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POSTER ABSTRACTS

731.AUTOLOGOUS TRANSPLANTATION: CLINICAL AND EPIDEMIOLOGICAL

Stem Cell Utilization in the Era of Novel Therapies for Multiple Myeloma

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Introduction:
Stem cell collection is recommended for patients with newly diagnosed multiple myeloma (NDMM) deemed eligible for autologous stem cell transplantation (ASCT). Standard practice at most institutions is to collect an adequate number of stem cells for at least 2 ASCTs, but the benefit of maintaining extra stem cells in storage for future use beyond an initial ASCT warrants re-evaluation in the current era of novel therapies and evolving MM clinical practice. To address this, we reviewed the utilization rates and indications for the use of stored stem cells (SSC) at our institution.

Methods:
We conducted a single-center, retrospective study of 1470 patients with NDMM who collected sufficient stem cells for at least 2 ASCTs and underwent at least one ASCT at Memorial Sloan Kettering Cancer Center between January 2007 and December 2022. From this cohort, we assessed rates of stem cell utilization for second, non-tandem (salvage) ASCT and/or stem cell boost over time and determined progression-free survival (PFS) and overall survival (OS) from the time of salvage ASCT using the Cox proportional hazard model.

Results:
The median patient age atinitial ASCT was 61 years (range 24-81), with 58% male, 25% International Staging System stage III, and 42% (542/1283) with at least one high-risk cytogenetic alteration. Granulocyte-colony stimulating factor, either with or without plerixafor, was used for stem cell mobilization in 70% (834/1193) of patients, with the remaining patients undergoing chemotherapy-based mobilization, including high-dose cyclophosphamide (15%) or other multiagent chemotherapy regimens (15%). The median total $CD34^+$ cell collection yield was 10.3×10^6/kg (interquartile range, IQR, 8-13).
During the entire study period, SSC were used for 14.6% (214/1470) of patients, with 11.2% (n=165) for a salvage ASCT and 2.1% (n=31) for a stem cell boost. Seven patients received both a salvage ASCT and a boost. An additional 25 patients had upfront tandem ASCT (none since 2015) and were excluded from this analysis. Notably, from 2019 to 2022, the annual utilization of salvage ASCT increased compared to pre-2019 levels (median=21, range 11-27 vs. pre-2019 median=7, range 4-12), as did stem cell boosts (median=4, range 1-6 vs. pre-2019 median=1, range 0-3), despite a decline in numbers during the COVID-19 pandemic (Figure 1). The median age at SSC use was 61 years (range 29-78). The median number of prior lines of therapy (LOT) before the use of SSC was 4 (IQR: 2-7) for salvage ASCT and 6 (IQR: 1-6.5) for boosts. The median infused stem cell dose (CD34+ cells/kg) was 4.4×10^6 (range 3.2-5.7) for salvage ASCT and 3.1×10^6 (range 2.2-3.6) for boosts.
The median PFS after salvage ASCT was 16 months (95% confidence interval, CI, 12-21), and the median OS was 37 months (95% CI 29 - 53). On multivariable analyses, receipt of fewer lines of therapy was the sole favorable prognostic factor for PFS and OS. Among patients with ≤ 3 prior LOT, the median PFS after salvage ASCT was 32 months (95% CI 22-42), while those with > 3 LOT had a median PFS of 8.0 months (95% CI 5.8-12) (Figure 2). Post-treatment therapy after salvage ASCT or stem

cell boost most commonly included various MM triplet regimens, chimeric antigen receptor T-cell therapy, and bispecific T-cell engagers.

Conclusion:

While overall rates of SSC utilization at our institution remain low, rates have increased in recent years, as both salvage ASCT and stem cell boosts provide effective platforms for treating disease and treatment-related refractory cytopenias as a bridge to next therapy for patients with advanced MM. Ultimately, institutional practices for stem cell collection and storage require optimizing the balance of clinical utility with resource allocation and costs of maintaining SSC.

