Radiotherapy and prostate cancer – an overview… and some of the latest research

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Summary

I will be covering:

- Radiotherapy:
  - Types of radiotherapy
  - Overview of prostate cancer management options
  - Some current trials and research

A few facts about radiotherapy

- About 50% of people with cancer are treated with radiotherapy (RT)
- 4 in 10 cancer cures involve radiotherapy
- There are 50 trusts/ 62 NHS radiotherapy centres in England
  - some are satellite departments.
- In 2013 36,151 patients received radiotherapy in the UK

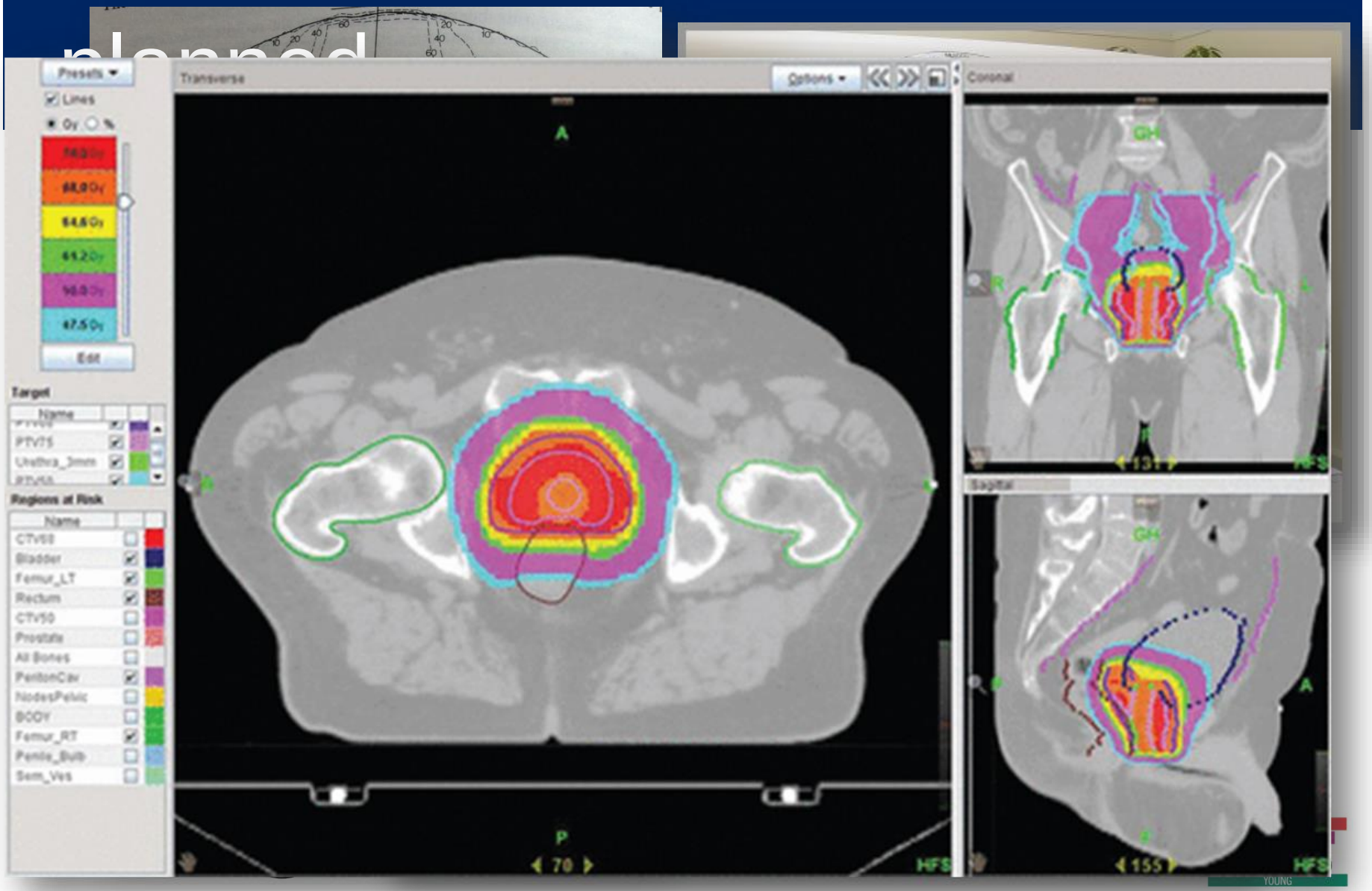
What is radiotherapy?

