

CANCER TREATMENT REGIMENS

Brain Cancer

CNS Cancer

The selection, dosing, and administration of anticancer agents and the management of associated toxicities are complex. Drug dose modifications and schedule and initiation of supportive care interventions are often necessary because of expected toxicities and because of individual patient variability, prior treatment, and comorbidities. Thus, the optimal delivery of anticancer agents requires a healthcare delivery team experienced in the use of such agents and the management of associated toxicities in patients with cancer. These cancer treatment regimens may include both FDA-approved and unapproved uses/regimens and are provided as references only to the latest treatment strategies. Clinicians must choose and verify treatment options based on the individual patient.

NOTE: Grey shaded boxes contain updated regimens.

Brain Cancer

CENTRAL NERVOUS SYSTEM CANCER (Part 1 of 3)	
REGIMEN	DOSING
Adult Low-Grade Infiltrative Supratentorial Astrocytoma/Oligodendroglioma (Excluding Pilocytic Astrocytoma)	
Adjuvant Treatment	
Temozolomide (Temodar; TMZ) ¹⁻³	<p>Temozolomide 75mg/m² orally daily from the first day of radiotherapy until the last day of radiotherapy, but for no longer than 49 days followed by a 4 week break, then followed by</p> <p>Days 1-5: Temozolomide 150mg/m² orally for the first cycle then, barring any hematologic toxicities, temozolomide 200mg/m² orally beginning with the second cycle. Repeat cycle every 4 weeks for up to 6 cycles.</p> <p style="text-align: center;">.....OR.....</p> <p>Days 1-49: Temozolomide 75mg/m² orally. Repeat cycle every 11 weeks.</p>
Recurrent or Progressive Low-Grade Disease	
Temozolomide ^{1,3}	Days 1-49: Temozolomide 75mg/m ² orally daily. Repeat cycle every 11 weeks.
Cisplatin (Platinol) + etoposide (Toposar, VePesid, Etopophos; VP-16) ^{1,4}	Days 1-3: Cisplatin 25mg/m ² /day IV + etoposide 100mg/m ² /day IV. Repeat cycle every 4 weeks for first 3 cycles, then repeat every 5 weeks for next 3 cycles, then repeat every 6 weeks for the last 3 cycles; total 10 cycles over approximately 10-11 months (total dose 750mg/m ² cisplatin and 3,000mg/m ² etoposide).
Carboplatin (Paraplatin) ^{1,5}	Carboplatin 560mg/m ² IV at 4-week intervals; continued until disease progression, unacceptable toxicity, or for 12 additional courses after achieving maximal response.
Anaplastic Gliomas	
Adjuvant Treatment	
Temozolomide ^{1,6}	Days 1-5: Temozolomide 200mg/m ² /day orally. Repeat cycle every 4 weeks until disease progression or for up to 24 cycles.
Recurrent/Salvage Treatment	
Temozolomide ⁷	Temozolomide 50mg/m ² daily for up to 1 year or until disease progression.
Bevacizumab (Avastin) + irinotecan (Camptosar; CPT-11) ⁸	Day 1: Bevacizumab 10mg/kg IV in combination with irinotecan 125mg/m ² OR 340mg/m ² IV in patients receiving enzyme inducing antiepileptics. Repeat once every 2 weeks.
Bevacizumab + fotemustine ⁹	<p>Induction therapy</p> <p>Days 1 and 15: Bevacizumab 10mg/kg IV, plus</p> <p>Days 1 and 8: Fotemustine 75mg/m² IV, followed by a 3-week break.</p> <p>Maintenance therapy</p> <p>Bevacizumab 10mg/kg IV + fotemustine 75mg/m² IV every 3 weeks until tumor progression or unacceptable toxicity.</p>
Cyclophosphamide (Cytoxan) ¹⁰	Days 1-2: Cyclophosphamide 750mg/m ² IV. Repeat cycle every 4 weeks.
Glioblastoma	
Adjuvant treatment	
Temozolomide ^{1, 2}	<p>Concurrent with radiotherapy</p> <p>Temozolomide 75mg/m²/day orally.</p> <p>Post-radiotherapy</p> <p>Days 1-5: Temozolomide 150-200mg/m² orally. Repeat cycle every 4 weeks.</p>

continued

CENTRAL NERVOUS SYSTEM CANCER (Part 2 of 3)

