



**MROQC Collaborative-Wide Meeting
CDA Breakout Session
May 15th, 2026**

AGENDA

**Introduction to Brain
Mets**

**New CDA Calendar
Dashboard Overview**

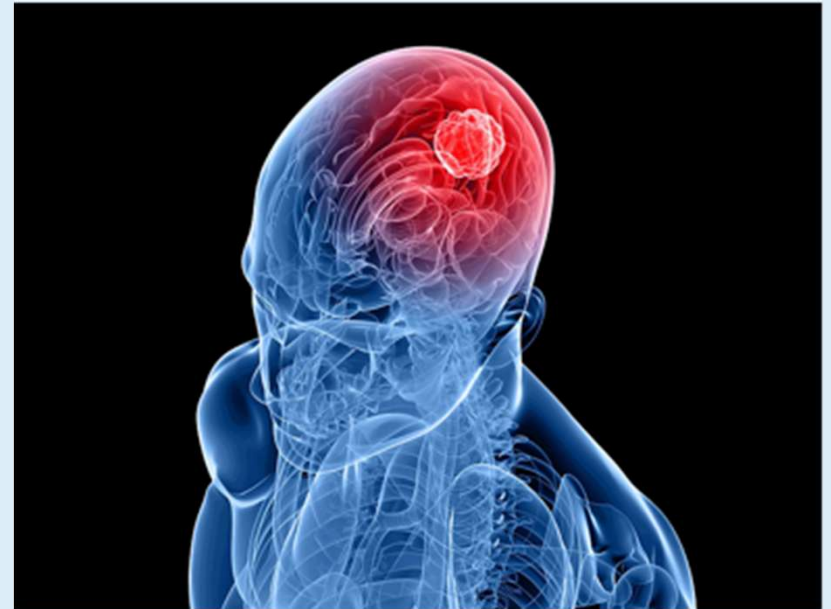
**Announcements &
Reminders**



MROQC CDA Presentation

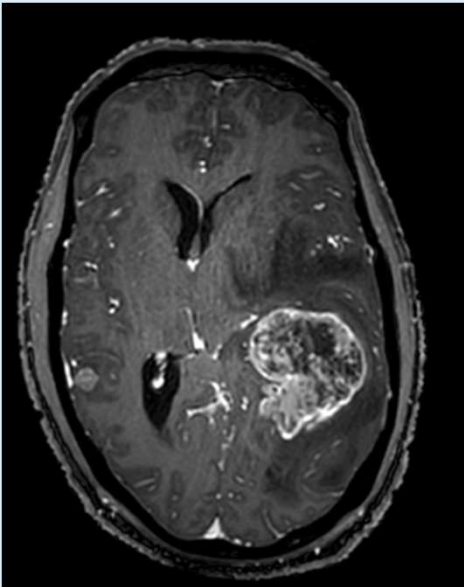
Intro to Brain Mets

Donna Edwards

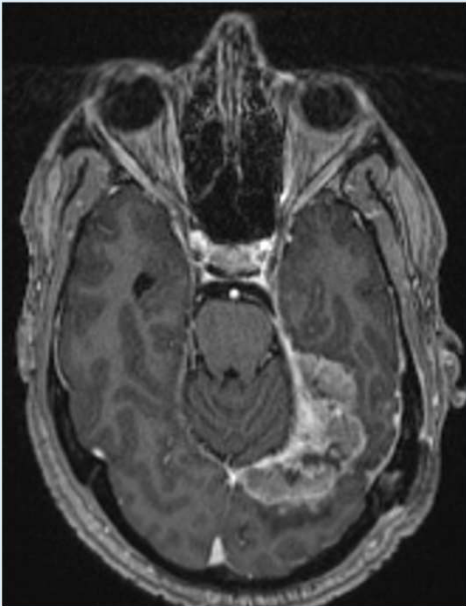
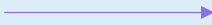


A CLINICAL STORY....

A male in his 40s presented with seizures, diagnosed with metastatic lung cancer with disease in his brain

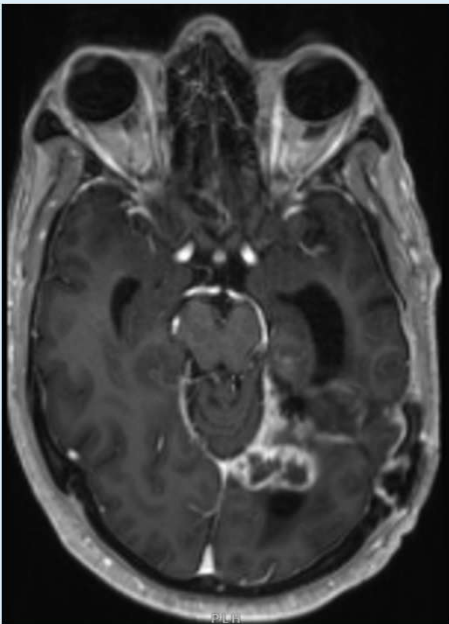
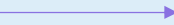


Surgery to remove most of the dominant lesion



A few weeks post op disease grew back, he was in the ICU with multiple seizures

Radiation



Months later the lesions were shrinking and he had not had any further seizures

ROADMAP: BRAIN METS

1

Background

1. Anatomy
2. Epidemiology

2

Treatment

1. SRS
2. fSRS
3. Hippocampal-avoidant whole brain
4. Whole brain

3

Technical Details

1. Treatment planning

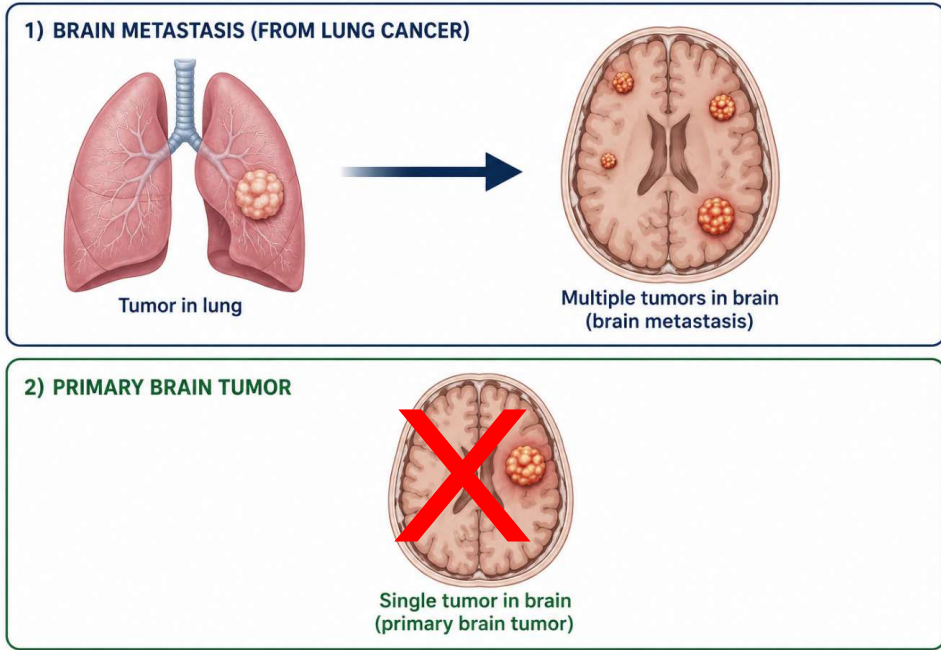
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Unique Considerations

