challenge. Despite advances in allo-HSCT reducing risk of morbidity and mortality, relapse has not altered significantly. We performed a single institution review of relapse following allo-HSCT in patients with AL examining salvage therapy and characteristics of long term survivors.

Methods: All adult patients who proceeded to an allo-HSCT for AL from 1998-2012 (n=100) were reviewed. 24 relapsed following allo-HSCT and a detailed review of salvage treatments and outcomes was made. Probability of overall survival (POS) and 95% confidence interval (CI) were calculated by actuarial method.

Results: The 5 year POS of the 100 patients with AL proceeding to allo-HSCT was 71 % (CI 61-80%). Of 24 relapsing after allo-HSCT, 17 had initial diagnosis AML, and 7 ALL. The AML group median age was 49y (range 22-65), 53% male. Ten patients received sibling donors, 6 unrelated donors and 1 patient a related haplo-identical donor. Relapses were mostly systemic (14) and extra medullary (EM) 3 of the 17 cases. Median time to relapse was 13 months (3-57). Salvage treatments were: second allo-HSCT +/- chemotherapy (chemo) (n=5); donor lymphocyte infusion (DLI) +/- chemo (n=5); chemo +/- withdrawal of immunosuppression (WI) (n=4); or palliative/supportive care (n=3). Ten patients (57%) achieved complete response (CR), and CR was maintained by 8 patients (47%), with a median follow up 34 months (range 8-66). All deaths (n=9) were due to disease. All 3 patients with EM relapse are in ongoing remission.

In the ALL group (n=7) median age was 22y (range 19-52), 57% of male. 3 were sibling donor transplants, 3 unrelated and 1 patient received a double cord. Relapse was systemic in 5 patients, and EM in 2. Median time to relapse was 13 months (range 3-57). Salvage treatments comprised: chemo +/- WI (n=3), second allo-HSCT +/- salvage chemo (n=2), DLI +/- salvage chemo (n=1), with 1 patient receiving novel monoclonal antibody therapy. Three patients achieved a CR, however, all died, 2 of disease progression. Two patients remain alive in PR with ongoing salvage treatment to be determined.

Conclusions: Despite advances in allo-HSCT, long term survival outcomes for patients with ALL who relapse after allo-HSCT remain poor. However, in contrast, for patients with AML who relapse, durable long-term remissions can be achieved with salvage therapy (with and without second allo-HSCT) with almost half of our patients (47%) in ongoing CR at a median of 34 months (range 8-66). As shown in other studies EM relapse, may be salvaged with good long term results.

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Impact of Invasive Fungal Infections on Mortality, Length of Hospital Stay, and Costs in Allogeneic Hematopoietic Stem Cell Transplant Patients

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Background: Over the last decade, unrelated donors have become a vital resource for hematopoietic stem cell transplantation (HSCT) and the number of allogeneic HSCT (allo-HSCT) has increased significantly. While invasive fungal infections (IFIs) remain major concerns in these patients, data regarding impact of these infections on mortality, length of hospital stay, and hospital charge are limited in the United States at a national level. Additionally, with many updates in transplant practice, risk factors for IFIs in these patients may have changed.

Methods: To assess risk factors and impact of IFIs on mortality, length of hospital stay, and hospital charges, a quantitative and cross-sectional design was used to analyze secondary data from the 2010 Healthcare Cost and Utilization Project - Nationwide Inpatient Sample (HCUP NIS) database. Chi-square test, Mann-Whitney test, and multiple logistic regression were used for statistical analyses.

Results: A total of 5,753 weighted hospital records of allo-HSCT were identified with a mean age of 44.8 $\pm$ 19.1 years. The IFI rate was 7.8% (451), with aspergillosis (30.6%) and candidiasis (9.6%) as the two most common IFIs. Compared to patients without IFIs, patients with IFIs had nearly 5 times higher mortality (25.1% vs. 5.1%), longer hospital stays, and higher hospital charges ($p < .01$). Multiple regression analyses on risk factors confirmed presence of graft-versus-host disease as a recognized risk factor for IFIs. However, younger age, female gender, and related donors were also identified as risk factors for IFIs in this analysis. The underlying reasons for these unexpected findings will be explored.

Conclusions: An analysis of a large U.S. inpatient database confirmed that allo-HSCT patients with IFIs have higher mortality and higher health care costs. The risk factors for IFIs have been identified that could enable better management and control of these infections.

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The Impact of ABO Incompatibility in Allogeneic Stem Cell Transplant (ALLOSCT): A Retrospective Single Center's Analysis

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Background: ABO typing is not readily available within donor databases. ABO incompatibility between donor and recipient is not considered a hurdle to an allogeneic hematopoietic stem cell transplantation (ALLOSCT). Conflicting data still exist as to its influence on graft-versus-host disease (GVHD), relapse, and survival.

Method: We retrospectively examined the impact of ABO compatibility on outcomes of 109 patients who underwent matched unrelated donor (MUD), matched related (REL) and cord blood (CBU) ALLOSCT at our institution since 01/01/2010.

Results: Median age was 58 years (range, 19.9- 83.6); 33 (30%) were female; 64 (59%) patients had a myeloid, 34 (31%) lymhoid, 8 (7%) plasma cell and 3 (3%) had other disorder; 57 (52%) patients received myeloablative, 25 (23%) non-myeloablative and 27 (25%) received reduced intensity conditioning. The stem cell sources were represented by 78 (72%) MUDs, 15 (14%) RELs and 16 (15%) CBUs. 80 (86%) of the MUD and REL transplants were 10/10, 11 (13%) were 9/10, 1