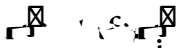





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Cancer in children, while constituting a small percentage of overall cancer cases, presents a significant clinical challenge due to the unique biological and physiological considerations involved. Approximately 300,000 children and adolescents under 19 years of age are diagnosed with cancer globally each year. The most common childhood cancers include leukemia, brain tumors, neuroblastoma, and lymphomas. While advancements in oncology have dramatically improved survival rates, treatment is often complicated by long-term health issues that arise from the aggressive therapies employed. This article reviews the current treatment options for pediatric cancer, evaluates their efficacy, and explores future advancements aimed at improving survival while minimizing long-term harm [1,2].



Pediatric cancers differ from adult cancers in their types, treatment responses, and prognosis. The majority of childhood cancers are the result of genetic mutations rather than lifestyle factors. Common types of pediatric cancers include:

-  : Acute Lymphoblastic Leukemia

have revolutionized pediatric oncology. Targeted therapies offer the potential for increased efficacy with reduced side effects compared to traditional chemotherapy, although their use in children is still being explored in clinical trials [8].

Immunotherapy, particularly chimeric antigen receptor (CAR) T-cell therapy, has emerged as a groundbreaking treatment for certain types of pediatric leukemia, especially in cases that have relapsed or are refractory to standard treatments. By harnessing the body's immune system to target cancer cells, immunotherapy offers a novel and effective approach with the potential for long-term remission. However, challenges remain, including managing immune-related side effects and the high cost of treatment.

Survival rates for pediatric cancers have improved dramatically in recent decades, with five-year survival rates for childhood leukemia exceeding 85% in developed countries. The use of combination therapies—chemotherapy, surgery, and radiation—has been instrumental in these outcomes. However, survival varies significantly by cancer type. Brain tumors and certain high-risk neuroblastomas still have relatively poor prognoses, with five-year survival rates below 70%.