

Radiotherapy viva questions

Examiner: abcdefg

Moderator: hijklmn

Dose Survey:

Where do you get the values of dose rates for the designation of controlled and supervised areas from?

For a car park outside the bunker where the dose rate was $>7.5\mu\text{Sv/hr}$ which wasn't supervised following the survey – how would you continue to monitor this area? Who from the hospital would need to be informed?

Whats the difference between Gy and Sv?

How do you get effective dose? What other information do you need?

Draw a PDD for a 6MV photon beam.

What is the depth of d_{max} ?

Draw the PDD for a 15MV photon beam and explain the differences.

Why does the position of d_{max} change?

For a fixed field size what is the effect of surface dose with increasing energy?

Electrons:

What do you have to consider when matching a photon and electron field?

What is the shape of the electron distribution?

When measuring the dose from an electron field what factors do you need to include?

How dose obliquity change the position of d_{max} ?

For electrons passing through an inhomogeneity (air gap) in a medium how the depth dose would PDD change? How does this compare with photons?

What changes are there in the head of a linac for photon and electron beams?

How are electron treatments planned?

How is flatness and symmetry measured in the head of a linac?

What would the profile look like if you measured it? At 10cm and 5cm deep? What would it look like if the energy was wrong e.g. the energy was increased slightly?

How could you change the energy of a beam if it was wrong?

What difference between the intensity of the horns compared to the central axis?

Explain the shape of the CT/density table? Why does it have a kink in it? What is predominant interaction mechanism at CT energies? What is it for radiotherapy beams?

How do these depend on Z ?

What would you do if a source was lost? What documentation would you consult? Who would need to be informed inside and outside the hospital?

If a chamber was damaged and had to be repaired what would you do before putting it back into use?

How many measurements would you make for the strontium check? How would you assess the variation between these measurements (just wanted to hear standard deviation)?

Why might the sensitivity of a chamber have changed?

What other factors would you measure?

IMRT:

What do you have to consider between IMRT and conformal planning (very vague)?

What QC would you do specifically for IMRT – I talked about verification – This gives an overall check how would you split it up into different factors? (Wanted to know about profile checks for small fields).

What is gamma analysis?

What is the difference in the number of MU for IMRT and conformal radiotherapy? What sort of QC would you have to do because of this?

Prostate IMRT Project

Why didn't I do any formal statistical analysis on preliminary results? (They didn't expect me to but asked what tests I could have done)

4DXVI :

I'd done commissioning measurements of 4DXVI and the examiner had just done commissioning measurements of 4DCT and said that we had come to different conclusions. This led to a bit of a discussion about that and I tried to explain that the results weren't comparable...

Asked if I could say that for repeatability measurements volumes could agree within 0.01cm³ – thought this was too small but again is a different situation from 4DCT.