- The use of high energy, high dose radiation for the treatment of cancer
- Can be given externally or internally
- Equipment is designed to give maximum radiation dose at different depths in the body
- Can be given using radioactive sources or X-rays
- Staff delivering your treatment are known as therapeutic radiographers.
  - around 3500 therapeutic radiographers in the UK
  - State registered by the HCPC so this is a ‘protected title’

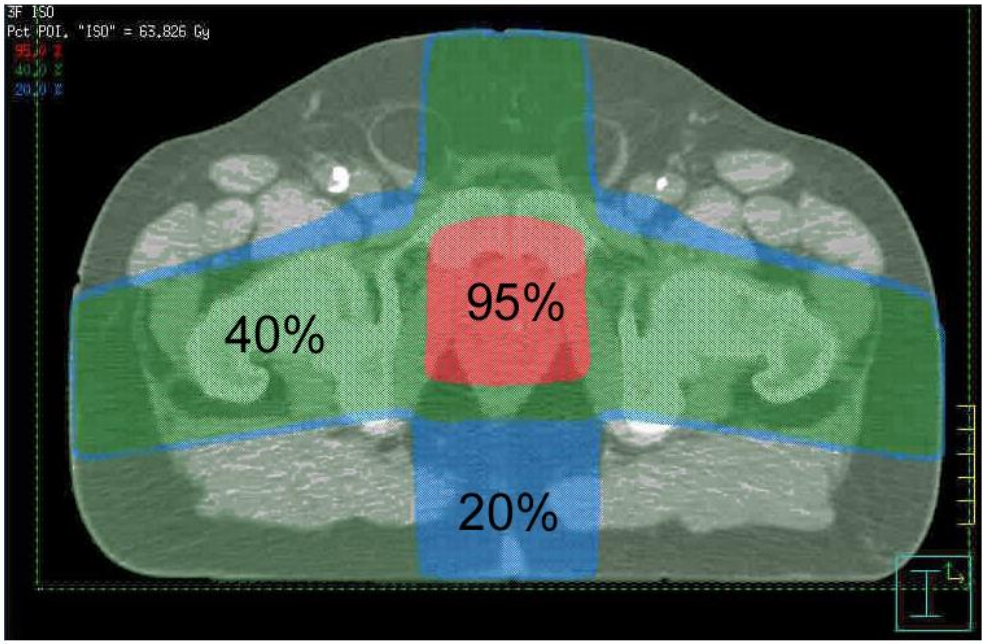
What RT equipment is available?

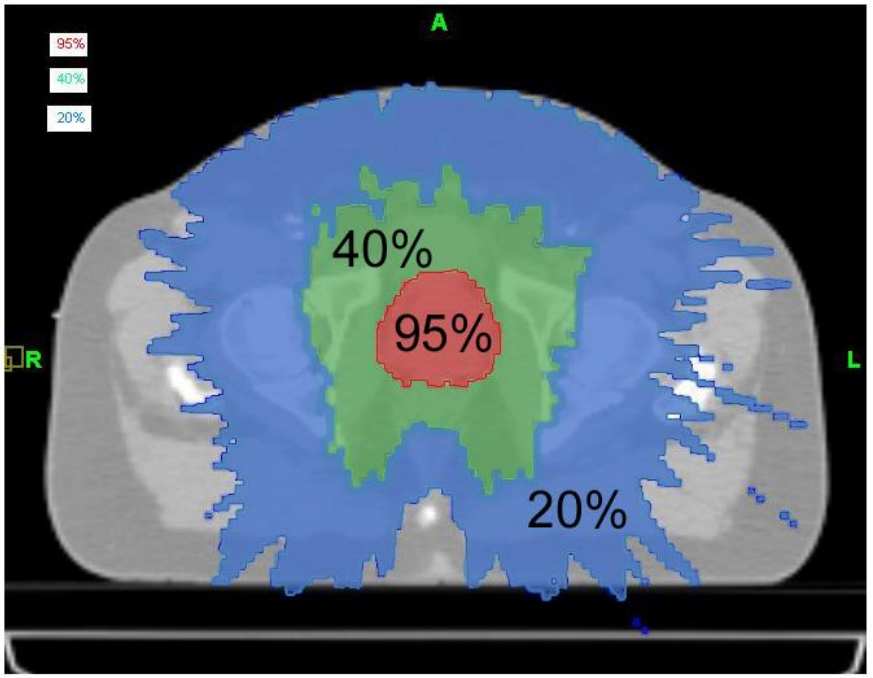
- Planning
  - CT simulation
  - Virtual simulation
- External Beam Radiotherapy (EBRT)
  - Linear accelerator (Linac)
  - MR linac
  - Tomotherapy
  - Cyberknife
  - Orthovoltage
  - Superficial
- Proton therapy
- Internal treatment (Brachytherapy)
  - Mammosite
  - Selectron
  - Gammamed
  - Permanent seed