REGIMEN	DOSING
Glioblastoma (continued)	
Recurrent/Salvage Treatment	
Bevacizumab + irinotecan¹¹	<p>Initial therapy Day 1: Bevacizumab 10mg/kg IV. Repeat every 2 weeks until disease progression.</p> <p>After tumor progression Day 1: Bevacizumab 10mg/kg IV + irinotecan 125mg/m² OR 340mg/m² IV in patients receiving enzyme inducing antiepileptics. Repeat once every 2 weeks.</p>
Bevacizumab + fotemustine⁹	<p>Induction therapy Days 1 and 15: Bevacizumab 10mg/kg IV, plus Days 1 and 8: Fotemustine 75mg/m² IV, followed by a 3-week break.</p> <p>Maintenance therapy Bevacizumab 10mg/kg IV + fotemustine 75mg/m² IV every 3 weeks until tumor progression or unacceptable toxicity.</p>
Cyclophosphamide¹⁰	Days 1–2: Cyclophosphamide 750mg/m ² IV. Repeat cycle every 4 weeks.
Meningioma	
Alpha-interferon (α-IFN)^{1,12}	α-IFN 10 million Units/m ² SC every other day for 4 weeks. Repeat cycle every 4 weeks.
Primary CNS Lymphoma	
Primary Treatment	
High-dose methotrexate (MTX) ≥3.5g/m² as single agent^{1,13}	<p>Induction therapy Methotrexate 8g/m² IV administered every 2 weeks until complete response achieved or max of 8 cycles reached.</p> <p>Consolidation Methotrexate 8g/m² IV administered every 2 weeks for 2 cycles.</p> <p>Maintenance therapy Methotrexate 8g/m² IV administered every 4 weeks for 11 cycles.</p>
High-dose MTX ≥3.5g/m² in combination with cytarabine (Cytosar-U; ARA-C)^{1,14}	Day 1: Methotrexate 3.5g/m ² IV, followed by Days 2 and 3: Cytarabine 2g/m ² IV twice daily. Repeat cycle every 3 weeks for 4 cycles and follow with whole-brain irradiation.
Recurrence or Progressive Disease	
High-dose MTX	Retreat (see regimen above).
Temozolomide or topotecan (Hycamtin)¹	Consider high-dose chemotherapy with autologous stem cell reinfusion in patients who achieve a complete response with conventional doses of salvage chemotherapy or have no residual disease after re-resection.
Rituximab (Rituxan) + temozolomide^{1,15}	<p>Induction therapy Day 1: Rituximab 375mg/m² IV, plus Days 1–5: Temozolomide 150–200mg/m² orally daily, administered after rituximab infusion. Repeat cycle every 4 weeks for 4 cycles.</p> <p>Maintenance therapy Days 1–5: Temozolomide 150–200mg/m² orally daily, administered after rituximab infusion. Repeat cycle every 4 weeks for 8 cycles.</p>
Adult Medulloblastoma and Supratentorial Primitive Neuroectodermal Tumor (PNET)	
Adjuvant Treatment	
Vincristine (Oncovin; VCR) + cisplatin + lomustine (CeeNU; CCNU)^{1,16}	<p>During craniospinal radiotherapy (RT) Day 1: Lomustine 75mg/m² orally. Day 2: Cisplatin 75mg/m² IV. Days 2, 8 and 15: Vincristine 1.5mg/m² IV bolus, max 2mg bolus; up to max 8 doses.</p> <p>*Data supporting the use of VCR have been found in pediatric trials only. Omission of VCR during RT or dose modification may be required for adults because they do not tolerate this regimen as well as children.</p>

continued

CENTRAL NERVOUS SYSTEM CANCER (Part 3 of 3)

REGIMEN	DOSING
Adult Medulloblastoma and Supratentorial Primitive Neuroectodermal Tumor (PNET) (continued)	
Adjuvant Treatment (continued)	
Vincristine + cisplatin + cyclophosphamide^{1,16}	Day 1: Cisplatin 75mg/m ² IV. Days 2, 8 and 15: Vincristine 1.5mg/m ² IV bolus, max 2mg bolus. Days 22, 23: Cyclophosphamide 1,000mg/m ² IV. *Data supporting the use of VCR have been found in pediatric trials only. Omission of VCR during RT or dose modification may be required for adults because they do not tolerate this regimen as well as children.
Recurrence/Salvage Treatment (No Prior Chemotherapy)	
High-dose cyclophosphamide ± etoposide¹ Carboplatin + VP-16 + cyclophosphamide¹ Cisplatin + etoposide + cyclophosphamide¹	Consider high-dose chemotherapy with autologous stem cell reinfusion in patients who achieve a complete response with conventional doses of salvage chemotherapy or have no residual disease after re-resection.
Recurrence/Salvage Treatment (Prior Chemotherapy)	
High-dose cyclophosphamide ± etoposide¹	Consider high-dose chemotherapy with autologous stem cell reinfusion in patients who achieve a complete response with conventional doses of salvage chemotherapy or have no residual disease after re-resection.
Temozolomide¹⁷	Days 1-5: Temozolomide 180mg/m ² /day (patients with prior craniospinal irradiation [CSI]) OR 200mg/m ² /day (patients with no prior CSI). Repeat every cycle every 4 weeks for up to 11 cycles.
Temozolomide + 13-cis-retinoic acid (Accutane; isotretinoin; cRA)^{1,18}	Days 1-5: Temozolomide 150mg/m ² /day (patients with prior chemotherapy) OR 200mg/m ² /day (patients with no prior chemotherapy) orally, plus Days 1-21: 13-cis-retinoic acid 100mg/m ² /day every 12 hours orally. Repeat cycle every 4 weeks.
References	
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