



Atrium Health

Promises and (Possible) Pitfalls of Proton Therapy in the Carolina

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Outline

- Intro
- Why the hype?
- What's the truth about protons?
- How can LCI/SERO help?
- Case Examples
- Logistics
- Conclusion

Disclosures

- I'm a radiation oncologist and I think radiation is great
- Small grant/consulting support paid to my institution, unrelated to this talk:
 - Naveris, Inc.
 - Exact Sciences
 - BCBS North Carolina
 - Demos Medical Publishing
 - Bayer Pharmaceuticals

Who am I?

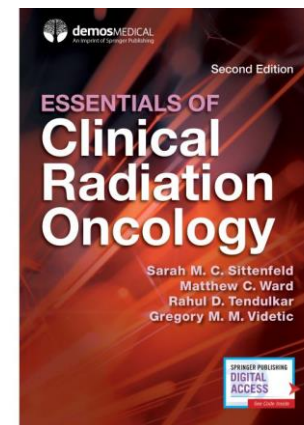


HEAD & NECK
CANCER
APRIL

International Journal of
Radiation Oncology
biology • physics

JAMA Otolaryngology –
Head & Neck Surgery

PROSTATE CANCER
Awareness Month



Who am I?



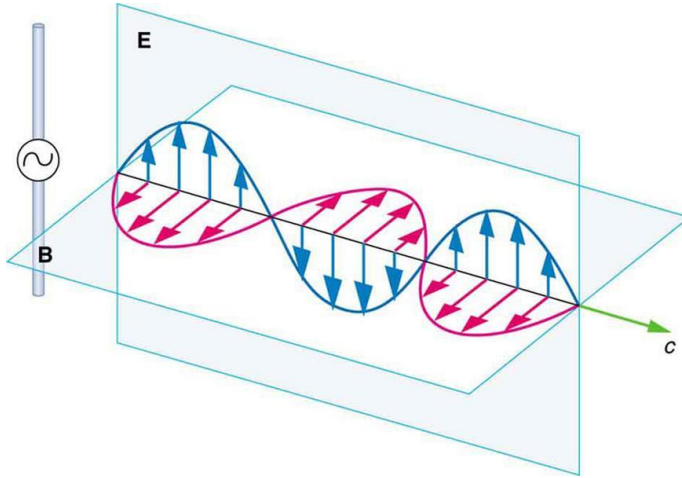
REMEMBER THE "F" IN PHYSICS



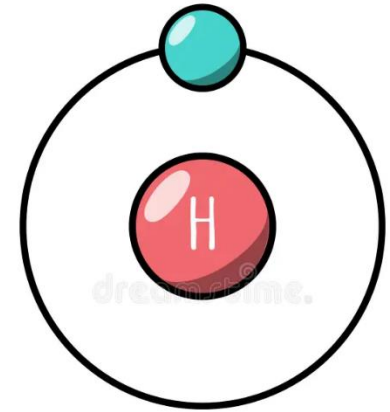
STANDS FOR FUN

What is proton therapy?

