



Radiotherapy revision

WHAT IS RADIOTHERAPY?

Internal Radiotherapy

- a radioactive source is inserted into the tumour

OR

- a radioactive substance is ingested/ injected to seek out a particular area e.g. radioactive iodine ^{131}I for thyroid

External Radiotherapy

- Treatment of cancer using high energy x/rays and other ionising radiation
- Radiation is applied as a beam from outside the body
- Beams can be directed from several angles to one point inside the body

HOW DOES RADIOTHERAPY WORK?

- X rays cause ionisation to tissues they penetrate
- Damages molecules and kills cells
- Especially affects fast growing cells – cancer cells

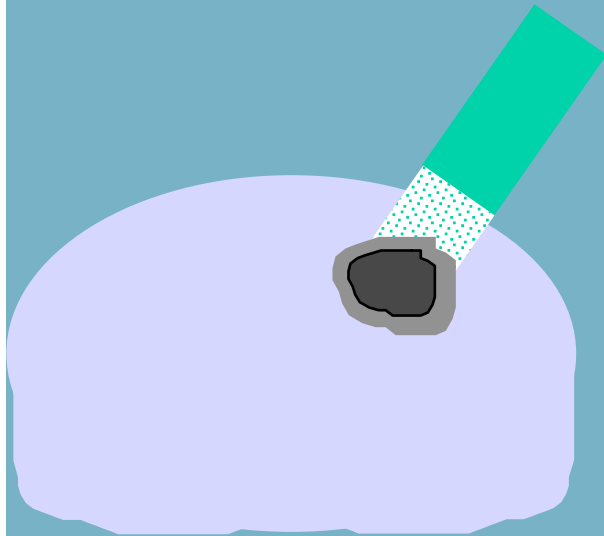
HOW DOES RADIOTHERAPY WORK?

- Tumour receives a high dose
- Tumour can be destroyed without serious damage to normal cells

PATIENTS RECEIVING
EXTERNAL
RADIOTHERAPY ARE
NOT RADIOACTIVE

SINGLE BEAMS

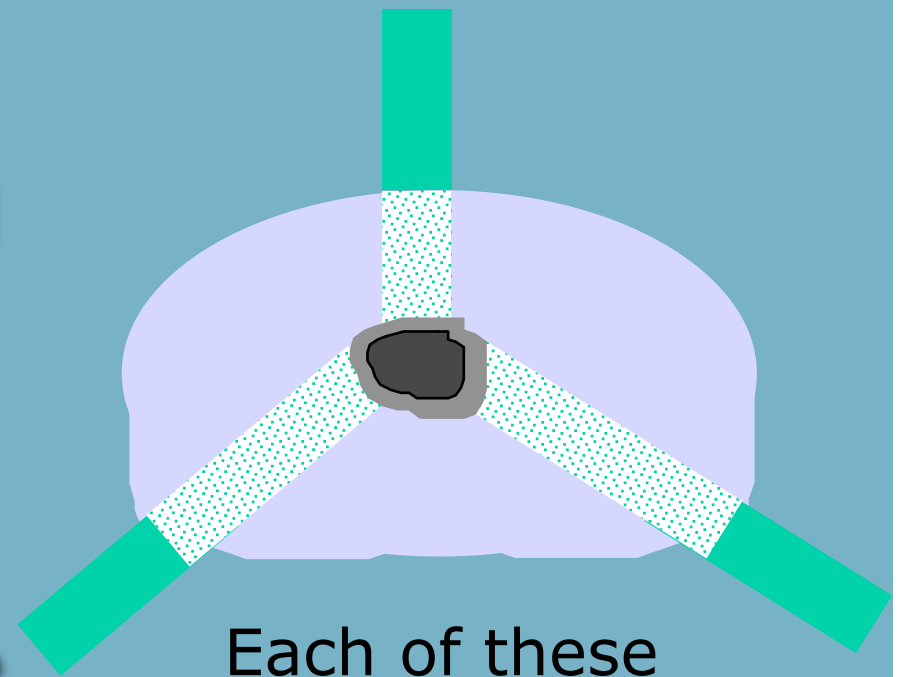
A single beam may be used to treat a tumour which is near enough to the body surface for sufficient dose to be received without overdosing overlying and underlying tissues within the treatment beam



Most tumours require a different method...

