Real-World Characteristics and Outcomes of Newly Diagnosed Multiple Myeloma Patients Receiving Autologous Stem Cell Transplantation (2018–2024) From the HONEUR Network

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HONEUR
Haematological Outcomes Network in Europe

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Introduction

- Eligibility for ASCT in multiple myeloma clinical trials is primarily determined by age and comorbidities[1-3]
- Notably, 2025 EHA-EMN guidelines recommend ASCT up to 70 years of age[4]
- Conversely, clinical practice often employs less stringent standards, leading to limited insight into the real-world baseline characteristics and outcomes for those with NDMM receiving ASCT[2,3,5]
- As new treatment options emerge, real-world data can uncover remaining unmet needs and foster ongoing improvements in the survival of these patients[2,4,5]
- This study outlines the baseline characteristics, treatment patterns, and outcomes of a cohort of patients with NDMM who underwent ASCT in clinical practice

ASCT, autologous stem cell transplantation; NDMM, newly diagnosed multiple myeloma. 1. National Comprehensive Cancer Network (NCCN). Multiple Myeloma. (Version 2.2026). 2. Belotti A, et al. *Am J Hematol* 2020;95:759-65. 3. Seehaus CM, et al. *Hematol Transfus Cell Ther* 2024;46 Suppl 6(Suppl 6):S13-S20. 4. Dimopoulos MA, et al. *Nat Rev Clin Oncol* 2025;22:680-700. 5. Blackburn L, et al. *Hemato* 2024; 5(4):407-19.

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REWARD: Study Population

- Data were selected from patients starting frontline treatment followed by ASCT from 2018 to 2024 within MyelomaToul - Institut Universitaire du Cancer de Toulouse (IUCT, France)
- 2945 patients underwent ASCT, representing one-third of the patients with NDMM starting treatment between 2018 and 2024
- 72.1% of patients were <65 years (n=2124), 27.9% were ≥65 years (n=821) (**Table 1**)
- Overall, 40% of patients were classified as ISS stage II or III; in the age-stratified analysis, patients aged ≥65 years showed a slightly higher proportion of ISS stage II or III (42%) compared with those aged <65 years (39.2%)
- 12.5% were identified as having high-risk cytogenetics

Table 1: Baseline demographics (HONEUR)

		NDMM (n=2945)	Aged <65 years (n=2124)	Aged ≥65 years (n=821
Median age (range), years		60 (18–79)	57 (18–64)	67 (65–79)
Male, n (%)		1731 (58.8)	1272 (59.9)	459 (55.9)
Age at line of therapy, years, n (%)	<50	371 (12.6)	371 (17.5)	-
	50–64	1753 (59.5)	1753 (82.5)	-
	≥65	821 (27.9)	-	821 (100)
M protein type, n (%)	IgA	469 (15.9)	326 (15.3)	143 (17.4)
	IgG	1246 (42.3)	877 (41.3)	369 (44.9)
	Others	55 (1.9)	45 (2.1)	10 (1.2)
	Unavailable	1175 (39.9)	876 (41.2)	299 (36.4)
ISS stage,[a] n (%)	I	789 (26.8)	603 (28.4)	186 (22.7)
	II	760 (25.8)	534 (25.1)	226 (27.5)
	III	418 (14.2)	299 (14.1)	119 (14.5)
	Unavailable	978 (33.2)	688 (32.4)	290 (35.3)
Cytogenetic profile,[a] n (%)	Standard risk	2014 (68.4)	1427 (67.2)	587 (71.5)
	High risk*	369 (12.5)	276 (13)	93 (11.3)
	Indeterminate	562 (19.1)	421 (19.8)	141 (17.2)

*High-risk cytogenetics: presence of del(17p), and/or t(4;14), and/or t(14;16). [a]LOCF, last observation carried forward.
ASCT, autologous stem cell transplantation; HONEUR, Haematology Outcomes Network in Europe; Ig, immunoglobulin; ISS, International Staging System; NDMM, newly diagnosed multiple myeloma.