X-rays

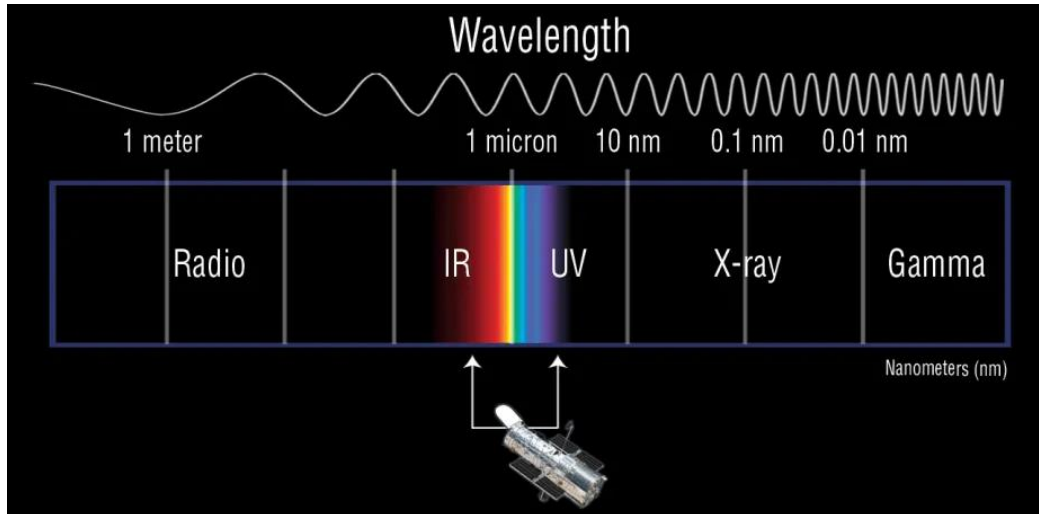


Protons

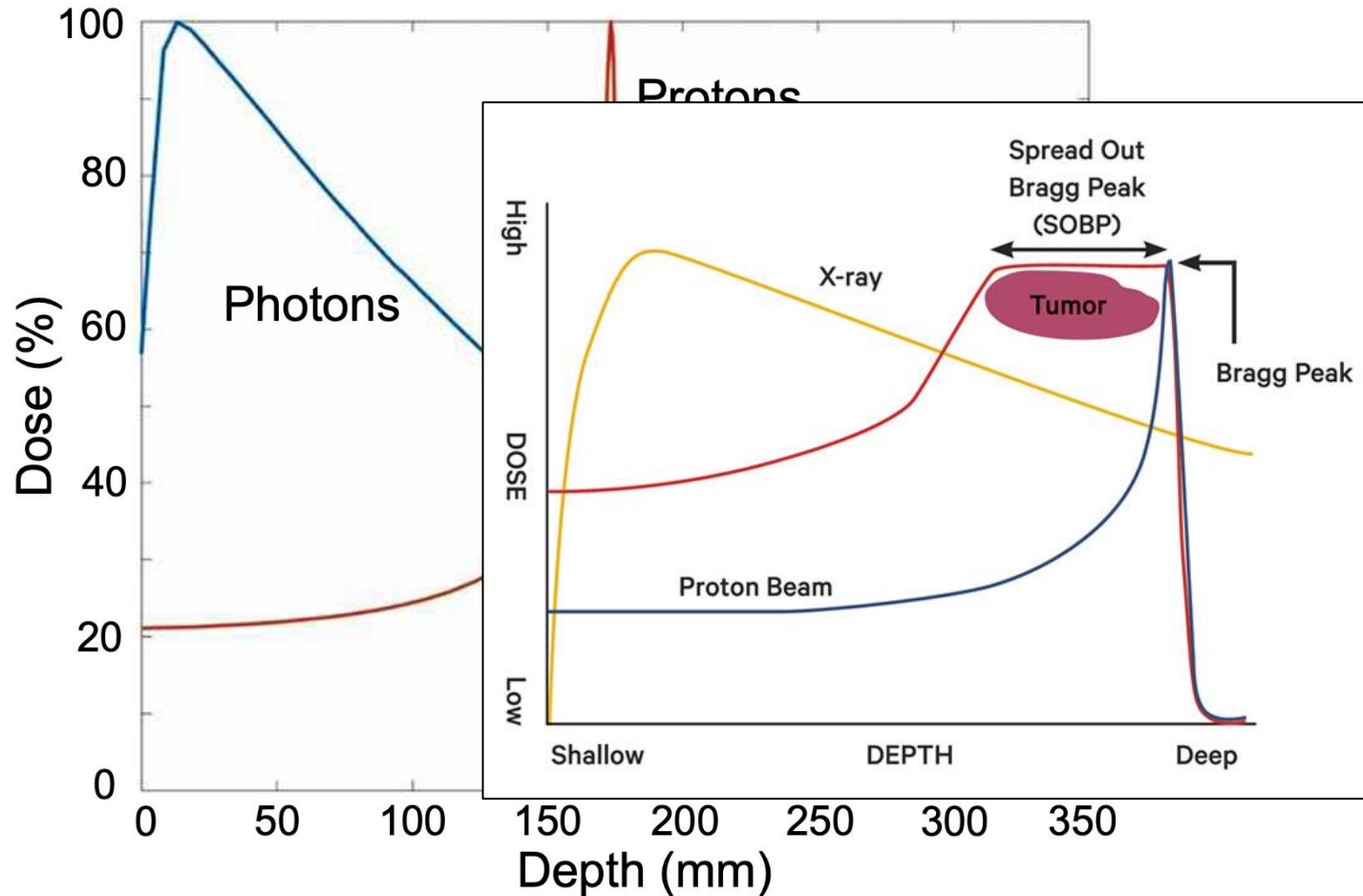


HYDROGEN

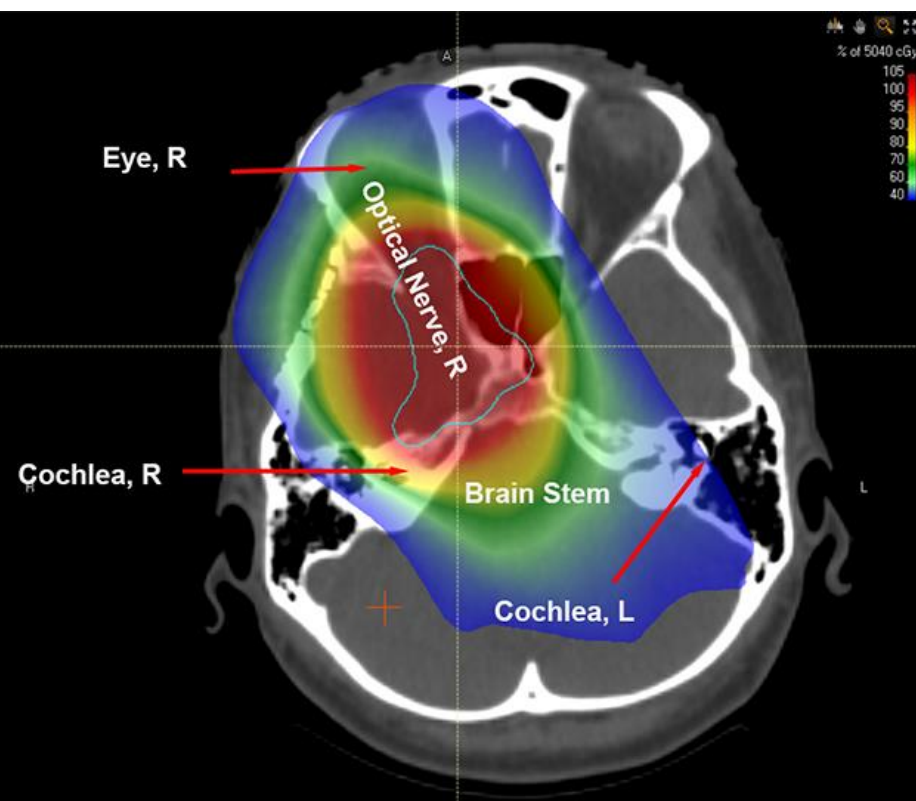
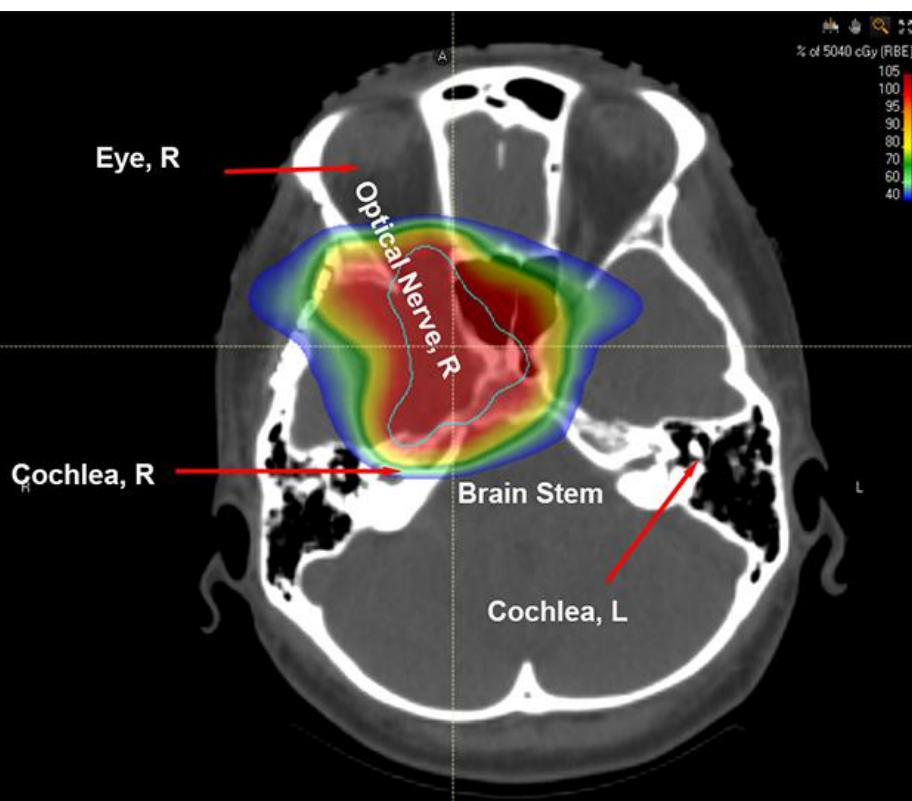
Has mass almost
2,000x an electron



