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# Optimal management of adolescents with acute lymphoblastic leukaemia

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## Abstract

During the last 25 years, improvement in survival for young children with acute lymphoblastic leukaemia (ALL) has been striking: children aged 1 to 9 years have the best outcome. However, children and adolescents aged 10 to 20 years have a markedly worse outcome, which is associated — in part — with genetic abnormalities, a lower incidence of favourable genetic abnormalities such as TEL/AML1 and hyperdiploidy, and a higher incidence of T-cell leukaemia.

Adolescents are less likely to have access to healthcare, are more likely to see providers who are not part of research institutions, and are less likely to be referred to or to join clinical trials, all of which may contribute to worse outcomes. Adolescents are treated by both adult and pediatric teams, following either adult or pediatric protocols. The type of team by which adolescents are treated (pediatric teams, or "combined" teams) may also impact the outcome. An unpublished survey by the EBMT (Dini) showed that 67% of patients aged 14-18 years old who received allogeneic hematopoietic stem cell transplantation (HSCT) for 2nd CR ALL from 1996 to 2005 that was reported to the EBMT registry had been treated by pediatric teams only, while the remaining 33% had been treated by adult teams [1].

Recent European studies have shown better outcomes in adolescents treated with pediatric protocols as compared to those treated with adult ones [2-5].

Adolescents should be referred to research treatment teams that have experience in the management of peediatric ALL, and they should be enrolled in international cooperative studies. Molecular, genetic, and proteomic evaluation may cast further light on the causes of the rather striking decrease in survival that is seen as the patient progresses from childhood to adolescence.

**Keywords:** acute lymphoblastic leukemia, adolescents, pediatric ALL protocols, allogeneic hematopoietic stem cell transplantation, allo-HSCT

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