

# Allogeneic hematopoietic stem cell transplantation in patients aged 60-79 years in Germany (1998-2018): a registry study

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## Abstract

Incidences of diseases treated with transplantation frequently peak at higher age. The contribution of age to total risk of transplantation has not been estimated amidst an aging society. We compare outcomes of 1,547 patients aged 70-79 years and 9,422 patients aged 60-69 years transplanted 1998-2018 for myeloid, lymphoid and further neoplasia in Germany. To quantify the contribution of population mortality to survival, we derive excess mortality based on a sex-, year- and age-matched German population in a multistate model that incorporates relapse and graft-versus-host-disease (GvHD). Overall survival, relapse-free survival (RFS) and GvHD-free-relapse-free survival (GRFS) is inferior in patients aged 70-79 years, compared to patients aged 60-69 years, with 36% (95% Confidence Interval [CI]: 34-39%) versus 43% (41-44%), 32% (30-35%) versus 36% (35-37%) and 23% (21-26%) versus 27% (26-28%) three years post-transplant ( $P < 0.001$ ). Cumulative incidences of relapse at three years are 27% (25-30%) for patients aged 70-79 versus 29% (29-30%) (60-69 years) ( $P = 0.71$ ), yet the difference in non-relapse mortality (NRM) (40% [38-43%] vs. 35% [34-36%] in patients aged 70-79 vs. 60-69 years) ( $P < 0.001$ ) translates into survival differences. Median OS of patients surviving >1 year relapse-free is 6.7 (median, 95% CI: 4.5-9.4, 70-79 years) versus 9 (8.4-10.1, 60-69 years) years since landmark. Three years after RFS of one year, excess NRM is