Promise of Protons



Promise of Protons

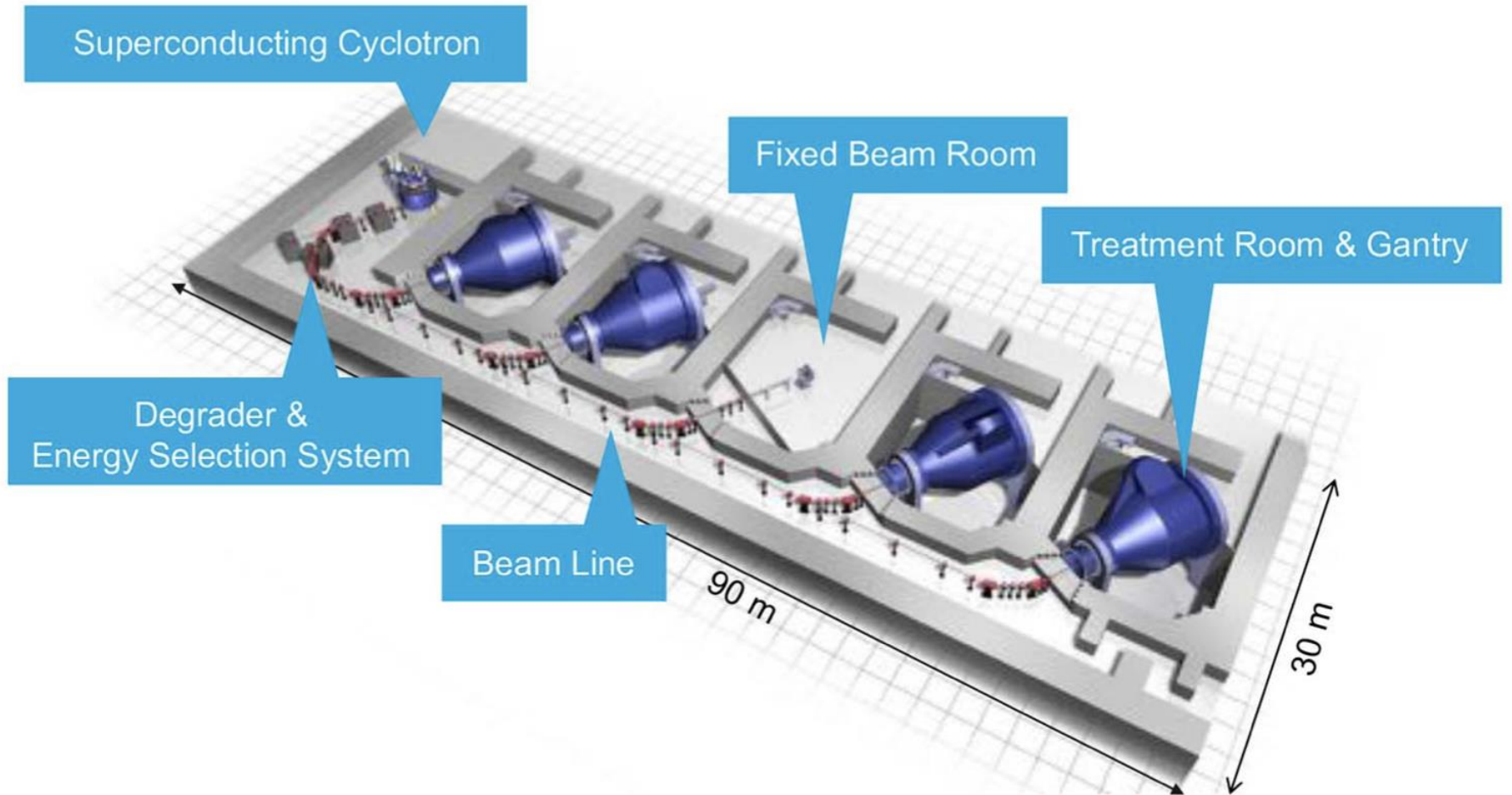


<https://www.fredhutch.org/en/patient-care/treatments/proton-therapy/brain-tumors.html>

Why the hype? Historical perspective



Why the hype?