CT Simulator – where RT is planned



Conventional radiotherapy vs IMRT





Current equipment options

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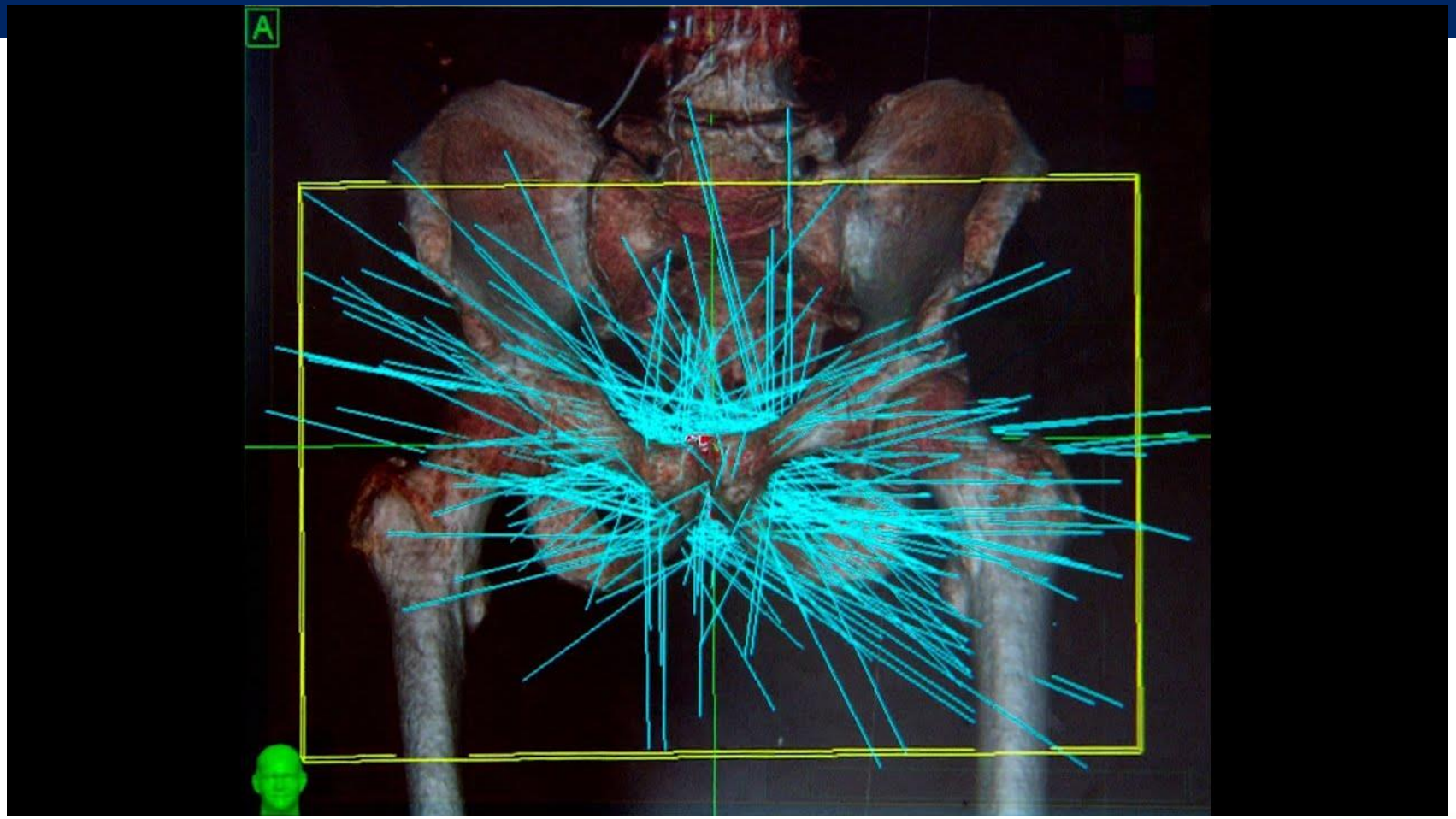
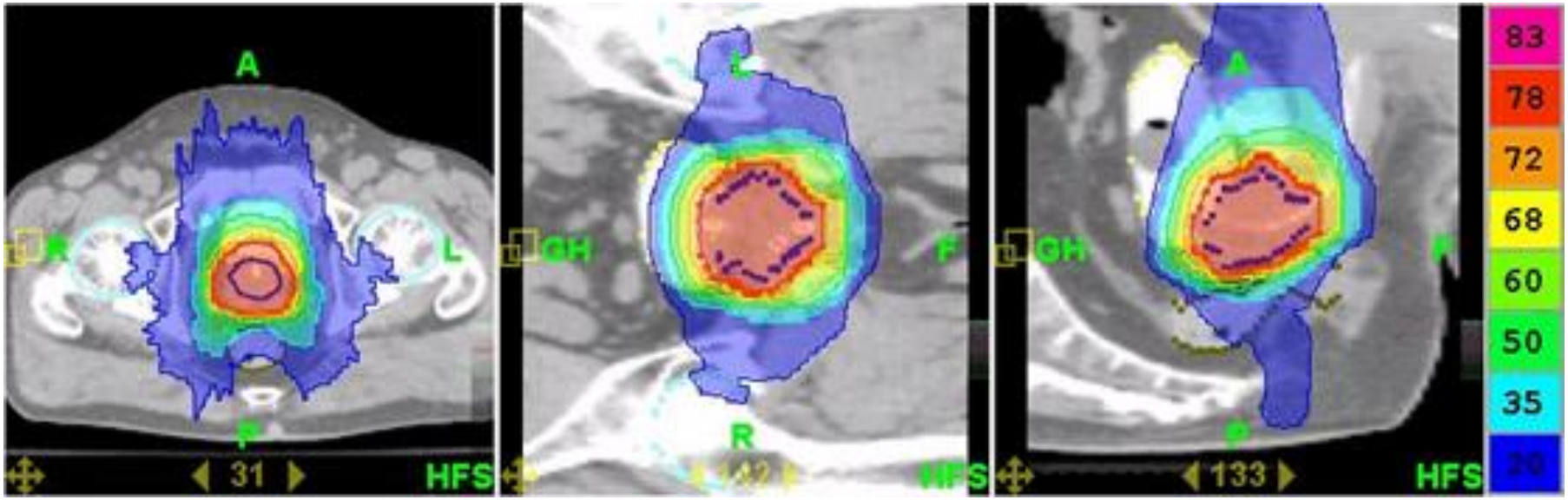
Cyberknife plan