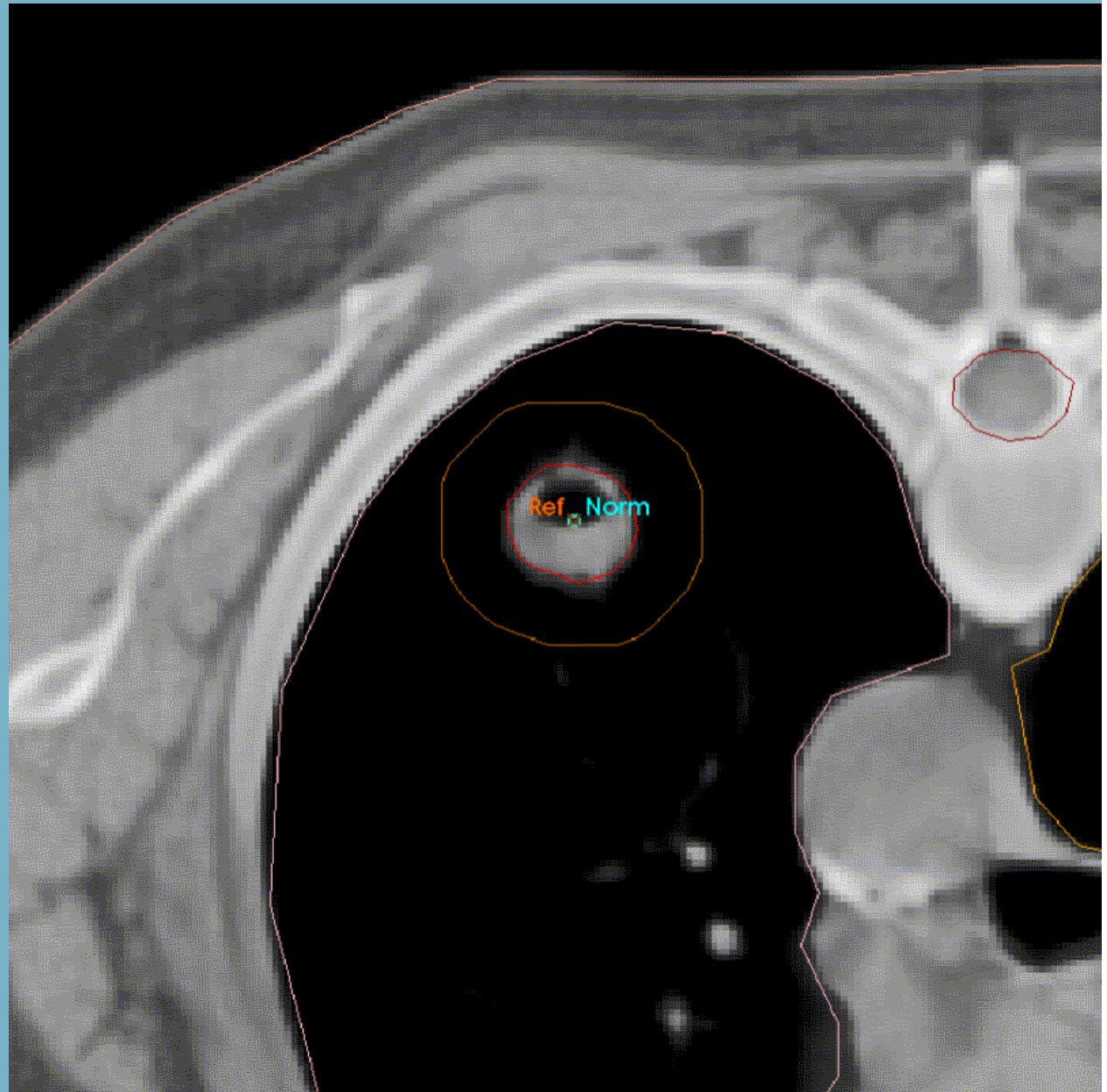
Multi-beam treatments

- Used if a high dose is required to kill tumours deeper in the body
- Several beams used
- Beams only overlap in the tumour area
- Tumour receives fatal dose but healthy cells receive a lower, safer dose.