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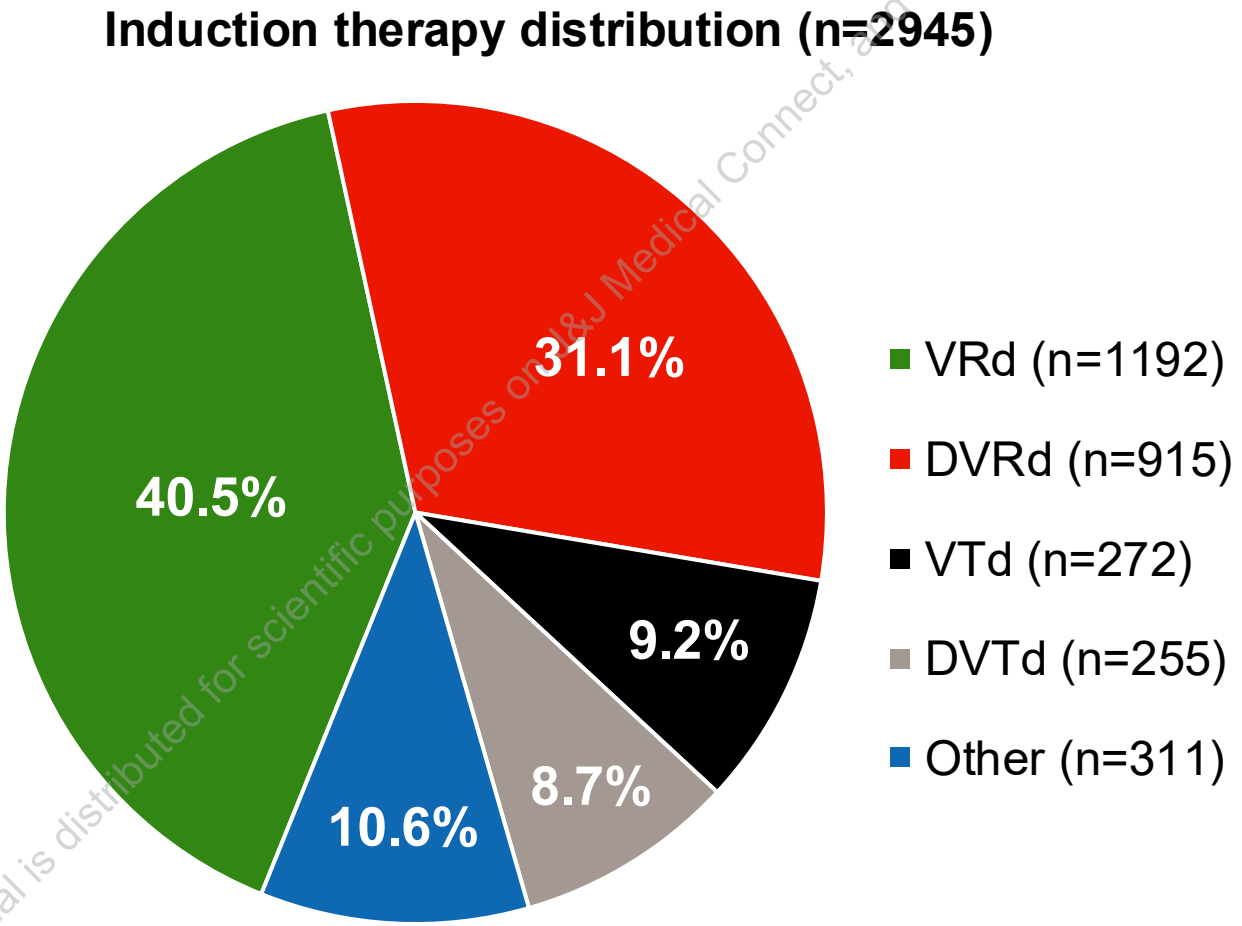
Treatment Regimens at Induction



D, daratumumab; d, dexamethasone; R, lenalidomide; T, thalidomide; V, bortezomib.