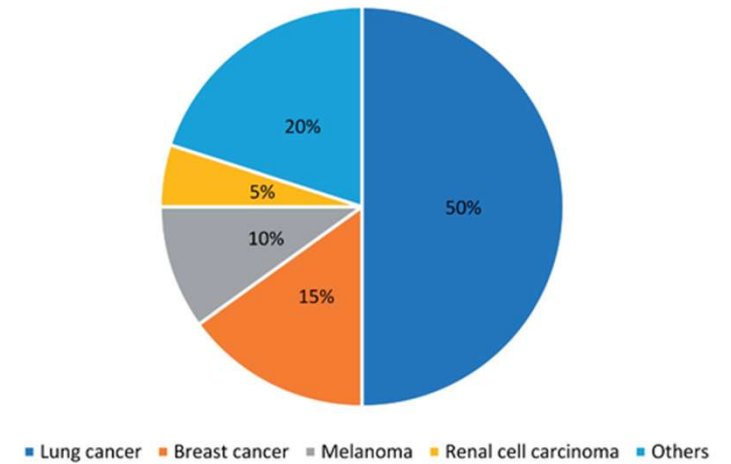
1. PROs
1. Neurocognition as a complex endpoint

Background: Brain Mets

- Most common tumor of the brain

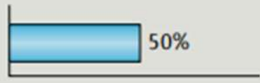

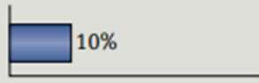
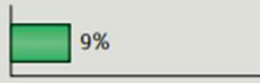
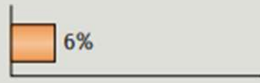

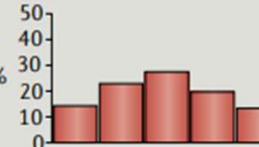
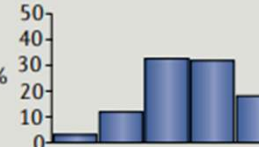
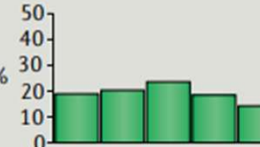
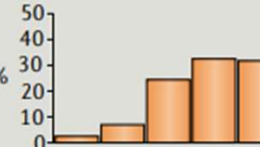
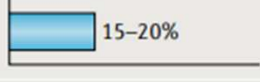
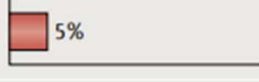

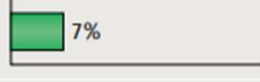



Incidence of brain metastasis by cancer site



<https://www.intechopen.com/chapters/83159>

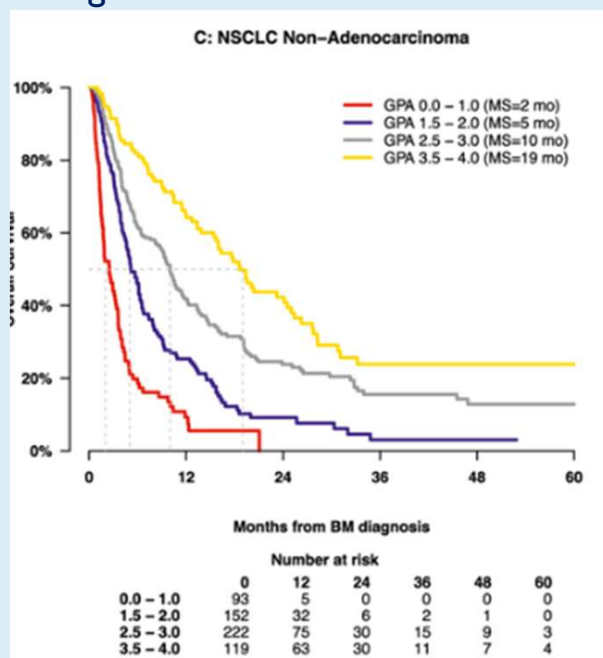
Background: Brain Mets

	Lung cancer	Breast cancer	Renal cell carcinoma	Melanoma	Colorectal or gastrointestinal cancer
Relative incidence	 50%	 15%	 10%	 9%	 6%
Female:male ratio	1:2	–	1:1	1:2	1:1
Frequency of brain metastases by age					
Risk of brain metastases	 15–20%	 5%	 7%	 7%	 2%
Histologies	<ul style="list-style-type: none"> • Adenocarcinoma • Squamous-cell carcinoma • Large-cell neuroendocrine carcinoma • Small-cell lung cancer 	<ul style="list-style-type: none"> • Adenocarcinoma 	<ul style="list-style-type: none"> • Clear cell 	<ul style="list-style-type: none"> • Melanoma 	<ul style="list-style-type: none"> • Adenocarcinoma
Disease-specific prognostic factors	<ul style="list-style-type: none"> • Age (<50, 50–60, >60) • KPS (<70, 70–80, 90–100) • Extracellular matrix (present versus absent) • Number of brain metastases (1, 2–3, >3) 	<ul style="list-style-type: none"> • Age (<60, ≥60) • KPS (≤50, 60, 70–80, 90–100) • Subtype (basal, luminal A, HER2, luminal B) 	<ul style="list-style-type: none"> • KPS (<70, 70–80, 90–100) • Number of brain metastases (1, 2–3, >3) 	<ul style="list-style-type: none"> • KPS (<70, 70–80, 90–100) • Number of brain metastases (1, 2–3, >3) 	<ul style="list-style-type: none"> • Age (<60, ≥60) • KPS (<80, 80, 90–100) • Extracellular matrix (present versus absent) • Number of brain metastases (1, 2–3, >3)
Molecular prognostic features	<ul style="list-style-type: none"> • EGFR mutation • ALK rearrangement 	<ul style="list-style-type: none"> • ER, PR and HER2 status 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • BRAF^{V600E} mutation 	<ul style="list-style-type: none"> • None

