



**A Guide to**  
**Radiation Therapy**

**at Temple University Hospital**

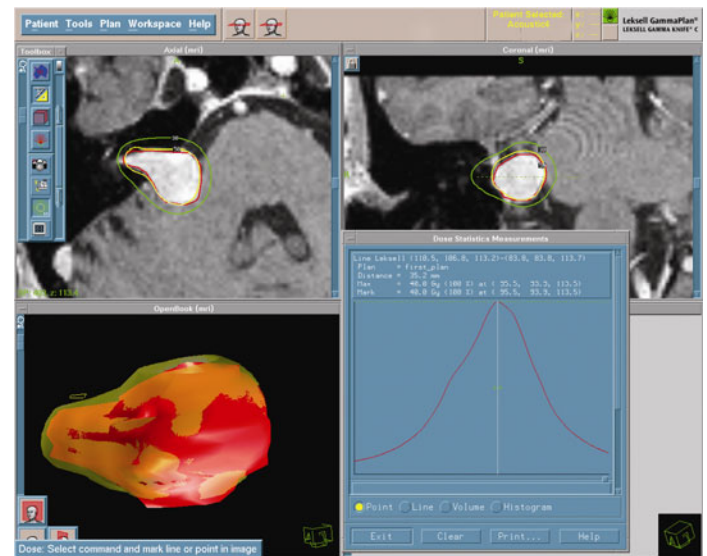
**Understanding the Process**



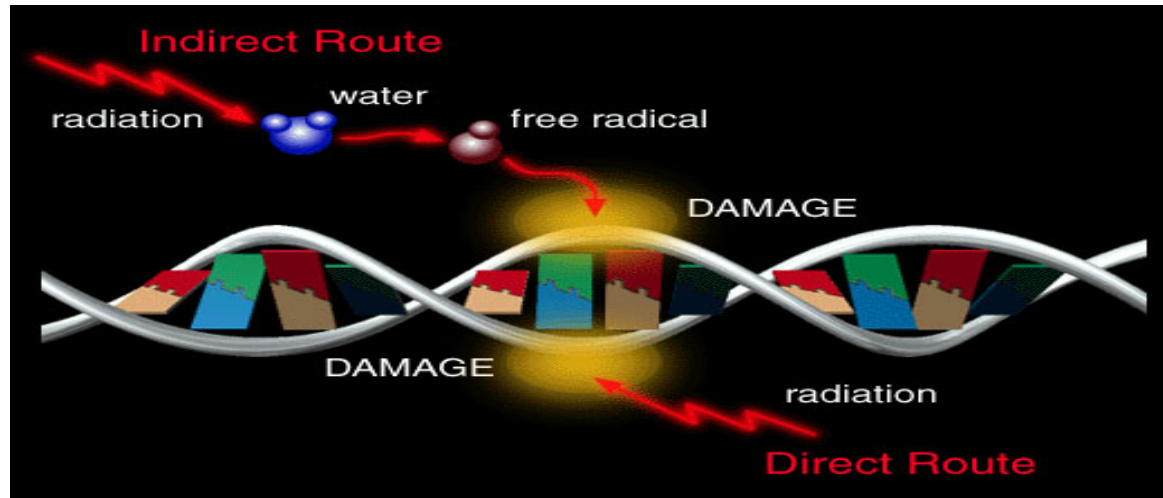
**Temple University  
Hospital**

# Radiation Therapy: It's All About Precision

- Today, radiation treatments are delivered with extreme precision, using the most advanced technology
- This allows the radiation to be **highly** focused on the **tumor/target, limiting** damage to surrounding healthy areas