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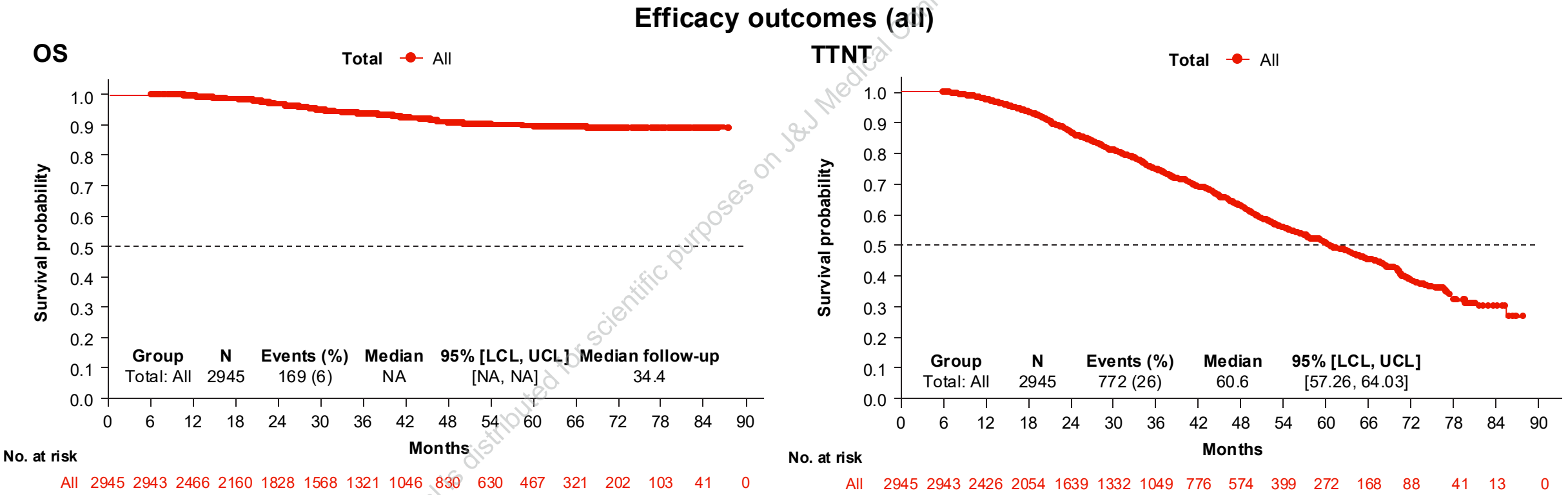
Overall Efficacy Outcomes

- Median TTNT from the start of induction was 60.6 months (95% CI, 57.3–64)
- While the median OS was not reached, 90.7% (95% CI, 89.1–92.0) of patients were alive at 4 years



IUCT, Institut Universitaire du Cancer de Toulouse; LCL, lower confidence limit; NA, not applicable; OS, overall survival; TTNT, time to next treatment; UCL, upper confidence limit.

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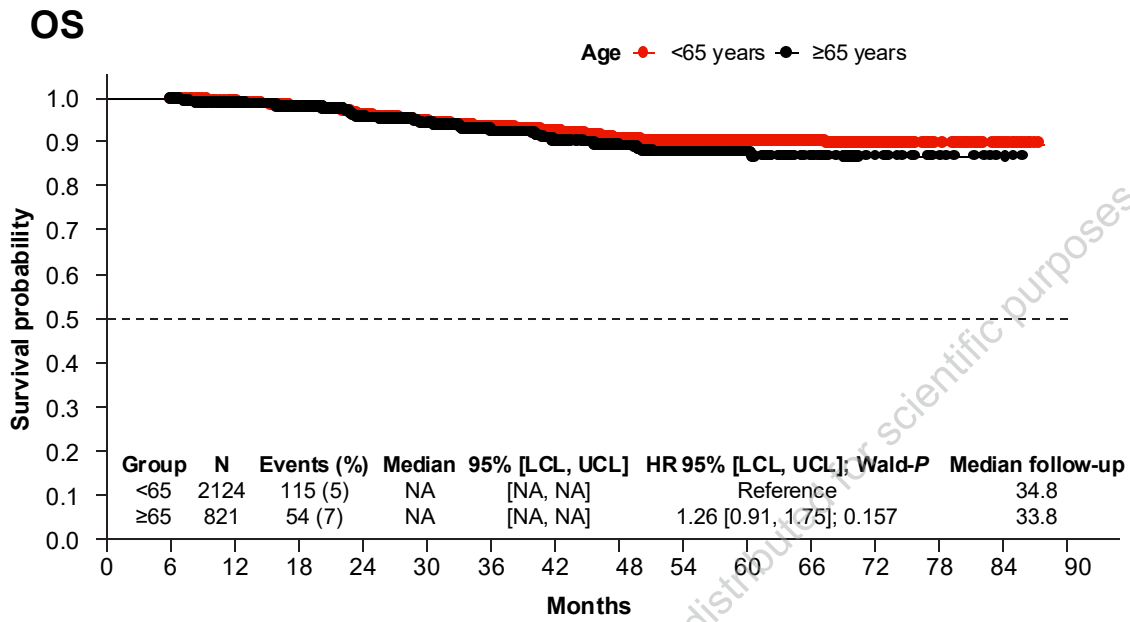
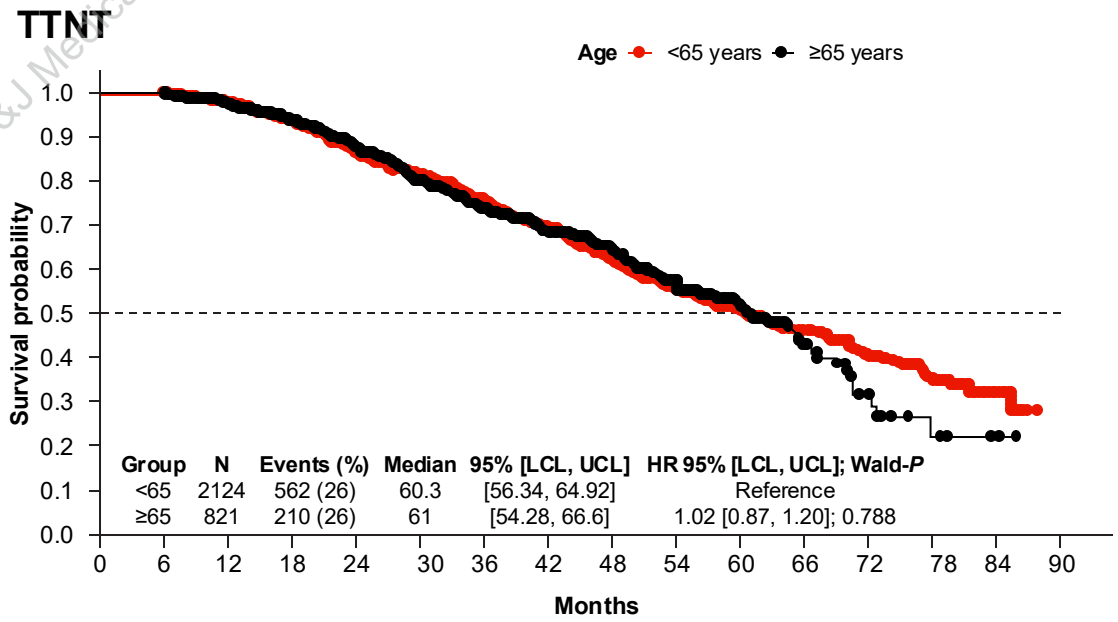
Efficacy Outcomes by Age