Background

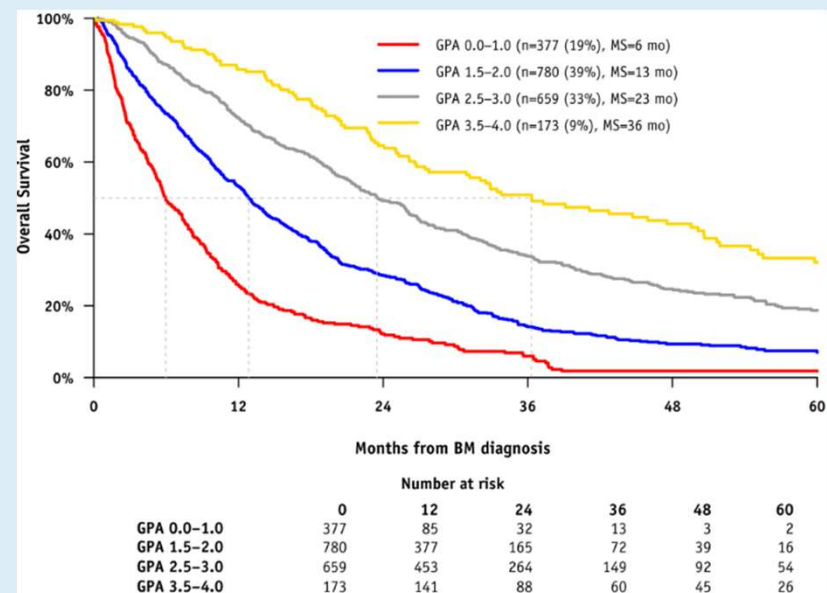
- Disease Specific GPA: histology, subtype etc predict very different outcomes for patients with brain mets

Survival for **Squamous cell carcinoma** Lung cancer BM patients:
range from 2-18 mo



Sperduto et al 2023

Survival for **Breast Cancer** BM patients:
range from 6-36 mo



Sperduto et al 2020

A difference for data collection....

Chart Review

Encounters Notes Labs Radiology Cardiology Procedures Surgeries Anesthesia Nursing Meds Referrals Other Orders

Refresh Lab Flowsheet Route Report Fax Order Preview

Filters CXL Genetic COVID-19 Result Cyto/Path Micro Blood Bank

Medications and orders also exist in active treatment plans: ONCOLOGY TREATMENT, THERAPY PLAN A

Order/Collect Da...	Test	Status	Result	Auth Provider
10/09/2024 10:40	Lung Cancer NGS Panel Formalin-Fixed Paraffin-E...	Final result	Abnormal	Edwards, Donna Marie, MD

Test Name: Lung Cancer NGS Panel

Results:

Molecular alteration(s) identified (see interpretation)

SUMMARY:

Level 1 FDA-recognized biomarker for an FDA-approved drug in the same indication ALK fusion; CLTC (exon 31) - ALK (exon 19) Transcripts: CLTC NM_004859 ; ALK NM_004304

Interpretation:

Level 1 FDA-recognized biomarker for an FDA-approved drug in the same indication

Brain Mets Baseline Clinical Data Form-CDA

Pre-treatment characteristics

- Primary cancer type: melanoma / lung / RCC / breast / other
 - If lung: adenocarcinoma / squamous cell carcinoma / non-small cell lung cancer NOS
 - If adenocarcinoma:
 - EGFR molecular alteration Y/N
 - ALK molecular alteration Y/N
 - KRAS molecular alteration Y/N
 - If breast: hormone receptor positive (ER and or PR+) / triple negative breast cancer / HER2+
 - If melanoma: LDH level prior to treatment: _____
- ECOG performance status: 0 / 1 / 2 / 3-4

Current Medications

- Steroids (ex dexamethasone, prednisone, prednisolone hydrocortisone) Yes / No
- Antiepileptics (ex levetiracetam, lacosamide, divalproex sodium, clobazam) Yes / No

Current systemic therapy (defined as within last 6 weeks): Yes/No

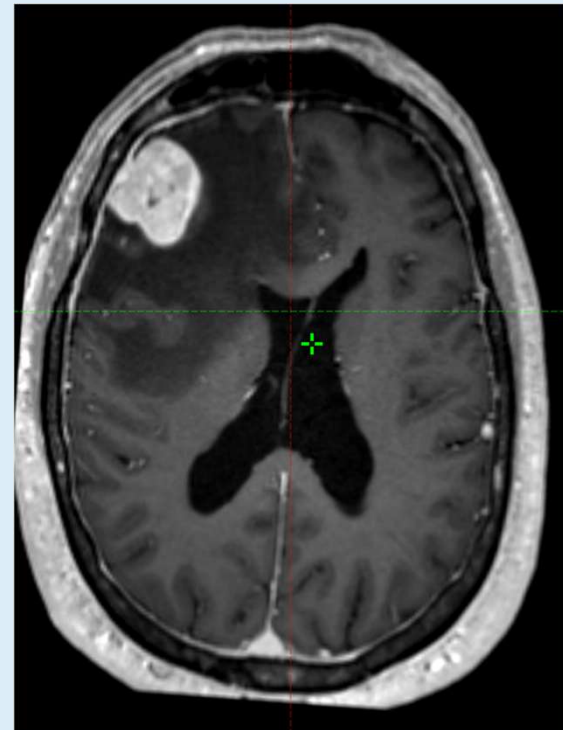
- If yes, please complete systemic therapy form

Treatment dates

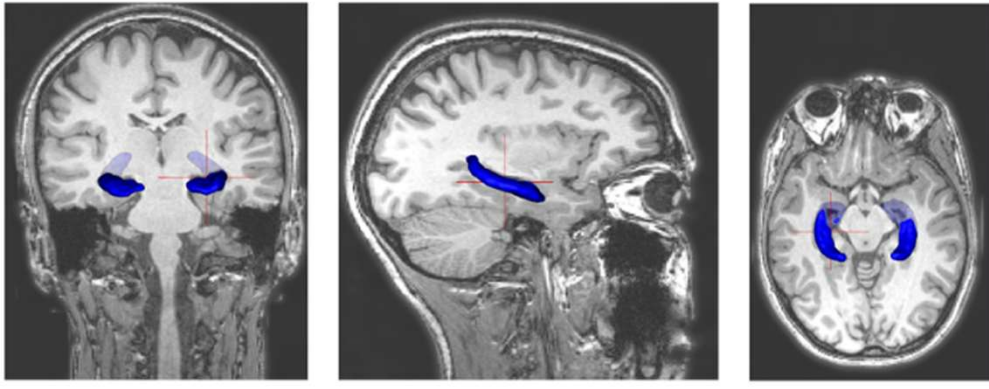
- Date of initial cancer diagnosis (month/year): _____
- Date of brain tumor diagnosis: _____
- Date of RT treatment start: _____
- Date of RT treatment end: _____
- Date of last systemic anti-cancer treatment prior to RT start: _____
- Date of most recent prior brain-directed RT before current course, if applicable: _____

