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Modern Radiotherapy Techniques

IMRT (Intensity Modulated Radiotherapy)

- Is a form of treatment delivery to achieve **highly conformal** dose distribution, ie treatment dose fits on the target & spares normal tissue as far as possible
- Uses complex dose prescription techniques, called **Inverse Planning**, whereby the physician is able to specify desired dose-constraints to the target & normal tissues

Parotid dose, xerostomia & IMRT

- With conventional radiotherapy in head-neck cancer, all patients undergo irradiation of parotid glands to a high dose, leading to irreversibly damaged function: this leads to permanent dryness of mouth
- Research has shown Severe xerostomia (<25% of baseline) avoided if mean parotid dose kept to **<20Gy** (if one parotid is to be spared) or **<25 Gy** (if both are to be spared)
- IMRT enables parotid sparing and reduces the possibility of long-term xerostomia
- Thus patients are able to achieve complete recovery of salivary function, facilitating **better swallowing & speech functions**, hence allowing for a better quality of life
- Research has also established that sparing of the parotid glands does not negatively impact tumor control.

IMRT For Prostate Cancer

- Radical radiotherapy is the curative option for organ-confined prostate cancer
- Radiotherapy dose escalation has been shown to **improve** disease control rates
- IMRT allows RT dose escalation while controlling doses to the adjacent anterior wall of the rectum
- Thus, IMRT in prostate cancer enables superior disease control with **tolerable** toxicity profile (rates of late radiation proctitis, causing bleeding per rectum are <5%)