- Median TTNT was similar in both age groups
- Median OS was not reached for either patient group, but mortality risk was 26% higher in patients aged ≥65 years versus those aged <65 years

Efficacy outcomes by age group





No. at risk

<65	2124	2124	1799	1567	1332	1141	967	762	608	468	357	252	163	85	36	0
≥65	821	819	667	593	496	427	354	284	222	162	110	69	39	18	5	0

No. at risk

<65	2124	2124	1769	1486	1186	971	766	564	415	288	205	133	74	36	11	0
≥65	821	819	657	568	453	361	283	212	159	111	67	35	14	5	2	0

HR, hazard ratio; IUCT, Institut Universitaire du Cancer de Toulouse; LCL, lower confidence limit; NA, not applicable; OS, overall survival; TTNT, time to next treatment; UCL, upper confidence limit.

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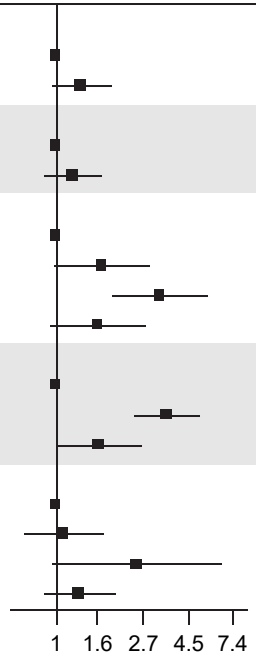
Influence of Cytogenetics and ISS Score on TTNT and OS

- Compared with ISS stage I, TTNT was shorter for patients with stage II (HR, 1.5 [95% CI, 1.2–1.9]; *P*<0.001) and stage III disease (HR, 1.9 [95% CI, 1.5–2.5]; *P*<0.001)
- Patients with standard-risk cytogenetics had longer TTNT and OS vs high-risk cytogenetics (TTNT: HR, 1.9 [95% CI, 1.6–2.3]; *P*<0.001; OS: HR, 3.5 [95% CI, 2.4–5.0]; *P*<0.001)