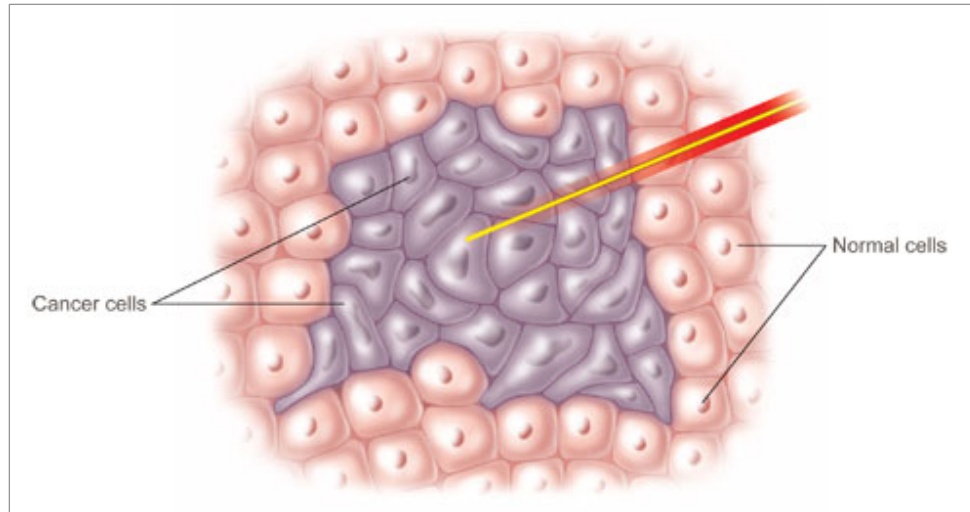


# How Radiation Therapy Works



- **Indirect Route** - Radiation reacts with oxygen and water in the body, creating free radicals that attack the DNA strand
- **Direct Route** - Radiation directly hits and breaks the DNA strand

# How Radiation Therapy Works



- Normal cells are able to repair themselves when they are damaged by radiation
- Cancer cells are **less likely** to repair themselves when damaged by radiation

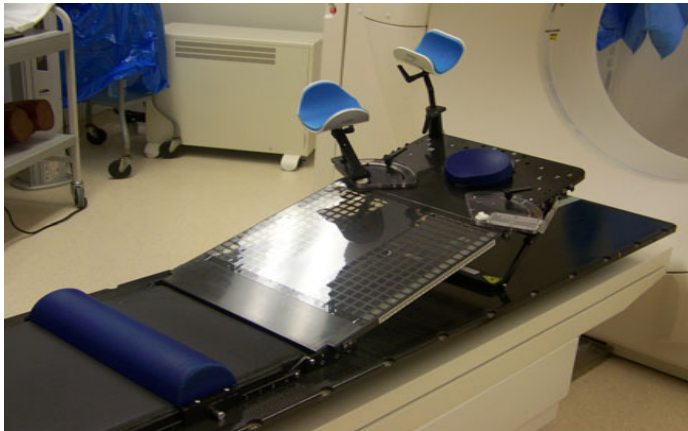
# Step 1: Consultation



- If Radiation Therapy is being considered as a treatment option, the patient meets with a Radiation Oncologist (Doctor)
- The doctor reviews the patient's medical history, reports and imaging studies
- If the doctor recommends radiation therapy treatment, a CT Simulation appointment is scheduled

# Step 2: CT Simulation

- The patient is placed into a treatment position that is **matched exactly** for every treatment
- To help align the patient, **special positioning devices** are used to help keep the patient still



- Devices such as these help to make sure that the target is treated accurately, with less radiation to nearby normal tissue

## Step 2: CT Simulation (continued)

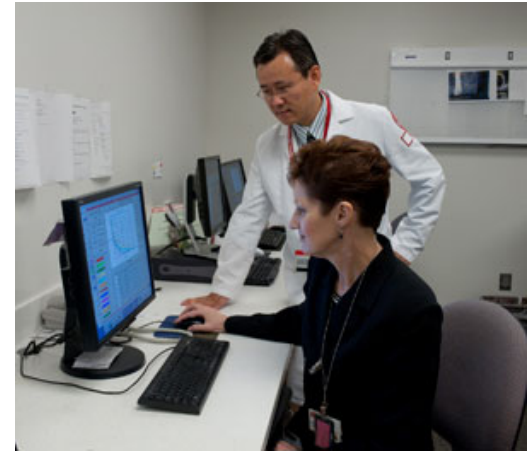
- Once in position, the patient gets a CT Scan. Using this CT Scan, the doctor is able to pinpoint the treatment area



- When the treatment area is identified, the patient receives several small tattoo marks
  - The tattoos **help align** the patient for their treatment

