Primary Brain Lesion-Diffuse Glioma – Adult
(Greater than or equal to 18 years old)

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

RADIOLOGICAL PRESENTATION

- Imaging study suggestive of glioma
- Left hemisphere Speech/motor
- Right hemisphere
- Other brain involvement

PRESURGICAL PLANNING

- Patient has speech symptoms?
  - Yes: MRI Stealth/Brain Lab
  - No: Strongly consider neuropsychological evaluation before functional imaging study

- Is gross total resection feasible?
  - Yes: Gross total resection with or without:
    - awake craniotomy
    - intraoperative imaging study
    - intraoperative monitoring (IOM)
  - No: Sub-total resection or Biopsy

TREATMENT

- Imaging study within 72 hours

- Glioblastoma, see Page 2
- Anaplastic Glioma, see Page 3

1 Biopsy first if MRI suggestive of CNS lymphoma or non tumor diagnosis
Primary Brain Lesion-Diffuse Glioma – Adult

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This practice algorithm has been specifically developed for MD Anderson using a multidisciplinary approach and taking into consideration circumstances particular to MD Anderson, including the following: MD Anderson’s specific patient population; MD Anderson’s services and structure; and MD Anderson’s clinical information. Moreover, this algorithm is not intended to replace the independent medical or professional judgment of physicians or other health care providers. This algorithm should not be used to treat pregnant women.

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

### PATHOLOGY

- **Glioblastoma**
- **Good performance status (KPS greater than or equal to 60)**
  - Chemo-radiation treatment\(^2\) to start 2 to 6 weeks after surgery: 3D approach\(^3\) required – fractionated external beam radiation (EBRT) 60 Gy/30 fractions and Temozolomide\(^4\) 75 mg/m\(^2\) for 6 weeks
  - For patients with a preop neuropsychological evaluation, consider post-op neuropsychological evaluation.
  - Consider clinical trial

- **Poor performance status (KPS less than 60)**
  - Radiation therapy\(^2\) to start 2 to 6 weeks after surgery: 3D approach\(^3\) required – fractionated external beam radiation (EBRT) 60 Gy/30 fractions
  - Consider temozolomide\(^2\) 75 mg/m\(^2\) for duration of radiation therapy if clinically appropriate
  - Consider shorter course of radiation therapy\(^2\) alone 40-50 Gy in 3 to 4 weeks
  - For patients with a preop neuropsychological evaluation, consider post-op neuropsychological evaluation.

- **End Stage Disease**
  - Consider hospice/ Supportive Care

### TREATMENT

- Imaging study scan\(^5\) in 3 to 4 weeks postradiation
- Adjuvant temozolomide\(^2\) 150 mg/m\(^2\) for 5 consecutive days of a 28 day cycle for 12 cycles; dose escalate to 200 mg/m\(^2\) if patient tolerates.

### SURVEILLANCE

- Imaging study every 2 to 3 months for first 2 years then as clinically indicated
- Consider neuropsychological evaluation every 3-6 months, or as clinically indicated

### RECURRENCE

- Consider bevacizumab 10 mg/kg every 2 weeks as clinically appropriate
- Consider temozolomide re-challenge
- Consider re-irradiation
- Consider lomustine with or without bevacizumab as clinically indicated
- Consider clinical trials

### PROGRESSIVE DISEASE?

- Yes
- No

- Continue surveillance

1. Refer Karnofsky Performance Status Scale (Appendix A)
2. Conduct baseline neuropsychological evaluation prior to radiation treatment
3. 3D approach = Intensity Modulated Radiation Therapy (IMRT) or 3D conformal radiation therapy
4. Monitoring while on therapy:
   - Constipation
   - Pneumocystis Pneumonia Prophylaxis
   - Neurologic evaluation
   - Intracranial Pressure (ICP)
   - Consider neuropsychological evaluation
   - Metabolic Panel every 4 weeks
   - Consider neuropsychological evaluation