Background: Brain Mets

- Brain mets cause symptoms due to pressure on the nearby normal brain as they grow
 - Many patients are on **steroids** (dexamethasone) to minimize swelling
 - Pressure can trigger seizures so many patients are on **anti seizure medications** as well



Brain Anatomy



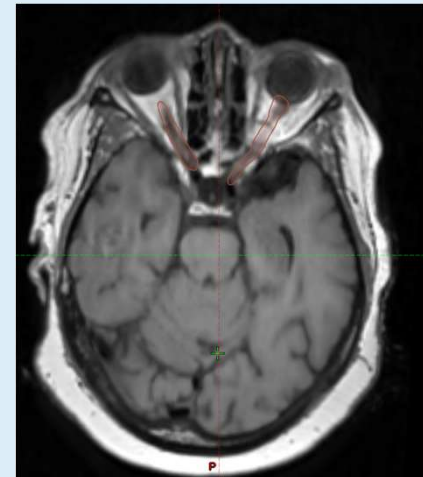
Hippocampi

- Main memory centers

Brainstem

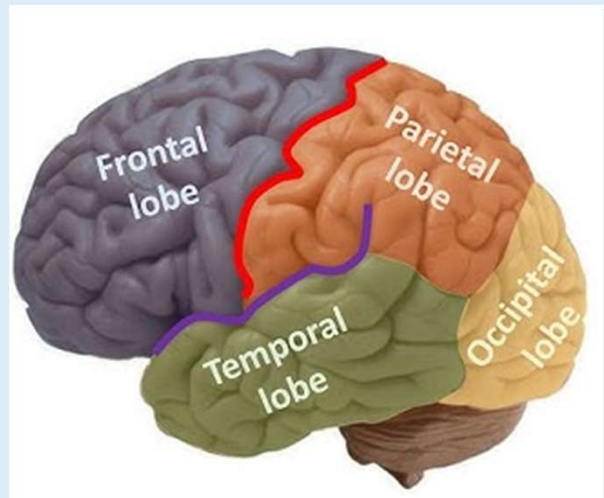


Optic Nerves

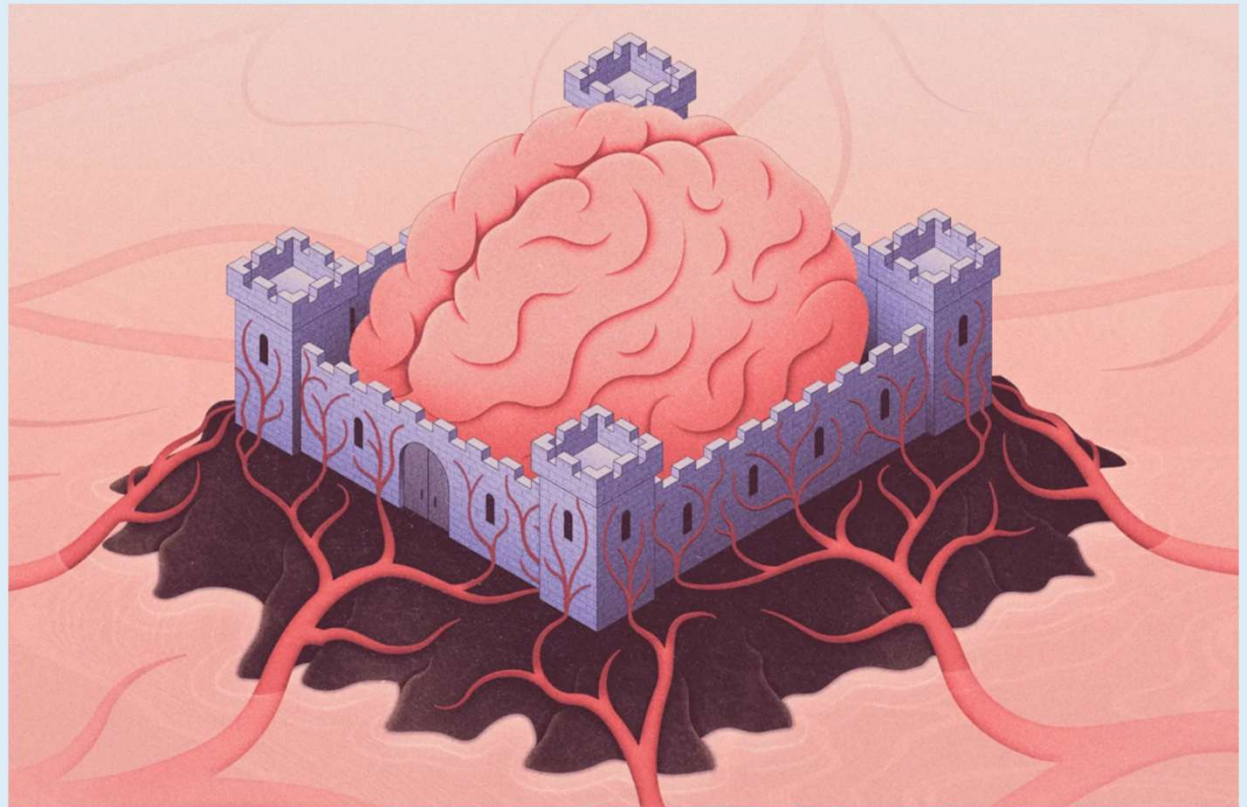


Brain Anatomy

Lobes



Blood Brain Barrier



Due to this, local therapies traditionally play a strong role in brain-directed treatment...