# Step 3: Treatment Planning

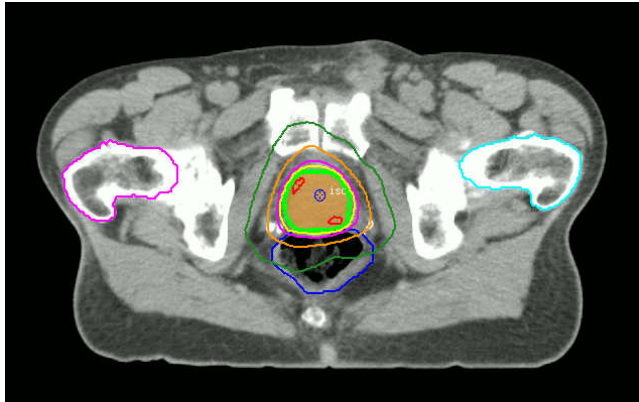
- To create the treatment plan, the doctor and the treatment planners use:
  - The CT Scan and
  - A special computer program
- The plan needs to deliver 100% of the radiation to the treatment area, while sparing the body's normal tissue



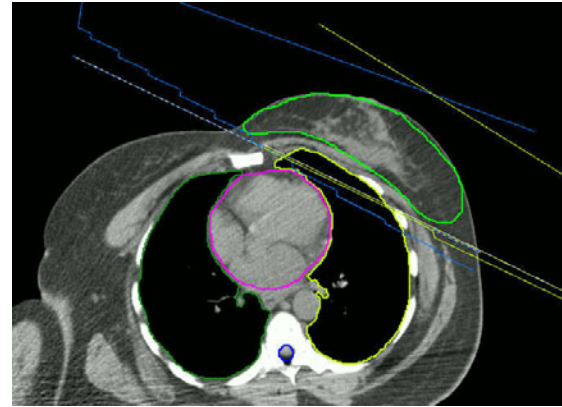


# Treatment Planning Examples

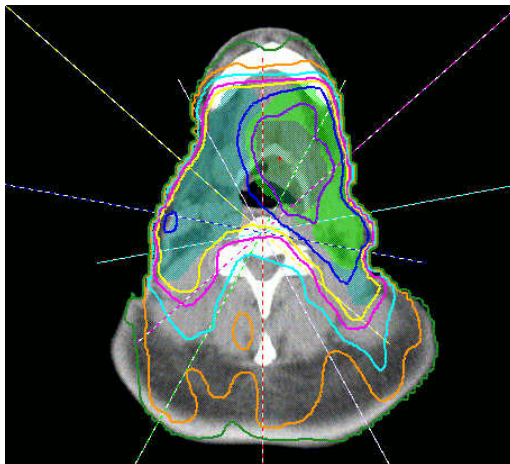
Prostate



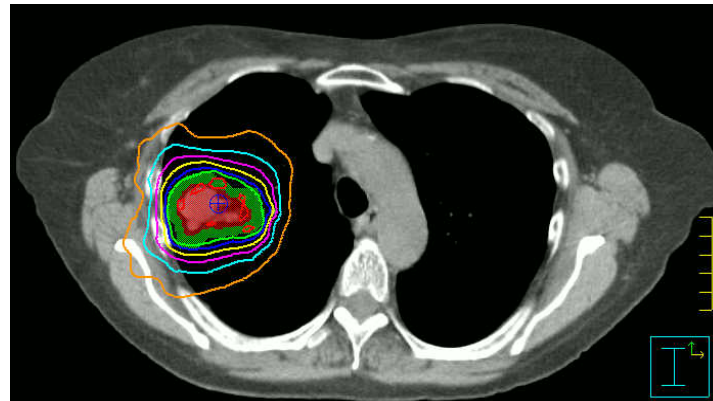
Breast



Head/Neck

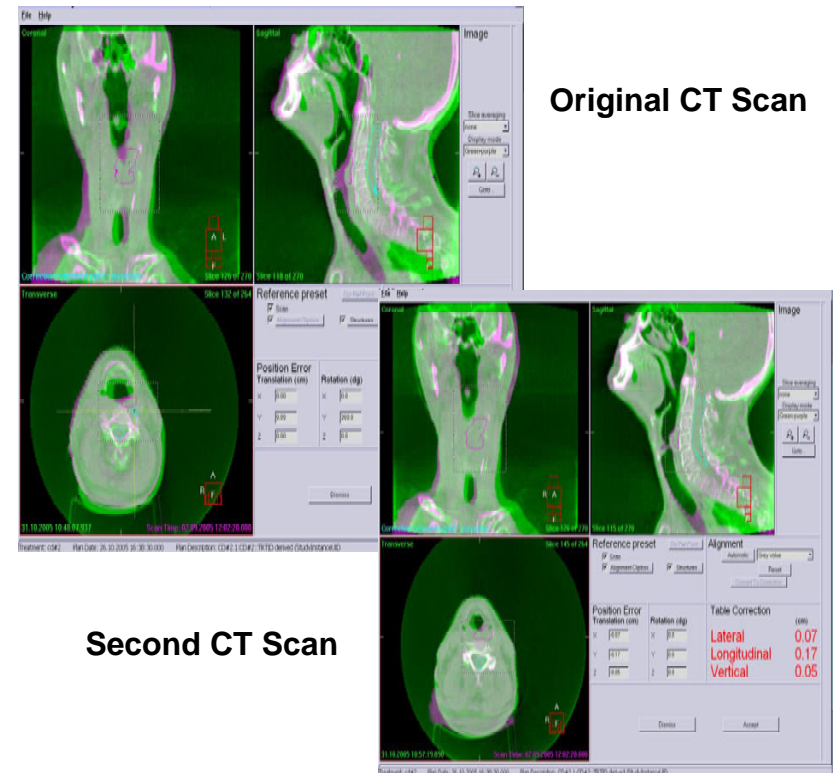


Lung



# Step 4: Radiation Treatment

- On the first day of treatment, the Radiation Therapists position the patient on the machine using the original CT Scan along with the instructions and tattoos from the CT Simulation
- Before the treatment begins, another X-ray/CT Scan is taken on the treatment machine to make sure the patient is perfectly positioned
- Once these films are approved by the doctor, the treatment can begin



# Treatment Options at Temple

- **IMRT (Intensity Modulated Radiation Therapy)**
  - Allows Temple specialists to customize the shape and intensity of the radiation, giving higher doses to the target and lower doses to nearby sensitive structures. This produces **fewer** side effects
- **SBRT (Stereotactic Body Radiation Therapy)**
  - Delivers high doses of radiation with pinpoint accuracy, taking into account any movement of the tumor from breathing
  - Treatment is usually delivered over 3-5 days
- **Gamma Knife**
  - Treats tumors and other abnormalities in the brain
  - Treatment is usually delivered in 1 day

# Treatment Options (continued)

## ■ Hyperthermia

- Uses **high temperatures** to kill cancer cells
- Makes cancer cells more sensitive to radiation therapy treatments
