

# VCU Palliative Care ECHO\*

October 24, 2019

# Continuing Medical Education

October 24, 2019 | 12:00 PM | teleECHO Conference

**Physicians:** VCU Health Continuing Medical Education is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians. VCU Health Continuing Medical Education designates this live activity for a maximum of 1 **AMA PRA Category 1 Credits<sup>™</sup>**.

Physicians should claim only the credit commensurate with the extent of their participation in the activity.

## **Continuing Nursing Education: 1.5 CE Contact Hours**

VCUHealth is approved as a provider of continuing nursing education by the Virginia Nurses Association, an accredited approver by the American Nurses Credentialing Center's Commission on Accreditation.

# Disclosures

October 24, 2019 | 12:00 PM | teleECHO Conference

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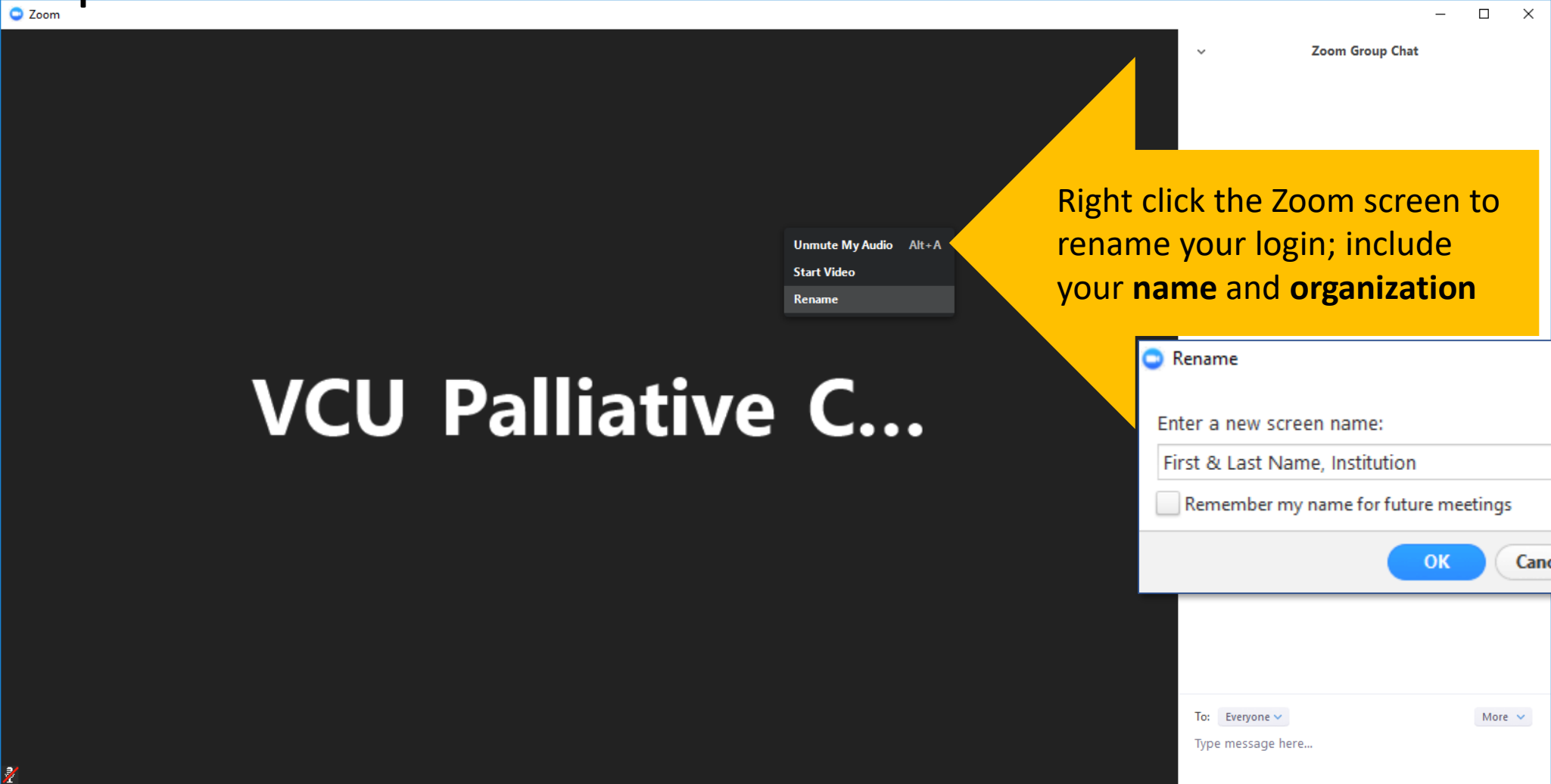
The following Planning Committee and Presenting Faculty Members report relevant financial relationships to disclose:

The following Planning Committee and Presenting Faculty Members report having no relevant financial relationships:

**Christopher McLaughlin, PGY-5**  
**Danielle Noreika, MD**

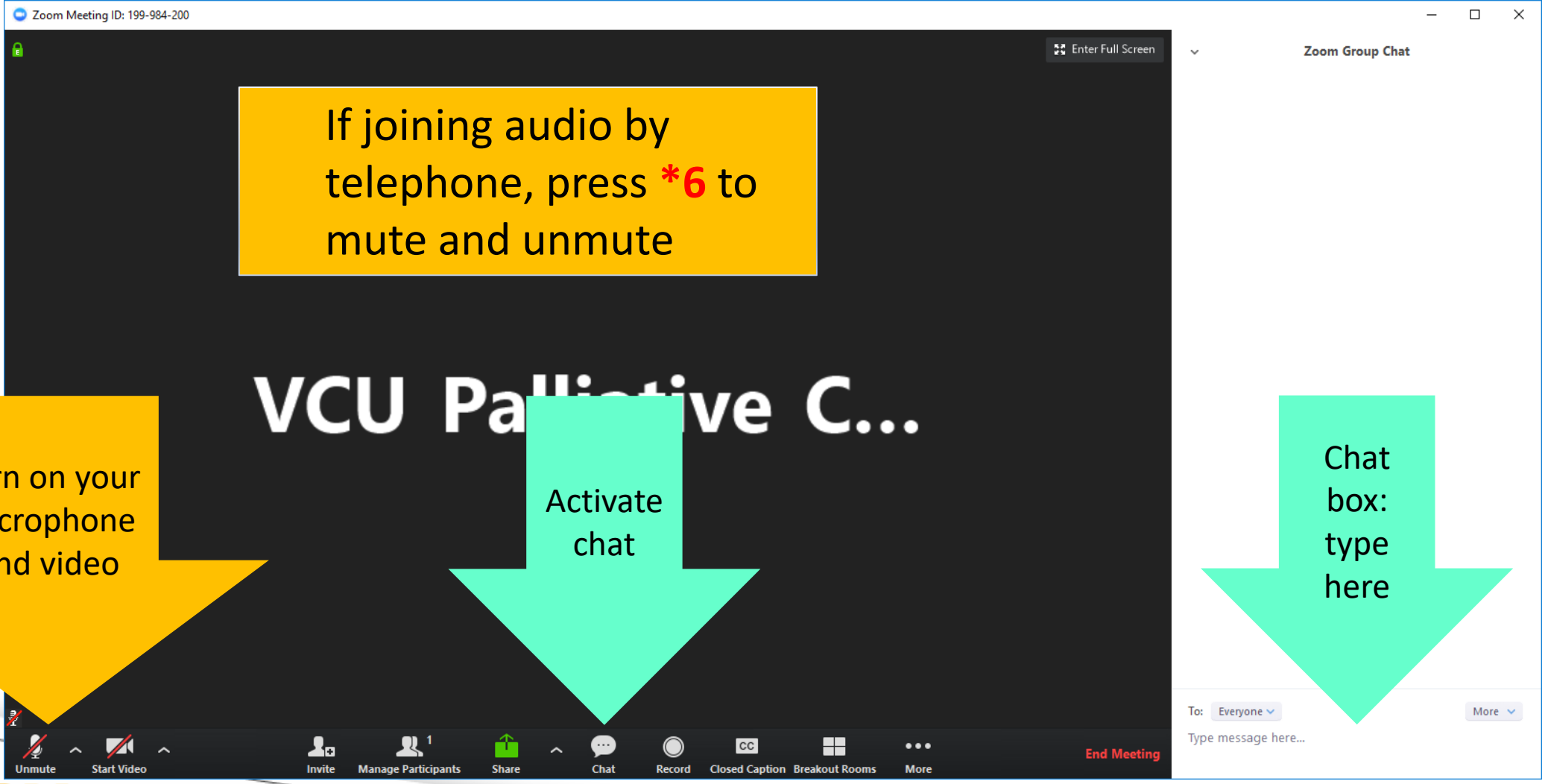
***No commercial or in-kind support was provided for this activity***

# Helpful Reminders



The screenshot shows a Zoom window with a dark background. A right-click context menu is open, showing options: 'Unmute My Audio Alt+A', 'Start Video', and 'Rename'. A yellow arrow points from the text 'Right click the Zoom screen to rename your login; include your **name** and **organization**' to the 'Rename' option. Below the menu, a 'Rename' dialog box is open, containing the text 'Enter a new screen name:', a text input field with 'First & Last Name, Institution', a checkbox for 'Remember my name for future meetings', and 'OK' and 'Cancel' buttons. The Zoom window title bar shows 'Zoom' and 'Zoom Group Chat'. The main content area displays 'VCU Palliative C...'.

# Helpful Reminders



The screenshot shows a Zoom meeting window with a dark background. At the top, it says "Zoom Meeting ID: 199-984-200". In the center, there is a yellow box with the text: "If joining audio by telephone, press \*6 to mute and unmute". Below this, the text "VCU Palliative C..." is visible. On the right side, there is a "Zoom Group Chat" panel with a text input field and a "More" button. At the bottom, there is a toolbar with icons for Unmute, Start Video, Invite, Manage Participants, Share, Chat, Record, Closed Caption, Breakout Rooms, and More. A red "End Meeting" button is also present.

If joining audio by telephone, press \*6 to mute and unmute

Turn on your microphone and video

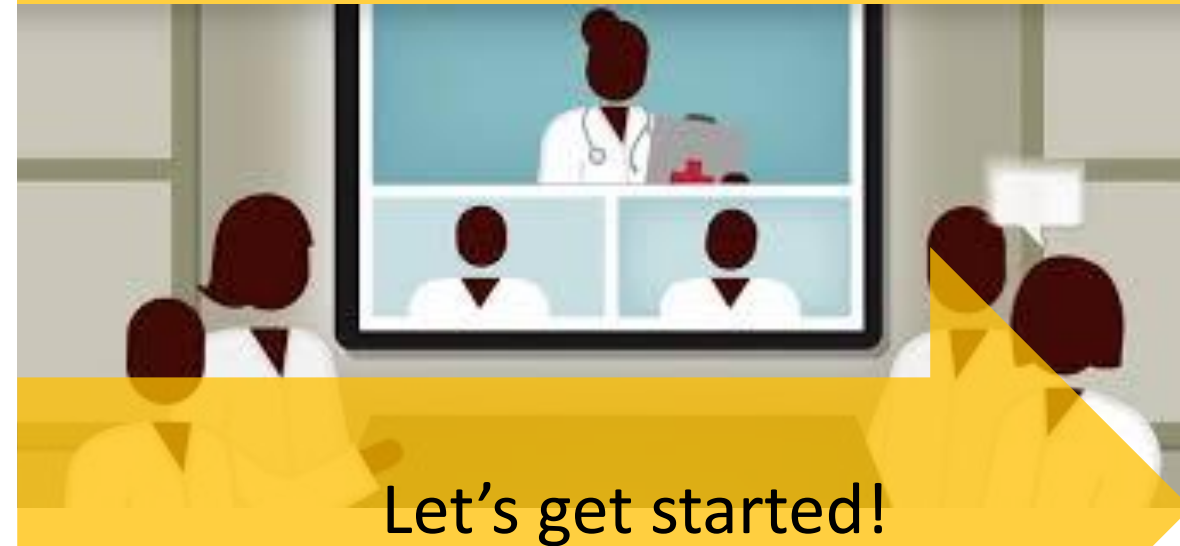
Activate chat

Chat box: type here

# What to Expect

- I. Didactic Presentation  
20 minutes + Q&A
- II. Case Discussions
  - Case Presentation  
5 min.
  - Clarifying questions from spokes,  
then hub  
2 min. each
  - Recommendations from spokes,  
then hub  
2 min. each
  - Summary (hub)  
5 min.
- III. Closing and Questions