Challenges: Technical



- Downtime
- Uncertainties
- Neutron contamination
- Patient tolerance

Challenges: Payer

NEWS

\$50 million Proton International Center at UAB closing over ‘inability to make payments’

Updated: Nov. 28, 2023, 4:49 p.m. | Published: Nov. 28, 2023, 3:18 p.m.

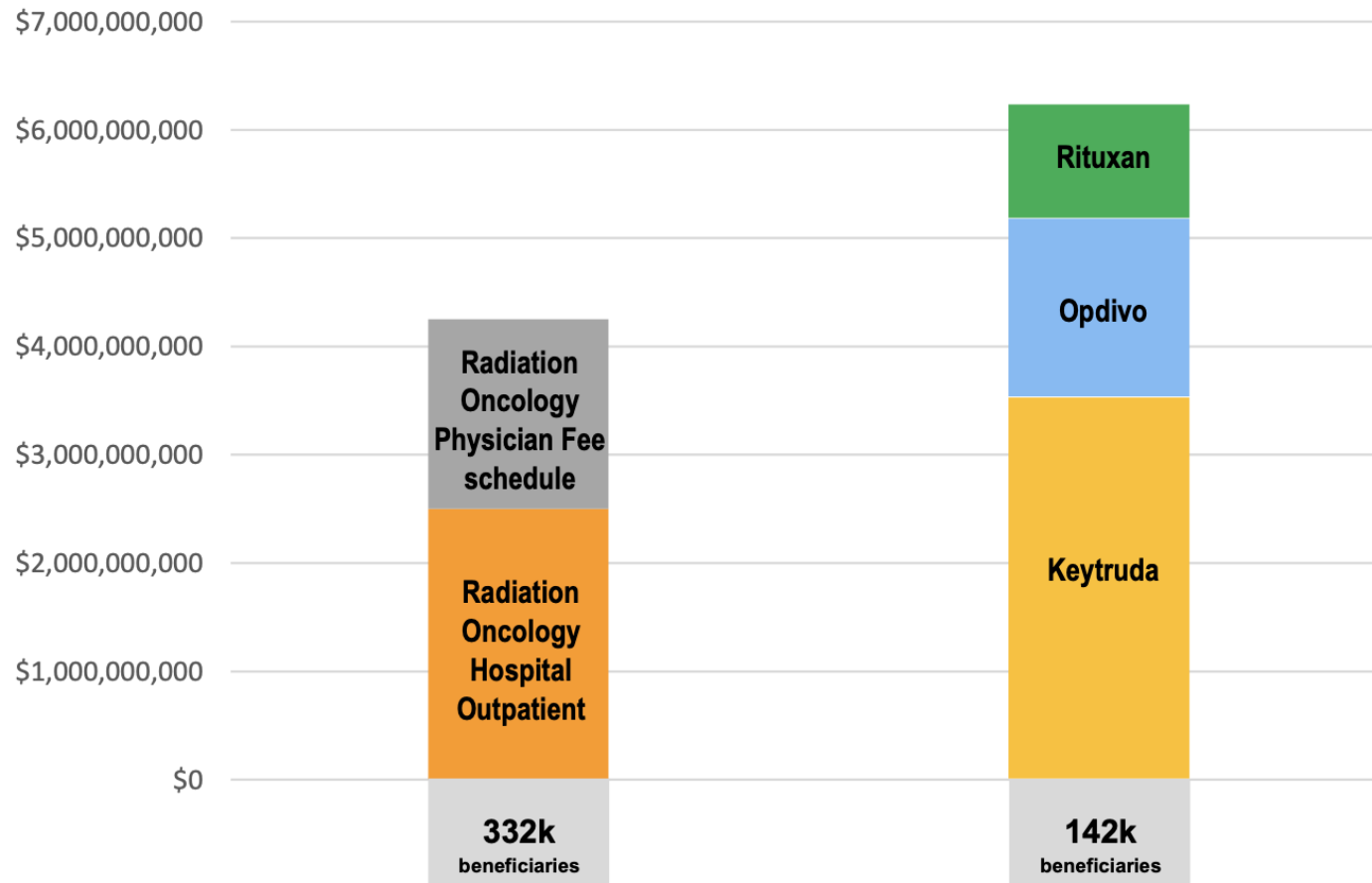
**THE
CANCER
LETTER**



Indiana to Close Proton Beam Facility Amid Nationwide Building Boom

Challenges: Payer

Table 2. Medicare Part B Spending 2020: Radiation Oncology vs. Top 3 Cancer Drugs