Disclosures Nishimura: *Chugai pharmaceutical company:* Consultancy; *Ono pharmaceutical company:* Honoraria. **Landau:** *Karyopharm, Pfizer, Juno, Prothena, Caelum Biosiences, Legend Biotech, Takeda, Janssen, Nexcella:* Honoraria; *Alexion Pharmaceuticals, Takeda, Janssen, Prothena, Protego:* Research Funding. **Lahoud:** *MorphoSys Inc, Kite:* Consultancy. **Scordo:** *Medscape, LLC:* Honoraria; *CancertNetwork (Intellisphere LLC):* Honoraria; *Omeros Corporation:* Consultancy, Research Funding; *Angiocrine Bioscience, Inc.:* Research Funding; *Amgen, Inc.:* Research Funding. **Mailankody:** *Fate Therapeutics:* Research Funding; *Takeda Oncology:* Research Funding; *Caribou Therapeutics:* Research Funding; *Legend Biotech:* Consultancy; *Janssen Oncology:* Consultancy; *Optum Oncology:* Consultancy; *Physician Education Resource:* Honoraria; *OncLive:* Honoraria; *MJH Life Sciences:* Honoraria; *Bristol Myers Squibb:* Research Funding; *Allogene Therapeutics:* Research Funding; *Janssen Oncology:* Research Funding. **Hassoun:** *Celgene, Takeda, and Janssen Pharmaceuticals:* Research Funding. **Hultcrantz:** *Curio Science LLC, Intellisphere, Bristol Myer Squibb, GlaxoSmithKline:* Honoraria; *Amgen, Daiichi Sankyo, GlaxoSmithKline:* Research Funding. **Korde:** *Amgen, Janssen, Epizyme, AbbVie:* Research Funding; *Janssen:* Other: Advisory Board; *CCO, OncLive, Intellisphere, Remedy Health:* Consultancy. **Lesokhin:** *Bristol Myers Squibb:* Research Funding; *ArcellX:* Consultancy; *Pfizer:* Honoraria, Research Funding; *Janssen:* Honoraria, Research Funding. **Shah:** *C4 Therapeutics:* Research Funding; *Plantable:* Research Funding; *Sabinsa:* Research Funding; *Janssen:* Consultancy, Other: Advisory Board, Research Funding; *M and M Labs:* Research Funding; *Bristol Myers Squibb:* Consultancy, Other: Advisory Board, Research Funding; *Sanofi:* Other: Advisory Board. **Tan:** *Sanofi:* Honoraria; *Takeda:* Research Funding; *Janssen:* Current Employment, Honoraria, Research Funding. **Usmani:** *Takeda:* Membership on an entity's Board of Directors or advisory committees, Research Funding; *Array Biopharma:* Research Funding; *Sanofi:* Membership on an entity's Board of Directors or advisory committees, Research Funding; *SecuraBio:* Membership on an entity's Board of Directors or advisory committees; *Oncopeptides:* Membership on an entity's Board of Directors or advisory committees; *TeneoBio:* Membership on an entity's Board of Directors or advisory committees; *Seattle Genetics:* Membership on an entity's Board of Directors or advisory committees, Research Funding; *Novartis:* Membership on an entity's Board of Directors or advisory committees; *Moderna:* Membership on an entity's Board of Directors or advisory committees; *Celgene:* Membership on an entity's Board of Directors or advisory committees, Research Funding; *K36 Therapeutics:* Membership on an entity's Board of Directors or advisory committees; *Janssen:* Membership on an entity's Board of Directors or advisory committees, Research Funding; *EdoPharma:* Membership on an entity's Board of Directors or advisory committees; *GSK:* Membership on an entity's Board of Directors or advisory committees, Research Funding; *Genentech:* Membership on an entity's Board of Directors or advisory committees; *Gilead Sciences:* Membership on an entity's Board of Directors or advisory committees, Research Funding; *Merck:* Research Funding; *Pharmacyclics:* Research Funding; *SkylineDX:* Membership on an entity's Board of Directors or advisory committees, Research Funding; *Bristol Meyer Squibb:* Membership on an entity's Board of Directors or advisory committees, Research Funding; *Amgen:* Membership on an entity's Board of Directors or advisory committees, Research Funding; *Abbvie:* Membership on an entity's Board of Directors or advisory committees, Research Funding. **Giralt:** *Amgen, Actinuum, Celgene/BMS, Kite Pharma, Janssen, Jazz Pharmaceuticals, Johnson & Johnson, Novartis, Spectrum Pharma, Takeda:* Membership on an entity's Board of Directors or advisory committees; *Amgen, Actinuum, Celgene/BMS, Omeros, Johnson & Johnson, Miltenyi, Takeda:* Research Funding.