- Bi-weekly tele-ECHO sessions (1.5 hours)
- Didactic presentations developed by inter-professional experts in palliative care
- Website: [www.vcuhealth.org/pcecho](http://www.vcuhealth.org/pcecho)
- Email: [pcecho@vcuhealth.org](mailto:pcecho@vcuhealth.org)



# Hub Introductions

<b>VCU Team</b>	
<b>Clinical Directors</b>	<p>Egidio Del Fabbro, MD VCU Palliative Care Chair and Program Director</p> <p>Danielle Noreika, MD, FACP, FAAHPM Medical Director/Fellowship Director VCU Palliative Care</p>
<b>Clinical Experts</b>	<p>Candace Blades, JD, RN – Advance Care Planning Coordinator</p> <p>Brian Cassel, PhD – Palliative Care Outcomes Researcher</p> <p>Jason Callahan, MDiv – Palliative Care Specialty Certified</p> <p>Felicia Hope Coley, RN</p> <p>Diane Kane, LCSW – Palliative Care Specialty Certified</p> <p>Tamara Orr, PhD, LCP – Clinical Psychologist</p>
<b>Support Staff</b>	
<p>Program Manager</p> <p>Telemedicine Practice Administrator</p> <p>IT Support</p>	<p>Teri Dulong-Rae &amp; Bhakti Dave, MPH</p> <p>David Collins, MHA</p> <p>Frank Green</p>

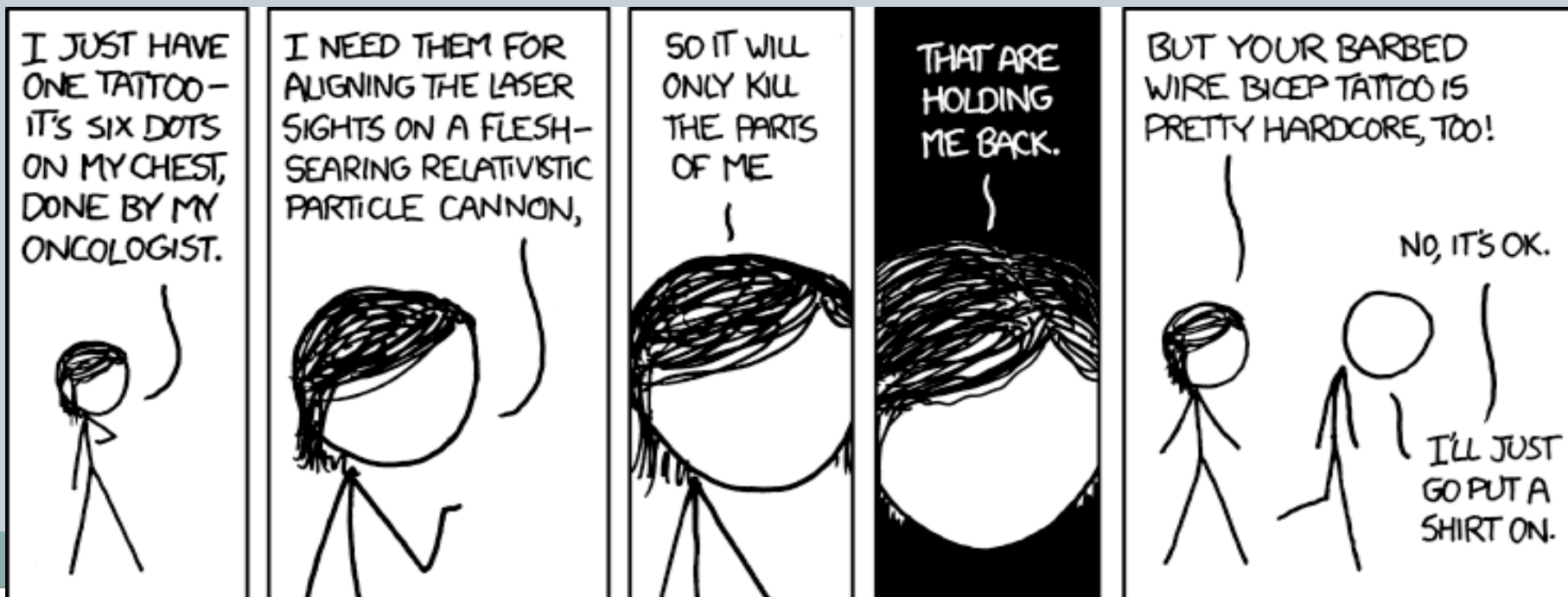
# Spoke Participant Introductions

Name and Institution



## INTRODUCTION TO RADIATION ONCOLOGY

### Christopher McLaughlin, PGY-5

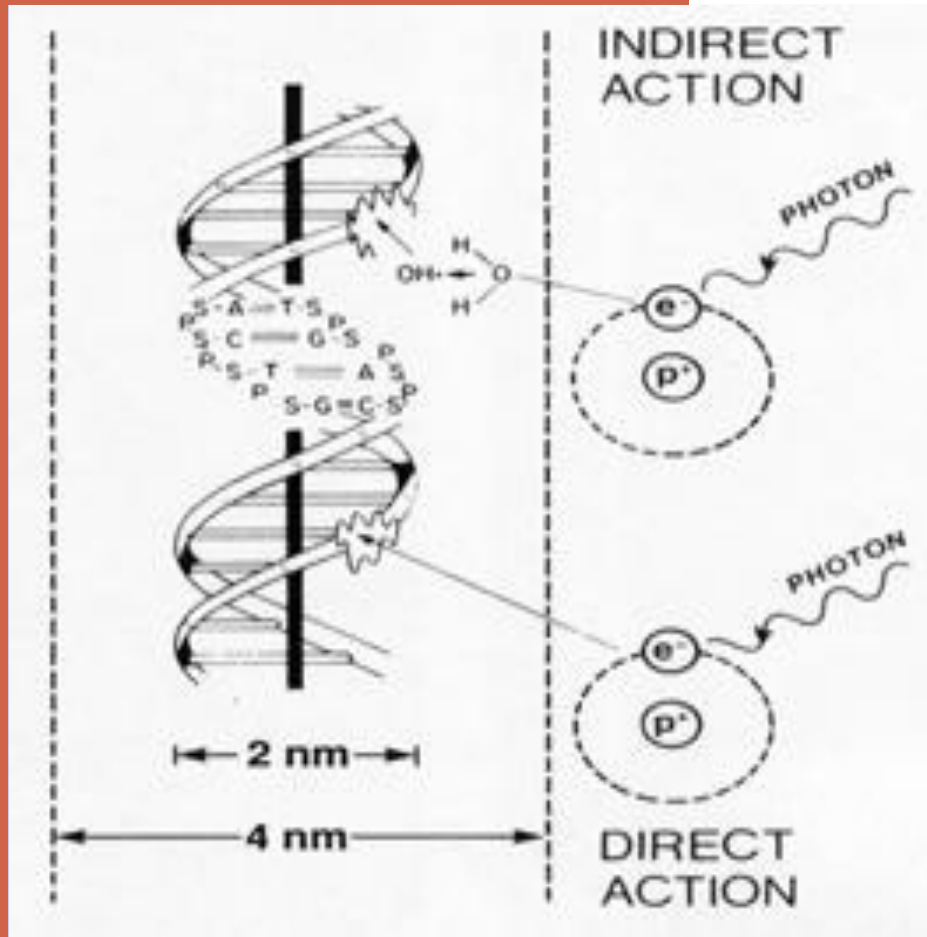


# Overview



- What is radiation and how does it work?
  - Types of Radiation
  - Treatment machines
  - Radiation oncology workflow
- Radiation Oncology in the treatment of cancer
  - Definitive treatment
  - Adjuvant treatment
  - **Palliative treatment**

## How Does Radiation Therapy Work?



- Biologic effects of radiation are from DNA damage
- Direct DNA damage is when an electron interacts with DNA
- Indirect DNA damage is when an electron interacts with water to produce a hydroxyl radical which in turn damages the DNA

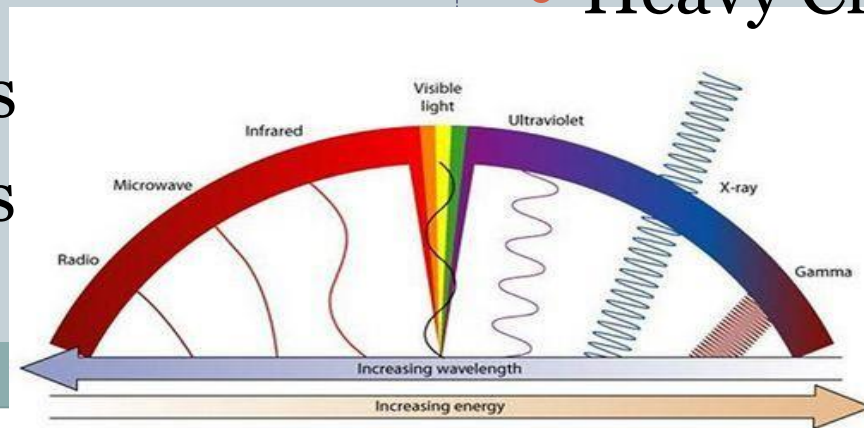
# Types of Radiation

## Electromagnetic Radiation

- **X-rays**
- **Gamma rays**
- Ultraviolet
- Visible Light
- Infrared
- Microwaves
- Radiowaves

## Particulate Radiation

- **Electrons**
- Protons
- $\alpha$  particles
- Neutrons
- Heavy Charged Particle



# How do we give radiation therapy?

- External beam radiation
- Brachytherapy
  - ✦ Intracavitary
  - ✦ Interstitial
- Stereotactic radiation therapy



# Modern linear accelerator

## Accelerator Structure

Microwave cavities propagating Electric fields used to accelerate electrons in a linear path.

## Modulator

Modulator circuit supplies high-voltage pulses to cathode of microwave generator.

## Magnetron

Generates + amplifies microwaves to be used for electron acceleration in the accelerator guide.

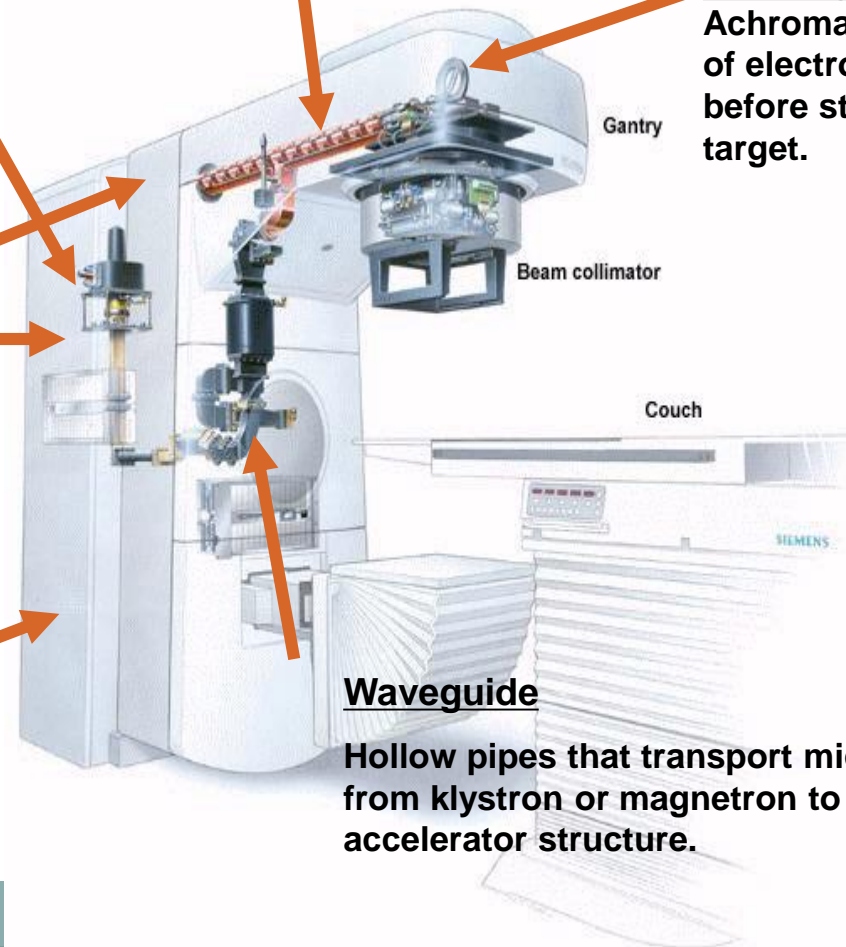
Or

## Klystron

Generates + amplifies microwaves to be used for electron acceleration in the accelerator guide.

