AAVBC

AMERICAN ACADEMY OF VALUE BASED CARE

Brain Cancer

Quick Reference Guide

2026

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1 CLINICAL SNAPSHOT

Definition: Malignant brain cancer includes **primary tumors** arising within the brain or central nervous system and **secondary/metastatic tumors** that spread to the brain from another primary site. Common primary malignant brain tumors include **glioblastoma, astrocytoma, oligodendroglioma, and other CNS malignancies**. Brain metastases most often arise from lung, breast, melanoma, kidney, and colorectal cancers. Final diagnosis depends on imaging, pathology, histology, and molecular classification.[1]

ICD-10 Codes:

Primary brain malignancy is coded by anatomic site: **C71.0–C71.9**. Use the most specific location available from imaging or pathology, such as frontal lobe **(C71.1)**, temporal lobe **(C71.2)**, parietal lobe **(C71.3)**, occipital lobe **(C71.4),** cerebellum (C71.6), brain stem **(C71.7)**, overlapping sites **(C71.8)**, or unspecified site **(C71.9)** only when location is not documented. Secondary/metastatic brain malignancy is coded **C79.31** and should be documented with the primary malignancy when known. **Z85.841** applies only after treatment is complete and there is no evidence of active disease, treatment, or surveillance.[2]

Prevalence and Burden: The American Cancer Society projects approximately **24,740 new cases** and **18,350 deaths** from malignant brain and spinal cord tumors in the United States in 2026, accounting for roughly 1.2% of all new cancer diagnoses.[3] The overall **5-year relative survival rate is approximately 32.9%**, and the average age at diagnosis is **61 years**—about 9 in 10 cases occur in adults.[3] **Glioblastoma**, the most common malignant primary brain tumor, is disproportionately a disease of older adults: patients **≥65 years** represent approximately one-third of all glioblastoma cases.[4,5] GBD 2021 US data show the highest disability-adjusted life-year (DALY) rate in males aged 70–74 (**516.96 per 100,000; 95% UI 491.24–539.07**), confirming concentrated burden in the Medicare population.[6] In a SEER analysis of **40,582 glioblastoma patients** (2000–2021), median overall survival for patients **>65 years** was **4 months** (95% CI 4–4) versus **19 months** (95% CI 18–20) for patients **≤65 years**; older age was associated with **HR 1.72** (95% CI 1.68–1.75; $p < 0.001$) for mortality.[7]

HCC/RAF V28 Mapping

ICD-10 CODE(S)	HCC CATEGORY (V28)	RAF (CNA)	DOCUMENTATION REQUIREMENT
C71.0–C71.9 Primary brain malignancy	**HCC 20 — Lung and Other Severe Cancers**[2]	**1.136**	Document active **primary brain malignancy** explicitly: “glioblastoma,” “malignant glioma,” “astrocytoma,” or “oligodendroglioma” — not only “mass” or “lesion.” Specify **anatomic site**, laterality when applicable, histologic confirmation, molecular markers, and active treatment/surveillance status[2]

ICD-10 CODE(S)	HCC CATEGORY (V28)	RAF (CNA)	DOCUMENTATION REQUIREMENT
C79.31 Secondary/ metastatic brain malignancy	**HCC 17 — Cancer Metastatic to Lung/Liver/Brain/Other**[2,8,9]	**4.209**	Document **brain metastasis** and code the **primary malignancy** when known. If the primary site is unknown, use **C80.1** until imaging/pathology confirms the primary source[8]
Z85.841 Personal history of malignant neoplasm of brain	**No HCC**[2,8,9]		Use only when tumor treatment is complete, there is **no evidence of disease**, and the patient is no longer on active treatment or active surveillance. Patients on maintenance therapy or surveillance under a treatment plan generally retain active C71.x documentation[2]

ABBREVIATIONS: CMS = Centers for Medicare & Medicaid Services; CNA = Community Non-Dual Eligible, Aged; HCC = Hierarchical Condition Category; RAF = Risk Adjustment Factor; V28 = CMS-HCC Model Version 28. * Annual value illustrative at AAVBC representative MA base rate ~$10,402/year, applied at CMS-HCC 2026 model normalization factor 1.067 for PY2026; actual plan payment varies by county and contract

RAF values represent the Community Non-Dual Eligible Aged (CNA) coefficient from the 2026 CMS-HCC model; values vary across patient populations based on eligibility and care setting

Risk-Adjusted Care Resources per Patient/Year[2,8,9]

RAF weight × $10,402.34 MA base rate = estimated annual care coordination support per documented HCC[8,9]

PRIMARY BRAIN MALIGNANCY (C71.0-C71.9)

$11.8K

SECONDARY METASTATIC BRAIN MALIGNANCY (C79.31)

~$43.8K+

HCC 17 · RAF 4.209

RAF values represent the Community Non-Dual Eligible Aged (CNA) coefficient from the 2026 CMS-HCC model; values vary across patient populations based on eligibility and care setting

AAVBC PERSPECTIVE

*In value-based primary care, **primary malignant brain tumors (C71.x)** and **brain metastases (C79.31)** represent different HCC categories and different levels of documented care burden. Primary brain malignancy maps to **HCC 20**, while metastatic brain disease maps to **HCC 17** and should also include the **primary cancer site** when known. Accurate documentation is not about maximizing payment; it is about representing the patient's true clinical complexity — neurologic decline, seizures, corticosteroid exposure, cognitive impairment, caregiver dependence, surveillance imaging, specialist coordination, and advance*

*care planning. Use **Z85.841** only when treatment is complete and there is no evidence of active disease, treatment, or surveillance.*[2,8,9]

2 RECOGNITION AND DIAGNOSIS

Medicare - Covered Diagnostic and Surveillance Workup

TEST	COVERAGE	FREQUENCY	CPT/HCPCS	CLINICAL INDICATION
No population-based brain cancer screening[1]	Not covered — no Medicare or guideline-endorsed screening[1]	—	—	Brain tumor screening is **not recommended** for asymptomatic adults. Diagnostic workup is **symptom-triggered**, especially for new or progressive neurologic or cognitive change[1]
MRI brain with contrast (preferred for suspected tumor)[10]	Medicare Part B; medically necessary	Diagnostic; symptom-triggered	**70553** (or 70552 with-contrast only)	Standard for **tumor characterization, treatment planning, post-treatment surveillance, and recurrence evaluation** when contrast is appropriate.[1] Use for **new seizure, progressive cognitive/personality change, focal deficit, papilledema, persistent headache with neurologic findings, or suspected intracranial pathology**[10]

TEST	COVERAGE	FREQUENCY	CPT/HCPCS	CLINICAL INDICATION
MRI brain without contrast[10]	Medicare Part B; medically necessary	Diagnostic	**70551**	Use **when gadolinium is contraindicated** or renal function limits contrast use; less sensitive for tumor characterization[10]
Stereotactic brain biopsy (image-guided)[1]	Medicare Part B; medically necessary	Tissue diagnosis	**61751** (CT/MR- guided); **61750** (open)	Required for definitive diagnosis when imaging suggests primary brain malignancy. **Do not code C71.x until malignancy is confirmed** in the outpatient setting[1]
Neurobehavioral status exam[1]	Medicare Part B; medically necessary	Baseline and per clinical change	**96116**	Documents cognitive, behavioral, executive-function, and tumor-related deficits versus pre-existing decline[1]
Standardized cognitive performance testing[1]	Medicare Part B; medically necessary	Baseline and reassessment	**96125**	Cognitive testing by healthcare professional; supports neuropsychological evaluation when MoCA insufficient[1]
Comprehensive Geriatric Assessment (CGA)[11-14]	Bundled into E/M	Before treatment decisions; reassess with major change	E/M-based	Assesses **frailty, cognition, function, comorbidity, nutrition, polypharmacy, falls, and caregiver support**; helps guide treatment intensity[11-14]
Advance Care Planning (AWV)[14,15]	Medicare Part B	Within 8 weeks of diagnosis; at any major change[15,16]	**99497/ 99498**	Brain tumors may impair decision-making capacity quickly. Document **surrogate, code status, goals of care and directives** early[15,16]

TEST	COVERAGE	FREQUENCY	CPT/HCPCS	CLINICAL INDICATION

ABBREVIATIONS: ACR = American College of Radiology; ACP = advance care planning; AWV = Annual Wellness Visit; CGA = Comprehensive Geriatric Assessment; CMS = Centers for Medicare & Medicaid Services; CPT = Current Procedural Terminology; CT = computed tomography; E/M = evaluation and management; HCPCS = Healthcare Common Procedure Coding System; MoCA = Montreal Cognitive Assessment; MRI = magnetic resonance imaging

AAVBC PERSPECTIVE

*The central value-based care challenge in brain cancer is not overdiagnosis. It is **late recognition of atypical disease in older adults**. In Medicare-age patients, malignant brain tumors often appear as cognitive decline, personality change, aphasia, gait instability, or caregiver-reported functional loss rather than classic headache or seizure. These symptoms overlap with dementia, depression, delirium, medication effects, and stroke, making the PCP's recognition role critical*

*The highest-value primary care actions are: **maintain a low threshold for MRI brain with contrast**, refer immediately when imaging identifies a mass, document CGA/frailty and functional status, initiate advance care planning before cognition declines, and assess caregiver burden early. Accurate documentation should reflect the patient's true clinical complexity — neurologic symptoms, cognitive change, treatment phase, molecular markers, steroid/AED use, surveillance imaging, caregiver support, and active-vs-history status — not simply a diagnosis label.*