<https://www.quantamagazine.org/how-the-brain-protects-itself-from-blood-borne-threats-20230620/>

ROADMAP: BRAIN METS

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Background

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Treatment

1. SRS
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3. Hippocampal-avoidant whole brain
4. Whole brain

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Technical Details

1. Treatment planning

4

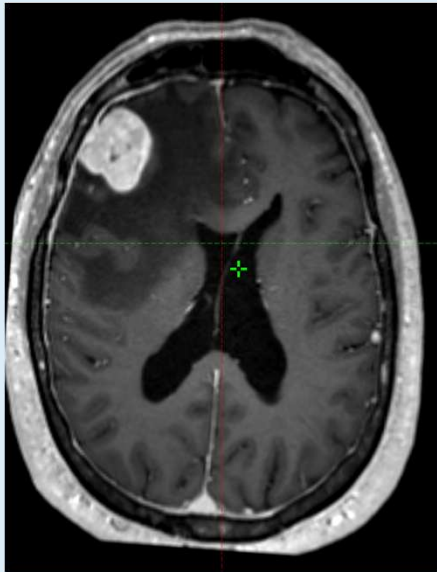
Unique Considerations

1. PROs
1. Neurocognition as a complex endpoint

Treatment Options

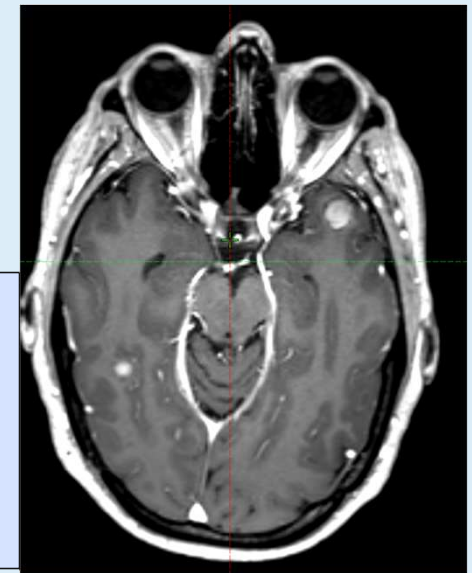
• Surgery → RT

- Usually limited brain mets
- Need to be surgical candidate
- Big tumors causing mass effect



• Radiation

- Multiple lesions
- Locations unable to access surgically
- Not a surgical candidate

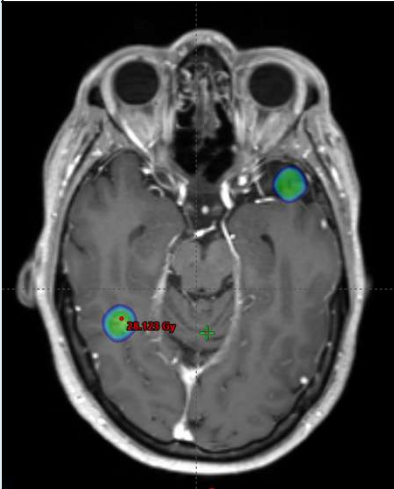


Factors for treatment decision-making:

- Performance status?
- Extent of extracranial disease?
- Number/location of lesions?

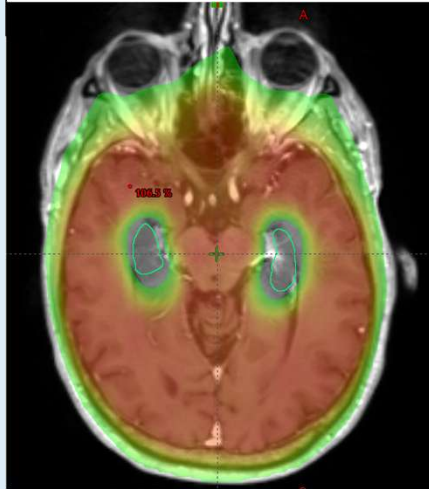
Radiation Treatment options

SRS (fSRS)



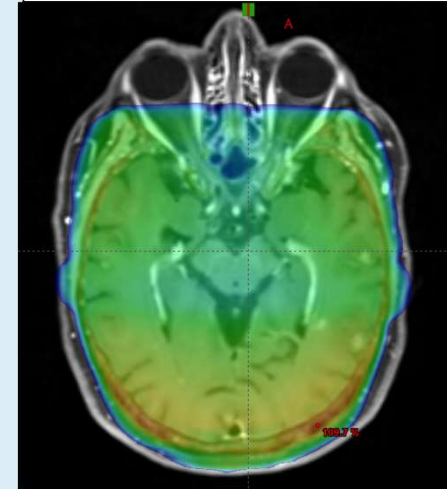
- Small number of mets
- Good performance status, life expectancy
- 1-5 treatment sessions

Hippocampal avoidant Whole Brain RT



- Greater number of mets
- Lesions not near hippocampi (>5mm away)
- 10 sessions (2 weeks)

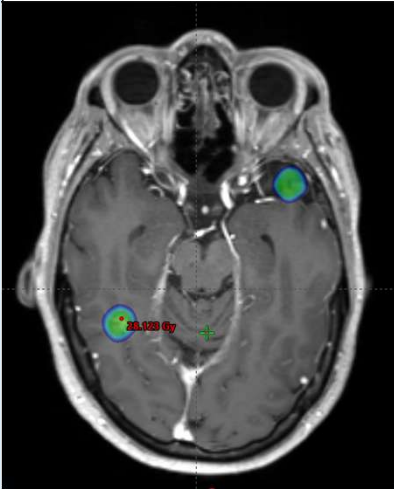
Whole Brain RT



- Greater number of mets
- Lesser performance status, life expectancy
- 10 sessions (2 weeks)

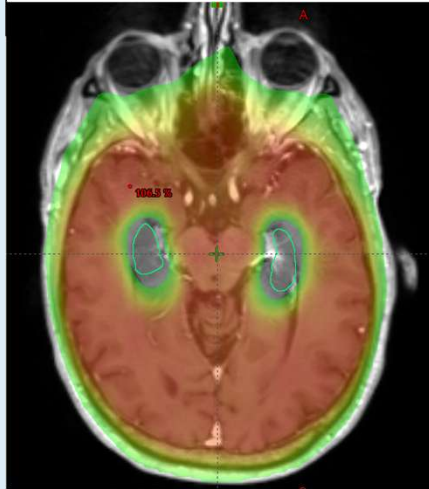
Side effects of Radiation Treatment

SRS (fSRS)



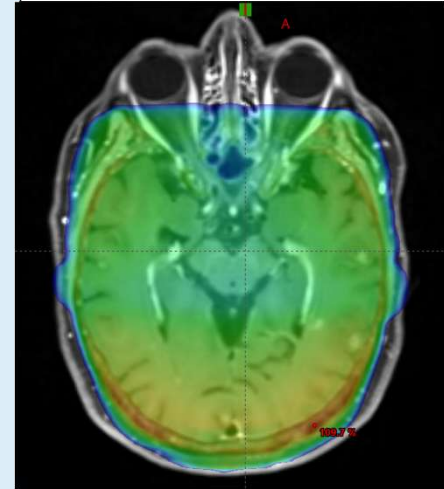
- Short term-mild fatigue, headaches, nausea
- Long term: radionecrosis
- **Less neurocognitive issues (location dependent)**

