**Brain Metastasis Management**

**CLINICAL PRESENTATION**

- **Known history of extracranial primary cancer**
  - Consider Brain Metastasis Clinic or multidisciplinary evaluation by Neurosurgery, Radiation Oncology, and Medical Oncology

- **Possible one or more metastatic lesions on MRI brain**
  - Consider SRS or WBRT

- **No known extracranial primary cancer history**
  - See Page 2

**TREATMENT**

- Surgery indicated and feasible?
  - Yes
    - Surgery followed by SRS or WBRT
    - After surgery and radiation therapy, consider systemic therapy for primary cancer or consider enrollment in a clinical trial
    - Consider neuropsychological evaluation
  - No
    - SRS (1-5 fractions per American Society of Radiation Oncology (ASTRO) guidelines)
    - WBRT (30 Gy/10 fractions)
    - If symptomatic, consider neurology consult
    - If there is suspicion for leptomeningeal disease (LMD), consider specific work-up (see Leptomeningeal Metastases algorithm)
    - Systemic therapy for primary cancer or consider enrollment in a clinical trial
    - Consider neuropsychological evaluation

**FOLLOW-UP**

- MRI brain every 2 to 3 months and consider neuropsychological evaluation if not previously done or follow-up and continue follow-up for primary cancer as clinically appropriate

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SRS = stereotactic radiosurgery  
WBRT = whole brain radiation therapy

1 Discuss Goal Concordant Care (GCC) with patient or if clinically indicated, with Surrogate-Decision Maker (SDM). GCC should be initiated by the Primary Oncologist. If Primary Oncologist is unavailable, Primary Team Attending Physician to initiate GCC discussion and notify Primary Oncologist. Patients or if clinically indicated the SDM should be informed of therapeutic and/or palliative options. GCC discussion should be consistent, timely, and re-evaluated as clinically indicated. The Advance Care Planning (ACP) note should be used to document GCC discussion. Refer to the GCC home page (for internal use only).

3 SRS is defined as 1-5 fractions per American Society of Radiation Oncology (ASTRO) guidelines. The term SRS implies highly conformal, image-guided, potentially ablative radiotherapy.

4 Clinical trial is the preferred option if one is available and the patient is eligible

5 Refer to Cancer Treatment algorithms for melanoma, breast, and lung cancers

6 Consider hippocampal sparing (if all lesions >5 mm from the hippocampi) and memantine to prevent cognitive decline associated with WBRT

7 In selected cases, surveillance may be spaced out as clinically appropriate. Follow-up will be done by the primary team and the team who provided treatment for the brain metastases.
**Brain Metastasis Management**

**CLINICAL PRESENTATION**

- No known extracranial primary cancer history
- **Symptomatic lesion?**

**TREATMENT**

- **Establish diagnosis with brain tissue acquisition by tumor resection**
  - Surgery followed by SRS
  - Surgery followed by WBRT

- Is primary cancer diagnosis confirmed?
  - Yes
    - Establish diagnosis with brain tissue acquisition by tumor biopsy
    - Consider systemic work-up as indicated in Box A
    - SRS or WBRT (30 Gy/10 fractions)
    - Consider neurology consult. If there is suspicion for leptomeningeal disease (LMD), consider specific work-up (see Leptomeningeal Metastases algorithm)
    - Systemic therapy for primary cancer or Consider enrollment in a clinical trial
  - No

**FOLLOW-UP**

- Refer to disease-specific specialty for further workup and treatment and/or refer to the Brain Metastasis Clinic or multidisciplinary evaluation by Neurosurgery, Radiation Oncology, and Medical Oncology
  - For treatment for additional brain metastases, refer to Treatment options on Page 1

- Is primary cancer diagnosis confirmed?
  - Yes
    - Establish diagnosis with brain tissue acquisition
  - No

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1 The decision to resect a tumor should be made after multidisciplinary discussion of each case, and it will be dependent on the size, location, feasibility and necessity. For smaller (<2 cm), deep, or asymptomatic lesions, SRS alone may be more appropriate. WBRT after surgery or SRS should be considered in selected cases in which multiple brain metastases remain untreated.

2 SRS is defined as 1-5 fractions per American Society of Radiation Oncology (ASTRO) guidelines

3 Consider memantine and hippocampal sparing (if lesions <5 mm from hippocampi) to prevent cognitive decline associated with WBRT

4 Refer to Cancer Treatment algorithms for melanoma, breast, and lung cancers

5 Clinical trial is the preferred option if one is available and the patient is eligible

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**NOTE:** Consider Clinical Trials as treatment options for eligible patients

**Disclaimer:** This algorithm has been developed for MD Anderson using a multidisciplinary approach considering circumstances particular to MD Anderson’s specific patient population, services and structure, and clinical information. This is not intended to replace the independent medical or professional judgment of physicians or other health care providers in the context of individual clinical circumstances to determine a patient’s care. This algorithm should not be used to treat pregnant women.

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NOTE: Consider Clinical Trials as treatment options for eligible patients

**RECURRENT**

Recurrent brain disease

A

- Refer back to established multidisciplinary team or Brain Metastasis Clinic
- Discuss GCC with patient or if clinically indicated, with SDM

Determine if recurrence is local at previously treated site or new distant brain metastasis with or without local recurrence

Previous surgery

Previous whole brain radiation

Previous stereotactic radiosurgery

**SURVEILLANCE**

Brain imaging with and without contrast every 2 to 3 months

Progressive disease?

Yes

- See Box A
- Discuss GCC with patient or if clinically indicated, with SDM

No

Individualize care as clinically indicated

**ADDITIONAL RECURRENTNESS**

- Surgery or SRS or WBRT or Systemic therapy 4 or Consider enrollment in a clinical trial 5
- Consider supportive care

LITT = laser interstitial thermal therapy

1 Clinician should ensure that imaging changes are more likely secondary to tumor recurrence rather than necrosis due to prior stereotactic radiosurgery (SRS)

2 GCC should be initiated by the Primary Oncologist. If Primary Oncologist is unavailable, Primary Team Attending Physician to initiate GCC discussion and notify Primary Oncologist. Patients or if clinically indicated the SDM should be informed of therapeutic and/or palliative options. GCC discussion should be consistent, timely, and re-evaluated as clinically indicated. The Advance Care Planning (ACP) note should be used to document GCC discussion. Refer to the GCC home page (for internal use only).

3 Recurrence on imaging can be confounded by treatment effects; strongly consider tumor tissue sampling if there is a possibility of treatment-related necrosis. Consider advanced brain tumor imaging such as dynamic perfusion and spectroscopic MRI or PET of the brain.

4 Systemic disease to be treated as clinically indicated

5 Clinical trial is the preferred option if one is available and the patient is eligible

6 In selected cases, surveillance may be spaced out as clinically appropriate. Follow-up will be done by the primary team and the team who provided treatment for the brain metastases.
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DEVELOPMENT CREDITS

This practice algorithm is based on majority expert opinion of the Brain Metastasis workgroup at the University of Texas MD Anderson Cancer Center. It was developed using a multidisciplinary approach that included input from the following:

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