Atypical Presentation in Older Adults (>65)

SIGN/SYMPTOM	CLINICAL SIGNIFICANCE
Progressive cognitive decline over weeks to months[4,17]	Most common presenting pattern in older adults; may mimic dementia, depression, or medication effect. **Subacute trajectory is the red flag**[4,17]
New personality change, apathy, or behavioral shift not explained by psychiatric history[5,18]	Frontal or temporal tumors may present as loss of initiative, irritability, disinhibition, or "not acting like themselves"[18]
Word-finding difficulty or aphasia[4,17]	May reflect dominant frontal, temporal, or parietal involvement; warrants imaging when new or progressive[4,17]
New-onset seizure in adult ≥50[19,20]	New seizure in older adults requires **MRI brain with contrast** and neurology referral; do not assume idiopathic epilepsy[20]

SIGN/SYMPTOM	CLINICAL SIGNIFICANCE
Progressive headache with vomiting, papilledema, or worsening with cough/Valsalva[19]	Suggests increased intracranial pressure; requires urgent imaging and specialist evaluation[19]
Anosognosia (inability to recognize one's own deficits)[18]	Patient may deny symptoms despite clear caregiver concern. **Caregiver history is critical** when cognition or insight is impaired[18]
New visual field cut or diplopia[19,21]	May suggest occipital, optic pathway, brainstem, or raised intracranial pressure; requires neuroimaging[19,21]
Gait imbalance, ataxia, or falls without other explanation[19]	Consider cerebellar or posterior fossa involvement; distinguish from peripheral neuropathy or vestibular causes[1]

ABBREVIATIONS: CI = confidence interval; MRI = magnetic resonance imaging; PPV = positive predictive value

⚠ RED FLAG — EMERGENCY/ACTIVATE CRISIS RESPONSE

Headache and seizure become less reliable presenting symptoms in older adults. New cognitive **decline, personality change, aphasia, hemiparesis, gait instability, anosognosia, or caregiver-reported functional decline** should be treated as possible organic CNS disease until proven otherwise. Do not attribute these changes to depression, dementia, delirium, or normal aging without considering neuroimaging.[4,5,18,20]

Geriatric Risk Factors

FACTOR	RISK SIGNAL	NOTES
Age ≥65 years[6,7]	Higher CNS cancer burden in older adults; GBM outcomes worsen with age[7]	Older adults may present with **cognitive/ behavioral change rather than headache or seizure**[6,7]
Male sex[19,21]	GBM incidence is higher in males[19,21]	Predominance is consistent across age cohorts; **clinical workup should not differ by sex**[19]
White race[19,21]	Higher GBM incidence reported compared with Black patients in US datasets[3,22]	Epidemiologic risk factor only; **does not change clinical management**[3]

FACTOR	RISK SIGNAL	NOTES
Prior ionizing radiation (head/neck)[19,21]	Strongest established environmental risk factor; latency may be years to decades[19,21]	Document prior radiation exposure when present; consider in patients with new intracranial mass or neurologic symptoms[19,21]
Cancer predisposition syndromes[3]	Li-Fraumeni, NF1, Lynch, Cowden, and other hereditary syndromes increase risk[3]	Consider **genetics referral** when personal or family history suggests hereditary cancer syndrome[3]
Prior systemic cancer [19,21]	Lung, breast, melanoma, kidney, and colon are common sources of brain metastasis[19,21]	Any new neurologic symptom in a cancer survivor should prompt **expedited MRI**; if metastasis confirmed, code **C79.31 + primary malignancy**[2]
Frailty (CGA-defined)[11,12]	Frailty predicts poorer tolerance and worse survival[11]	Use CGA or geriatric screening to guide treatment intensity; standard KPS alone may miss vulnerabilities in older adults[13]
Anosognosia/cognitive impairment limiting self-report[18]	Patient may not recognize or report deficits[18]	Lower threshold for imaging when family reports **new personality change, functional decline, or "not themselves" behavior**[18]

ABBREVIATIONS: CGA = Comprehensive Geriatric Assessment; CI = confidence interval; DALY = disability-adjusted life-year; FI-CGA-10 = 10-item Frailty Index based on CGA; GBM = glioblastoma; HR = hazard ratio; KPS = Karnofsky Performance Status; NF1 = neurofibromatosis type 1; OS = overall survival

Diagnostic Thresholds and Classification

TEST/SYSTEM	DIAGNOSTIC CRITERION	NOTES
MRI brain with contrast[1,10]	Preferred diagnostic modality for suspected intracranial mass[10]	Use for **new, persistent, or progressive neurologic/cognitive symptoms**. Do not wait for "classic" headache or seizure presentation[1,10]
WHO 2021 (5th edition) CNS Tumor Classification[22]	Integrates histology and molecular markers for final tumor classification[22]	Glioblastoma is classified by **IDH status, WHO grade, and molecular features**; pathology/ molecular confirmation drives final diagnosis[22]
Molecular markers (multigene panel preferred)[1,22]	IDH1/2, MGMT promoter methylation, 1p/19q codeletion, TERT, EGFR, CDKN2A/B, and other markers when indicated[1,22]	Document molecular markers in the problem list; **MGMT methylation guides TMZ benefit** in older GBM patients[1,22]
Urgent referral criteria for suspected brain tumor[23]	Progressive neurologic deficit, late-onset seizure, headache with cognitive/behavioral symptoms, or headache with papilledema[23]	Supports urgent imaging/ referral when symptoms suggest intracranial pathology; combine symptoms rather than evaluating one complaint in isolation[23]
Symptom PPVs in primary care[20]	Headache alone has low predictive value; risk increases when paired with cognitive symptoms or weakness[20]	**Headache + cognitive change, weakness, seizure, papilledema, or progressive functional decline** should prompt imaging[20]
Comprehensive Geriatric Assessment (CGA)[11-14]	Evaluates cognition, function, comorbidity, nutrition, polypharmacy, falls, and caregiver support[11-14]	CGA helps determine treatment tolerance and intensity; **frailty may matter more than chronological age**[12]

TEST/SYSTEM	DIAGNOSTIC CRITERION	NOTES
Neurocognitive screening (MoCA, MMSE) — note insensitivity[1]	MoCA/MMSE may miss executive dysfunction, sustained attention, and processing-speed deficits cause neurocognitive[1]	A "normal" screen does **not** rule out tumor-related cognitive decline. Consider neuropsychology when cognition, capacity, safety, or work/driving decisions are affected[1]

ABBREVIATIONS: ACR = American College of Radiology; ADL = activities of daily living; CIRS = Cumulative Illness Rating Scale; CPRD = Clinical Practice Research Datalink; CGA = Comprehensive Geriatric Assessment; CI = confidence interval; EGFR = epidermal growth factor receptor; FI-CGA-10 = 10-item Frailty Index based on CGA; GBM = glioblastoma; GPA = Graded Prognostic Assessment; HR = hazard ratio; IADL = instrumental activities of daily living; IDH = isocitrate dehydrogenase; KPS = Karnofsky Performance Status; MGMT = O^6-methylguanine DNA methyltransferase; MMSE = Mini-Mental State Examination; MoCA = Montreal Cognitive Assessment; NCCN = National Comprehensive Cancer Network; NICE = National Institute for Health and Care Excellence; OR = odds ratio; OS = overall survival; PPV = positive predictive value; TERT = telomerase reverse transcriptase

Clues to Dig Deeper

CLINICAL CLUE	WHY IT MATTERS	NEXT DIAGNOSTIC STEP
Subacute progressive cognitive change over weeks–months in a Medicare-age patient[4,17]	Distinct from dementia, which usually evolves over years. **Subacute progression is the key temporal pattern** that should trigger imaging[4,17]	**MRI brain with contrast**; document trajectory in the note[1]
New personality change, apathy, or word-finding difficulty[5,18]	May reflect **frontal or temporal lobe tumor** and is often misattributed to depression, aging, or stress[5,18]	Neurologic exam; **MRI brain with contrast**; consider cognitive testing when functional change is present[1,10]
New-onset seizure in adult ≥50[19,20]	New seizure in older adults should not be assumed to be idiopathic. It may be the first sign of **brain tumor, stroke, metabolic derangement, or CNS infection**[20]	**Urgent MRI brain with contrast**; refer to neurology for AED initiation if appropriate[19,20]
Headache + any cognitive symptom or weakness[20]	Headache alone is low-yield, but headache with neurologic or cognitive features raises concern for **intracranial pathology or increased ICP**[20]	**MRI brain with contrast**; urgent evaluation if papilledema, vomiting, or focal deficit is present[20]

CLINICAL CLUE	WHY IT MATTERS	NEXT DIAGNOSTIC STEP
Family-reported deficits the patient does not recognize[18]	Anosognosia is common with frontal/parietal involvement. **Caregiver history may reveal deficits missed by the patient**[18]	**MRI brain with contrast**; engage caregiver in history-taking, safety planning, and medication review[13,18]
Patient with prior systemic cancer (breast, lung, colon, kidney, melanoma) and any new neurological symptom[21]	Lung, breast, melanoma, kidney, and colorectal cancers commonly metastasize to the brain. New symptoms in a cancer survivor require **expedited imaging**[21]	**MRI brain with contrast**; coordinate with oncology[2]
'Normal' MoCA but progressive cognitive symptoms[1]	Standard cognitive screens may miss **executive dysfunction, sustained attention, and processing-speed deficits**. Progressive symptoms still warrant evaluation[1]	Imaging still warranted; consider **neuropsychological evaluation** when capacity, safety, or work/driving decisions are affected[1]
Sudden focal deficit in a patient with known brain malignancy[1]	May represent **tumor hemorrhage, edema, seizure/ postictal deficit, progression, or ischemic stroke**[1]	**Emergency department evaluation**; urgent imaging and neuro-oncology/neurosurgery contact[1]