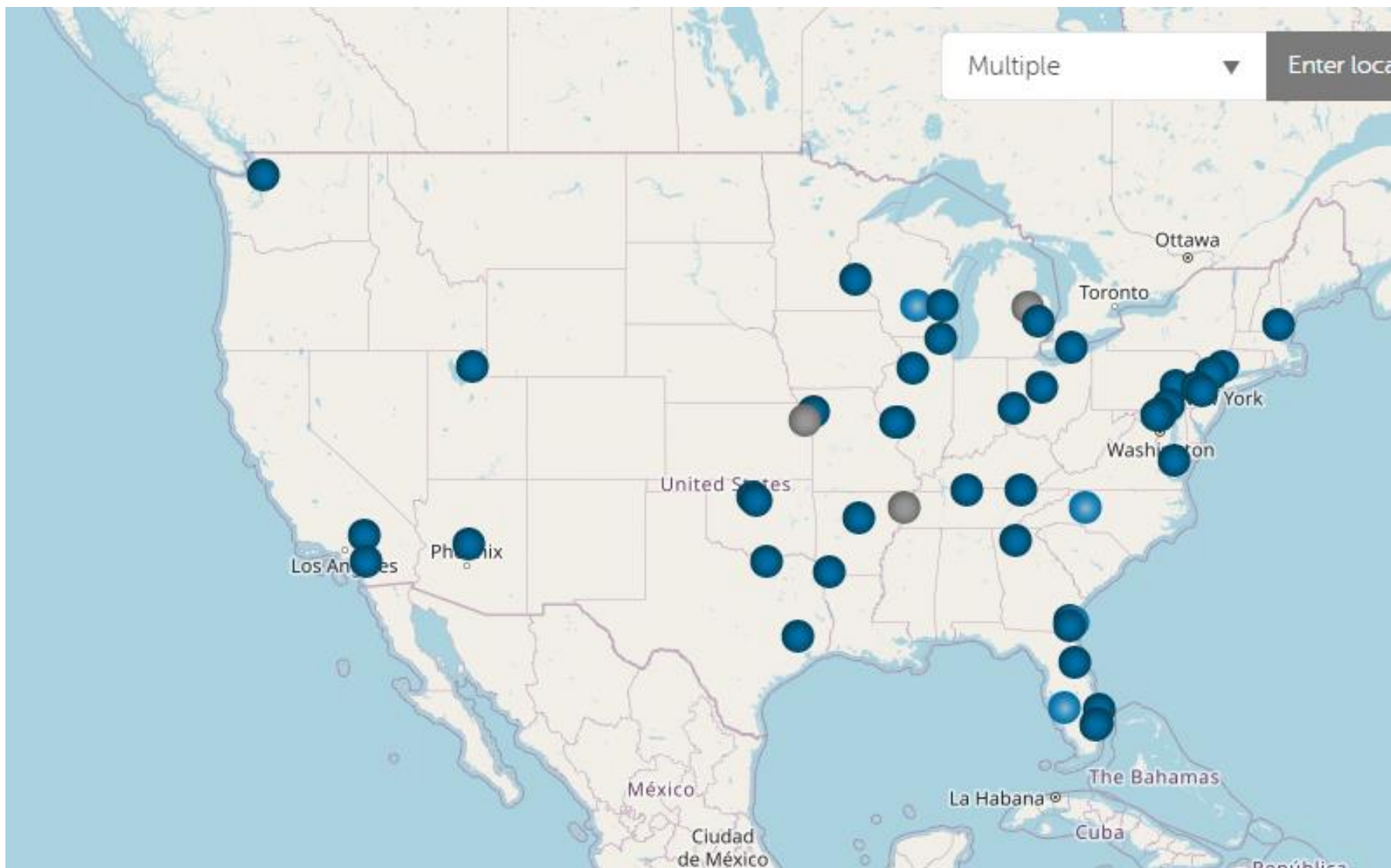


³ Medicare Payment Advisory Commission (MedPAC). (2022). Report to Congress: Medicare and the Health Care Delivery System. Retrieved from https://www.medpac.gov/wp-content/uploads/2022/06/Jun22_MedPAC_Report_to_Congress_SEC.pdf

How can LCI help?



