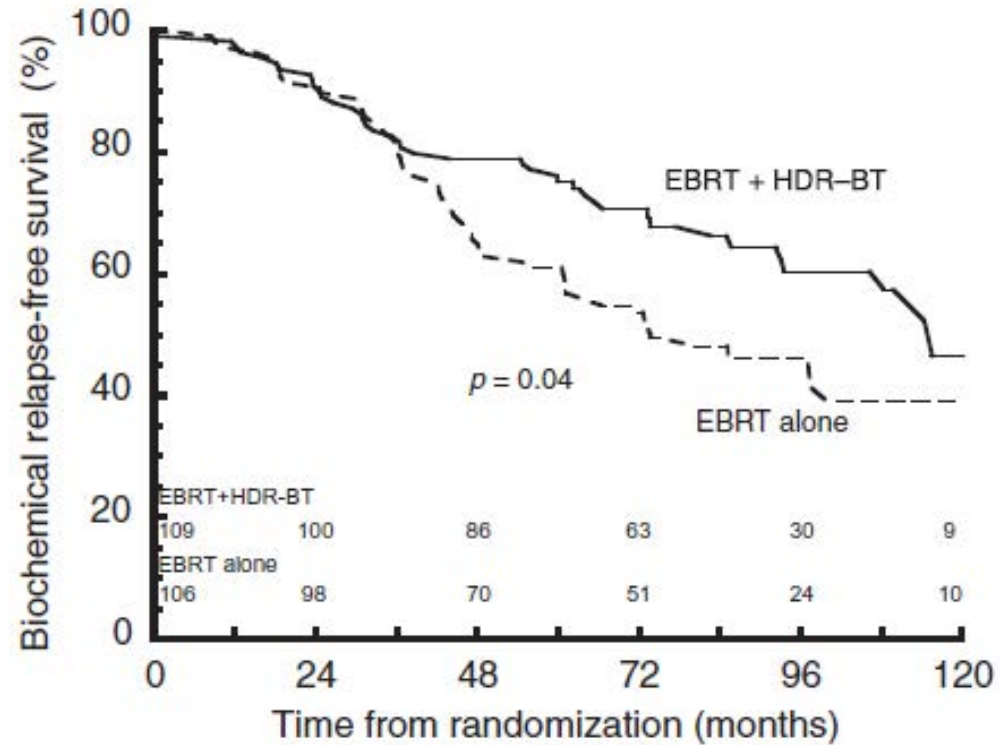


HDR Brachytherapy

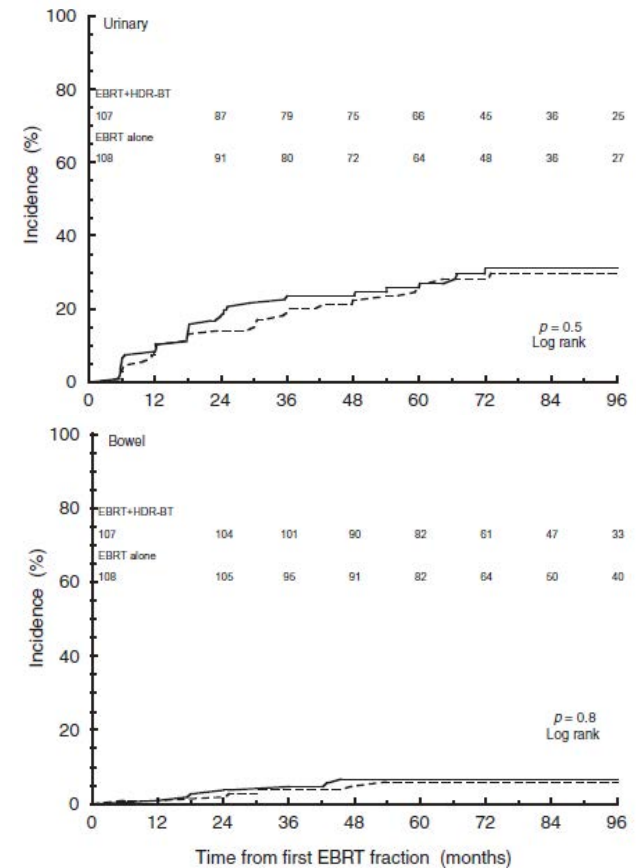


HDR Brachytherapy

PSA PFS



Toxicity



HDR Brachytherapy

NICE Guidelines: 2014

“Consider high-dose rate brachytherapy in combination with external beam radiotherapy for men with intermediate- and high-risk localised prostate cancer”

National Prostate Cancer Audit: 2014

- 54 UK Radiotherapy Centres
 - 11 offer HDR brachy
 - 40% of Specialist MDTs offer HDR brachy
- London:
 - UCLH
 - Mount Vernon

HDR Brachytherapy



Summary

- Rapid advances in computing and imaging over the last 20 years
- Rapid evolution of radiotherapy techniques:
 - IMRT / IGRT
 - Tumour: Dose escalation
 - Normal tissue: Dose reduction
- HDR Brachytherapy
 - Cost-effective means of further improving the RT therapeutic ratio

Any Questions?