## Bending Magnet

Achromatic focusing of electron beam before striking target.



## Waveguide

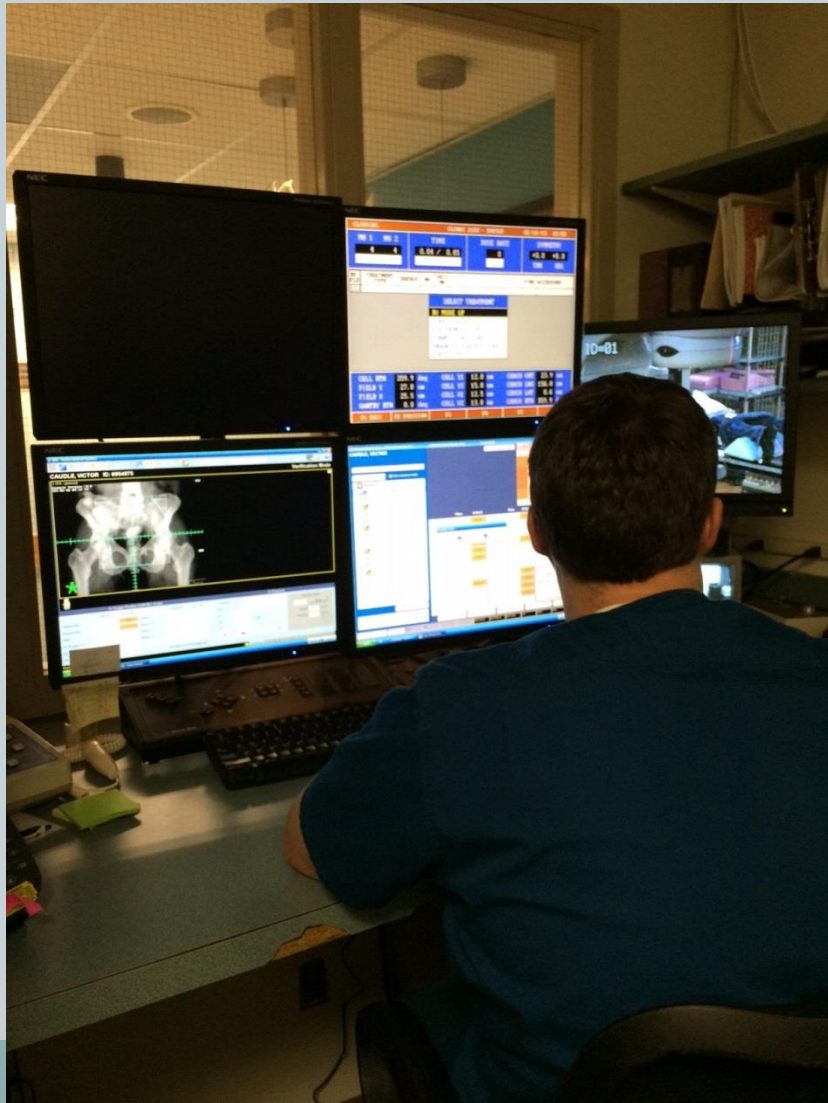
Hollow pipes that transport microwaves from klystron or magnetron to the accelerator structure.

## Linear Accelerators:

- Elekta
- Varian Truebeam
- TomoTherapy
- BrainLab Novalis
- Cyberknife



# Linear Accelerators at VCU



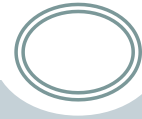
# Fractionation



- Radiation split into “fractions”
- Exploit difference in survival curves between normal tissue, tumor
- Target of RT = DNA
  - Tumor DNA repair mechanisms dysfunctional
  - Daily DNA damage repaired well by normal tissue, poorly by tumor
- If no adequate DNA repair before mitosis, “mitotic catastrophe”
  - Death is not instant!



# Stereotactic Treatment



- Refers to 3D coordinate system that allows accurate correlation of a virtual target seen in patient's diagnostic images with the actual target in patient anatomy
- 1-5 high dose treatments delivered with pin point accuracy
- Intracranial radiosurgery (SRS)
- Stereotactic body radiotherapy (SBRT)

# What Does it Take to Irradiate?



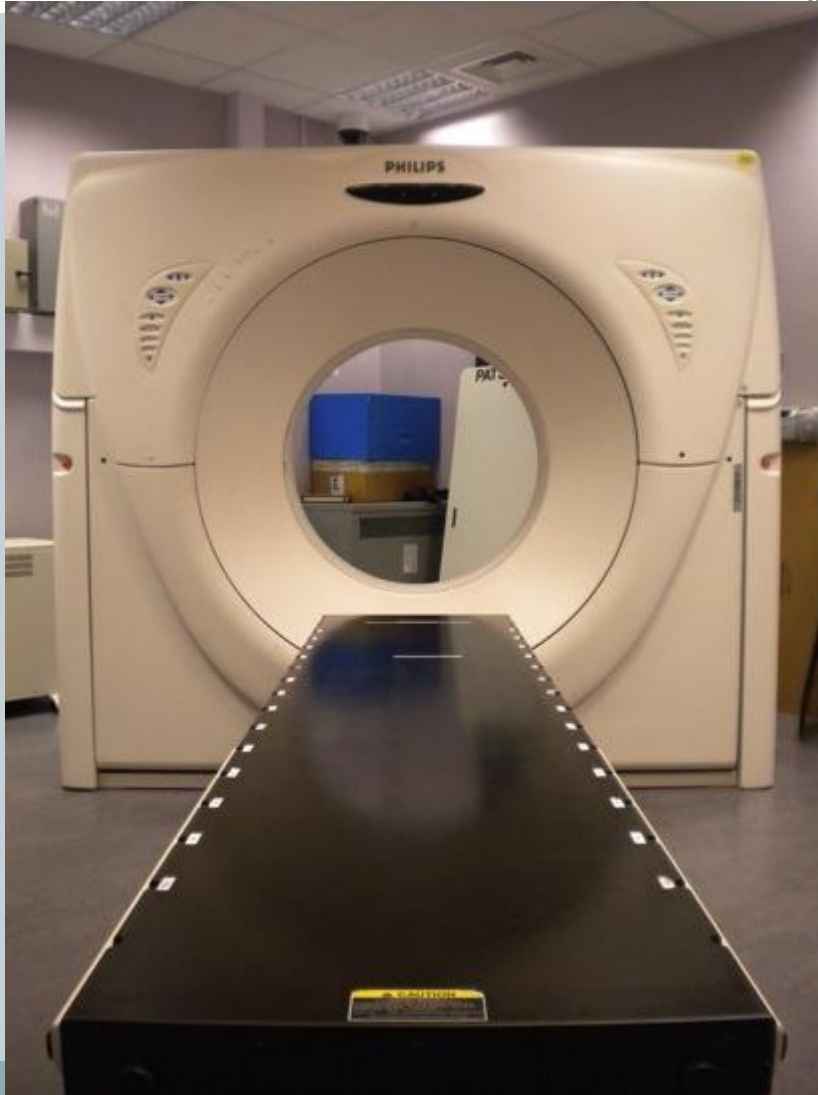
1. Radiation oncologist orders treatment
2. CT simulation
3. Contouring (radiation oncologist)
4. Treatment plan (dosimetrist)
5. QA (physics)
6. Treatment delivery (therapists)
  1. Setup verification
  2. Beam on

# CT simulation

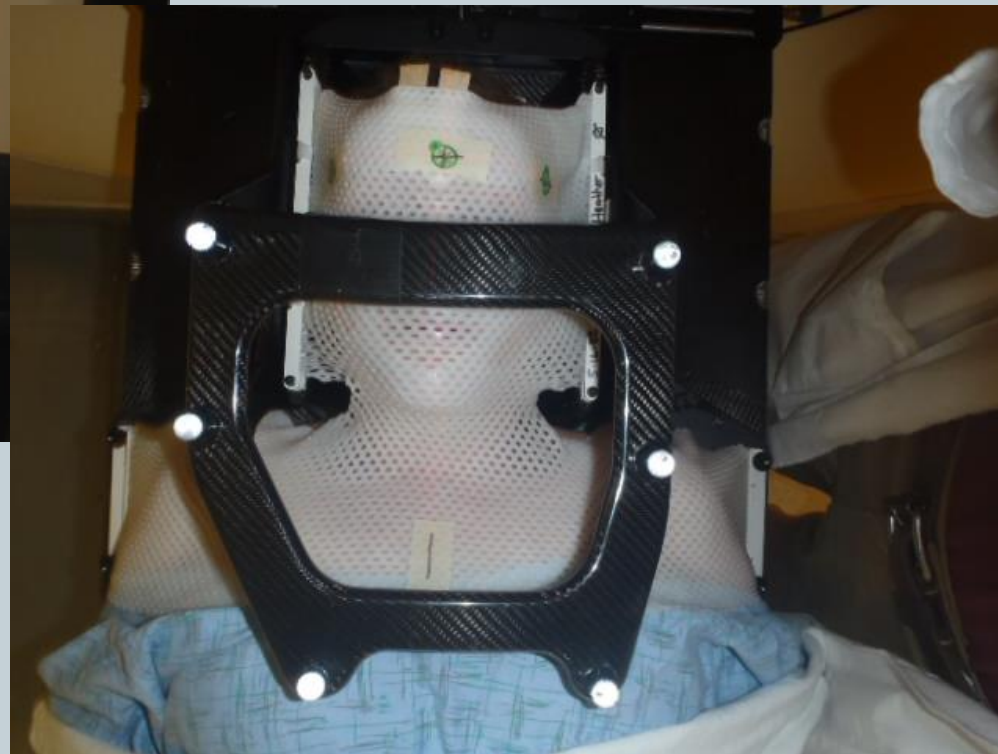


- The simulation is tailored to maximize:
  - 1) Target/avoidance structure ratio
  - 2) Visualization of the target
  - 3) Patient safety/comfort
  - 4) Reproducibility

# CT simulation

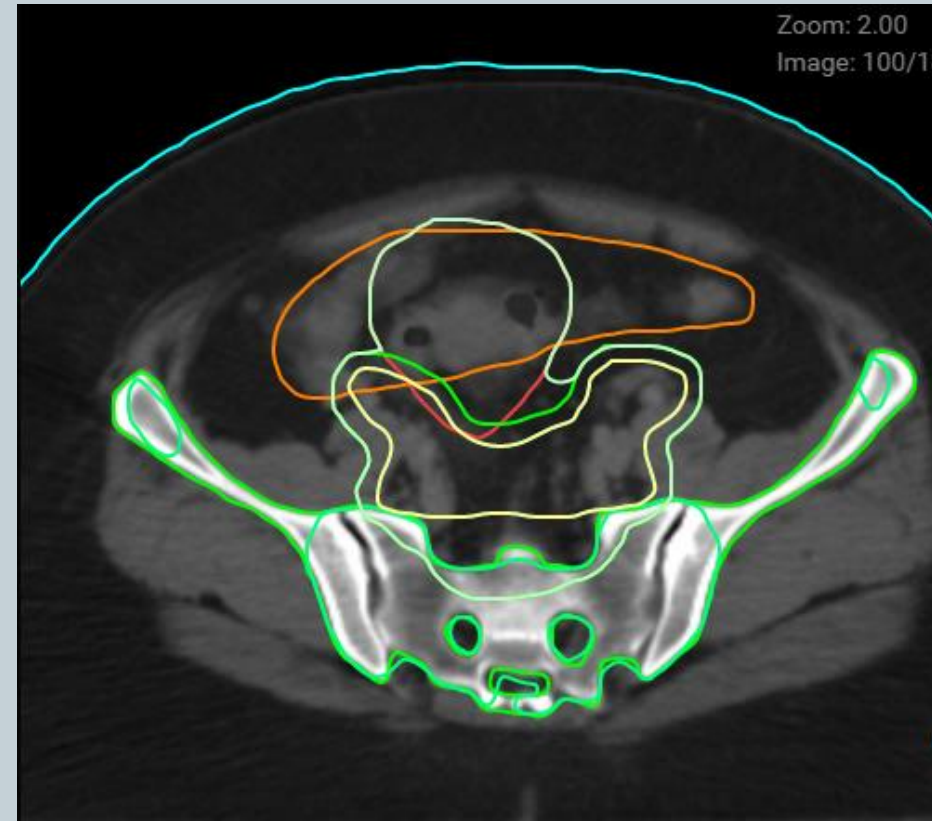
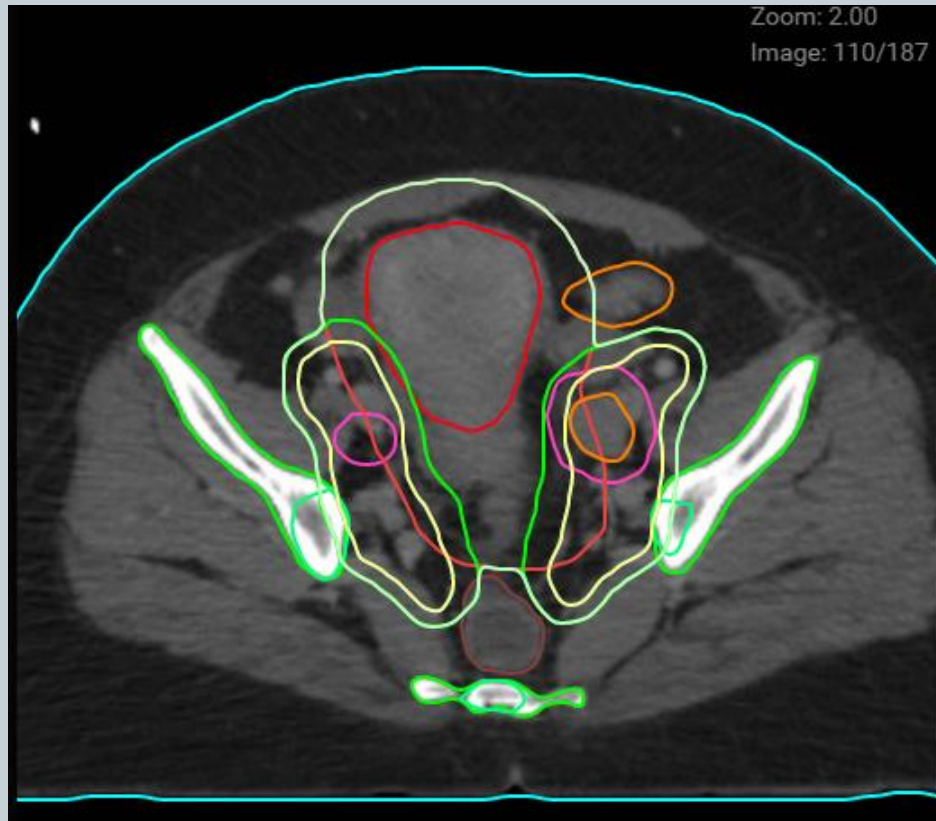