ABBREVIATIONS: AED = antiepileptic drug; CPT = Current Procedural Terminology; MoCA = Montreal Cognitive Assessment; MRI = magnetic resonance imaging; PPV = positive predictive value

Common Oversights

OVERSIGHT/SHORTCUT	WHY IT MATTERS — WHAT TO DO INSTEAD
Anchoring on dementia, depression, or stroke without considering an organic CNS mass[4,18]	In older adults, brain tumor symptoms can mimic common geriatric conditions. A **subacute weeks-to-months trajectory** should prompt imaging rather than empiric psychiatric or dementia treatment alone[4,18]
Waiting for 'classic' brain tumor symptoms (headache, seizure) in older adults[4]	Headache and seizure may be absent in older adults. New **cognitive decline, personality change, aphasia, gait change, or loss of independence** should trigger a low threshold for MRI brain with contrast[4]

OVERSIGHT/SHORTCUT	WHY IT MATTERS — WHAT TO DO INSTEAD
Evaluating headache in isolation[20]	Headache alone has low predictive value. Combine headache history with **cognitive change, focal weakness, seizure, papilledema, vomiting, or progressive functional decline** to guide imaging decisions[20]
Relying on a 'normal' MoCA or MMSE to rule out brain tumor[1]	Standard cognitive screens may miss executive dysfunction or processing-speed changes. Any **progressive caregiver-reported change** warrants further evaluation, even when screening scores appear reassuring[1]
Watchful waiting for an MRI-identified intracranial mass[1]	Any MRI-identified intracranial mass requires **urgent neuro-oncology/neurosurgery referral**. Do not delay for repeat imaging alone or routine follow-up if malignancy is possible[1]
Misattributing fatigue on dexamethasone to drug-related side effect alone[1]	Steroid-related **hyperglycemia, myopathy, mood/sleep disturbance, infection risk, and PCP risk** may contribute to decline. Monitor glucose, BP, weakness, mood/sleep, infection symptoms, and taper plan[1]
Continuing enzyme-inducing AEDs (phenytoin, carbamazepine, oxcarbazepine, phenobarbital) when temozolomide is initiated[1]	Phenytoin, carbamazepine, oxcarbazepine, and phenobarbital may reduce treatment exposure. Prefer **non–enzyme-inducing AEDs** such as levetiracetam, valproic acid, or lacosamide when clinically appropriate[1]
Skipping advance care planning at diagnosis[15,16]	Brain tumors can impair decision-making capacity over weeks to months. Document **surrogate decision-maker, code status, goals of care, and directives** early, ideally within 8 weeks of diagnosis[15]

ABBREVIATIONS: ACP = advance care planning; AED = antiepileptic drug; CNS = central nervous system; CYP3A4 = cytochrome P450 3A4; MMSE = Mini-Mental State Examination; MoCA = Montreal Cognitive Assessment; MRI = magnetic resonance imaging; PCP = Pneumocystis pneumonia; PPV = positive predictive value; RAF = Risk Adjustment Factor; TMZ = temozolomide

Key Differentials in Elderly

PRESENTATION	DIFFERENTIAL	KEY TESTS
Progressive cognitive decline over weeks to months in patient ≥65[4,17]	Could represent **primary or metastatic brain tumor**, rapidly progressive dementia, Lewy body dementia, vascular dementia, CNS infection, paraneoplastic encephalitis, or toxic-metabolic encephalopathy. **Subacute progression is the red flag**[4,17]	**MRI brain with contrast;** CBC, CMP, TSH, B12, RPR, HIV; consider LP if rapid course or CNS infection suspected[1,11]
New-onset focal weakness or aphasia in patient ≥50[4,19]	Stroke is common, but progressive or fluctuating deficits may reflect **brain tumor, abscess, demyelinating disease, or intracranial hemorrhage**[4,19]	**Urgent MRI brain with and without contrast;** vascular imaging if stroke suspected; LP if infection or demyelination considered[1,11]
New-onset seizure in adult ≥50[19,20]	New seizure may be the first sign of **brain tumor, cerebrovascular disease, metabolic derangement, alcohol withdrawal, medication toxicity, or CNS infection**. Do not assume idiopathic epilepsy[19,20]	**Urgent MRI brain with contrast**; EEG; CMP, glucose, alcohol level if indicated[19]
Progressive headache with new features after age 50[19]	Concerning for **brain tumor, giant cell arteritis, medication overuse, cerebral venous sinus thrombosis, or subdural hematoma**, especially with vomiting, papilledema, focal deficit, or Valsalva worsening[19]	**MRI brain with contrast**; ESR/CRP if GCA suspected; MRV if CVT suspected[19]
Personality change or behavioral shift in patient ≥65[5,18]	May reflect **frontal/temporal lobe tumor**, frontotemporal dementia, depression, delirium, medication effect, CNS vasculitis, or paraneoplastic syndrome. Caregiver history is often essential[5,18]	**MRI brain with contrast**; cognitive testing; review medications, infection triggers, electrolytes, and caregiver report[1,10]
Gait imbalance or ataxia[19]	Could indicate **cerebellar/posterior fossa tumor**, hydrocephalus, vestibular dysfunction, peripheral neuropathy, stroke, or medication effect[19]	**MRI brain with contrast** with attention to posterior fossa; gait assessment; Timed Up and Go; medication review[13,19]

PRESENTATION	DIFFERENTIAL	KEY TESTS

ABBREVIATIONS: CBC = complete blood count; CMP = comprehensive metabolic panel; CNS = central nervous system; CRP = C-reactive protein; CVT = cerebral venous thrombosis; EEG = electroencephalogram; ESR = erythrocyte sedimentation rate; GCA = giant cell arteritis; HIV = human immunodeficiency virus; LP = lumbar puncture; MRI = magnetic resonance imaging; MRV = magnetic resonance venography; RPR = rapid plasma reagin; TSH = thyroid-stimulating hormone

Comorbidity Screening

CONDITION	PREVALENCE/ASSOCIATION	SCREENING APPROACH
Cognitive impairment/ dementia[1]	Up to 90% of patients with supratentorial brain tumors have **neurocognitive dysfunction**[1]	**Baseline MoCA at diagnosis**; reassess every **3–6 months** or with clinical change; consider neuropsychology when standard screens are insufficient[1]
Depression/anxiety[1,11]	Depression and anxiety are common and may overlap with **tumor-related behavioral change**[1]	**PHQ-9/GAD-7** at baseline and during treatment; SSRIs/SNRIs generally preferred; avoid bupropion and tricyclics in active seizure disorder[1]
Falls/functional decline[13]	Older brain tumor patients frequently report **mobility problems** and functional decline[13]	**Timed Up and Go**; **PT/OT referral; home safety evaluation;** document assistive device needs and caregiver support[13]
Venous thromboembolism (VTE)[1]	High-grade glioma has among the **highest VTE** risks of any cancer[1]	Patients with **high-grade glioma have** clinically important **VTE risk** during active disease and perioperative treatment. Assess risk after surgery, hospitalization, and during active disease; coordinate anticoagulation decisions with neurosurgery/neuro-oncology[1]
Polypharmacy[14]	AEDs, dexamethasone, anticoagulants, antiemetics, opioids, and comorbidity medications create **high interaction risk**[14]	**Medication reconciliation every** visit; pharmacist review at TMZ initiation; avoid enzyme-inducing AEDs when TMZ is anticipated[14]

CONDITION	PREVALENCE/ASSOCIATION	SCREENING APPROACH
Cardiovascular disease[1]	May limit surgical candidacy and affects **bevacizumab safety**[1]	Baseline BP and ECG when indicated; optimize secondary prevention; monitor BP closely during anti-angiogenic therapy[1]
Renal impairment[1]	Affects **gadolinium contrast use** and may complicate TMZ (temozolomide) hydration/ supportive care[1]	**Check eGFR before contrast MR**I; monitor CBC closely during TMZ; reinforce hydration and renal-safe medication use[1]
Caregiver burden[13,15,16,24]	Brain cancer commonly affects **personality, cognition, independence, and decision-making capacity**[13,15,16,24]	Assess caregiver role at each active-disease visit; use Zarit Burden Interview or equivalent when needed; **refer to social work** for SDOH or respite-care needs[13,15,16,24]
Diabetes/hyperglycemia (dexamethasone-related)[1]	Dexamethasone **may worsen or unmask diabetes** during edema treatment[1]	**Check fasting glucos**e at steroid initiation and taper; HbA1c every 3 months in diabetic patients; adjust diabetes medications proactively[1]

ABBREVIATIONS: BP = blood pressure; CBC = complete blood count; DVT = deep vein thrombosis; ECG = electrocardiogram; eGFR = estimated glomerular filtration rate; GAD-7 = Generalized Anxiety Disorder-7; HbA1c = glycated hemoglobin; MoCA = Montreal Cognitive Assessment; OT = occupational therapy; PE = pulmonary embolism; PHQ-9 = Patient Health Questionnaire-9; PT = physical therapy; SDOH = social determinants of health; SSRI = selective serotonin reuptake inhibitor; TMZ = temozolomide; VTE = venous thromboembolism
***Consult FDA labels for the most up-to-date dosage information, contraindications, and drug-drug interactions**

⚠ RED FLAG — URGENT (24-72 HOURS)

Send the patient to the ED immediately for signs of possible hemorrhage, herniation, or rapidly worsening intracranial pressure:

- **Sudden severe headache** with vomiting, altered consciousness, or new dense hemiplegia
- **Status epilepticus** or seizure lasting **>5 minutes**
- Recurrent seizures without recovery between events[1]
- **Fixed dilated pupil** or rapidly declining GCS
- Known brain malignancy with sudden focal deficit, severe headache, or acute neurologic collapse[1]

Activate ED transfer and notify neurosurgery/neuro-oncology when available.