Hippocampal avoidant Whole Brain RT



- **LESS MEMORY DECLINE** compared to WBRT

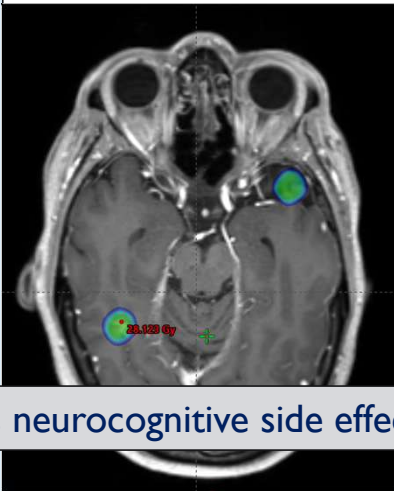
Whole Brain RT



- **Fatigue**
- Nausea/vomiting
- Hair loss
- Hearing loss
- Pituitary dysfunction
- **MEMORY ISSUES**

Radiation Treatment options

SRS (fSRS)



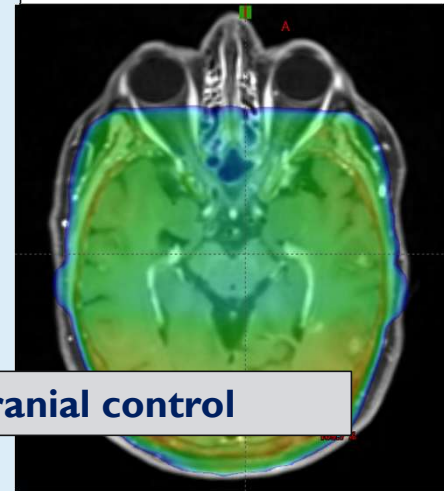
Less neurocognitive side effects

**Hippocampal avoidant
Whole Brain RT**



Better distant intracranial control

Whole Brain RT



NO DIFFERENCE IN OVERALL SURVIVAL

GOAL OF OUR TREATMENTS: TO HELP PATIENTS LIVE BETTER

ROADMAP: BRAIN METS

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Technical Details

1. Treatment planning

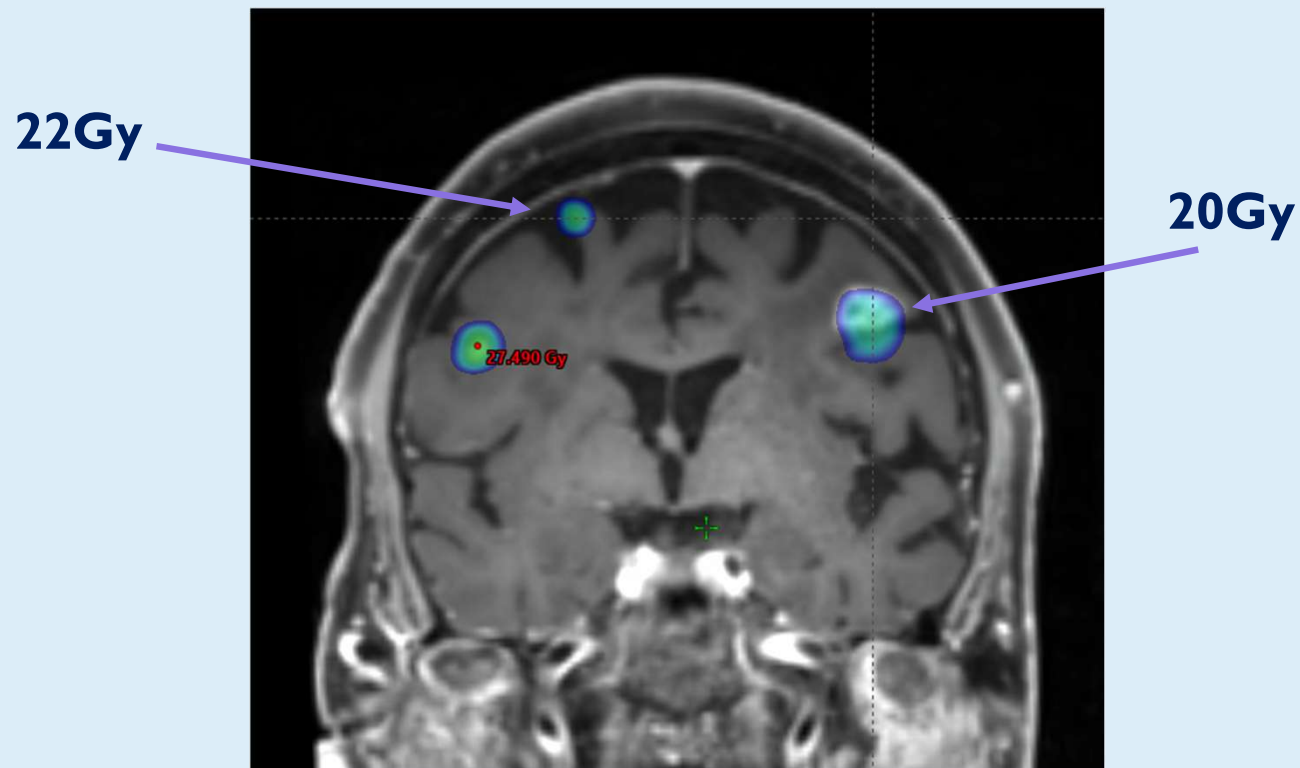
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Unique Considerations

