

# Brain metastases adjuvant therapy

In the context of [brain metastases treatment](#), [adjuvant therapy](#) aims to prevent or control the spread of cancer cells in the brain following the initial treatment.

The choice of adjuvant therapy for brain metastases depends on various factors, including the primary cancer type, the extent of metastatic disease, the overall health of the patient, and the treatments already received. Here are some common adjuvant therapy options for brain metastases:

## □ Systemic Therapy

Targeted therapies: EGFR/ALK inhibitors in NSCLC, HER2 inhibitors in breast cancer.

Immunotherapy: Checkpoint inhibitors (e.g., anti-PD1) show intracranial efficacy in melanoma and NSCLC.

Chemotherapy: Limited blood-brain barrier penetration in many agents.

## □ Radiotherapy

Stereotactic radiosurgery (SRS): Preferred for 1–10 lesions, good local control, less cognitive impact.

Whole brain radiotherapy (WBRT): Reserved for multiple metastases or leptomeningeal disease. Cognitive decline is a major concern.

Hippocampal-avoidance WBRT + memantine: To preserve cognitive function.

## □ 3. Emerging Strategies (2024-2025)

Liquid biopsies of CSF for mutation tracking.

Proton therapy for reduced exit dose.

Combination therapy: SRS + immune checkpoint inhibitors.

Artificial intelligence: Predicting treatment response, radiomics.

CIMARa studies: Collaborative data on bevacizumab for radiation necrosis, PARP inhibitors in CNS metastases, and consensus definitions.

## □ 4. Multidisciplinary Management

Successful treatment requires interdisciplinary collaboration, involving:

Neuro-oncology

Neurosurgery

Radiation oncology

Medical oncology

Neuroradiology

Palliative care

Clinical research teams

## Radiotherapy for brain metastases

see [Radiotherapy for brain metastases](#).

## Stereotactic Radiosurgery

see [Stereotactic radiosurgery for brain metastases](#).

## CyberKnife Radiosurgery for brain metastases

[CyberKnife Radiosurgery for brain metastases](#).

## Chemotherapy for brain metastases

see [Chemotherapy for brain metastases](#).

**Targeted Therapy:** Some cancers have specific molecular targets, and targeted therapies may be used as part of adjuvant treatment. These drugs are designed to interfere with specific pathways involved in cancer growth and spread.

**Immunotherapy:** Immunotherapy is an evolving field in cancer treatment. Some immunotherapeutic agents are being investigated for their potential in treating brain metastases, particularly in cases where the immune system can be mobilized to recognize and attack cancer cells.

The choice of adjuvant therapy is personalized based on the specific characteristics of the patient and the cancer. The oncology team, including medical oncologists, radiation oncologists, and neurosurgeons, collaborates to determine the most appropriate treatment plan. Patients must discuss their individual cases and treatment options with their healthcare team to make informed decisions based on their unique circumstances.

## Systematic review and meta-analysis

Suppree et al. conducted a systematic review and meta-analysis to investigate the [brain metastases local recurrence](#) rate following [surgical resection](#) of [brain metastases](#) without [adjuvant therapy](#). The analysis included four studies with a total of 235 cases. It was found that the rate of local recurrence by 12 months was 48.1% (95% CI 41.2-58.9). These findings underscore the high rate of patients who will experience local recurrence within 12 months of surgery, emphasizing the need for vigilant surveillance when omitting adjuvant radiotherapy in favor of systemic treatments with potential but unproven CNS penetrance. The analysis highlights unmet needs in this patient population <sup>1)</sup>

<sup>1)</sup>

Suppree JS, Kannan S, Hughes DM, Jenkinson MD, Zakaria R. Letter: Estimating the baseline local recurrence rate for a brain metastasis after neurosurgical resection. Clin Exp Metastasis. 2024 Feb 14. doi: 10.1007/s10585-024-10274-6. Epub ahead of print. PMID: 38353933.

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