⚠ RED FLAG — EMERGENCY CRISIS RESPONSE

Do not wait for the “classic” headache-and-seizure presentation. Arrange urgent MRI brain with contrast and specialist contact when the patient has:

- **New focal neurologic deficit** that progresses over days, such as weakness, aphasia, visual field cut, or gait decline
- **New-onset seizure in an adult ≥50**
- **Papilledema** or headache with vomiting/Valsalva worsening
- **Rapid cognitive or personality change** over weeks to months, especially when family says the patient is “not themselves”[4,17]
- **Any MRI-identified intracranial mass**[1,10]
- Worsening symptoms in a patient with known brain tumor history

The practical rule: **sudden collapse goes to the ED; progressive neurologic or cognitive decline needs urgent imaging and specialist referral.**

3 MEAT DOCUMENTATION AND ESSENTIALS

Brain cancer documentation translates the patient's real clinical complexity into a record that supports **continuity, quality measurement, and care planning** — not code optimization. The most common gaps are vague diagnostic language ('MRI consistent with glioblastoma') that does not authorize a C71.x code in outpatient settings,[2] carrying forward an active C71.x code after tumor excision and treatment completion,[2] using C71.9 (unspecified) when imaging or pathology identifies a specific lobe,[2] and failing to code the primary malignancy alongside C79.31 for metastatic brain disease.[2] Each gap obscures the patient's true clinical picture and impedes shared decision-making with neuro-oncology, neurosurgery, and palliative-care colleagues.

*A 73-year-old male presents with **8 weeks of progressive word-finding difficulty** and personality change reported by spouse. No headache, seizure, or focal motor deficit. Functional status: independent in basic ADLs with **new IADL decline** managing finances. MoCA **24/30** with executive-domain deficit. PCP documents subacute trajectory and orders MRI brain with contrast.*

MONITOR: **Cognitive trajectory:** progressive word-finding difficulty and personality change over 8 weeks. **Functional status**: independent ADLs with new IADL decline. **Neurologic symptoms:** no seizure, headache, or focal motor deficit on exam. **Caregiver report:** spouse notes anosognosia and behavior change. Comorbidities: hypertension and hyperlipidemia reviewed for treatment planning.

EVALUATE: **MRI brain with contrast ordered** for subacute cognitive/personality change distinct from dementia, depression, or acute stroke. Baseline labs reviewed: CBC, CMP, TSH, B12, RPR, HIV. MRI shows **4.2-cm contrast-enhancing left frontal lobe mass with** surrounding vasogenic edema, suspicious for high-grade glioma. **Urgent neurosurgery and neuro-oncology referral** initiated for stereotactic biopsy and tumor board review.

ASSESS: Before pathology, document **progressive cognitive symptoms** and **memory/cognitive impairment**; do not code **C71.1** until biopsy confirms malignancy. After biopsy confirms IDH-wildtype glioblastoma, update problem list to **glioblastoma, IDH-wildtype, left frontal lobe**

(C71.1), MGMT-methylated, on active treatment. Document edema, seizure risk, steroid use, functional decline, caregiver involvement, and need for neuro-oncology, neurosurgery, radiation oncology, and palliative-care coordination.

TREAT: Specialist-directed treatment. Tumor board recommends maximal safe resection followed by hypofractionated radiotherapy plus concurrent/adjuvant temozolomide given MGMT methylation; PCP supports BP and glucose monitoring during corticosteroid use, infection monitoring during TMZ cycles, medication reconciliation, caregiver education, advance care planning, and surveillance MRI coordination.

Clinical Documentation Elements

- **Specify tumor site and laterality:** Document the exact brain lobe/site and laterality from MRI, operative note, pathology, or oncology documentation. Use the most specific active malignancy code available: **C71.0–C71.8** when site is known. Avoid **C71.9** when the tumor location is documented[2]
- **Document tumor type and molecular profile:** State the histology and molecular diagnosis when available, such as **glioblastoma, IDH-wildtype, grade 4**, **astrocytoma, IDH-mutant**, **oligodendroglioma, IDH-mutant and 1p/19q-codeleted**, or other WHO-classified diagnosis. Include key markers such as **IDH status, MGMT promoter methylation, 1p/19q codeletion, EGFR**, or other relevant results when documented[22]
- **Document active vs history status:** Use active **C71.x** when the patient is receiving treatment, under active oncology/neuro-oncology surveillance, or has residual/recurrent disease. Do **not** transition to **Z85.841** unless treatment is complete, there is no evidence of disease, and no active treatment-directed surveillance remains[2]
- **Document primary vs metastatic brain disease:** For metastatic brain disease, code **C79.31** for secondary malignant neoplasm of the brain and also document/code the primary cancer when known, such as lung, breast, melanoma, renal, or colorectal cancer. If the primary site is unknown, document that clearly and use the appropriate unknown-primary code rather than omitting the primary disease context[2]
- **Avoid coding malignancy from imaging alone:** When outpatient imaging says “MRI concerning for glioblastoma” or “mass suspicious for malignancy,” document and code presenting symptoms such as **headache, seizure, aphasia/language impairment, cognitive change, weakness, or altered mental status** until biopsy, pathology, or oncology documentation confirms malignancy[2]
- **Document neurologic and functional impact:** Capture clinically supported manifestations and deficits, including **seizures, cognitive impairment, aphasia, weakness, gait instability, dysphagia, visual field deficit, mood disorder, steroid-related complications, or need for caregiver support**. These conditions may affect risk, function, treatment tolerance, and care planning[1,15,16]
- **Document geriatric/frailty considerations when relevant:** For older adults, document **CGA findings, cognition, falls, ADL/IADL function, nutrition, polypharmacy, social**

support, and treatment tolerance. These details support treatment selection, risk adjustment, and realistic care planning[11-14]

- **Document advance care planning and goals of care:** Brain malignancies can progress rapidly and affect cognition or decision-making. Document **surrogate decision-maker, goals of care, advance care planning discussion, code status when addressed, and palliative care involvement** when clinically appropriate[15,16,24]
- **Code comorbidities affecting treatment tolerance:** Document and code relevant comorbidities that influence therapy risk, including **cardiovascular disease, renal impairment, diabetes, depression/anxiety, baseline cognitive disorder, VTE history/risk, infection risk, steroid-induced hyperglycemia, osteoporosis risk, and anticoagulation issues**[1,14]

DOCUMENTATION REMINDER IS COMPREHENSIVE CODING

- **Anatomic site and laterality:** specify lobe/site rather than defaulting to **C71.9 unspecified** when imaging or pathology identifies a specific location[2]
- **Histology and molecular markers:** document **tumor type** and **markers** such as glioblastoma, IDH-wildtype, WHO grade 4, MGMT methylation, or 1p/19q status when available[1,22]
- **Treatment phase:** capture **current** status — post-resection, chemoradiation, adjuvant TMZ cycle, bevacizumab, targeted therapy, surveillance, recurrence/progression, or palliative/supportive care[1,22,25-29]
- **Active vs. suspected diagnosis:** use symptom codes while biopsy/pathology is pending; reserve confirmed **C71.x/C79.31** coding for documented malignancy[2]
- **Functional and cognitive status:** document KPS/CGA findings, MoCA/neuropsychology results, gait/falls, ADL/IADL change, and caregiver support[15-16]
- **Treatment-related risks:** track steroid exposure, seizure/AED plan, VTE history, renal function, cardiovascular disease, depression, polypharmacy, and medication safety issues

4 TREATMENT AND REFERRAL QUICK GUIDE

Treatment of malignant brain tumors is specialist-directed.[1,22]

Primary care does not select or initiate tumor therapy, but it often determines how quickly the right care begins. The PCP's role is to recognize **new or progressive neurologic or cognitive change**, especially atypical presentations in older adults; order prompt MRI when red flags are present; refer urgently when imaging identifies a mass; and support the patient through active treatment with comorbidity management, medication safety monitoring, advance care planning, caregiver support, and accurate coding documentation.[1,15,22,25]