# CT simulation: Mask, BrainLab Spheres



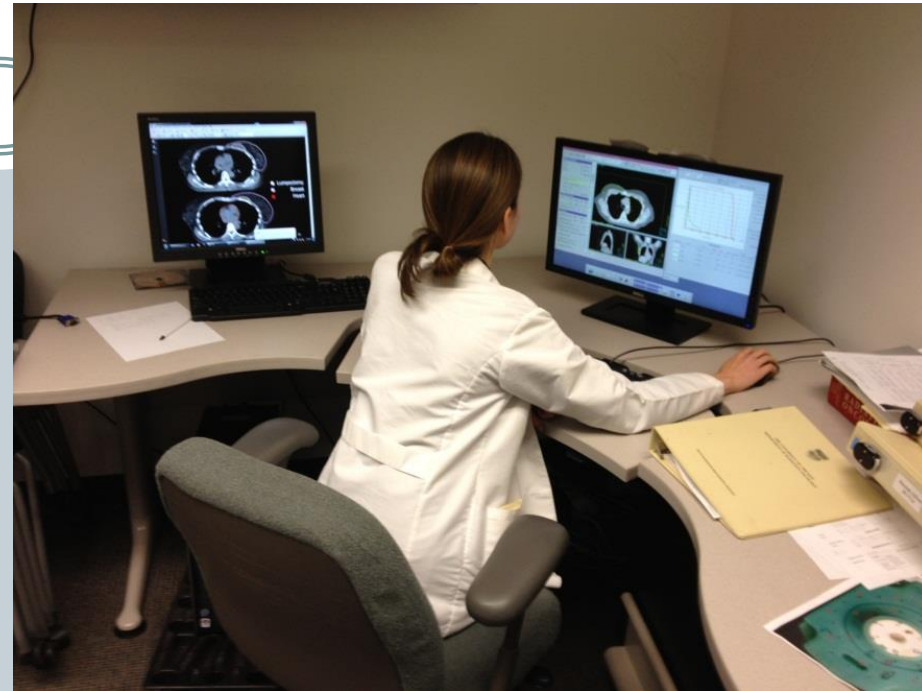
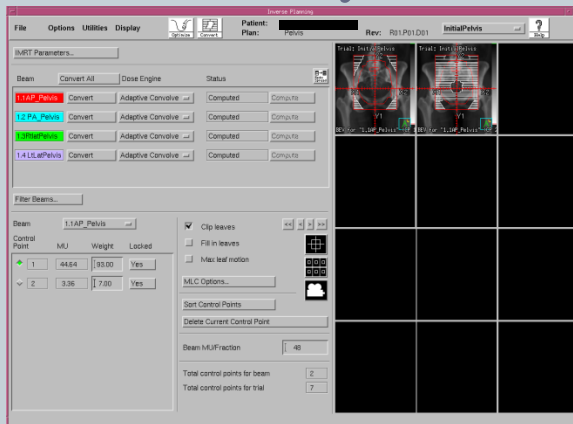


# Treatment Planning: Contouring



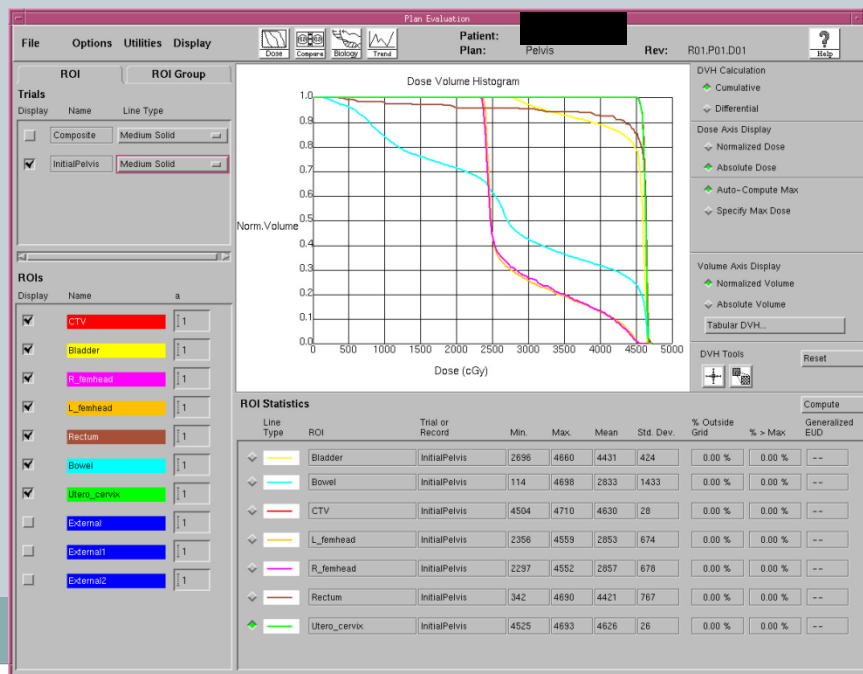
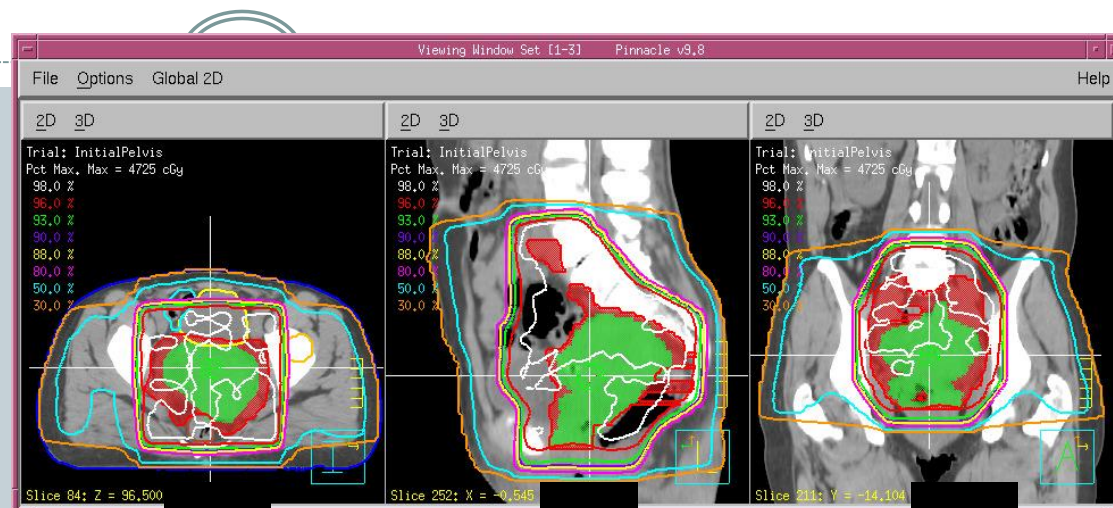
# Treatment Planning

- Dosimetry
  - Image fusion
  - Target delineation
  - Modality and beam selection



# Plan Evaluation

- ✦ Dose-volume histogram (DVH)
- ✦ Target coverage
- ✦ Critical structure dose tolerances





# Patient's First Day: Set-up Verification

The interface displays two main image windows for set-up verification. The top-left window shows a lateral view of the pelvis with a planned field edge overlaid in cyan. The top-right window shows an anterior-posterior (AP) view of the pelvis with a planned field edge overlaid in cyan. Below these are zoomed-in views of the field edges. A timeline at the bottom tracks the session progress, and a control panel is on the right.

**1.1AP\_Pelvis - 1.1 AP\_Pelvis-9**  
Field edge: Planned

**1.1AP\_Pelvis -**  
Field edge: Planned

**1.1 AP\_Pelvis-9**

**1.1 AP\_Pelvis-9**

**Pelvis**

Time	View	Status
1:10	1.1 AP_Pelvis	✓
1:31	1.1 AP_Pelvis	✓
3:06	1.4 LtLatPelvis	✓
3:26	1.4 LtLatPelvis	✓
5:24	1.2 PA_Pelvis	✓
5:44	1.2 PA_Pelvis	✓
7:06	1.3 RtlatPelvis	✓
7:26	1.3 RtlatPelvis	✓
14:11	1.3 RtlatPelvis	✓
15:01	1.1 AP_Pelvis	✓
15:37	1.4 LtLatPelvis	✓
16:11	1.2 PA_Pelvis	✓

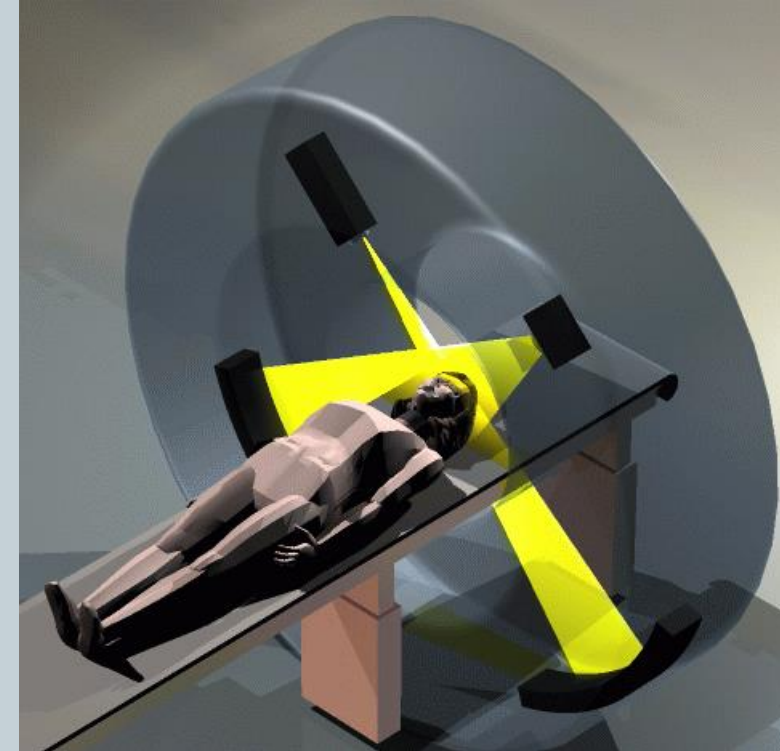
min:sec

**Session Timeline** Course Timeline

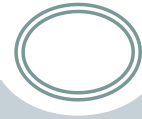
⚠ 📄 👁 ⚠ ✓

# Radiation oncology in the treatment of cancer

- **Definitive treatment**
  - To cure disease
  - Examples: Locally advanced cervical cancer, locally advanced lung cancer, head and neck cancer, prostate cancer, lymphoma
- **Adjuvant treatment**
  - To improve outcomes in conjunction with other therapies (surgery)
  - Examples: Pancreatic cancer, rectal cancer, esophageal cancer, breast cancer
- **Palliative treatment**
  - To decrease pain, improve QoL, prevent future problems
  - Examples: Bone mets, mediastinal masses, whole brain radiation



