

# **Outcomes of Haematopoietic Stem Cell Transplantation for Hurler's**

## **Syndrome in Europe: a Risk Factor Analysis for Graft-Failure**

Bone Marrow Transplantation (in press)

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### **Abstract**

Hurler's syndrome (HS), the most severe form of mucopolysaccharidosis type-I causes progressive deterioration of the central nervous system and death in childhood. Allogeneic stem cell transplantation (SCT) before the age of two years halts disease progression. Graft-failure limits the success of SCT. We analyzed data on HS-patients transplanted in Europe to identify risk-factors for graft-failure.

We compared outcomes in 146 HS-patients transplanted with various conditioning regimens and grafts. Patients were transplanted between 1994-2004 and registered to the EBMT-database. Risk-factor analysis was performed using logistic-regression.

“Survival” and “alive and engrafted”-rate after first SCT was 85-percent and 56-percent, respectively. In multivariable-analysis, T-cell depletion (odds-ratio, 0.18; 95-percent confidence-interval 0.04-0.71; p=0.02) and reduced-intensity conditioning (odds-ratio, 0.08; 95-percent confidence-interval 0.02-0.39; p=0.002) were risk-factors for graft-failure. Busulfan-targeting protected against graft-failure (odds-ratio 5,76; 95%-confidence-interval 1,20-27,54; p=0.028). No difference was noted between cell sources used (bone-marrow, peripheral blood stem-cells or cord-blood), however significantly more patients who received cord-blood transplants had full-donor chimerism (odds-ratio 9.31, 95%-CI 1.06-82.03; p=0.044).

These outcomes may impact the safety/efficacy of SCT for “inborn-errors of metabolism” at large. Cord-blood increased the likelihood of sustained engraftment associated with normal enzyme levels and could therefore be considered as a preferential cell-source in SCT for “inborn-errors of metabolism”.