Therapy Escalation Criteria

TRIGGER	ACTION
New, persistent, or progressive neurological or cognitive symptom in adult ≥50[1,23]	**MRI brain with contrast** (CPT 70552/70553); do not wait for 'classic' headache or seizure presentation[1,10]
MRI shows any intracranial mass[1,10]	**Immediate neuro-oncology center referral** (same- or next-day specialist contact); do not delay for watchful waiting[1,10]
Progressive deficit, late-onset seizure, headache + cognitive/behavioral symptoms, headache + papilledema[21,23]	**Urgent specialist referral** with MRI within 1–2 weeks; document urgent-aligned indication[23]
New-onset seizure in adult ≥50[19,20]	**Urgent MRI brain with contrast**; refer to neurology. Prefer non-enzyme-inducing agents when tumor treatment may follow[1,17]
Confirmed glioblastoma, age ≥70, KPS ≥60, MGMT-methylated[1,26]	Specialist treatment: **hypofractionated RT** + **concurrent and adjuvant TMZ**[1,26,29]
Confirmed glioblastoma, age ≥70, KPS ≥60, MGMT-unmethylated[1]	Specialist treatment: **hypofractionated RT alone preferred** — TMZ benefit is limited and myelosuppression risk should be weighted[1,14]
Confirmed glioblastoma, age ≥70, KPS <60[1]	**Palliative/best supportive care** or short-course RT alone; initiate advance care planning[1,23,24]
IDH-mutant astrocytoma or oligodendroglioma[1,27,28]	Specialist treatment per **histology and molecular markers;** coordinate surveillance imaging and functional monitoring[1,22,27,28]
Brain metastasis (C79.31) confirmed[1,19,28]	Refer to **neuro-oncology and oncologist**; SRS, WBRT, surgery or systemic therapy per multidisciplinary plan[1,19,28]
Cerebral edema treated with corticosteroids[1]	PCP monitors **glucose,BP, infection risk, mood/sleep changes, myopathy, and steroid taper plan**; coordinate with neurooncology[1]
Confirmed brain tumor with progressive cognitive decline[15,16]	Document **healthcare proxy, code status, and goals of care**[15,16]
Caregiver burden or SDOH concern[13,24]	Document **caregiver involvement, transportation and financial capacity;** respite care discussion[13,24]

TRIGGER	ACTION

ABBREVIATIONS: AED = antiepileptic drug; CGA = Comprehensive Geriatric Assessment; CPT = Current Procedural Terminology; GBM = glioblastoma; IDH = isocitrate dehydrogenase; KPS = Karnofsky Performance Status; MGMT = O^6-methylguanine DNA methyltransferase; MRI = magnetic resonance imaging; NCCN = National Comprehensive Cancer Network; NICE = National Institute for Health and Care Excellence; OAO = Older Adult Oncology; RT = radiotherapy; SDOH = social determinants of health; SRS = stereotactic radiosurgery; TMZ = temozolomide; WBRT = whole-brain radiotherapy

NCCN v1.2026-Aligned Treatment by Subtype, Molecular Status, and Patient Profile

Treatment is specialist-directed.[1] The PCP role is recognition, referral, and co-management, **not treatment selection**. All regimens below are **per NCCN Central Nervous System Cancers v1.2026**.

SUBTYPE/SETTING	PREFERRED REGIMEN(S)	KEY NOTES
Newly diagnosed glioblastoma, age ≤70, KPS ≥60[1]	Maximal safe resection + standard R+ concurrent and adjuvant TMZ[1]	**Specialist-directed;** PCP supports BP/glucose control during steroids, seizure precautions, medication reconciliation, and caregiver planning[1]
Glioblastoma, age >70, KPS ≥60, MGMT-methylated or indeterminate[1,14]	Hypofractionated RT + concurrent and adjuvant TMZ[1,26,29]	**TMZ benefit greatest when MGMT-methylated**; monitor CBC, infection risk, fatigue, nausea, and treatment adherence[26]
Glioblastoma, age >70, KPS ≥60, MGMT-unmethylated[1]	Hypofractionated RT alone often preferred; RT + TMZ only if specialist-selected[1]	**Avoid low-value TMZ toxicity** when expected benefit is limited; monitor functional status and treatment tolerance[1,26,29]
Glioblastoma, age >70, KPS <60[1]	Hypofractionated RT alone, TMZ alone, or palliative/supportive care per specialist plan[1]	**Early ACP and palliative-care involvement**; document goals of care, caregiver support, fall risk, and functional decline[15,16,24]
IDH-mutant astrocytoma, grades 2–4[11,27,28]	Maximal safe resection + RT ± adjuvant chemotherapy per grade and molecular profile[1,27,28]	Generally better prognosis than IDH-wildtype GBM; PCP supports **long-term surveillance**, cognitive[1,27,28]

SUBTYPE/SETTING	PREFERRED REGIMEN(S)	KEY NOTES
Oligodendroglioma, 1p/19q codeleted[1,27,28]	Maximal safe resection + RT + PCV chemotherapy[1,27,28]	Often prolonged disease control; monitor **cognition, neuropathy, cytopenias, fatigue**, and quality-of-life concerns[1,27,28]
Recurrent/progressive disease[1]	Clinical trial preferred; systemic therapy, re-irradiation, or palliative/supportive care per specialist plan[1,26]	**Urgent neuro-oncology reassessment** for new symptoms or MRI progression; revisit ACP, caregiver burden, and symptom control[1]
Brain metastasis (C79.31), limited disease, good performance status[1,17]	SRS, surgery, WBRT, or systemic therapy per multidisciplinary plan[17]	Code **primary malignancy + C79.31**; coordinate oncology, radiation oncology, neuro-oncology, and supportive care[2]
Brain metastasis with poor prognosis[17]	Palliative care consultation; symptom-focused management; advance care planning[17,23,24]	**Palliative care does not mean no care**; prioritize symptom relief, seizure/steroid planning, caregiver support, and ACP[17]
CGA-defined frailty in any subtype[12,13,18]	Reduced-intensity treatment or supportive-care approach per specialist plan[18,25]	**CGA-guided care reduces toxicity**; document functional status, falls, cognition, nutrition/weight loss, caregiver support, and goals of care[13,19]

ABBREVIATIONS: ASCO-SNO = American Society of Clinical Oncology–Society for Neuro-Oncology; CGA = Comprehensive Geriatric Assessment; CV = cardiovascular; EANO = European Association for Neuro-Oncology; FGFR = fibroblast growth factor receptor; FI-CGA-10 = 10-item Frailty Index based on CGA; HR = hazard ratio; IDH = isocitrate dehydrogenase; KPS = Karnofsky Performance Status; MGMT = O^6-methylguanine DNA methyltransferase; NCCN = National Comprehensive Cancer Network; NTRK = neurotrophic tyrosine receptor kinase; OAO = Older Adult Oncology; OS = overall survival; PCV = procarbazine, lomustine, vincristine; RR = relative risk; RT = radiotherapy; SRS = stereotactic radiosurgery; TMZ = temozolomide; VBC = value-based care; WBRT = whole-brain radiotherapy

CLINICAL PEARL: FUNCTIONAL STATUS > CHRONOLOGICAL AGE

Brain cancer treatment decisions in older adults should be guided by **functional status, frailty, cognition, and caregiver support** — not age alone.[13,18,25] A fit 80-year-old may tolerate treatment better than a frail 65-year-old. Use validated tools such as the **G-8 Questionnaire, CGA, Fried Frailty Criteria, or FI-CGA-10** to support referral and treatment-intensity decisions.[12,13] For PCPs, documenting functional status and frailty findings helps neuro-oncology determine the safest and most appropriate level of treatment.[19]

Non-Pharmacologic Care and Supportive Interventions

INTERVENTION	TARGET/RECOMMENDATION	NOTES
Comprehensive Geriatric Assessment (CGA)[12,18,25]	Before treatment decisions; reassess at major changes[18,25]	Includes **cognition, function, comorbidity, nutrition, polypharmacy, and social support**; helps guide treatment intensity[18]
Advance care planning (CPT 99497/99498)[15,16,24]	Within **8 weeks of diagnosis** and when goals change[23]	Cognitive decline may limit decision-making capacity; document **surrogate, code status, and goals of care** early[24]
Caregiver support and burden assessment[18,27]	At each encounter during active disease[18,27]	Engage caregivers in **medication management, symptom monitoring, transportation, and safety planning**; refer to social work when burden or SDOH needs are identified[18,27]
PT/OT referral and home safety evaluation[18]	At diagnosis and with any new functional decline[18]	Supports mobility, fall-risk reduction, assistive device needs, and home safety planning[18]
Nutritional assessment and dietitian referral[18]	At diagnosis if weight loss, poor intake, dysphagia, or treatment intolerance is present[18]	Monitor **weight loss, hydration, protein intake, steroid-related hyperglycemia, and treatment tolerance**[18]

INTERVENTION	TARGET/RECOMMENDATION	NOTES
Cognitive monitoring and neuropsychological evaluation[1]	MoCA at diagnosis; reassess **q3–6 months** or with any clinical change[1]	Standard screens may miss executive dysfunction; neuropsychology supports **capacity, safety, work/driving decisions, and caregiver planning**[1]
Palliative care integration[23,27]	Early integration concurrent with active treatment[23]	**Not end-of-life only**; supports symptom control, goals-of-care alignment, caregiver support, and advance care planning
Driving assessment after first seizure or major focal deficit[17]	Document driving restriction at diagnosis and local DMV rules[17]	Public safety; confirm seizure-free interval requirements before clearance[17]
Symptom-focused fatigue management[1]	Review at each treatment visit[1]	Distinguish treatment-related fatigue from **new neurologic decline, steroid effects, anemia, depression, sleep disruption, or infection**[1]
Hospice referral evaluation when goals align[27]	For progressive disease, declining performance status, or symptom-focused care preference[27]	Align with patient and family goals; document prognosis discussion, caregiver needs, and symptom-management priorities[27]