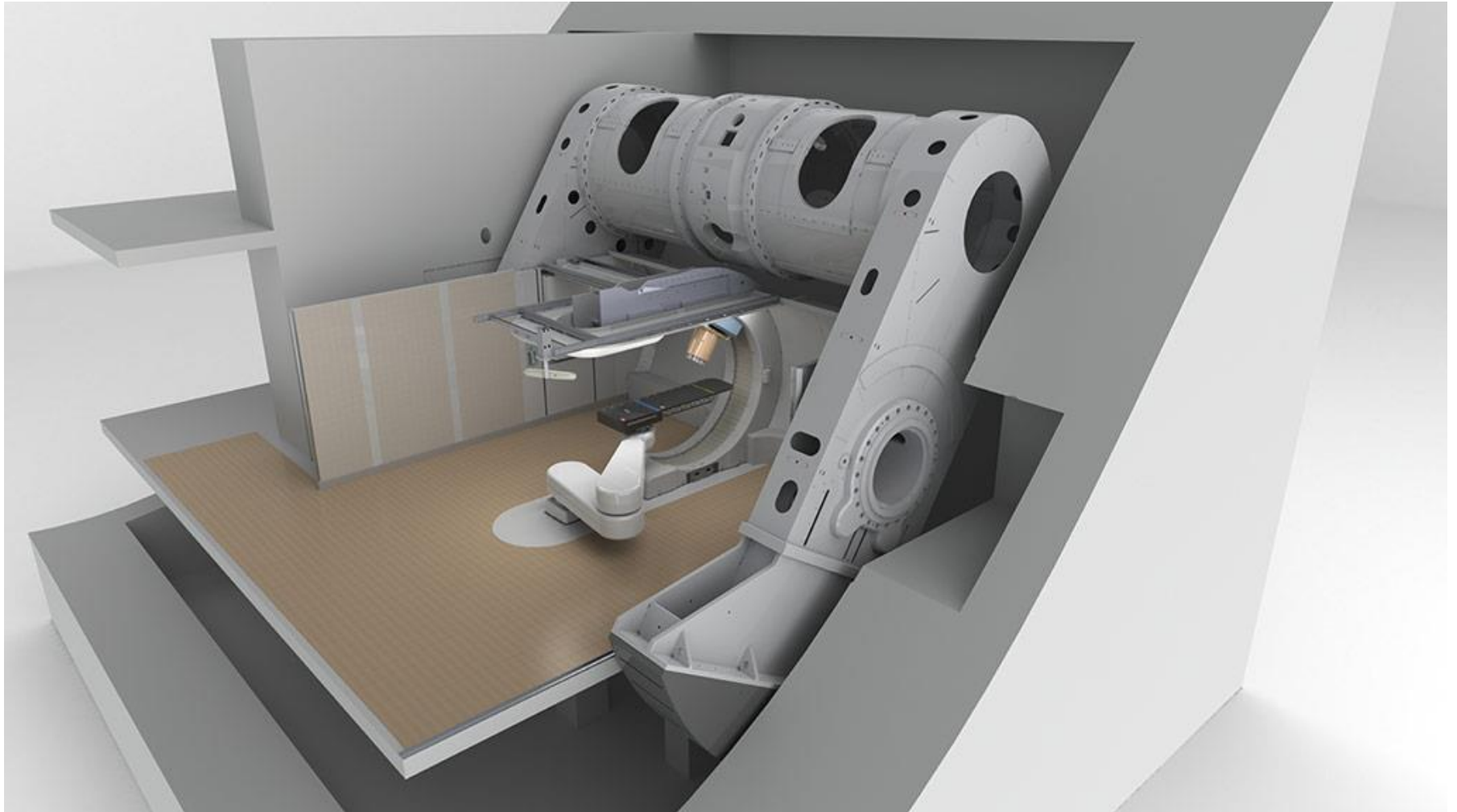
Geographic Access



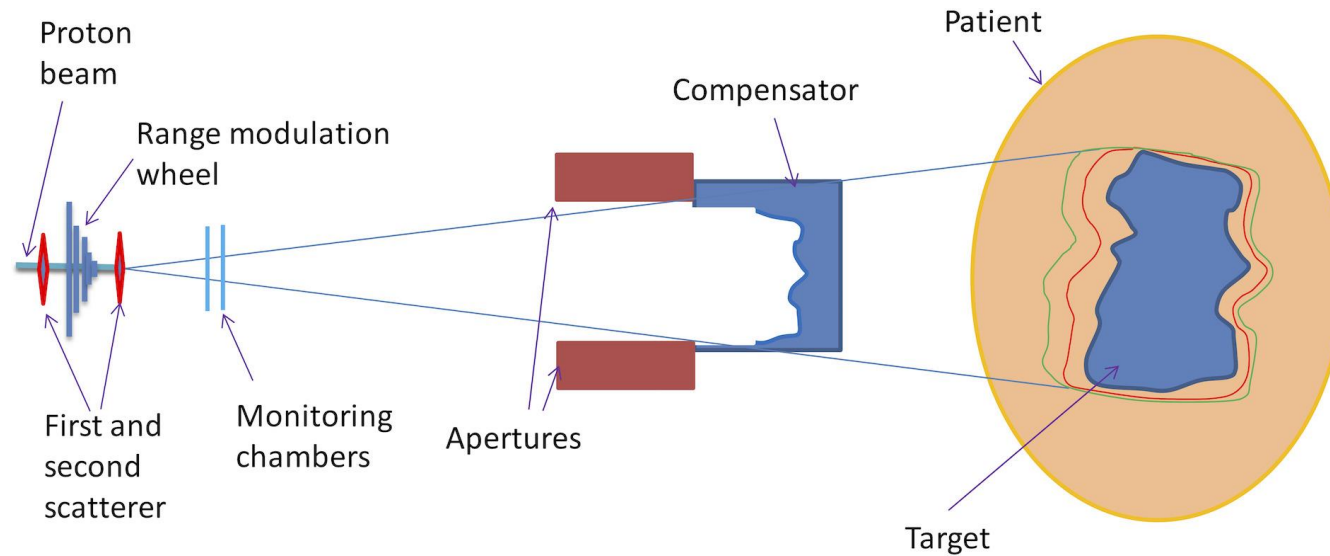
How Can LCI help?



How can LCI help?



Not all proton units are created equal

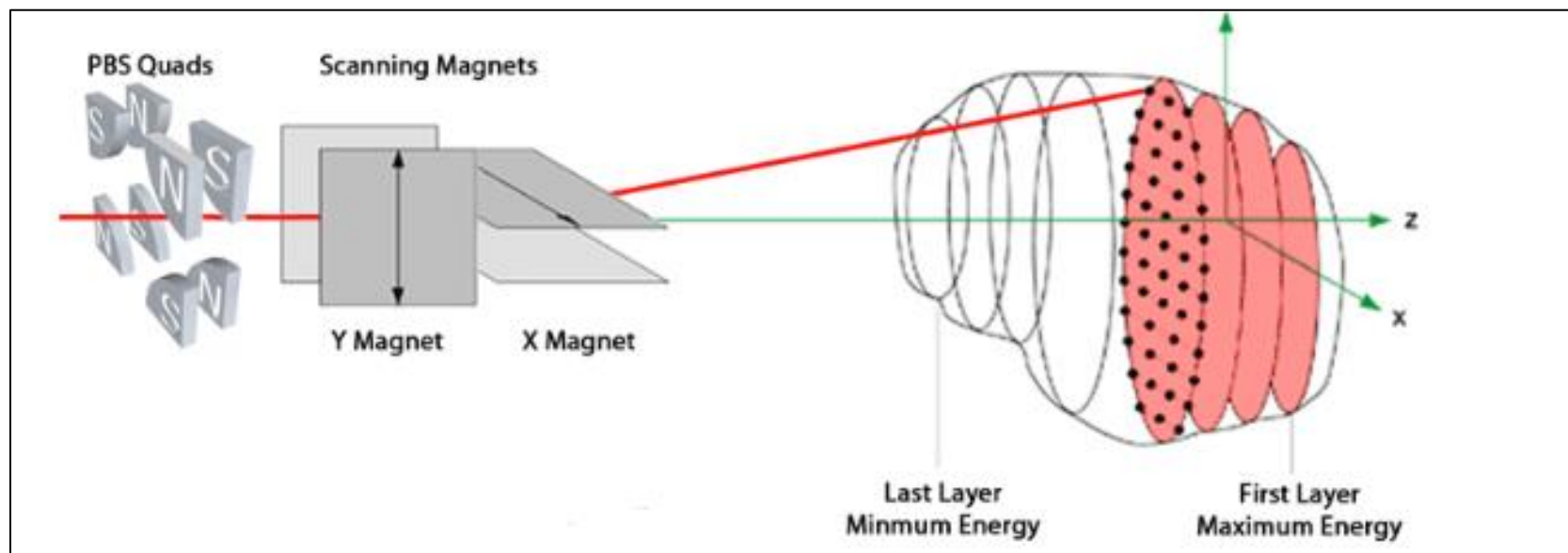


Source: AAPM TG224 Arjomandy et al.