# Palliative Radiotherapy



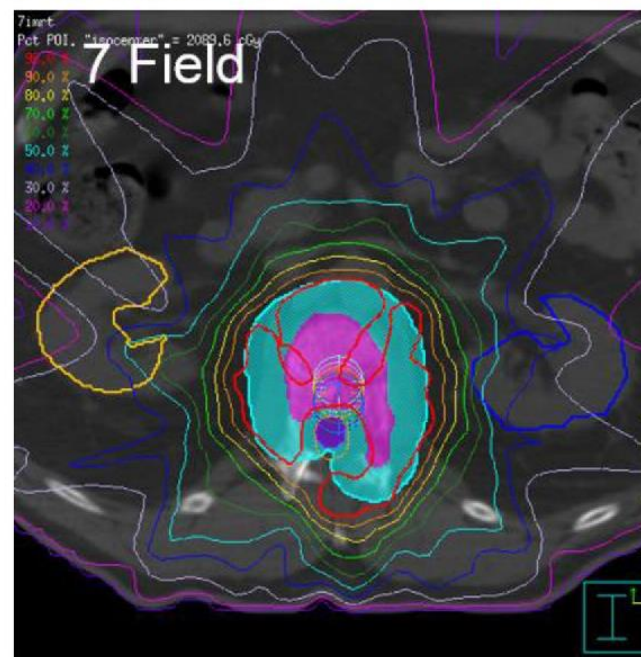
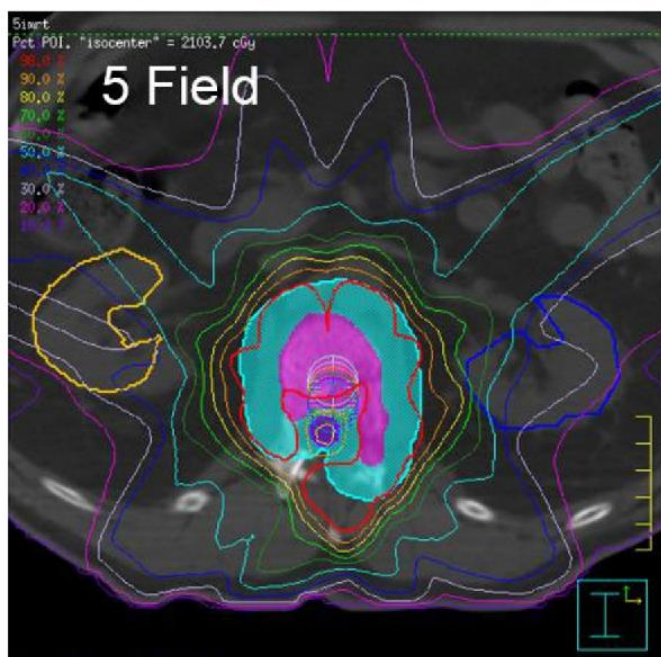
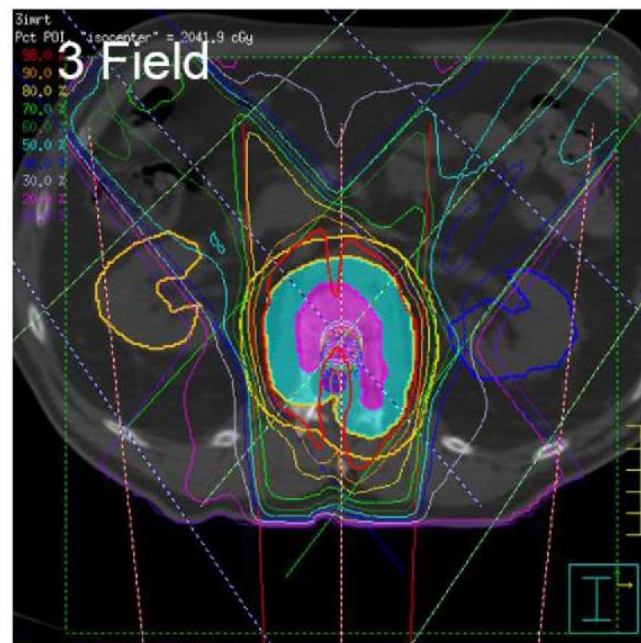
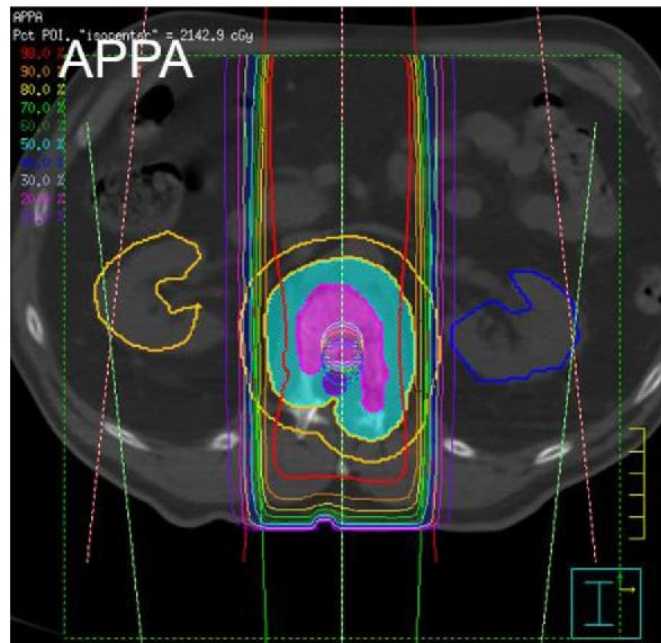
- Can treat any *focal* site of pain or other symptoms
  - Bleeding, airway obstruction, brain mets
- Time to effect varies
  - Typically at least 24 hours
  - Peak analgesia at 10-14 days
  - Pain flare uncommon, but beware
- Fewer/less intense side effects vs. definitive RT
  - Acutely responding tissues: skin, mucosa, marrow

# Palliative Scenarios



- **Bone pain**
  - Most common utilization, often spine
  - Typically treated in 1-10 fractions (8/1, 20/5, 30/10)
  - Simple field designs, quick turnaround to treatment
  - If urgent, can start same day
- **Visceral pain**
  - Size relative to organs at risk can limit treatment
  - Similar dosing as bone pain
- **Bleeding**
  - Can treat with a single fx of 4 Gy





2 Representative plan images comparing 2- 3- 5- and 7-field RaSp plans

# The Radiation Emergency

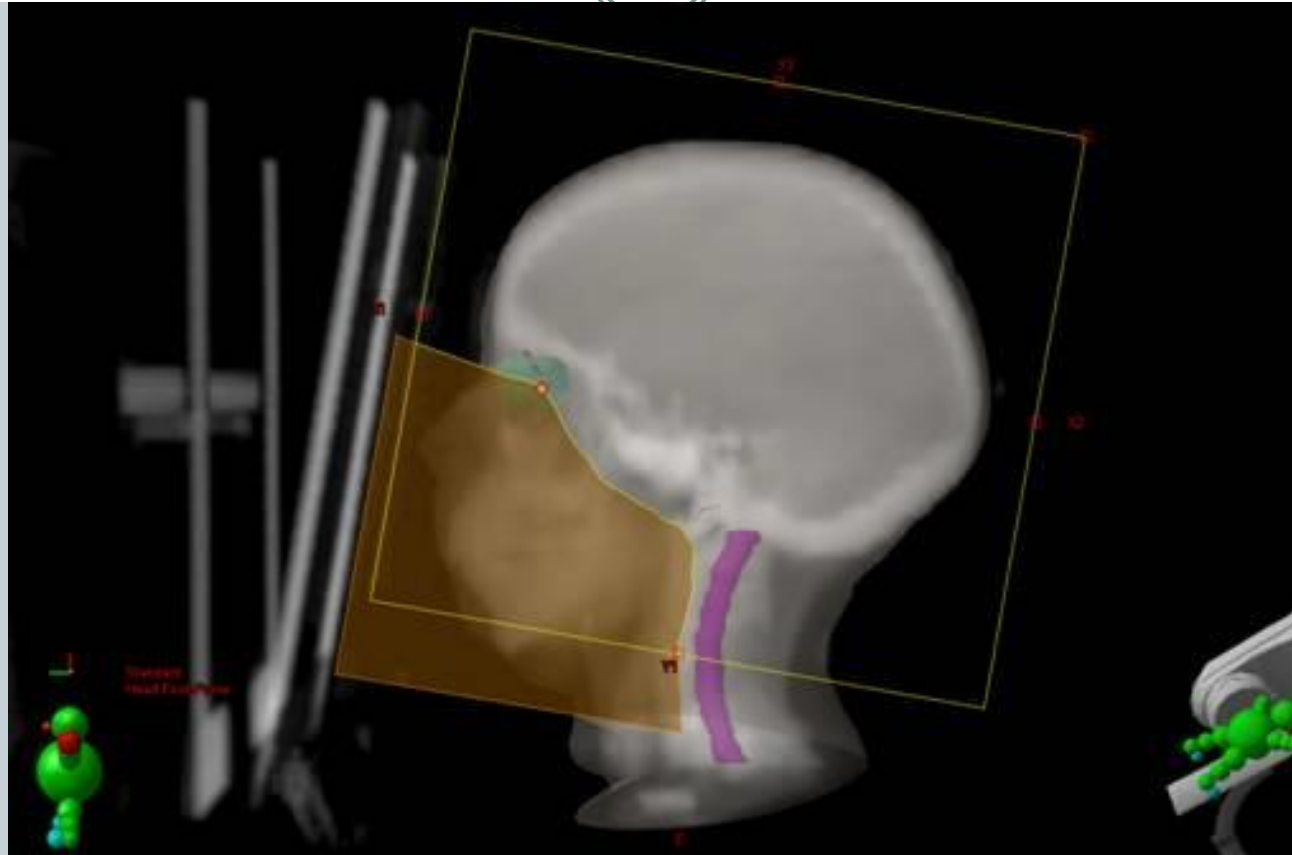


- **Spinal cord compression**
  - Typically severe back pain, with saddle anesthesia and/or LE weakness
  - Tissue confirmation, MRI spine ASAP
  - Start dexamethasone after diagnosis
  - Phase III data supports surgery first if possible
  - If more acute, more likely to recover ambulation
  - Goal to start radiation within 24 hours if no surgery