ABBREVIATIONS: ACP = advance care planning; ADL = activities of daily living; ASCO = American Society of Clinical Oncology; CGA = Comprehensive Geriatric Assessment; CIRS = Cumulative Illness Rating Scale; CPT = Current Procedural Terminology; DMV = Department of Motor Vehicles; EANO = European Association for Neuro-Oncology; IADL = instrumental activities of daily living; MMSE = Mini-Mental State Examination; MoCA = Montreal Cognitive Assessment; NCCN = National Comprehensive Cancer Network; OAO = Older Adult Oncology; OT = occupational therapy; PT = physical therapy; SDOH = social determinants of health; TUG = Timed Up and Go

Medication Safety and Key Interactions

DRUG/CLASS	INTERACTION/TOXICITY	CLINICAL ACTION
Temozolomide (TMZ)[1,14]	**Myelosuppression** — cumulative across cycles and higher risk with reduced marrow reserve[1,14]	Monitor CBC per neuro-oncology protocol; watch for neutropenia, thrombocytopenia, infection, and bleeding[1]

DRUG/CLASS	INTERACTION/TOXICITY	CLINICAL ACTION
Enzyme-inducing AEDs[1]	Phenytoin, carbamazepine, oxcarbazepine, and phenobarbital may reduce treatment exposure [1]	Prefer **non-enzyme-inducing AEDs** such as levetiracetam, valproic acid, or lacosamide when clinically appropriate[1]
Dexamethasone + glycemic control[1]	Steroid-induced hyperglycemia; may unmask or worsen diabetes[1]	Check glucose during initiation and taper; monitor HbA1c in diabetic patients and adjust therapy proactively[1]
Dexamethasone (prolonged) + opportunistic infection[1]	**Immunosuppression,*** myopathy, mood/sleep effects, infection risk[1]	Confirm steroid taper plan; monitor BP, glucose, weakness, mood, sleep, and need for **PCP prophylaxis** if prolonged exposure[1]
Valproic acid + TMZ[1]	Additive thrombocytopenia risk[1]	Monitor CBC closely; consider levetiracetam if seizure control allows[1]
Bevacizumab + cardiovascular disease[1]	Hypertension, arterial thromboembolism, bleeding/ wound-healing risk[1]	Monitor BP at every visit; document cardiovascular history and coordinate with oncology/cardiology before treatment[1]
SSRIs/SNRIs in brain tumor patients[1]	Generally preferred for depression/ anxiety in brain tumor patients[1]	Prefer SSRIs/SNRIs* when needed; **avoid a**gents that lower seizure threshold when active seizure risk is present[1]
Anticoagulation in glioma patients with VTE[1]	High VTE risk must be balanced against intracranial bleeding risk[1]	Coordinate anticoagulation choice and timing with neuro-oncology, especially around surgery or radiation[1]
Gadolinium contrast in renal impairment[1]	Risk of nephrogenic systemic fibrosis[1]	Check eGFR before contrast MRI; coordinate alternative imaging strategy if eGFR is severely reduced[1]
Nephrotoxic agents during TMZ[1]	NSAIDs/aminoglycosides may compound renal stress [1]	Avoid concurrent nephrotoxic agents during active TMZ cycles when possible[1]

DRUG/CLASS	INTERACTION/TOXICITY	CLINICAL ACTION

ABBREVIATIONS: AED = antiepileptic drug; ANC = absolute neutrophil count; BP = blood pressure; CBC = complete blood count; CYP3A4 = cytochrome P450 3A4; eGFR = estimated glomerular filtration rate; HbA1c = glycated hemoglobin; MRI = magnetic resonance imaging; NSAID = nonsteroidal anti-inflammatory drug; PCP = Pneumocystis pneumonia; RT = radiotherapy; SNRI = serotonin-norepinephrine reuptake inhibitor; SSRI = selective serotonin reuptake inhibitor; TMP-SMX = trimethoprim-sulfamethoxazole; TMZ = temozolomide; VTE = venous thromboembolism
***Consult FDA labels for the most up-to-date dosage information, contraindications, and drug-drug interactions**

When to Refer

CRITERION	SPECIALIST	URGENCY
Status epilepticus or prolonged seizure (>5 min)[1]	Emergency department/neurology	**Emergent**
Acute neurological deterioration (severe headache + vomiting, altered consciousness, dense hemiplegia)[1]	Emergency department/ neurosurgery	**Emergent**
Signs of uncal herniation (fixed dilated pupil, declining GCS)[1]	Emergency department/ neurosurgery	**Emergent**
MRI showing any intracranial mass[1]	Neuro-oncology center (multidisciplinary)	**Urgent: same/next day**
New-onset seizure in adult ≥50[17,20]	Neurology + urgent MRI brain with contrast	**Urgent: within 1 week**
Rapidly progressive cognitive decline (subacute weeks)[4,17]	Neurology/neuro-oncology	**Urgent: within 1–2 weeks**
Papilledema on fundoscopy[1]	Neurology/neurosurgery + urgent imaging	**Urgent: same/next day**
Confirmed brain tumor — new diagnosis[1]	Neuro-oncology multidisciplinary tumor board	**Urgent: within 1 week**
Confirmed brain metastasis (C79.31)[1]	Neuro-oncology + primary cancer specialist	**Urgent: within 1–2 weeks**
CGA-defined frailty before treatment intensification[18,25]	Geriatric oncology/CGA	**Urgent: before treatment cycle 1)**
Cognitive decline limiting decision-making capacity[15,16,24]	Palliative care/advance care planning	**Urgent: within 8 weeks of diagnosis**

CRITERION	SPECIALIST	URGENCY
Caregiver burden or SDOH concern[18,27]	Social work	**Routine: at diagnosis**
Hospice-eligible with end-stage disease[27]	Hospice (Medicare Hospice Benefit)	**When goals align**
Driving safety concern after seizure or major focal deficit[17]	Neurology + state DMV reporting	**Routine**

ABBREVIATIONS: CGA = Comprehensive Geriatric Assessment; DMV = Department of Motor Vehicles; GCS = Glasgow Coma Scale; MRI = magnetic resonance imaging; SDOH = social determinants of health

Follow-Up Timing

STAGE/CATEGORY	FREQUENCY	LABS/MONITORING
Active surveillance during specialist-directed treatment (C71.x active)[1]	Per neuro-oncology protocol — typically MRI brain **q2–3 months** during active treatment[1]	MRI brain with contrast; new neurologic symptom, seizure, rapid cognitive decline, or functional drop should trigger **expedited neuro-oncology contact**[1]
Stable disease post-treatment (C71.x active surveillance)[1]	MRI every **3–4 months** initially; extend interval per neuro-oncology plan if stable[1]	Functional status; cognitive assessment; comorbidity management; ongoing ACP[1,23]
During TMZ adjuvant cycles[1]	Visit/labs per oncology protocol, often every cycle[1]	CBC, CMP, LFTs; monitor for **neutropenia, thrombocytopenia, infection, fatigue, and nausea**[1]
On dexamethasone[1]	At initiation, dose changes, and taper[1]	Glucose, BP, sleep/mood, myopathy, infection risk, bone health, and steroid taper plan; assess need for **PCP prophylaxis** if prolonged exposure[1]

STAGE/CATEGORY	FREQUENCY	LABS/MONITORING
Neurological exam and functional status[1,18]	At every PCP encounter[1,18]	KPS or CGA-based assessment; new focal deficit, worsening gait, seizure, or rapid cognitive decline should prompt **urgent imaging/ referral**[1,18]
Cognitive screening (MoCA + neuropsychological when indicated)[1]	At diagnosis; reassess every **3–6 months** or with clinical change[1]	MoCA/MMSE may miss executive dysfunction; consider neuropsychology for **capacity, safety, work/driving decisions, and caregiver planning**[1]
VTE assessment and prophylaxis[11]	At post-surgical/post-hospital encounters and during active high-grade disease[1]	New unilateral swelling, pleuritic chest pain, or dyspnea should prompt DVT/PE evaluation; **coordinate anticoagulation** with neuro-oncology
Caregiver burden[18,27]	At each active-disease encounter[18,27]	Assess medication support, transportation, safety, SDOH needs, and caregiver strain; refer to social work as needed[18,27]
Advance care planning[15,16,24]	Within **8 weeks of diagnosis** and at major disease/function changes[15,16,24]	Document surrogate, code status, goals of care, and directives before capacity declines

ABBREVIATIONS: ACP = advance care planning; ANC = absolute neutrophil count; CBC = complete blood count; CGA = Comprehensive Geriatric Assessment; CMP = comprehensive metabolic panel; DVT = deep vein thrombosis; HbA1c = glycated hemoglobin; KPS = Karnofsky Performance Status; LFT = liver function test; MMSE = Mini-Mental State Examination; MoCA = Montreal Cognitive Assessment; MRI = magnetic resonance imaging; PCP = Pneumocystis pneumonia; PE = pulmonary embolism; RT = radiotherapy; SDOH = social determinants of health; TMZ = temozolomide; VTE = venous thromboembolism