Tomotherapy plan



brachytherapy

- Catheters or applicators are inserted into body cavities
- needles can be placed directly into tumour
- radioactive source fed through catheter/ needle
- Radioactive ‘seeds’ implanted into tumour

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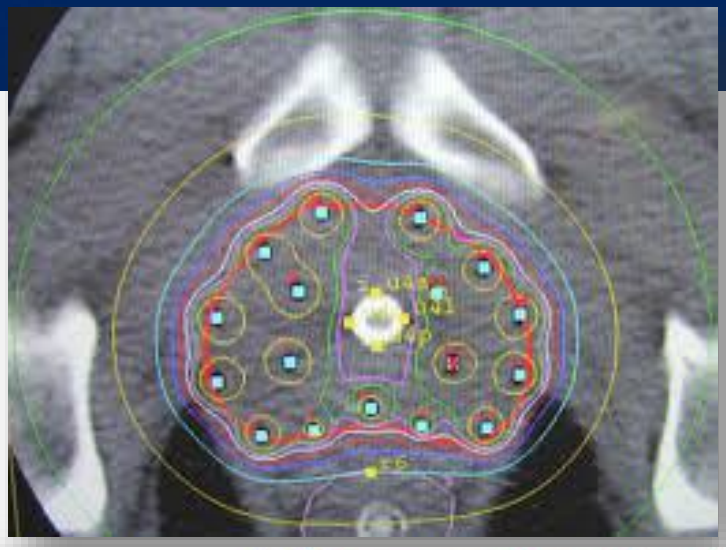
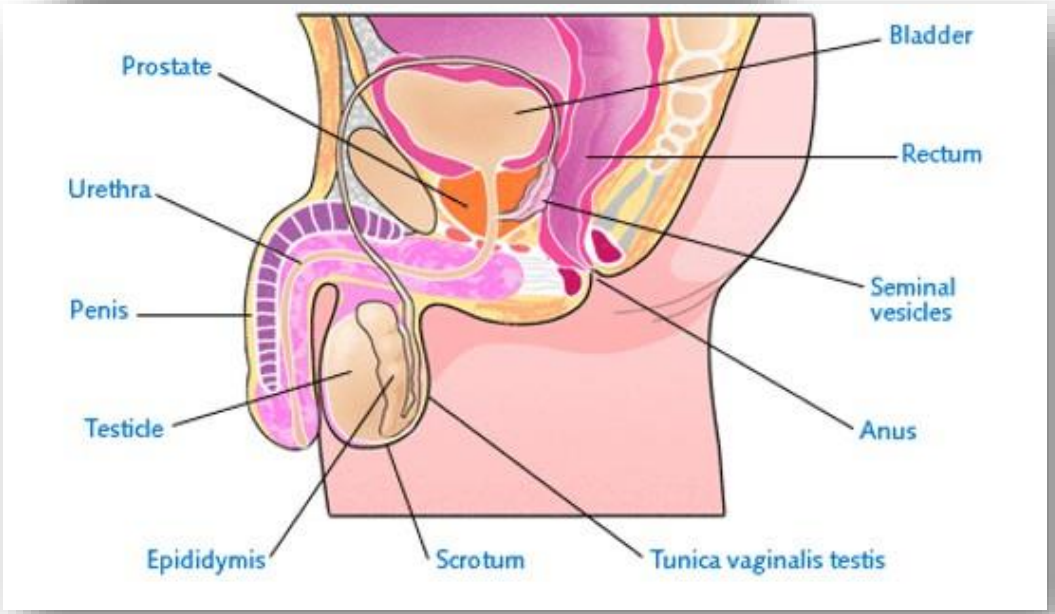
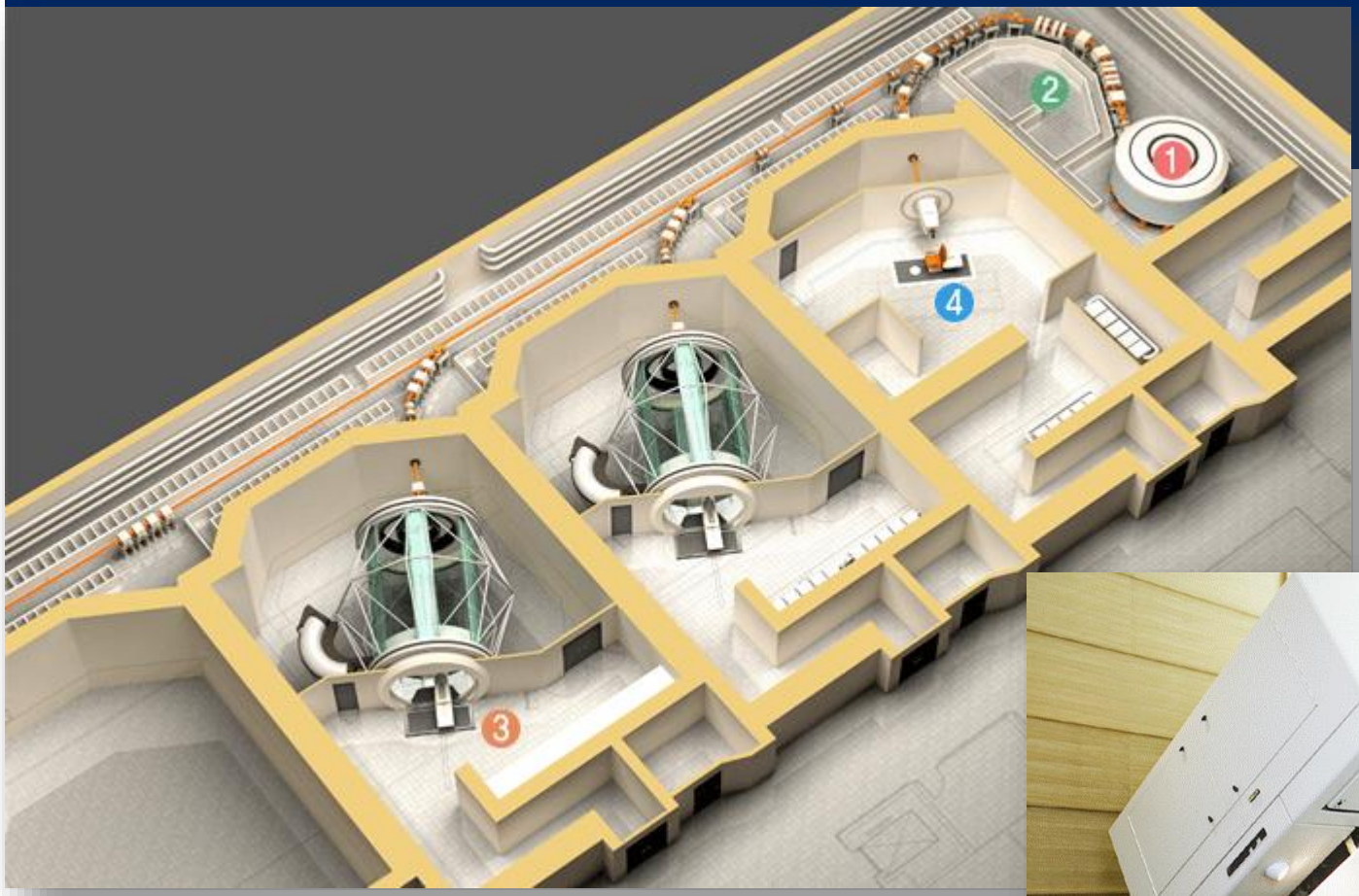
Prostate brachytherapy