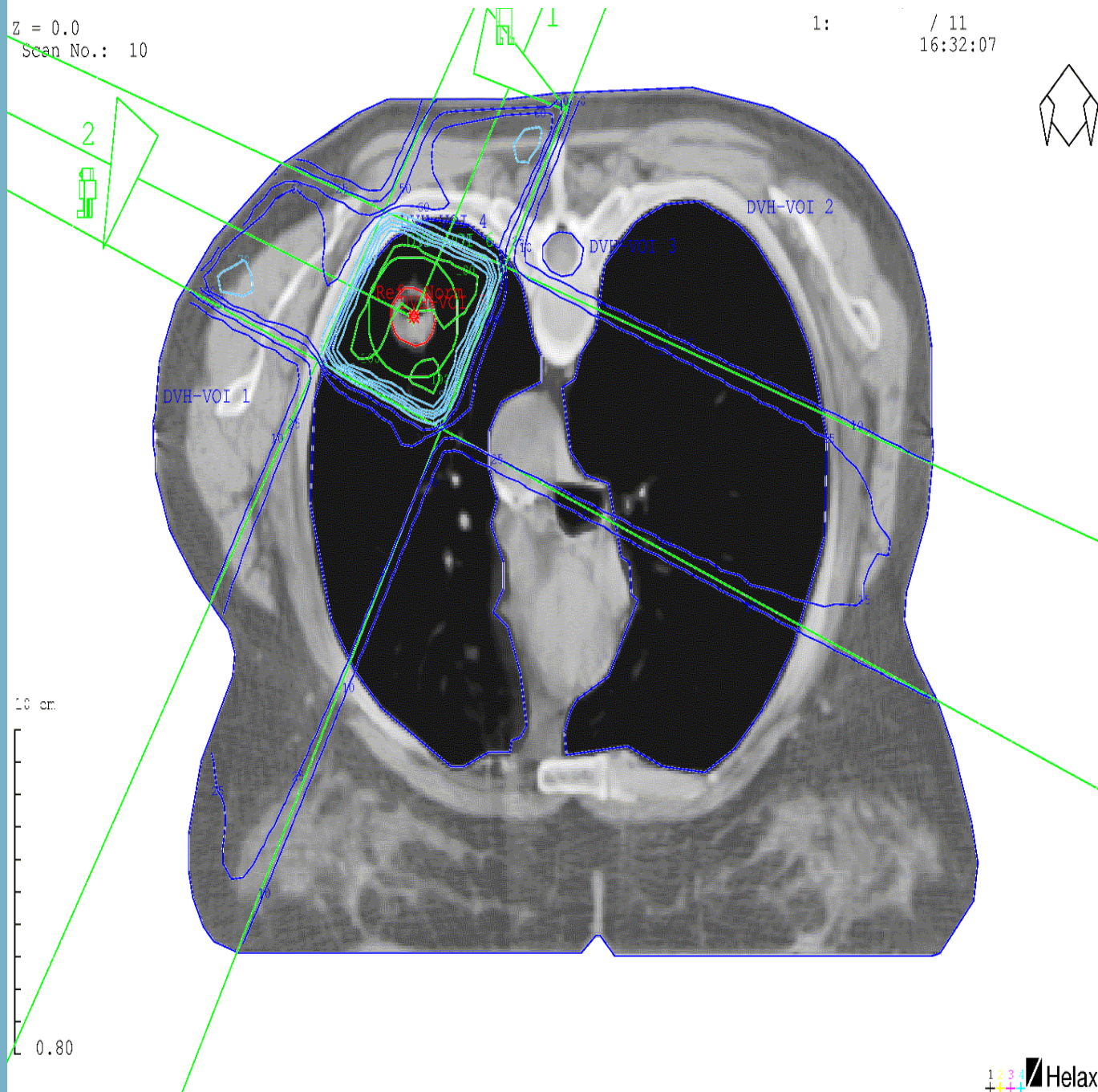


Each of these beams delivers 1/3 of the required dose.