***Consult FDA labels for the most up-to-date dosage information, contraindications, and drug-drug interactions**

Comorbidity Management — Primary Care Role

COMORBIDITY	APPROACH	CAUTION
Hypertension[1]	Optimize antihypertensive regimen; daily home BP monitoring during bevacizumab[1]	**Bevacizumab contraindicated** with uncontrolled hypertension or recent thromboembolic events[1]
Diabetes (steroid-induced hyperglycemia)[1]	Baseline MoCA; reassess every 3–6 months; engage caregiver in medication management[1]	Steroids may **unmask or destabilize diabetes**; coordinate medication changes during taper[1]
Depression/anxiety[1]	PHQ-9/GAD-7 at baseline and during treatment; SSRIs/SNRIs preferred when clinically appropriate[1]	**Avoid bupropion and tricyclics in active seizure disorder**; distinguish mood symptoms from tumor-related behavioral change[1]
Cognitive impairment[1,12,18]	Baseline MoCA at diagnosis; reassess q3–6 months; engage caregiver in medication management[1,18]	Standard screens insensitive to executive function changes; neuropsychological evaluation when indicated[1]
VTE[11]	Assess at post-surgical/post-hospital visits; coordinate anticoagulation plan with neuro-oncology[11]	Balance **VTE risk vs. intracranial bleeding risk**; do not start anticoagulation without specialist coordination[11]
Falls/mobility decline[18]	Timed Up and Go; PT/OT referral; home safety evaluation[18]	Mobility decline is common; document assistive device needs, fall risk, and caregiver support[18]
Renal impairment[1]	Check eGFR before gadolinium contrast MRI and during nephrotoxic medication exposure[1]	**Severe renal impairment increases gadolinium-related NSF risk**; coordinate imaging strategy with radiology[1]
Polypharmacy[25]	Medication reconciliation every visit; pharmacist review before TMZ or AED changes[25]	Enzyme-inducing AEDs may reduce TMZ exposure; prefer **non-enzyme-inducing AEDs** when clinically appropriate[1,25]

COMORBIDITY	APPROACH	CAUTION
Cardiovascular disease[1]	Continue secondary prevention; cardiology review before bevacizumab in high-risk patients[1]	**Bevacizumab may increase hypertension, arterial thromboembolism, bleeding, and wound-healing risk**[1]

ABBREVIATIONS: AED = antiepileptic drug; BP = blood pressure; CV = cardiovascular; eGFR = estimated glomerular filtration rate; GAD-7 = Generalized Anxiety Disorder-7; HbA1c = glycated hemoglobin; MoCA = Montreal Cognitive Assessment; OT = occupational therapy; PHQ-9 = Patient Health Questionnaire-9; PT = physical therapy; SSRI = selective serotonin reuptake inhibitor; TMZ = temozolomide; VTE = venous thromboembolism
***Consult FDA labels for the most up-to-date dosage information, contraindications, and drug-drug interactions**

Cost-Smart Options

BRAND	GENERIC/ ALTERNATIVE	EST. SAVINGS	COST-SMART TIP
Temodar(temozolomide)[1]	**Generic temozolomide** available	**~$2,500–$3,300/fill**	Use **generic TMZ** when formulary permits; maintain equivalent dosing, CBC monitoring, and adherence review[1]
Avastin (bevacizumab)[1]	**Bevacizumab biosimilars** when available and covered	**~$95–$100/vial before site-of-care and payer-contract differences**	Biosimilars may reduce cost while preserving therapeutic intent; confirm payer formulary and monitor BP/ thromboembolic risk
Dexamethasone[1]	**Generic dexamethasone**	**Variable; generally low-cost generic**	Use the **lowest effective dose** and taper promptly to reduce hyperglycemia, myopathy, infection, mood/ sleep effects, and PCP risK[1]

BRAND	GENERIC/ ALTERNATIVE	EST. SAVINGS	COST-SMART TIP
Phenytoin/ carbamazepine (avoid with TMZ)[1]	**Levetiracetam, valproic acid, or lacosamide** when clinically appropriate[1]	**Variable**	Avoid **enzyme-inducing AEDs** when possible; they may reduce TMZ exposure and increase interaction risk[1]
Surveillance MRI at high-cost imaging center	In-network MRI or negotiated MA plan imaging site[1]	**Variable; potentially substantial**	Coordinate MRI site before ordering; avoid duplicate imaging and prior-authorization delays[1]
Inpatient palliative care escalation	**Early outpatient palliative care + advance care planning**[23,24,27]	**Variable; potentially substantial**	Early ACP and symptom planning may reduce avoidable ED visits, hospitalizations, and crisis-driven care[17,23]
Brand levetiracetam (Keppra)	**Generic levetiracetam**[1]	**~$750–$800/fill**	Use generic; counsel patients on consistent dosing schedule[1]

ABBREVIATIONS: ACP = advance care planning; AED = antiepileptic drug; ED = emergency department; MA = Medicare Advantage; MRI = magnetic resonance imaging; PCP = Pneumocystis pneumonia; TMZ = temozolomide
***Consult FDA labels for the most up-to-date dosage information, contraindications, and drug-drug interactions**

Patient Education and Adherence

Brain cancer education should focus on **early symptom recognition, treatment safety, caregiver involvement, and advance care planning**. Education should cover the diagnosis and molecular markers when available, the treatment plan, seizure precautions, corticosteroid safety, cognitive and functional changes;[18,24] and when to call urgently.

DOCUMENTATION REMINDER — PATIENT EDUCATION

Document the following education topics, the patient and caregiver(s) present, materials provided, and patient understanding:

- **Diagnosis and treatment plan:** Document histology/molecular markers when available, treatment sequence, expected timeline, and patient questions[1,22]
- **Seizure precautions and AED adherence:** Document anticonvulsant use, missed doses, driving restrictions, and when to seek urgent care
- **Steroid safety:** Document dexamethasone dose/taper, glucose/BP monitoring, sleep/mood changes, myopathy, infection risk, and PCP prophylaxis plan when applicable
- **Cognitive and functional changes:** Document baseline cognition, functional status, caregiver observations, medication-management capacity, and safety concerns
- **Symptoms to report urgently:** New seizure, worsening headache, vomiting, focal weakness, severe confusion, declining consciousness, vision change, or rapid neurologic decline
- **Caregiver role:** Document caregiver involvement in medication management, transportation, symptom monitoring, and decision-making support
- **Advance care planning:** Document surrogate decision-maker, code status, goals of care, and directives before cognition or function declines[23,24,27]

Quality Metrics Tie-In

MEASURE	STANDARD	NOTES
Care for Older Adults — Functional Status Assessment (HEDIS COA/CMS Display DMC21)[18]	**Denominator:** MA/SNP enrollees ≥66 **Numerator:** Functional status assessment completed annually[18]	Directly relevant because brain tumors often impair **ADLs/IADLs, gait, cognition, and treatment tolerance**; document functional decline and caregiver support[18]
Care for Older Adults — Medication Review (HEDIS COA/CMS Star C06)[25]	**Denominator:** SNP enrollees ≥66 **Numerator:** Medication review completed annually	Important with **AEDs, dexamethasone, anticoagulants, opioids, antiemetics, and TMZ**; document reconciliation and interaction review[1,25]

MEASURE	STANDARD	NOTES
Care for Older Adults — Pain Assessment (HEDIS COA/CMS Star C07)[27]	**Denominator:** MA/SNP enrollees ≥66 **Numerator:** Pain assessment completed annually[27]	Brain tumor patients may have headache, neuropathic pain, steroid-related myopathy, or treatment-related discomfort; document pain score and plan[27]
Medication Reconciliation Post-Discharge — HEDIS MRP/CMS Star C14[1]	**Denominator:** Patients discharged from an inpatient stay **Numerator:** Medication reconciliation completed within 30 days of discharge[1]	Critical after biopsy, resection, seizure admission, steroid change, AED initiation, or hospitalization for neurologic decline[1]
Advance Care Planning (MIPS — CPT 99497/99498)[23,24]	**Standard:** ACP discussion documented; surrogate, code status, and goals of care recorded[23]	Brain tumors may cause rapid cognitive decline; document ACP **early**, ideally within 8 weeks of diagnosis[23,24]

ABBREVIATIONS: AAN = American Academy of Neurology; ACP = advance care planning; ADL = activities of daily living; AWV = Annual Wellness Visit; COA = Care for Older Adults; CMS = Centers for Medicare & Medicaid Services; CPT = Current Procedural Terminology; CYP3A4 = cytochrome P450 3A4; HEDIS = Healthcare Effectiveness Data and Information Set; IADL = instrumental activities of daily living; MIPS = Merit-based Incentive Payment System; MRP = Medication Reconciliation Post-Discharge; SNO = Society for Neuro-Oncology; TMZ = temozolomide

QUALITY OUTCOME:

When primary care recognizes a low threshold for MRI in older adults[12,18] with new or progressive neurologic or cognitive symptoms, refers immediately after a mass is identified, documents tumor-specific diagnosis and functional status, reconciles medications after surgery or hospitalization, and initiates early advance care planning, the record supports **timely treatment**[8,27] **safer medication management, reduced crisis-driven care, and care aligned with patient goals.**

