

Review [Pediatr Blood Cancer](#). 2025 Feb 12:e31588. doi: 10.1002/psc.31588.

Online ahead of print.

# Cognitive Outcomes in Children Treated for Ependymoma Diagnosed Under 36 Months: A Systematic Review

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PMID: 39937086 DOI: [10.1002/psc.31588](https://doi.org/10.1002/psc.31588)

## Abstract

It is crucial to understand the morbidity associated with treatments for young children with ependymoma given this is a high incidence age group also known to be at risk of poorer cognitive outcomes. This review aimed to identify the quality of existing evidence describing cognitive outcomes in children treated for ependymoma under 36 months of age with a particular focus on the impact of radiotherapy. Eight studies were identified. Given the quality and heterogeneity of methodology, studies were only suitable for qualitative synthesis, as the majority included small numbers of participants with multiple confounding factors. Whilst some studies reported poor cognitive outcomes, the only large study reporting planned irradiation reported outcomes below the population mean but still broadly in the average range. This was consistent with a further study of interest that did not meet inclusion criteria but reported outcomes for children treated under five years old, many of whom were likely in the target population age for this review. Overall, the length of follow-up was often limited, and further research to monitor long-term impact, including photon and proton irradiation protocols on cognitive development, is required. Importantly, there is an urgent need to agree homogeneous methodology and achieve international consensus for cognitive assessment protocols to interrogate cognitive outcomes in this vulnerable population.

**Keywords:** Brain Tumour; Child; Cognitive; Ependymoma.

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