Compensator: Antique party gift?

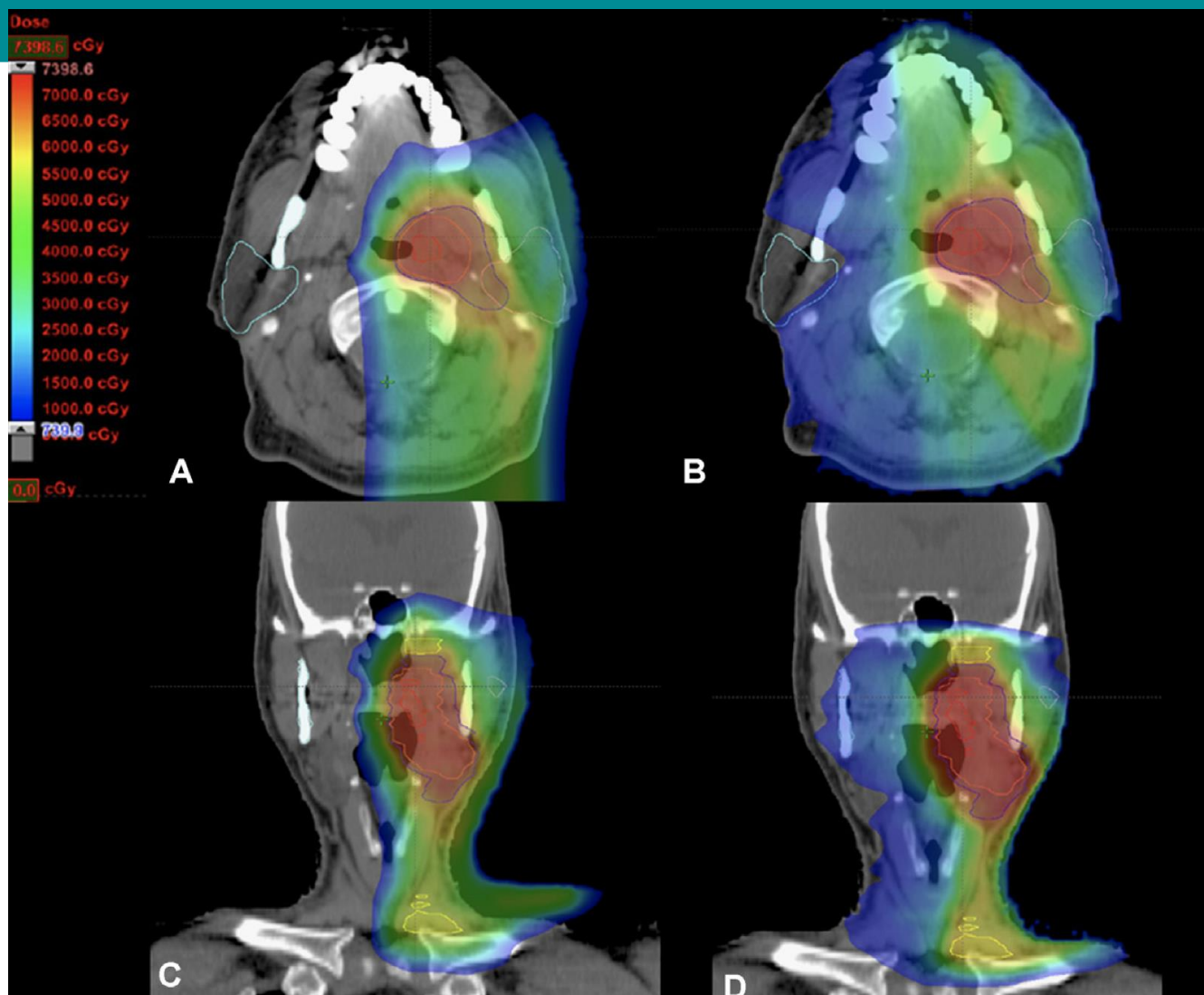


IMPT/Spot scanning

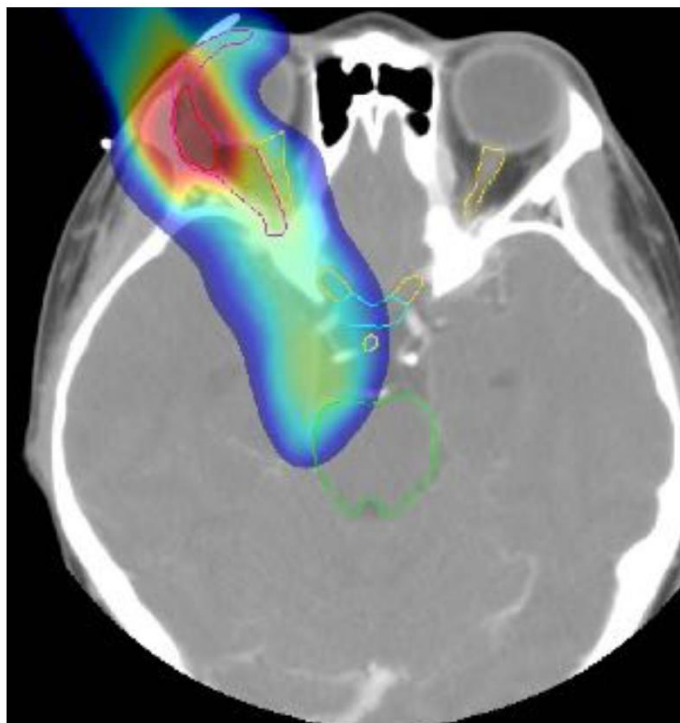
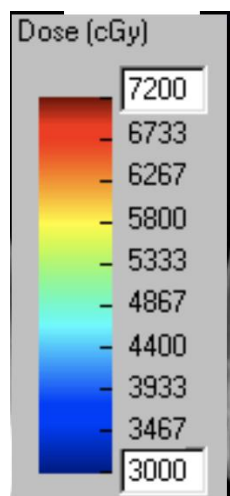


Source: AAPM TG224 Arjomandy et al.