5 CODING REMINDERS AND CASE EXAMPLES

Coding Specificity

ELEMENT	DOCUMENTATION REQUIREMENT
Primary brain malignancy (C71.x)[2]	Document definitive malignant language: “glioblastoma,” “malignant glioma,” “astrocytoma,” “oligodendroglioma,” or “carcinoma” — not only “mass,” “lesion,” or “consistent with malignancy[2]
Anatomic site and laterality (C71.0–C71.8)[2]	Specify tumor location from imaging/pathology: cerebrum, frontal, temporal, parietal, occipital, cerebellum, brainstem, ventricle, or overlapping sites. **Avoid C71.9 unspecified when site is known**[2]
Histologic subtype and molecular markers[1,2]	**Document subtype** and **markers** when available: IDH-wildtype glioblastoma, IDH-mutant astrocytoma, oligodendroglioma, MGMT methylation, 1p/19q codeletion[1,2]
Metastatic brain disease (C79.31)[2]	Document brain metastasis and code the primary malignancy when known. **If primary site is unknown, use C80.1 until confirmed**[2]
Active vs. history status[2]	Use active **C71.x/C79.31 during active treatment**, adjuvant therapy, maintenance therapy, recurrence/progression, palliative treatment, or active surveillance. Use Z85.841 only when treatment is complete and there is no evidence of disease or ongoing surveillance/treatment plan[28]
Maintenance/adjuvant therapy exception[2]	**Document current phase**: new diagnosis, post-resection, concurrent chemoradiation, adjuvant TMZ, surveillance, recurrence/progression, or palliative/supportive care[2]
'Consistent with' trap[2]	Do not code suspected malignancy as confirmed cancer in outpatient settings. **Code presenting symptoms** — headache, seizure, cognitive decline, memory impairment, focal deficit — until biopsy/pathology confirms malignancy[2]
Brain tumor-related seizures[2]	Document seizure type, recurrence, antiseizure medication, and whether **seizures are tumor-related or drug-resistant** when supported[2]
Mood disorder due to brain tumor[2]	When clinically supported, document mood disorder, personality change, or cognitive impairment due to known CNS tumor rather than nonspecific depression/anxiety alone[2]
Prior systemic cancer with brain metastasis[2]	**Z87.39 (personal history of other malignant neoplasm)** for prior treated systemic cancers when they are relevant background; primary still required for active C79.31[2]
Comorbidities — frequently undercoded[25]	Document relevant linked conditions: hypertension, diabetes, depression/anxiety, cognitive impairment, seizures, VTE, osteoporosis, polypharmacy, steroid exposure, caregiver dependence[25]

ELEMENT	DOCUMENTATION REQUIREMENT

ABBREVIATIONS: CNS = central nervous system; IDH = isocitrate dehydrogenase; MGMT = O^6-methylguanine DNA methyltransferase; TMZ = temozolomide

Annual Clinical Review and Confirmation

- **Annual review:** Active primary or metastatic brain malignancy must be reassessed with MEAT documentation when under treatment, adjuvant/maintenance therapy, surveillance, or palliative management[28]
- **Visit modality:** Face-to-face or synchronous audio-video telehealth qualifies when it supports meaningful clinical evaluation and documentation
- **Clinical context:** Under CMS-HCC V28, active primary or metastatic brain malignancy maps to **HCC 20**.[8,9] Anatomic specificity within C71.x supports clinical accuracy, shared care planning, and audit defense
- **Avoid rollover:** Do not copy forward prior notes without updating **tumor status, treatment phase, molecular markers, surveillance imaging, neurologic function, cognitive status, caregiver support, and active-vs-history determination**[1,28]

Good Documentation — EHR Tips

EHR TIP	WHAT TO INCLUDE
"Brain mass"/"brain lesion"[2]	'MRI brain shows **4.2-cm enhancing left frontal lobe mass with vasogenic edema**; urgent neurosurgery/neuro-oncology referral placed for tissue diagnosis. **Do not code C71.x until malignancy is confirmed by pathology**[1,2,28]
"MRI consistent with glioblastoma"[1]	Imaging suspicious for **high-grade glioma**; biopsy pending. Document **progressive cognitive symptoms**, personality change, focal deficit/seizure status if present, MRI findings, and urgent specialist referral plan[1,23]
Confirmed GBM without site or markers[1,22]	**Glioblastoma, IDH-wildtype, grade 4, left frontal lobe (C71.1), MGMT-methylated**, s/p maximal safe resection on [date]; receiving concurrent RT/TMZ; surveillance MRI planned q3 months[1,28]

EHR TIP	WHAT TO INCLUDE
Using C71.9 when lobe/site is known[2]	**Malignant neoplasm of left frontal lobe (C71.1)** documented from MRI/pathology; avoid **C71.9 unspecified** when anatomic site is identified[1,2]
Brain metastasis documented without primary cancer[1]	**Brain metastasis (C79.31) from non-small cell lung cancer (C34.x)**; radiation oncology and medical oncology following; steroid taper, seizure precautions, and surveillance imaging reviewed[1]
"History of brain cancer" during active surveillance[1,2]	Active brain malignancy on **surveillance/active treatment plan**; no progression on most recent MRI; neuro-oncology follow-up scheduled. Avoid history-only coding while active surveillance continues[1,2]
"On TMZ" without monitoring[1]	Adjuvant **temozolomide cycle;**; CBC/CMP reviewed; ANC and platelets acceptable; nausea, fatigue, infection symptoms, adherence, and dose schedule reviewed[1]
"On steroids" without rationale or taper[23,24]	Dexamethasone __ mg daily for **vasogenic edema**; taper plan reviewed with neuro-oncology; monitoring glucose, BP, mood/sleep, myopathy, infection risk, and PCP prophylaxis need[23,24]
Seizure listed without tumor linkage or details[18,27]	**Tumor-related seizure disorder**; last seizure [date]; on levetiracetam __ mg BID; adherence, side effects, driving restriction, and neurology follow-up documented[18,27]
Cognitive decline not linked to tumor	Progressive cognitive/personality change related to **left frontal brain tumor**; MoCA; caregiver managing medications/transportation; safety planning and ACP reviewed.
Caregiver role not documented	Primary caregiver present; assists with **medication administration, appointments, transportation, symptom monitoring, and decision-making support**; caregiver burden and social work needs assessed

ABBREVIATIONS: ACP = advance care planning; AED = antiepileptic drug; ASCO = American Society of Clinical Oncology; CBC = complete blood count; CYP3A4 = cytochrome P450 3A4; EGFR = epidermal growth factor receptor; IDH = isocitrate dehydrogenase; MGMT = O^6-methylguanine DNA methyltransferase; MRI = magnetic resonance imaging; TERT = telomerase reverse transcriptase; TMZ = temozolomide

Brief Case Examples

SUCCESS — Subacute Cognitive Change → Imaging → Specialist → Coordinated Care

Patient: 73-year-old male with **8 weeks of progressive word-finding difficulty** and personality change reported by spouse. PMH hypertension and hyperlipidemia. Patient denies symptoms, but the spouse reports functional decline and anosognosia. MoCA 24/30 with executive-domain deficit. PCP documents subacute trajectory and orders MRI brain with contrast.

Documentation: 'Progressive cognitive/personality change over 8 weeks with new IADL decline; MoCA 24/30. MRI brain with contrast ordered for subacute neurologic change. MRI shows **4.2-cm contrast-enhancing left frontal lobe mass with vasogenic edema**, suspicious for high-grade glioma. Referred urgently to neurosurgery/neuro-oncology for stereotactic biopsy and tumor board review. Initial outpatient diagnoses: **progressive cognitive symptoms (R41.840), cognitive impairment/memory impairment (R41.3), and abnormal MRI brain (R90.89)** pending pathology. After biopsy confirms malignancy: **glioblastoma, IDH-wildtype, left frontal lobe (C71.1), MGMT-methylated**, on active treatment.'

Outcome: Documentation supports timely imaging, urgent specialist referral, active tumor management, and care coordination. Once pathology confirms malignancy, **C71.1** is supported by tumor type and anatomic site. PCP documentation captures steroid monitoring, seizure precautions, functional decline, caregiver involvement, ACP, and surveillance planning.

PITFALL — Premature Cancer Code, Delayed Referral, Missed ACP

Documentation as written: 'History of brain cancer. MRI consistent with glioblastoma. Coded **C71.9**. Continued levetiracetam. Follow-up in 3 months.'

Consequence: Vague language ("brain cancer"/"MRI consistent with") does not confirm malignancy for outpatient cancer coding. **C71.9 unspecified** is used despite a known left frontal lesion. No pathology confirmation, molecular markers, treatment phase, steroid plan, seizure details, neuro-oncology referral, functional status, caregiver role, or ACP documentation is captured. Delayed follow-up risks missed tumor progression and missed treatment planning.

HCC/RAF Impact: Premature **C71.x** assignment before biopsy is an audit risk. If the lesion is metastatic disease, missing the primary malignancy and **C79.31** creates an incomplete cancer record. Although **C71.1 and C71.9 map to the same HCC**, C71.9 understates clinical specificity when the lobe/site is known.

Fix: Document explicitly: "Left frontal contrast-enhancing brain mass with vasogenic edema on MRI; malignancy suspected but pathology pending. Document presenting symptoms (**progressive word-finding difficulty, cognitive/personality change, seizure/headache/focal deficit status**), urgent neurosurgery/neuro-oncology referral, biopsy plan, steroid indication/taper, seizure medication adherence, caregiver involvement, and ACP. After pathology confirms GBM, update to **glioblastoma, IDH-wildtype, left frontal lobe (C71.1), MGMT-methylated**, on active treatment/surveillance plan.

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