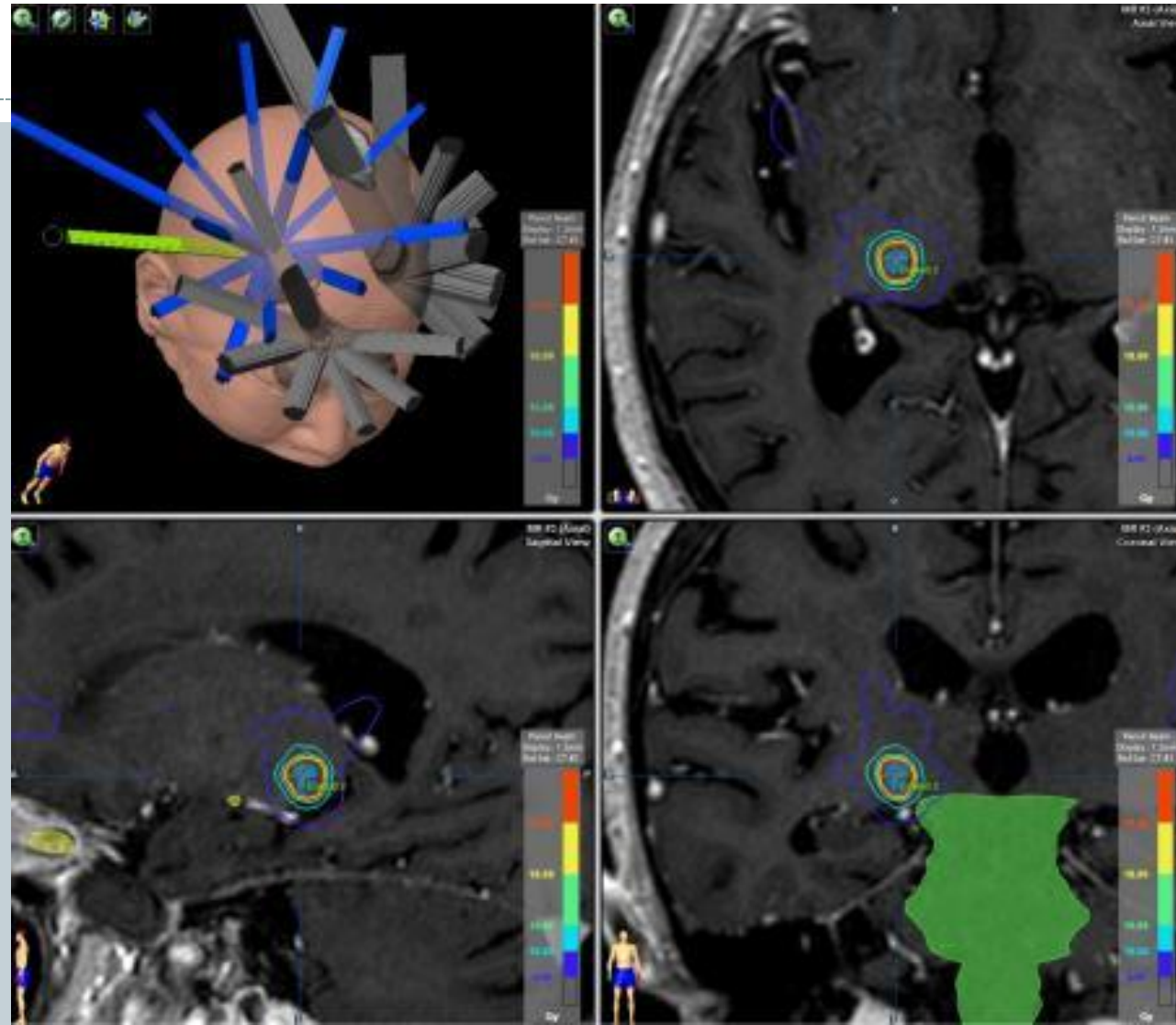
# Not Quite Emergencies

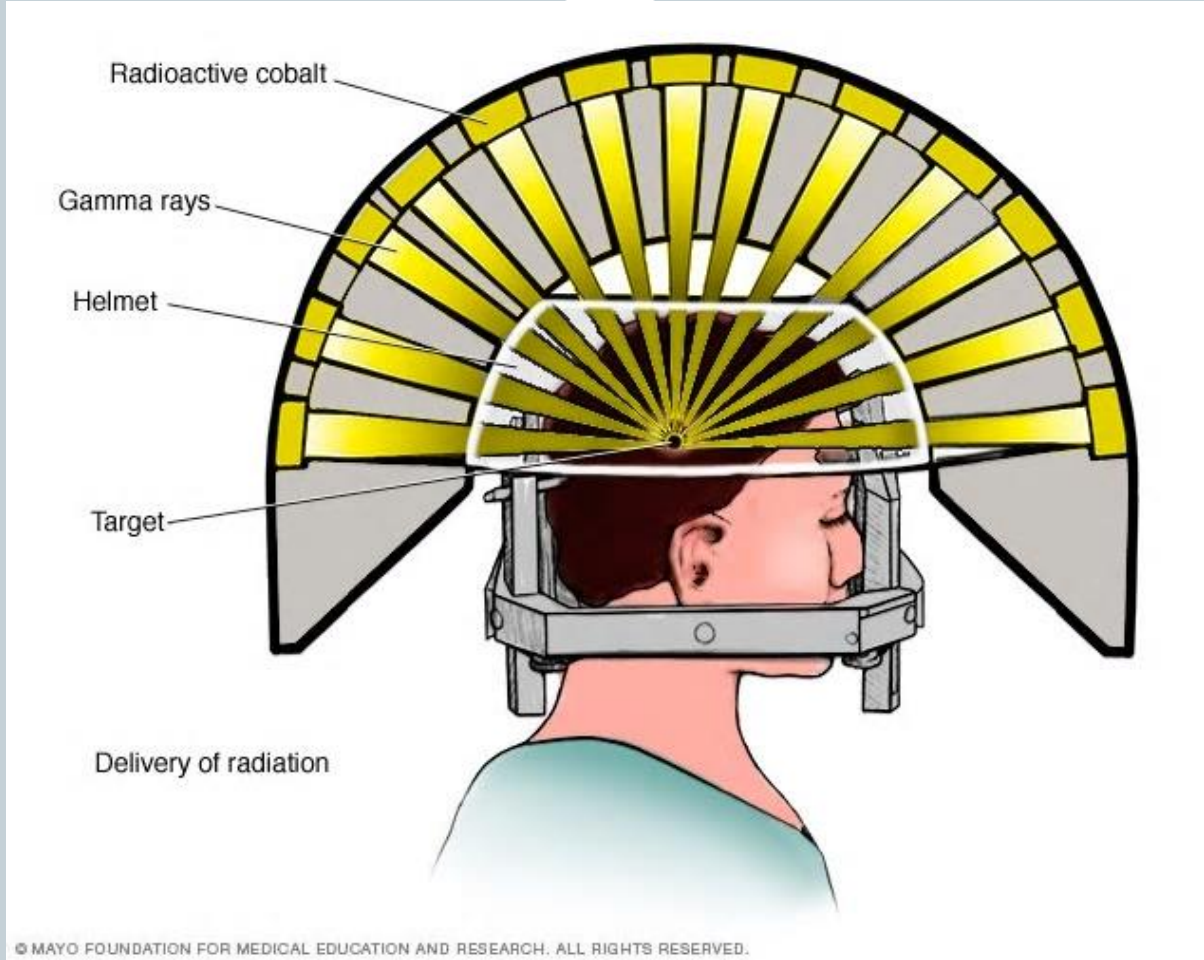


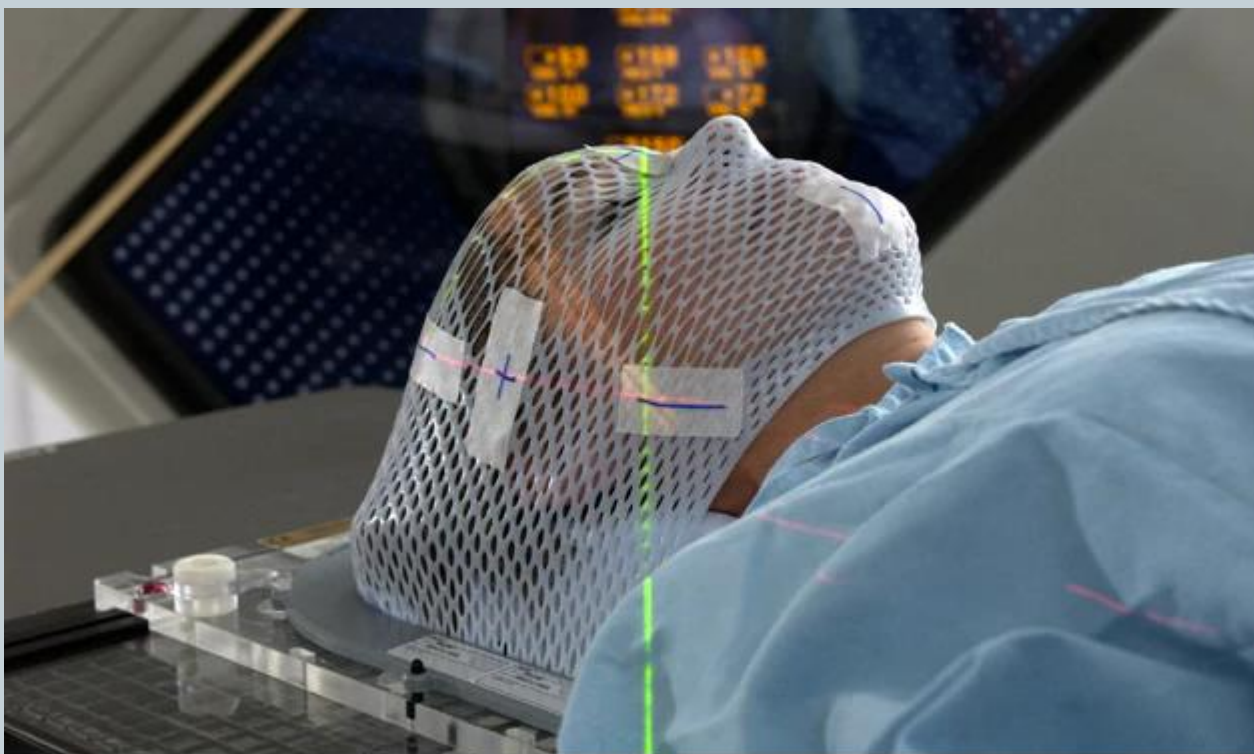
- **Symptomatic brain metastases**
  - Headache, vision/hearing loss, weakness/numbness
  - Tissue confirmation, MRI brain ASAP
  - Start dexamethasone after diagnosis
  - If resectable, surgery first
  - If not, whole brain RT or SRS











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- **SVC syndrome**

- Horner's syndrome, facial swelling, dyspnea
- Previously considered an RT emergency, emphasis shifted to chemotherapy first, if possible
- Resolution after RT delayed

# Re-Irradiation



- Not all radiation damage is repaired over time
- Danger with re-treatment of additive toxicity
- Dangerous: spinal cord, lung, kidney, liver, small bowel, brainstem, optic pathway

# Questions and Discussion

# Case Presentation

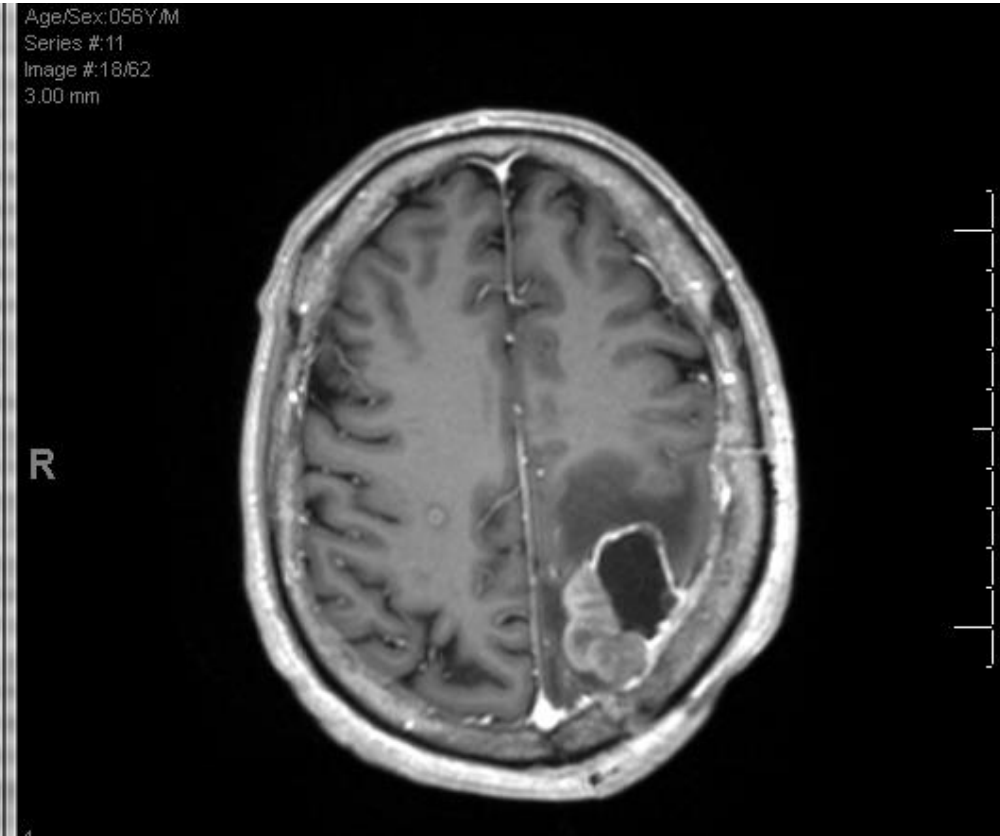
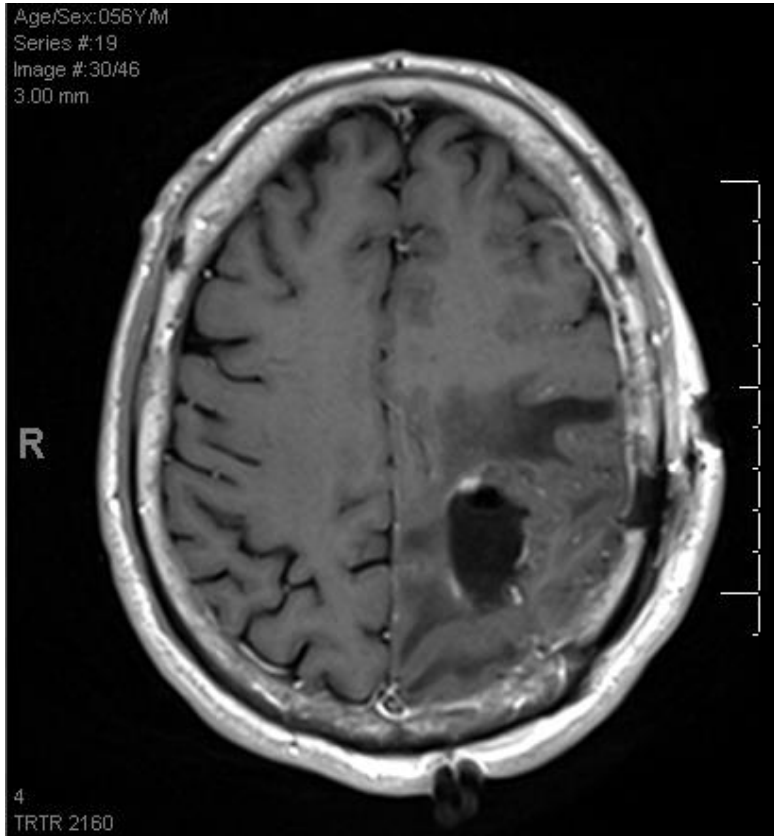
Christopher McLaughlin, PGY-5