Case Examples: Unilateral H&N

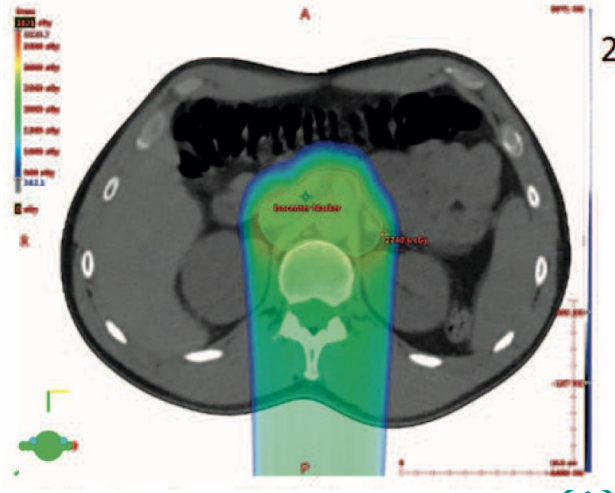
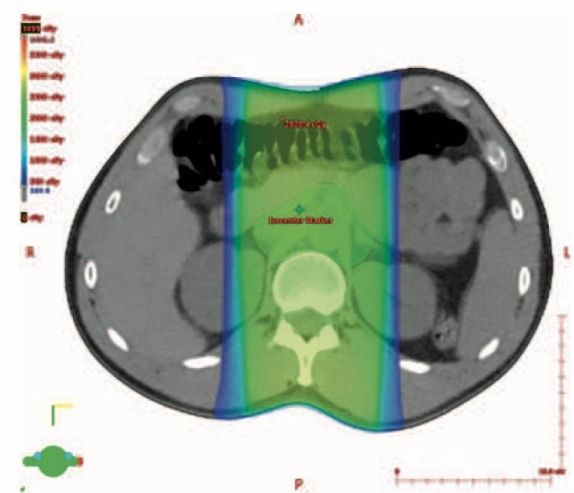
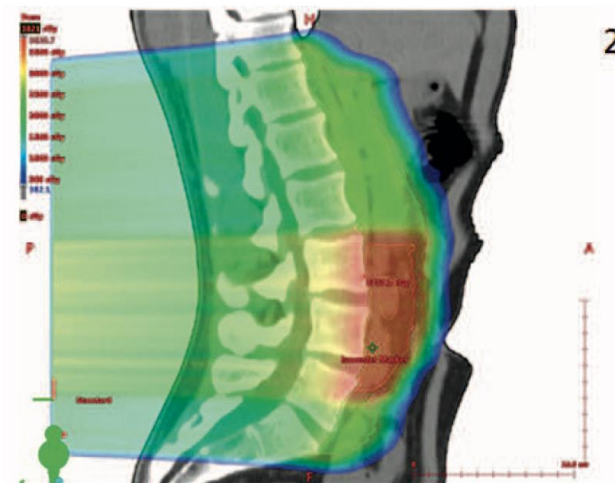
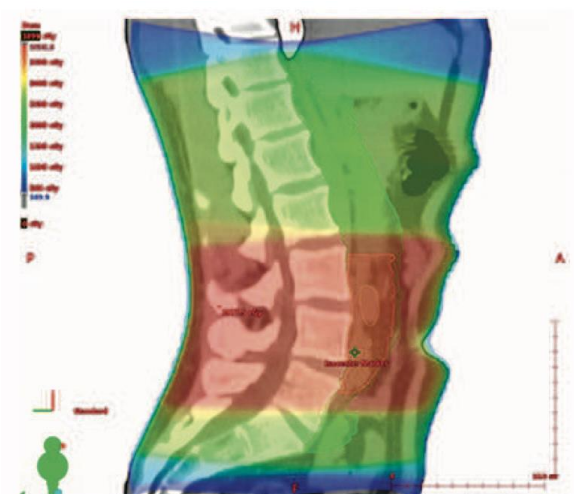


Case Examples: Lacrimal Adenoid Cystic



Courtesy Dr. Skip Rosenthal, Mevion

Case Examples: Stage II seminoma



“Tier 1” Indications

Overall: definitive intent therapy in patients with expected longevity

- Pediatric patients
- Skull base or spine chordoma / chondrosarcoma
- Skull base tumors (NPX or paranasal sinus)
- Localized unresectable HCC
- Patients with radiosensitizing genetic syndromes (Li-Fraumeni, Rb etc)
- Definitive intent re-irradiation
- Craniospinal irradiation

“Tier 2” Indications

- Esophageal cancer (cardiac sparing)
- Low grade/benign CNS tumors not amenable to SRS
- AVM not amenable to SRS
- Locally advanced H&N cancer
- Lymphoma involving
the chest or ABD
- Locally advanced NSCLC
- Advanced breast requiring comprehensive RNI •
Retroperitoneal sarcoma

“Tier 3” Indications (Not indicated)

- Prostate cancer
- High grade gliomas
- Metastatic disease
- Palliative re-irradiation
- Other disease types

Logistics

- Refer to closest LCI facility (can be seen in region)
- Options for out-of-town appointments available
- Video visits available

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