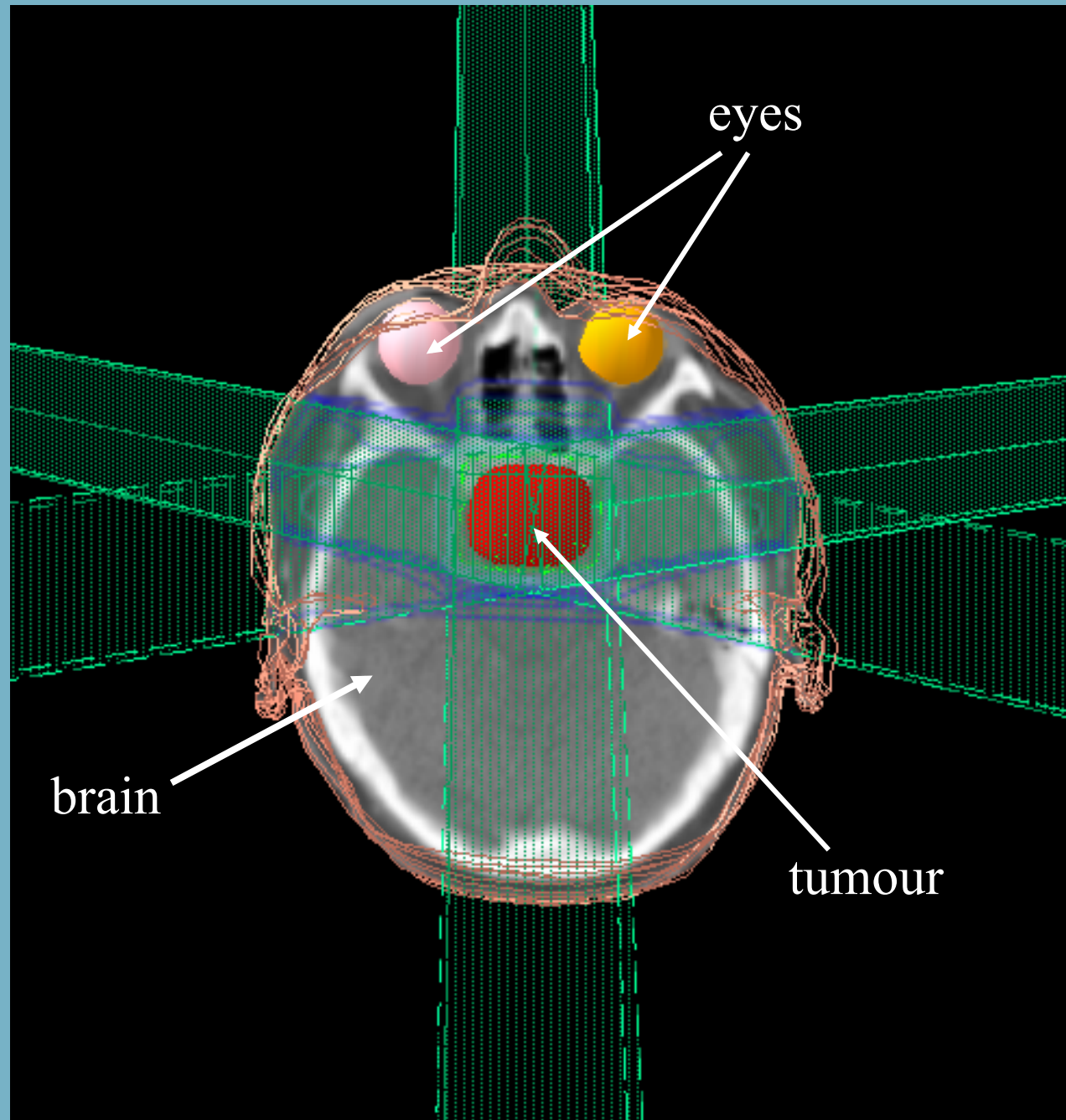
Before treatment can begin, scans are taken to accurately locate the tumour.



Then computers are used to help plan the best route for each beam



Sensitive areas such as the eyes and spinal cord must be avoided.



the treatment room

- Radiotherapy machines are large and expensive
- Patients need to travel to a main regional hospital for treatment