1. PROs
1. Neurocognition as a complex endpoint

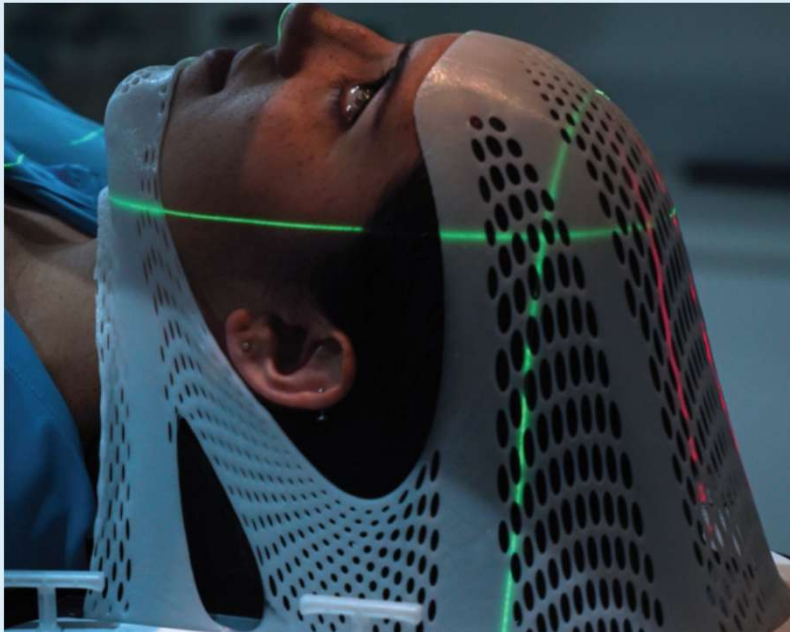
Technical Details

- One Radiation plan can be highly complex with multiple targets

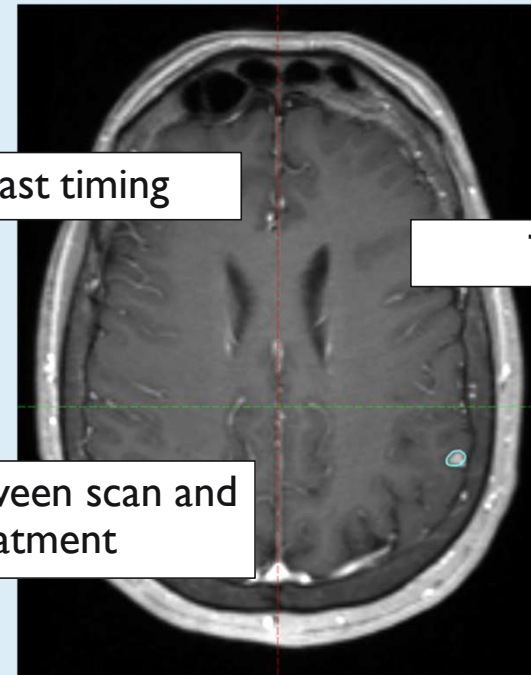


Technical Details

- High precision treatment (important when we are using high doses, small targets)



Surface Guided Radiation Therapy
Small margins on treatment



Contrast timing

Thin Slices

Time between scan and
treatment

MRIs are crucial to treatment planning for target
delineation

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Unique Considerations

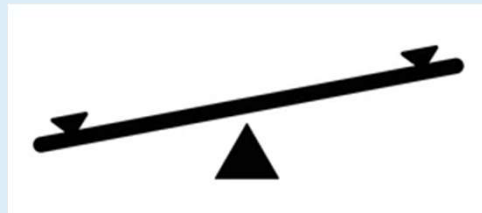
1. PROs
1. Neurocognition as a complex endpoint

Unique considerations: PROs

- Unique population—they have **significant QoL impacts** from their disease; may not directly be able to engage in PROs (due to cognitive impairment) and so we are proposing **caregiver** forms
- We follow these patients **more closely** than bone mets, so believe this data will be able to be captured (most will have a 2-3 mo post RT visit, so we are proposing baseline and 3 mo)

Unique considerations: neurocognition

- Neurocognition is a complex endpoint
 - Highly meaningful to patients
 - Changes however may reflect disease progression vs treatment side effects
 - If we can minimize disease progression AND side effects, we can MAXIMIZE patient **quality of life**



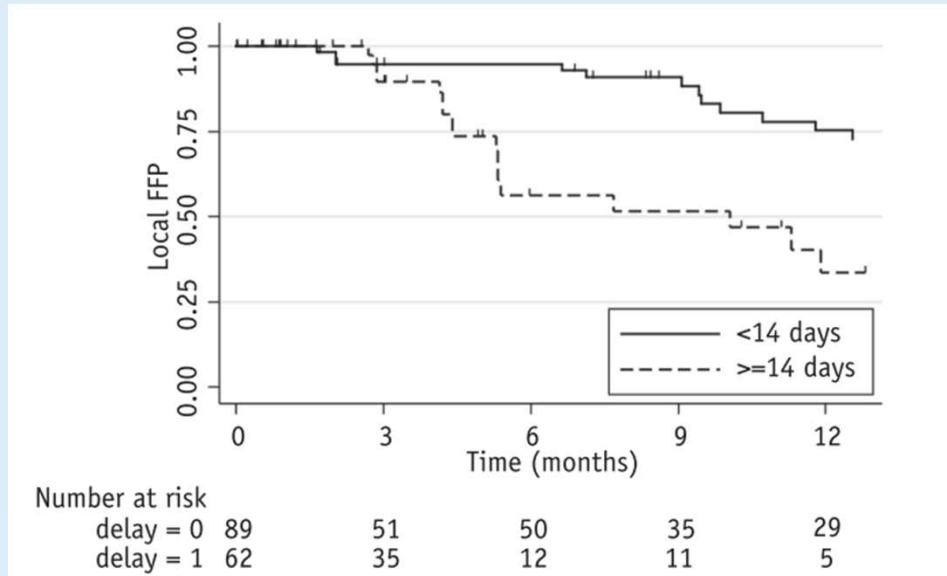
Areas of interest for MROQC Brain Mets

Focus I

Quality of Treatment Delivery for Brain Mets Patients

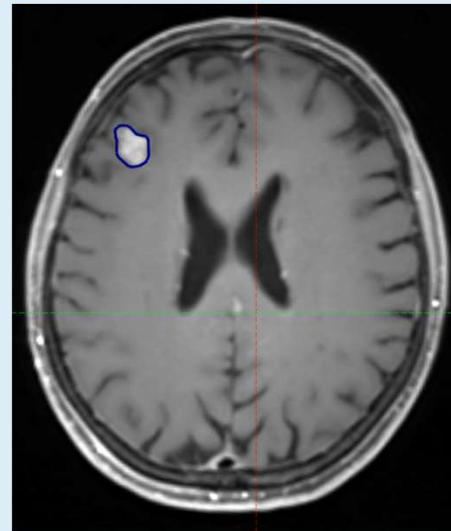
- Pretreatment MRI: sequences utilized, timing between scan and delivery