Proton therapy



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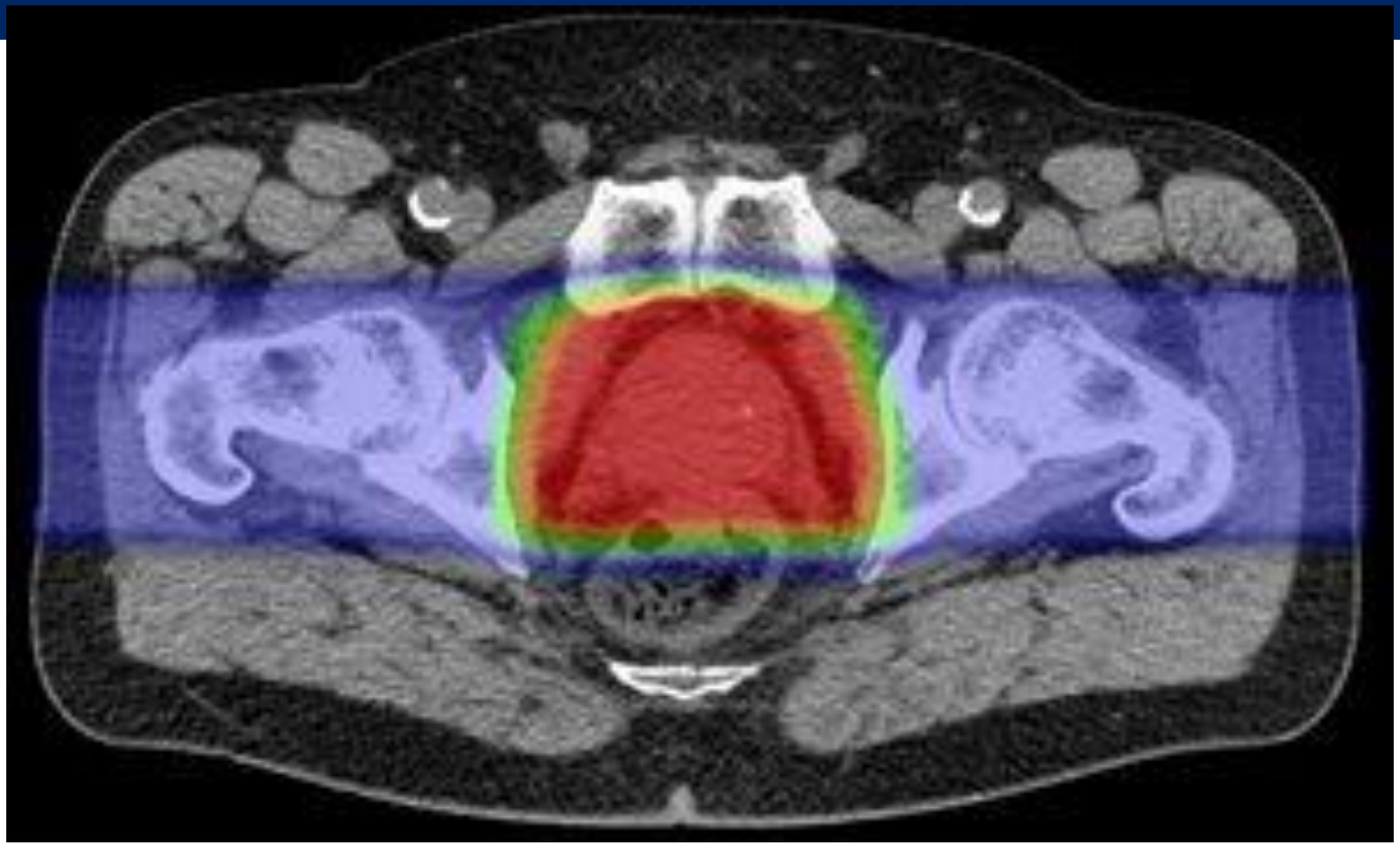
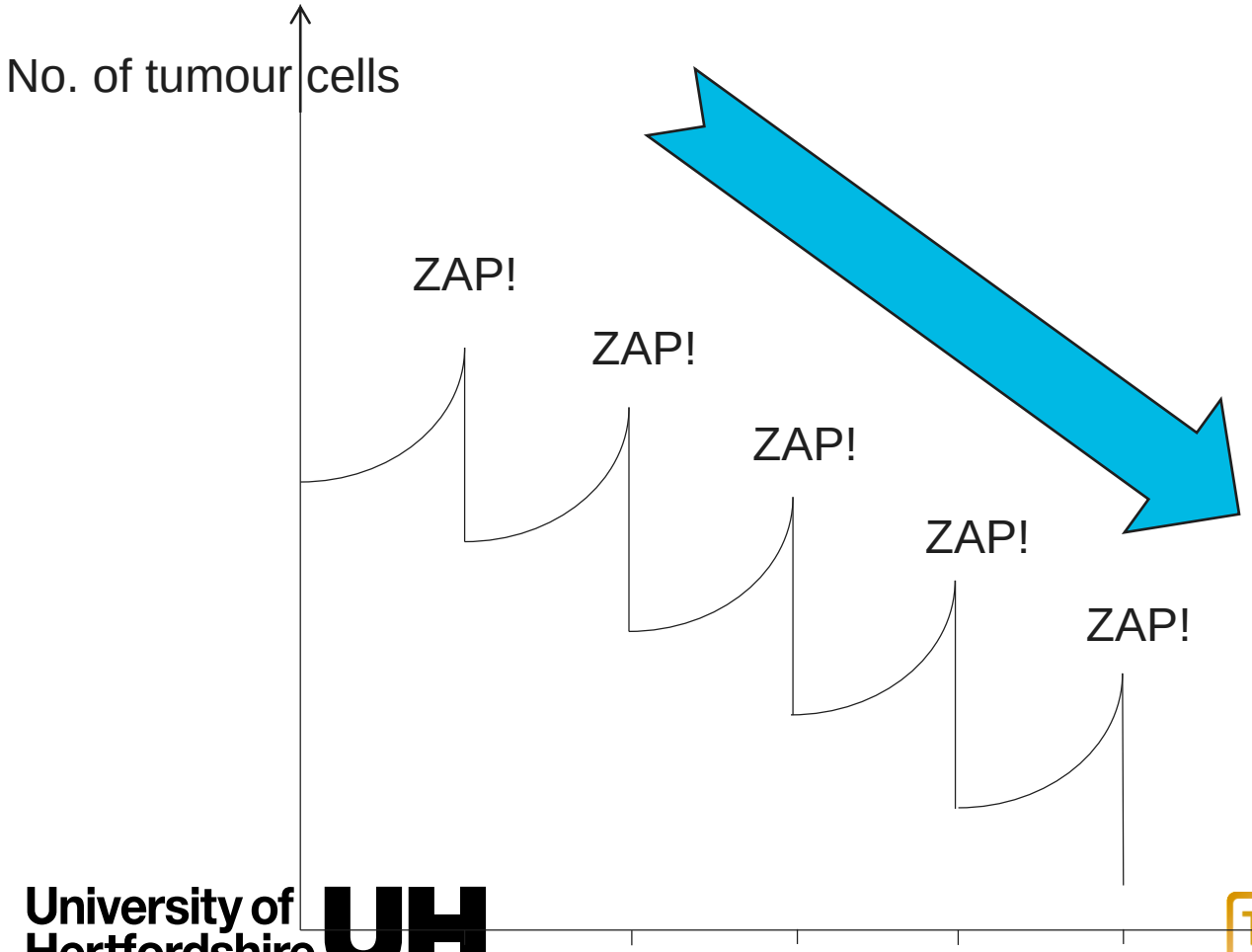
Proton therapy plan



