



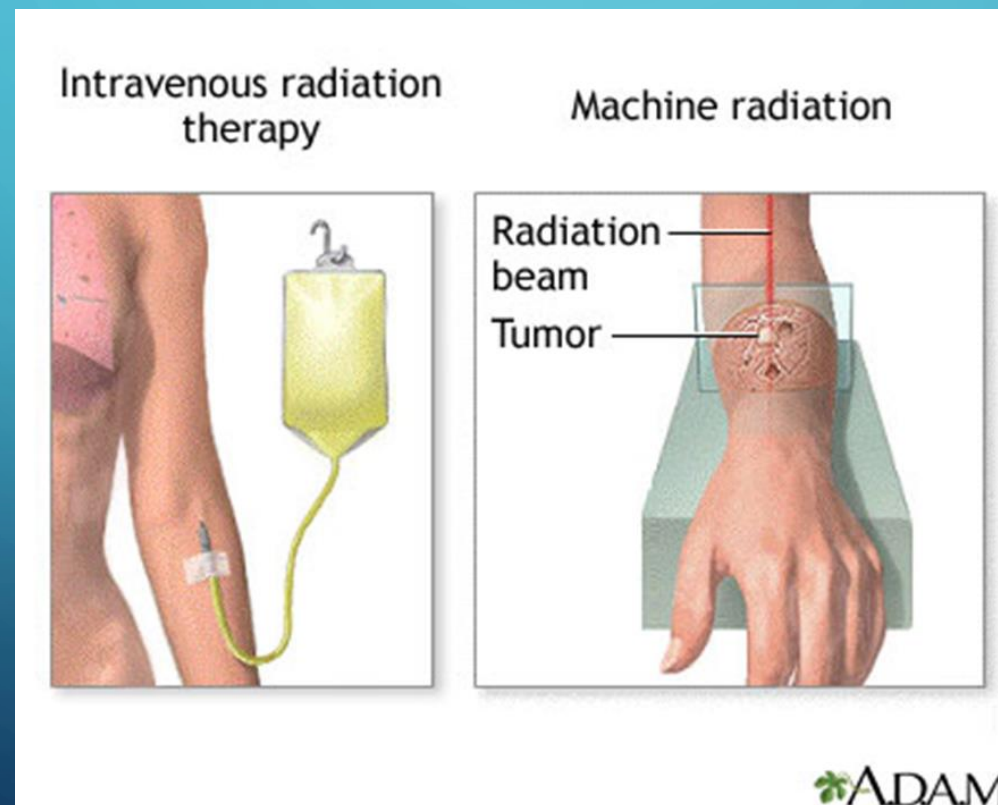
RADIATION AND CANCER

RADIATION AND THE HUMAN BODY UNIT

BYERS AND GRIFFETH

REVIEW: LARGE DOSES OF RADIATION (50,000+ MREM) CAN CAUSE MANY TYPES OF CANCER.

- Radiation is also used as a **treatment** for certain types of cancers.

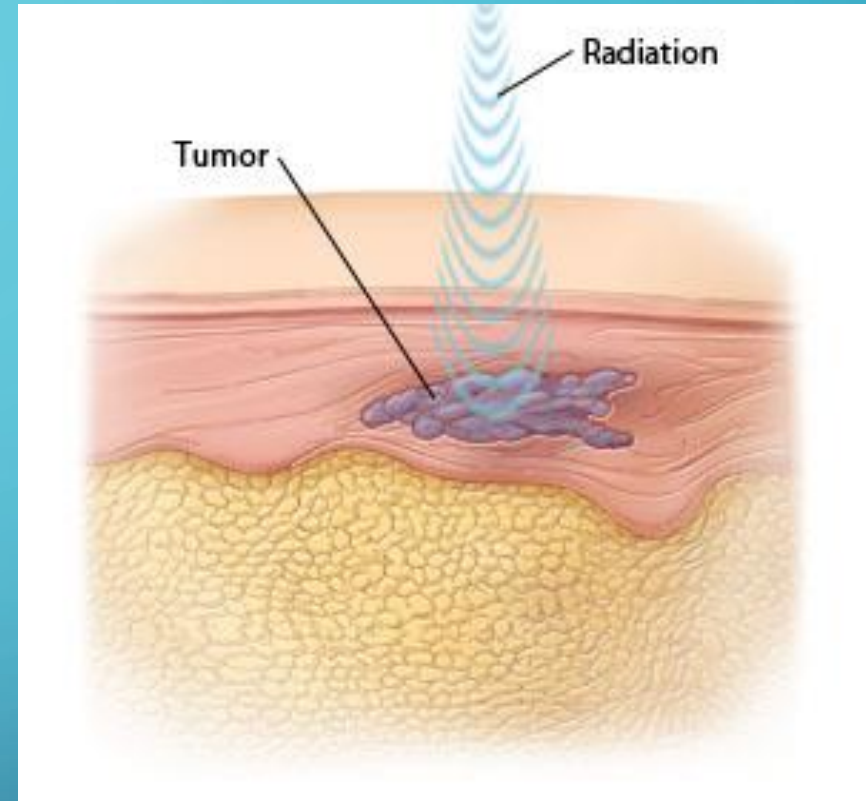


HIGH DOSES OF RADIATION CAN KILL CANCEROUS CELLS

- As discussed before, radiation can damage cells so that they can no longer repair themselves and survive
- 3 main types of radiation therapy
 - External-beam: beam delivered by machine outside body
 - Internal radiation: radioactive material placed in body (near cancer cells/tumor)
 - Systemic radiation: radioactive substances travel through blood to kill cancer cells

HOW IT WORKS

- Aims external beams of energy, or places radioactive materials full of energy which are targeted towards cancerous cells/tumors
- High levels of energy damage these cells, stop them from growing
- Desired effects: reduction of tumor size, relief of pain caused by tumors, sometimes used as a “cure” for certain individuals’ cancer



DEAD TUMOR CELLS ARE THEN
BROKEN DOWN BY THE BODY'S
IMMUNE SYSTEM.

Proton-beam therapy today

Calculating the specific timing, focus and duration of the radioactive beam takes time and is a challenge for even the best doctors.



Doctors and technicians take **MRIs** to visualize the tumor.



It takes doctors **a week or more** to analyze MRIs, calculate treatment variables and calibrate the machine.



During that time, **bodily conditions can change**, potentially limiting the effectiveness of the chosen radiation treatment.

DOES RADIATION ONLY KILL CANCER CELLS?

- No, oncologists (cancer physicians) take a known risk of damaging other normal, healthy cells in the body
- Each tissue (group of similar cells) in body has a known amount of radiation that can be received



SIDE EFFECTS

- In systemic radiation therapy (in your blood), a patient's body fluids can become temporarily radioactive, but this is not a major health concern.
- Possibility of skin damage from radiation
- Fatigue, general extreme tiredness
- Side effects vary based on location of treatment in the body.
 - Ex. Nausea results from radiation therapy to the stomach/abdomen
 - Chest: difficulty swallowing, breathing, dry mouth, etc.

Side Effects During Radiation or Weeks After Treatment

Common (25+% chance)

Skin	Tanning, redness, irritation, hair loss under arm
Breast	Aches, mild throbbing pain, mild swelling
Chest	Tightness in chest/arm, occasional muscle spasm
Energy	Mild tiredness