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Figure 1. Number of 2nd ASCT or Booster by year

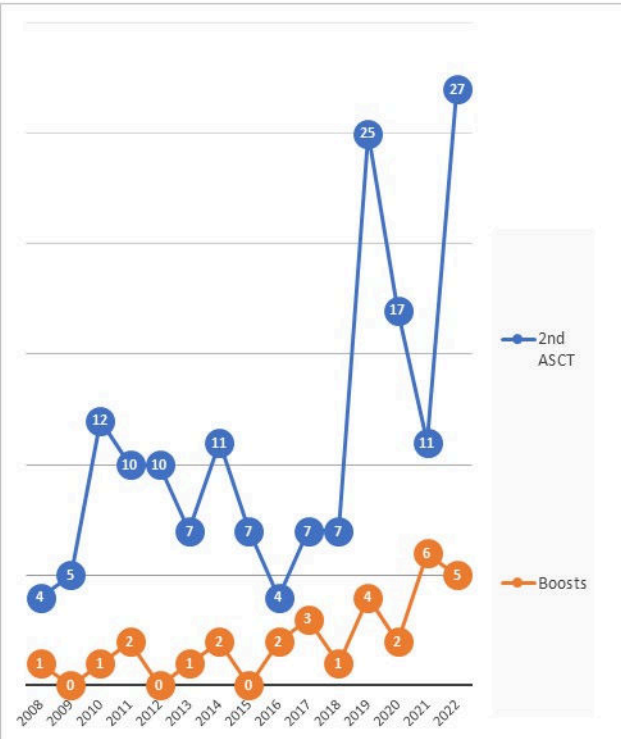
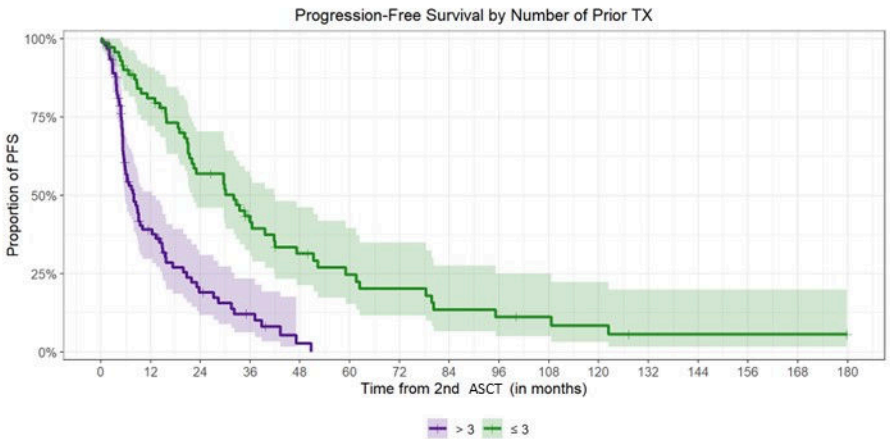


Figure 2. PFS after 2nd ASCT by number of prior TX



> 3																
At Risk	90	28	12	6	1	0	0	0	0	0	0	0	0	0	0	0
Events	0	51	64	68	72	73	73	73	73	73	73	73	73	73	73	73
≤ 3																
At Risk	70	53	35	22	15	11	9	6	5	4	3	1	1	1	1	0
Events	0	13	28	36	42	45	47	50	51	51	52	53	53	53	53	53

Figure 1