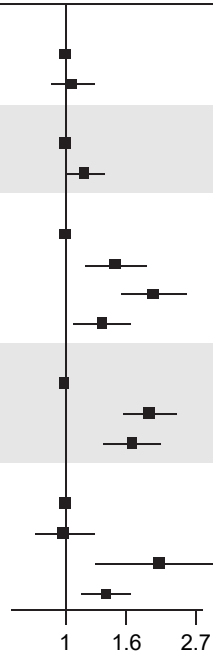
OS

Covariates	Hazard ratio (95% CI)	*P* value	No. of observations (%)	No. of events (%)
Age, years				
<65	Reference		2124 (72.1)	115 (5.4)
≥65	1.33 (0.96, 1.85)	0.084	821 (27.9)	54 (6.6)
Sex				
Female	Reference		1214 (41.2)	66 (5.4)
Male	1.21 (0.88, 1.65)	0.239	1731 (58.8)	103 (6)
ISS				
Stage I	Referenc		789 (26.8)	22 (2.8)
Stage II	1.69 (0.99, 2.86)	0.053	760 (25.8)	38 (5)
Stage III	3.23 (1.92, 5.43)	<0.001	418 (14.2)	43 (10.3)
Unavailable	1.61 (0.96, 2.71)	0.073	978 (33.2)	66 (6.7)
Cytogenetic risk				
Standard risk	Reference		2014 (68.4)	79 (3.9)
High risk[a]	3.51 (2.45, 5.03)	<0.001	369 (12.5)	52 (14.1)
Unavailable	1.62 (1.00 2.61)	0.049	562 (19.1)	38 (6.8)
M protein				
IgG	Reference		1246 (42.3)	56 (4.5)
IgA	1.10 (0.70, 1.71)	0.686	469 (15.9)	31 (6.6)
Others	2.49 (0.98, 6.34)	0.056	55 (1.9)	5 (9.1)
Unavailable	1.37 (0.89, 1.92)	0.171	1175 (39.9)	77 (6.6)



TTNT

Covariates	Hazard ratio (95% CI)	*P* value	No. of observations (%)	No. of events (%)
Age, years				
<65	Reference		2124 (72.1)	562 (26.5)
≥65	1.06 (0.91, 1.25)	0.456	821 (27.9)	210 25.6)
Sex				
Female	Reference		1214 (41.2)	312 (25.7)
Male	1.16 (1.00, 1.34)	0.044	1731 (58.8)	460 (26.6)
ISS				
Stage I	Reference		789 (26.8)	136 (17.2)
Stage II	1.48 (0.18, 1.86)	<0.001	760 (25.8)	178 (23.4)
Stage III	1.99 (1.55, 2.54)	<0.001	418 (14.2)	125 (29.9)
Unavailable	1.33 (1.07, 1.66)	0.01	978 (33.2)	333 (34)
Cytogenetic risk				
Standard risk	Reference		2014 (68.4)	424 (21.1)
High risk[a]	1.91 (1.58, 2.33)	<0.001	369 (12.5)	140 (37.9)
Unavailable	1.68 (1.36, 2.07)	<0.001	562 (19.1)	208 (37)
M protein				
IgG	Reference		1246 (42.3)	266 (21.3)
IgA	0.99 (0.80, 1.24)	0.947	469 (15.9)	117 (24.9)
Others	2.08 (1.28, 3.38)	0.003	55 (1.9)	18 (32.7)
Unavailable	1.37 (1.15, 1.64)	<0.001	1175 (39.9)	371 (31.6)



[a]High-risk cytogenetics: presence of del(17p), and/or t(4;14), and/or t(14;16).
HR, hazard ratio; Ig, immunoglobulin; ISS, International Staging System; OS, overall survival; TTNT, time to next treatment.

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Conclusions

- In this pooled analysis of a French population receiving either triplet (52%) or quadruplet (48%) induction therapy followed by ASCT at frontline, over one-quarter of patients were ≥65 years, indicating that the real-world transplanted population often exceeds age-based clinical trial criteria
- Median TTNT from the start of induction therapy was 60.6 months; while median OS was not reached, 90.7% of the patients were alive at 4 years
- Median TTNT was similar in patients less than 65 years old and in those 65 years and older, and median OS was not reached in either group
- Multivariable analysis results indicated that cytogenetics and ISS score were the primary factors influencing TTNT and OS independent of age
- This study precedes the widespread uptake and approval of quadruplet anti-CD38 induction, consolidation, and maintenance, which is now considered standard of care. Therefore, it will be pertinent to repeat these analyses with standard of care treatments in the future

This study highlights how real-world practices extend beyond traditional clinical trial eligibility criteria for patients with NDMM receiving ASCT. High-risk profiles associated with reduced survival underscore the importance of prognostic assessments and personalized treatment strategies

ASCT, autologous stem cell transplantation; ISS, International Staging System; NDMM, newly diagnosed multiple myeloma; OS, overall survival; TTNT, time to next treatment.

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