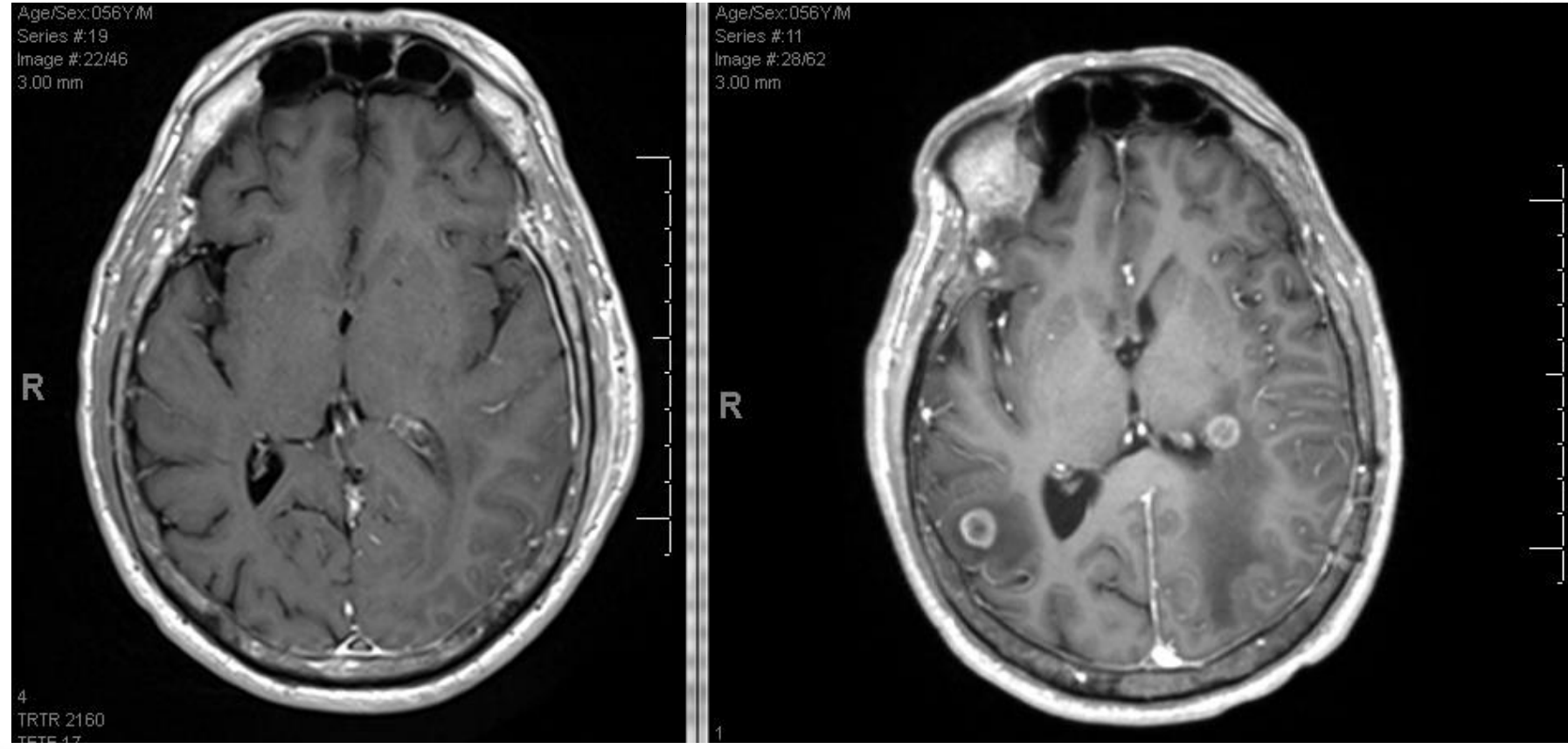
# Case: RM

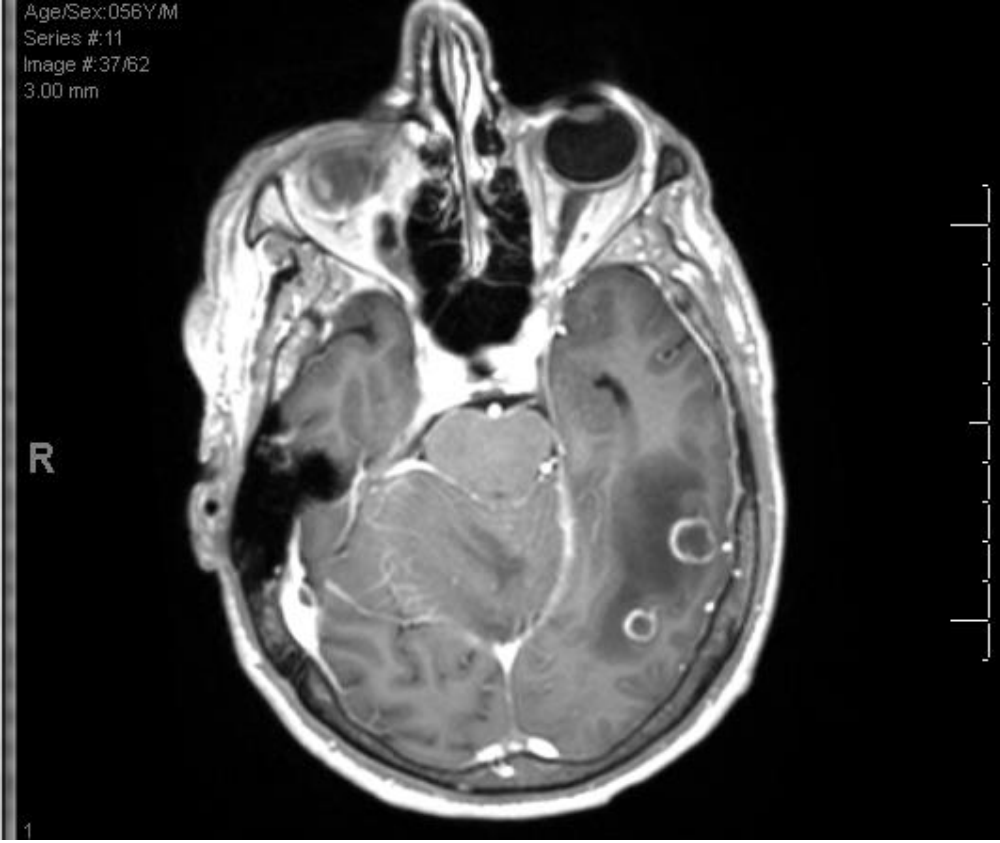
- 56M with widely metastatic lung adenoca
  - Initially p/w **chest pain, SOB, 20 lb weight loss** in August 2019
  - Staging imaging of the brain revealed 4cm enhancing mass in left frontoparietal lobes
  - **Brain met resected 9/3/19**, path: likely lung primary
  - Initial RT plan was for post-op SRS to cavity, primary SRS to smaller met in cerebellum
  - Did not tolerate port placement, no chemo to date
  - Inmate, released, **lost to follow-up**

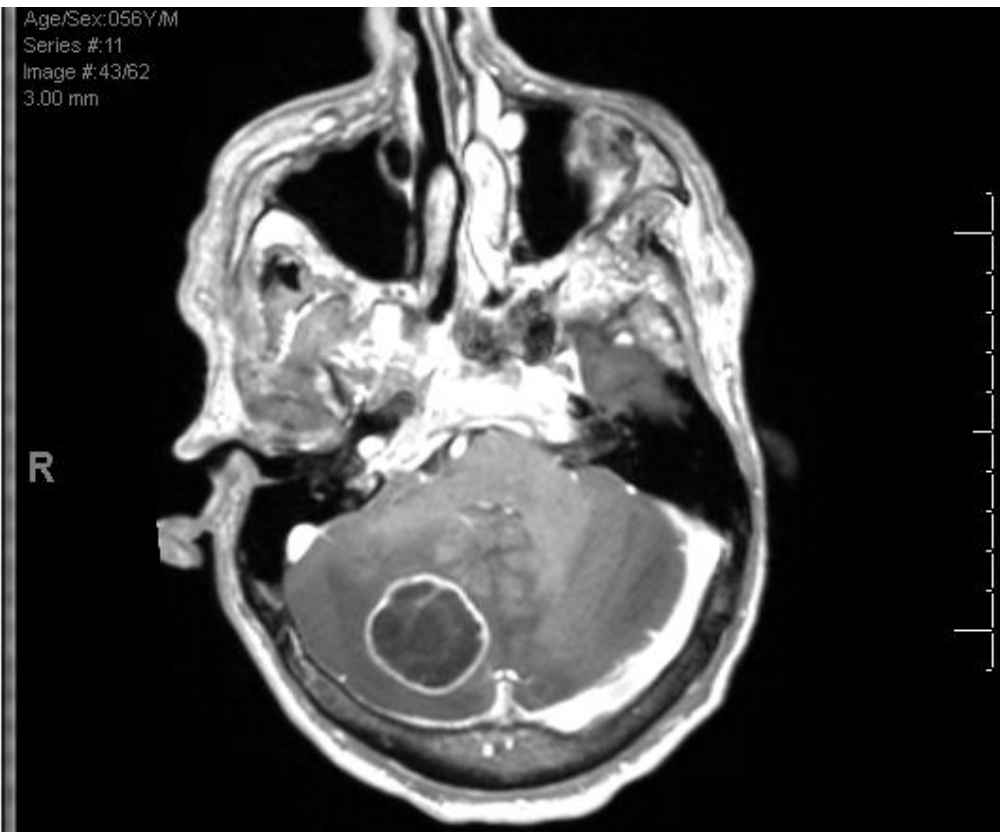


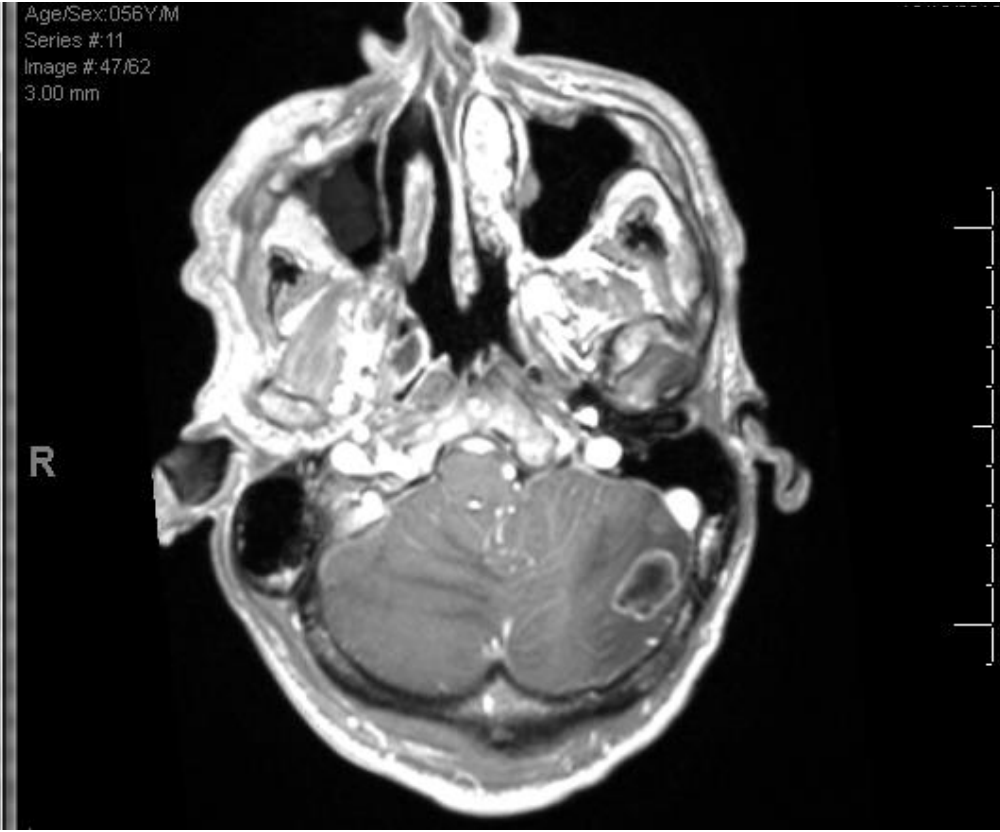
- Presented to ED on 10/13/19 with lethargy













