

Radiation Therapy – Basic Information

YOUR DOCTORS

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Types of Radiation Therapy

Full Course Radiation Therapy

Full course RT is also known as definitive or curative RT. The goal of full course RT is long-term tumor control. For best results, this type of RT is often combined with surgery and/or chemotherapy. Typically, one treatment or fraction is given per day (Mon–Fri) over a 3 to 4 week period. The protocol will vary slightly with tumor type, timing of RT relative to surgery (preoperative vs. postoperative), and location of the tumor on the body.

- Daily treatment
- Mon-Fri
- 16–19 treatments
- 3–4 weeks

- Maximum Tumor Control
- Maximum Acute Side Effects
- Minimal Risk of Late Side Effects

Since our goal with full course RT is to maximize tumor cell kill and duration of tumor control, we must accept an increase in the acute RT side effects. The acute RT side effects are seen in rapidly dividing cell populations such as skin and oral mucosa. Fortunately, these side effects are temporary and usually heal within 2 to 4 weeks after RT is completed. Late RT side effects are minimized with full course RT, since our goal is for the patient to live a long time with minimal long-term permanent side effects from RT. Full course RT protocols are designed to keep the risk of permanent (potentially life threatening) side effects <5% over the rest of the patient's life.

Palliative Radiation Therapy

Palliative RT is also known as coarse fractionation RT. The goal of palliative RT is to improve or maintain the quality of life. Typically, 3 to 6 fractions are given once a week over a 3 to 6 week period. The protocol will vary slightly with tumor type and location of the tumor on the body.

Since quality of life is our primary interest with palliative treatments, the RT protocols are designed to minimize acute RT side effects by giving fewer treatments with a larger dose/fraction. This allows rapidly dividing normal cells time to recover between treatments. However, late RT side effects are increased with palliative RT due to the larger dose/fraction. Palliative RT protocols are designed to keep the risk of permanent side effects <5% for one year; however, after one year the risk of side effects will increase.

- 1–2 treatments/week
- Mon-Fri
- 4–6 treatments
- 3–6 weeks
- Osteosarcoma – 3 treatments on day 0, 7, 21

- Improve or Maintain Quality of Life
- Minimal Acute Side Effects
- Increased Risk of Late Side Effects

Length of Time for RT Treatments for Outpatients

- 1st RT – 1.5-2.5 hours
- Subsequent RT's – 1-1.5 hours

Anesthesia

- Induction – Propofol or mask
- Maintenance – Isoflurane + O²

Radiation Therapy – Basic Information continued

RT Beams Available

- X-rays – 6MV packets of energy
- Electrons – particles from an atom with energy

How Radiation Works

- RT damages DNA of cells – both tumor and normal tissue
- RT kills cells when they divide (exception – lymphocytes)

RADIATION THERAPY COSTS

Full course	\$ _____
Intermediate	\$ _____
Palliative	\$ _____
Second Site	\$ _____
PreRT Dental	\$ _____
Boarding	\$ _____
CT Scan	\$ _____
Bandages	\$ _____
Side Effect Medications	\$ _____
Feeding Tube	\$ _____

Side Effects of Radiation Therapy

Acute or early side effects - occurs in tissues that divide, develops during RT or within a few weeks after RT. These are **TEMPORARY** side effects.

- **Skin** – moist or dry desquamation, starting at the end of the 3rd or 4th week. Typically heals 3–4 weeks post RT.
- **Hair Follicles** – hair loss. Re-growth will start 2 months post RT.
- **Oral Mucosa** – oral ulcers, starting at the end of the 2nd week of RT. Typically heals 2–3 weeks post RT.
- **Eyes** – conjunctivitis
- **Tracheitis, esophagitis**
- **Colitis, urethritis**

Late or long term side effects - occurs in tissues that do not divide develop many months to years after RT. These are **PERMANENT** side effects.

- Brain, Bone, Muscle – tissue scars or death

*The goal is to avoid these side effects.

- using small, daily doses of RT
- limiting total RT dose for most sensitive tissue

Other ocular side effects

- Dry eye, then cataract. Blindness may occur.