  - Most commonly used for tumors on or close to the skin surface

## ■ HDR Brachytherapy

- Places a **radioactive source in or next to the treatment area**
- Areas treated with HDR Brachytherapy:
  - GYN (female pelvis)
  - Breast
  - Skin

## ■ TSEB (Total Skin Electron Beam)

- Delivers electrons to the entire surface of the skin. Treats the outer layers of tissue, but does not penetrate deep enough to damage internal organs
- Used to treat certain skin diseases such as Cutaneous T-Cell Lymphoma

# Possible Side Effects

- **Site Specific**

Side effects from radiation treatments depend on **what part of the patient's body** is being treated

- **One Common Side Effect: Fatigue**



# Possible Side Effects (continued)

## Acute

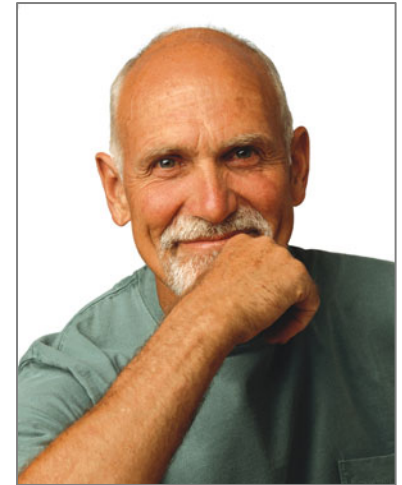
- These side effects occur during the time the patient is under treatment
- These effects are usually temporary and may last for a couple of months after treatment

## Chronic

- These side effects usually occur several months or even years after treatment
- These effects are usually permanent

**Please contact your doctor for more information  
on side effects**

# Our Expectations of You



- **Bring your referrals**
- **Come for your daily treatment**
  - On time
  - Expect to be in our department for 1 hour
  - Call if you are not able to make it
- **Stay to see the doctor for your weekly visit**
  - Follow the doctor's treatment instructions
  - Let us know if you have any questions
  - Use the resources available to you

# Questions?



If you have questions about the information in this presentation or about Radiation Oncology at Temple, please call

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