Why a long course of radiotherapy?



What types of reaction to radiation can occur?

Acute

- Develop within a few days of commencing RT
- Continue for a few weeks after RT
- Can determine tolerance to treatment

Chronic (late)

- Develop several weeks to several years after RT
- Effects are generally permanent
- Severity is usually dose related

Likely side effects of external beam prostate radiotherapy (all vary from person to person)

- During and for a few weeks after treatment
  - Tiredness
  - Radiation induced cystitis
  - Some bowel effects
  - Some pain
  - Some skin soreness
- Longer term
  - Some bowel effects
  - Some bladder effects
  - Some effects on sexual functioning

Overview of management options: Factors affecting treatment options

The stage of your cancer helps your doctor to decide which treatment you need. Treatment also depends on the following:

- Gleason score
- your PSA blood test level
- your type of cancer (the type of cells the cancer started in)
- your age and general health
- how you feel about what the treatments involve and the side effects

The importance of PSA

- Normal protein found in prostate and seminal vesicles.
- Diseases of the prostate gland cause raised levels
  - normal serum PSA level correlates with age and prostate volume
    - Higher as you get older
    - Higher with larger prostate glands
  - TUR or biopsy elevate levels significantly
  - PSA levels may rise some years before eventual diagnosis of cancer (5-10 yrs prior to diagnosis according to some research)

Management options:

- You might not have treatment straight away. Sometimes your doctor monitors your cancer and starts treatment if the cancer begins to grow.
- Depending on your situation, they may call this:
  - active surveillance
  - watchful waiting
- If you have active treatment this might include:
  - surgery to remove your prostate
  - external radiotherapy
  - internal radiotherapy (brachytherapy)
  - hormone therapy
  - high frequency ultrasound therapy (HIFU) as part of a clinical trial
  - cryotherapy as part of a clinical trial
  - chemotherapy
  - symptom control treatment (palliative treatment)

Recent radiotherapy research

- CHHiP trial
  - Compared three different radiotherapy schedules for localised prostate cancer.
  - 20 treatments with 60Gray of radiation found to be equivalent to 37 treatments with 74Gray.