5. Reflected as new baseline; pseudoprogression may be noted.

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Department of Clinical Effectiveness V3

Approved by the Executive Committee of the Medical Staff on 12/15/2015
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**PATHOLOGY**

- Anaplastic Oligodendroglioma (AO)²
- Anaplastic Glioma
- Anaplastic Astrocytoma (AA)
- OR Anaplastic Oligoastrocytoma (AOA)

**TREATMENT**

- Sequential radiation and chemotherapy with PCV² or temozolomide based on the molecular profile and physician’s discretion
- For patients with a pre-op neuropsychological evaluation, consider post-op neuropsychological evaluation

Start 2 to 6 weeks after surgery 3D approach required:
- Fractionated external beam radiation (EBRT) 57 Gy/30fx¹ with or without temozolomide concurrently and/or adjuvant temozolomide based on the molecular profile and physician’s discretion
- For patients with a pre-op neuropsychological evaluation, consider post-op neuropsychological evaluation

**SURVEILLANCE**

MRI every 2 to 3 months for first 2 years then as clinically indicated based on the following factors:
- Performance status
- Extent of residual disease
- Imaging
- Proliferation rate
- Patient personal preferences

Consider neuropsychological evaluation every 6-12 months, or as clinically indicated

Imaging study scan² in 3 to 4 weeks postradiation

Consider adjuvant therapy based on the following factors:
- Performance status
- Extent of residual disease
- Imaging
- Proliferation rate
- Patient personal preferences

**RECURRENCE**

- Karnofsky performance greater than or equal to 60?
  - Yes
    - Consider clinical trial
    - Consider re-irradiation
  - No
    - Consider hospice

- Prior history of radiation therapy?
  - Yes
    - Consider radiation therapy
  - No
    - Individualize care as clinically indicated

- Stable or improving disease?
  - Yes
    - Continue surveillance
  - No
    - Consider hospice

- Consider adjuvant therapy based on the following factors:
  - Performance status
  - Extent of residual disease
  - Imaging
  - Proliferation rate
  - Patient personal preferences

- Consider neuropsychological evaluation every 6 -12 months, or as clinically indicated.

1 Prognostic factors (any of the following present or positive):
- Less than age 40
- 1p/19q deletion status
- IDH-1 mutation status

2 PCV- procarbazine, lomustine, and vincristine

3 Reflected as new baseline; pseudoprogession may be noted.
## Appendix A: Karnofsky Performance Status Scale Definitions

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>Normal no complaints; no evidence of disease.</td>
</tr>
<tr>
<td>90</td>
<td>Able to carry on normal activity; minor signs or symptoms of disease.</td>
</tr>
<tr>
<td>80</td>
<td>Normal activity with effort; some signs of disease.</td>
</tr>
<tr>
<td>70</td>
<td>Cares for self; unable to carry on normal activity or to do active work.</td>
</tr>
<tr>
<td>60</td>
<td>Requires occasional assistance, but is able to care for most of his personal needs.</td>
</tr>
<tr>
<td>50</td>
<td>Requires considerable assistance and frequent medical care.</td>
</tr>
<tr>
<td>40</td>
<td>Disabled; requires special care and assistance.</td>
</tr>
<tr>
<td>30</td>
<td>Severely disabled; hospital admission is indicated although death not imminent.</td>
</tr>
<tr>
<td>20</td>
<td>Very sick; hospital admission necessary; active supportive treatment necessary.</td>
</tr>
<tr>
<td>10</td>
<td>Moribund; fatal processes progressing rapidly.</td>
</tr>
<tr>
<td>0</td>
<td>Dead</td>
</tr>
</tbody>
</table>

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SUGGESTED READINGS


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This practice consensus algorithm is based on majority expert opinion of the Primary Brain Lesion Workgroup Faculty at the University of Texas MD Anderson Cancer Center. It was developed using a multidisciplinary approach that included input from the following medical, radiation and surgical oncologists.

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t Core Development Team

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