- Multiple brain mets, requiring urgent start? “Clinical setup”
  - No simulation needed
  - Patient set up at treatment machine, tape placed over forehead for immobilization
  - Horizontal separation across cranium measured
  - Dose rate calculated
  - Standard lateral fields used



# Accessing CME and CEU Credits



# Claim CME / CEU at [www.vcuhealth.org/pcecho](http://www.vcuhealth.org/pcecho)



## VCU Health Palliative Care ECHO



Our VCU Health Palliative Care ECHO program partners with community practices caring for patients with serious illness and applies our interdisciplinary care team - a mix of physicians, nurses, social workers, psychologists, chaplains and more - to provide patient care support and education throughout Virginia.

We have a long-standing palliative care program with an inpatient unit, consult service and supportive care clinic to provide serious illness care. Many communities in Virginia do not have access to palliative care and we're here to help.

- [View Palliative Care ECHO sessions](#) (CME/CEU available).
- [Register now for an upcoming clinic.](#)
- [Submit a case study](#) (registered participants only).
- Live Session Participants: [Claim CME/CEU](#).

[Contact us](#) for more information or help with any questions about our program.

### About Palliative Care

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# Submit your evaluation to claim your CME

**VCU Health Palliative Care ECHO Survey** Resize font: + | -

Please complete the survey below.

Thank you!

<b>Name</b> <small>* must provide value</small>	<input type="text"/>
<b>Credentials (MD, DO, NP, RN, ...)</b> <small>* must provide value</small>	<input type="text"/>
<b>Email Address</b> <small>* must provide value</small>	<input type="text"/>
<b>I attest that I have successfully attended the Virginia Palliative Care ECHO Clinic.</b> <small>* must provide value</small>	<input type="radio"/> Yes <input type="radio"/> No

[reset](#)



# View recorded sessions at [www.vcuhealth.org/pcecho](http://www.vcuhealth.org/pcecho)



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## Curriculum



[Register now](#) for an upcoming clinic on palliative care.



## Upcoming Clinics

### Mindfulness and Provider Self Care +

June 13, 2019

## Previous Clinics

### Introduction to Palliative and Supportive Care -

Feb. 14, 2019

[View session for CME](#)

Presented by Danielle Noreika, MD

#### Learning Objectives:

- Define palliative care and differentiate from hospice.
- Describe reasons for referral to palliative care.
- Describe basic structure of palliative care team.

## Telehealth

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Submit Your Case Study

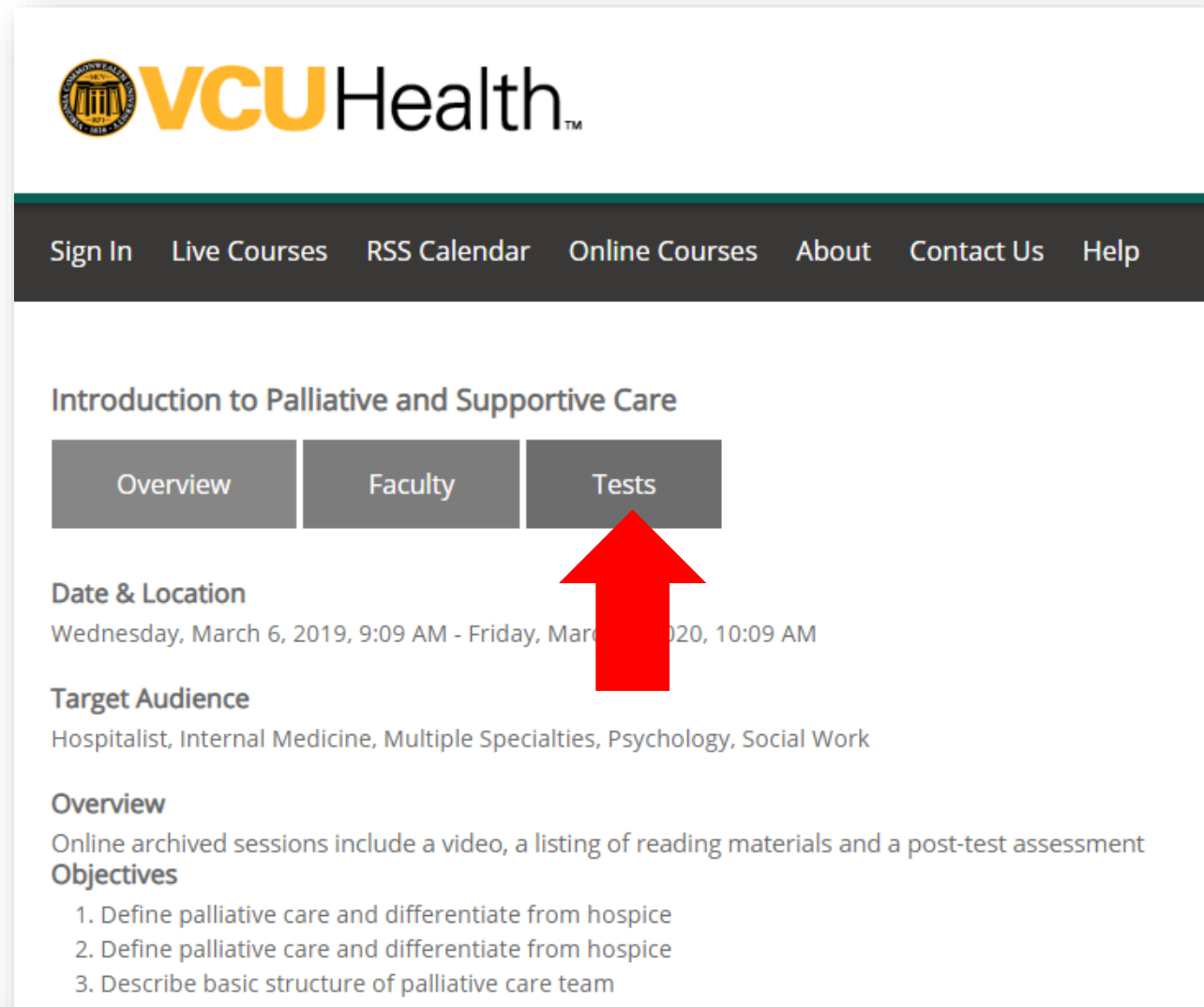
Virginia Sickle Cell Disease ECHO v


Telehealth Programs v



# View previously recorded ECHOs for CME

Click “Tests” to view video of the session and take a short quiz for continuing education credit



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### Introduction to Palliative and Supportive Care

[Overview](#) [Faculty](#) [Tests](#)

**Date & Location**  
Wednesday, March 6, 2019, 9:09 AM - Friday, March 15, 2020, 10:09 AM

**Target Audience**  
Hospitalist, Internal Medicine, Multiple Specialties, Psychology, Social Work

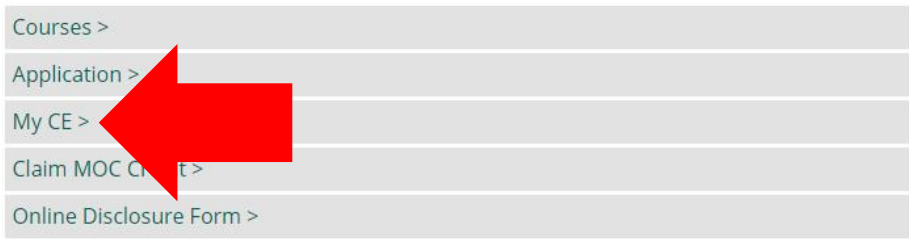
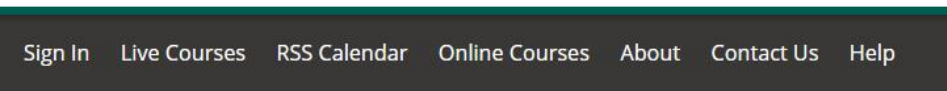
**Overview**  
Online archived sessions include a video, a listing of reading materials and a post-test assessment

**Objectives**

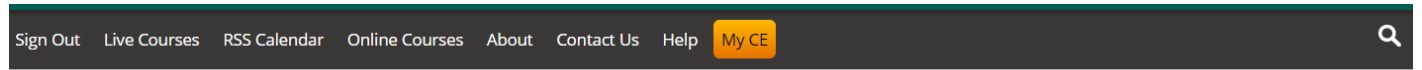
1. Define palliative care and differentiate from hospice
2. Define palliative care and differentiate from hospice
3. Describe basic structure of palliative care team

# View your CME/CEU transcript

- Go to [vcu.cloud-cme.com](https://vcu.cloud-cme.com) and click “My CE”
- Log in with the email you used to register for our ECHO session

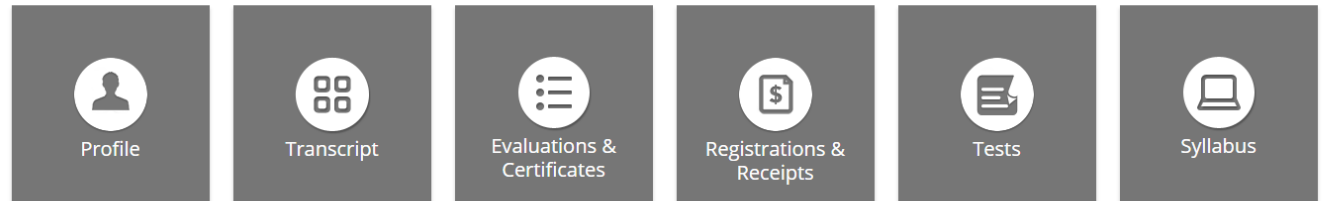


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Welcome Teri Dulong-Rae



## My CE

Instructions: Click a button to proceed.



# View your CME/CEU transcript

If you have never logged in before, you may be prompted to enter more information before you can view your transcript



[Logout](#) [Attendee Portal](#)

 print

Please complete the information below. Required fields are noted with a red asterisk. Scroll down and click Submit. If you are new to this system, you will need to login with your email address and the password you created below.

[Reset My Password](#)

I am eligible for the following credit categories

- AMA PRA Category 1 Credits™
- AAFP - American Academy of Family Physicians
- ACPE - Accreditation Council for Pharmacy Education
- ANCC - American Nurses Credentialing Center (contact hours)
- ADA CERP - American Dental Association Continuing Education Recognition Program
- ABA MOCA 2.0 Part 2
- American Psychological Association
- Non-Physician Attendance
- AAP - American Academy of Pediatrics
- ABIM - American Board of Internal Medicine MOC Part II
- ASET - The Neurodiagnostic Society ACE
- ABP - American Board of Pediatrics MOC Part II
- General Attendance
- ABIM MOC Part 2
- ABPN MOC Part 2

### Basic Information

- Employee Category
- I am an employed member of VCU Health Staff.
  - I am a community member of VCU Health Staff.
  - I am NOT a member of VCU Health Staff.

Salutation      First      MI      Last      Suffix



# THANK YOU!

We hope to see you at our next ECHO