  - Longer schedule is still being used for some patients whose cancer is not localised within the prostate gland.

Current open trials

PACE: comparing stereotactic radiotherapy with conventional radiotherapy or surgery for localised prostate cancer.

- comparing survival outcomes
- comparing side effects

DELINEATE: To see if radiotherapy can be better focussed within the gland for men who have medium to high risk cancer

VoxTox: To collect information about nature and severity of RT side effects

POPS: Use of the ProSpare device to see if it reduces side effects of RT after surgery

ADRRAD: adding radium 223 and Rt to hormone therapy for men with spread to bones

PIVOTALboost: to see if RT to lymph nodes improved outcomes. For men with medium to high risk disease.

Recent trial results

STAMPEDE:

adding docetaxel or abiterone to hormone therapy improves overall survival but both cause worse side effects

adding radiotherapy to hormone therapy for men with locally metastatic prostate cancer (i.e. close to prostate gland) improved overall survival.

HYPRO: compared 19 vs 39 treatments for men with localised cancer. More frequent severe immediate side effects in the shorter course, but no difference 3 months later.

Just can’t wait?

- https://www.bladderandbowel.org/help-information/just-cant-wait-card/

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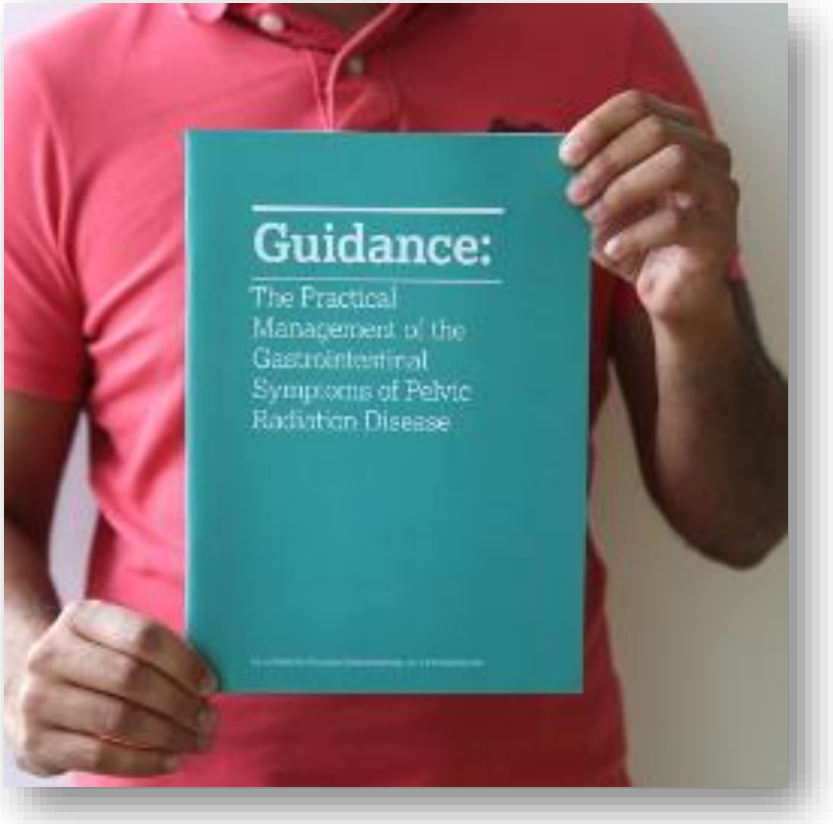
Longer term bowel issues?

- Point your GP/health care practitioner to this fabulous guide (not for lay people):
- https://www.macmillan.org.uk/_images/practical-management-gi-symptoms-pelvic-radiation-disease_tcm9-300557.pdf



Finally - How to look after yourself after radiotherapy

- Listen to the advice of your doctors, nurses and therapeutic radiographers
  - Their expert knowledge will be specific to your type of cancer, aimed at minimising side effects of RT and ensuring you are well cared for.
  - They will refer you to other HCP as needed (e.g. for dietetic advice)
  - Always check any ‘lay’ advice with your HCP before following it.
  - Even after treatment finishes, you can contact the RT clinic radiographers for advice if you feel your GP knowledge is not specialist enough

Thank you!!

Any questions?