NCCN recommends interval between MRI to treatment ≤ 2 weeks

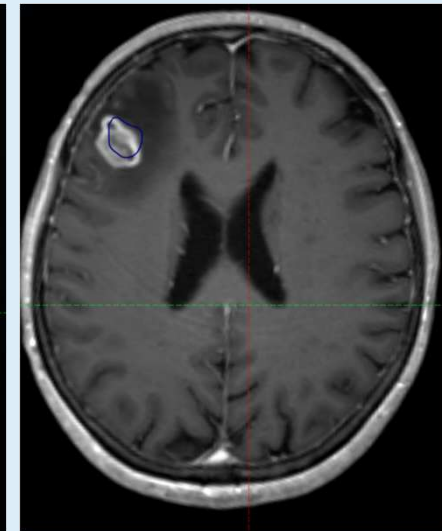


Seymour et al 2014 IJROBP

Day 1



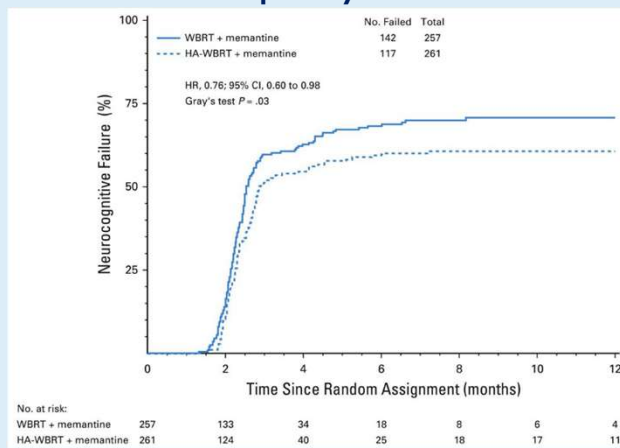
Day 13



Focus 2

- **Quality of Life for Patients: Neurocognitive Preservation**

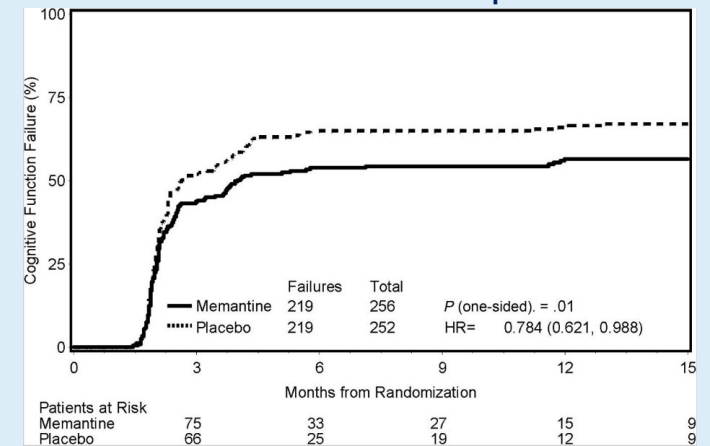
- Utilization and quality of HA-WBRT



NRG CC001

HA-WBRT preserved cognitive function compared to WBRT

- Use of memantine → helpful?



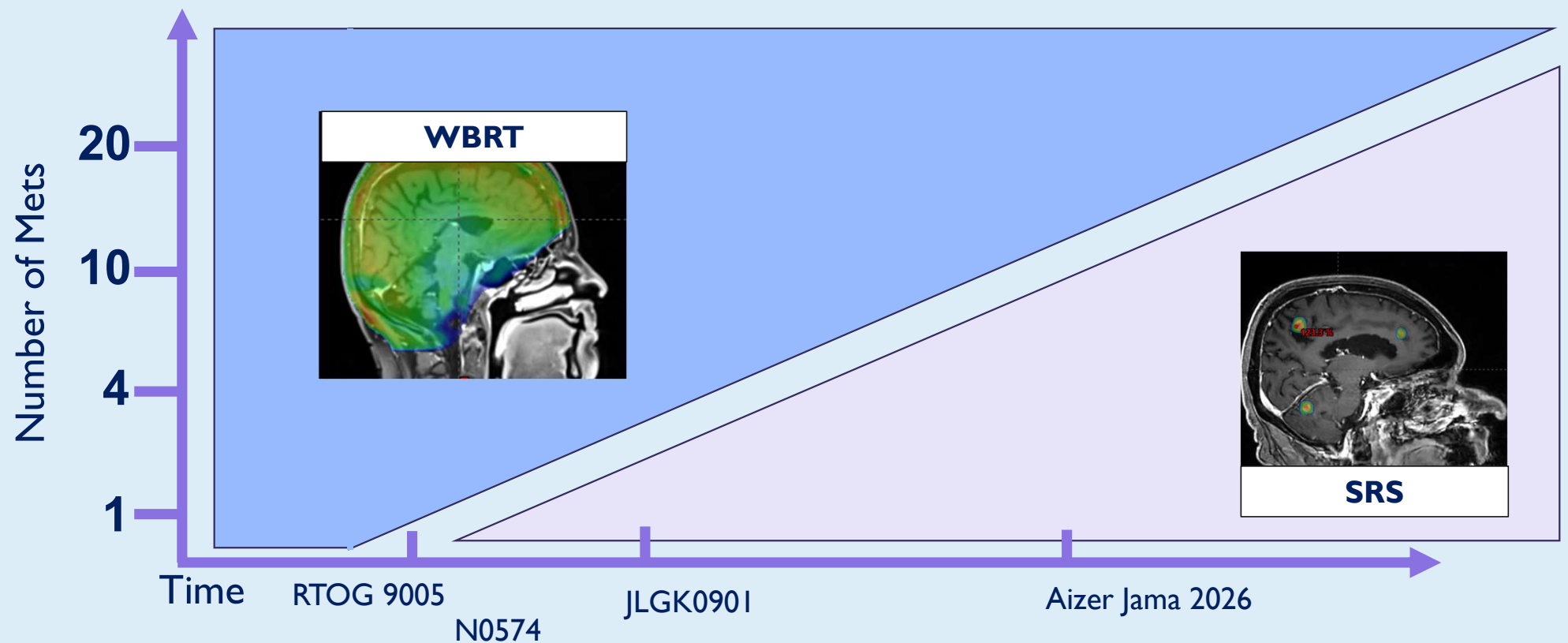
RTOG 0614

memantine delayed time to cognitive decline

Focus 2

- **Quality of Life for Patients: Neurocognitive Preservation**

- Minimizing treatment footprint (number of mets influencing decision for SRS vs HA-WBRT)



Questions?





New CDA Calendar Dashboard

Vinoothna Bavireddy

ANNOUNCEMENTS & REMINDERS

It's not too late to offer feedback on the Brain Metastases forms.

Directions for using the new CDA Calendar Dashboard will be emailed.

Next CDA Team Meeting: **Wednesday, May 20 at 10:00 AM** (Audit Information Session)

Next Collaborative-Wide Meeting: **Friday, October 30th** at Schoolcraft College

The MROQC Coordinating Center will be closed on **Monday, May 18.**

WE'D LOVE YOUR FEEDBACK!

Your input helps us make CDA breakout sessions more valuable and impactful.

Please take a moment to complete the short evaluation survey.

Scan the QR code below to get started:



Thank you for helping us improve!