

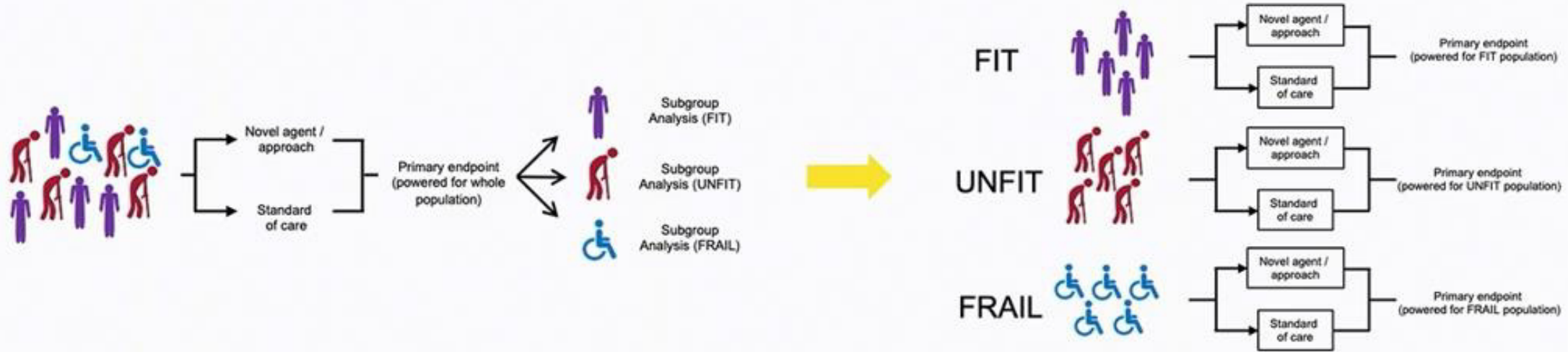
Transplant non eligible IMW 2024

מפגש חוג מיאלומה 11.2024

מירי זקצר

מרכז רפואי סורוקה

Paradigm switch for management of elderly patients



	IMWG frailty score	R-MCI	UKMRA MRP	Mayo risk score	Ancona Vulnerability Score	IFM simplified frailty scale
Biological / Clinical components	Age CCI	eGFR PFTs Age Cytogenetics	Age R-ISS CRP	Age NT-proBNP	CCI	Age CCI
Functionality tests	ADL IADL	PS (Kamofsky)	PS (WHO)	PS (WHO)	PS (WHO)	ECOG
Population	Clinical trials	Clinical trials, real world	Clinical trials, real world	Real world	Real world	Clinical trials

Need for frailty scores

- to compare clinical trials
- to guide the clinical practice

Tailoring patients upfront and adapting therapy based on frailty

Main recent phase 3 trials in elderly patients

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Trials	Age limit	Frailty limit
FIRST	≥ 65 or TNE	none
ALCYONE	≥ 65 or TNE	none
MAIA	≥ 65 or TNE	none



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Trials	Age limit	Frailty limit
IFM2017-03	≥ 65	Frailty score ≥ 2
IMROZ	TNE and ≤ 80	none
BENEFIT IFM	≥ 65 and < 80	Frailty score <2
CEPHEUS	TNI	Frailty score <2
MAJESTEC-7	TNI	Frailty score <2 Or 2 if age only
CARTITUDE-5	TNI	Frailty score <2

IMWG frailty score

Score assessment	Score
Age (year)	≤75: 0 76-80: 1 >80: 2
Activity of Daily Living	>4: 0 ≥4: 1
Instrumental Activity of Daily Living	>5: 0 ≤5: 1
Charlson Comorbidity Index	≤1: 0 ≥2: 1
Score assessment	Total score
Fit	0
Intermediate	1
Frail	≥2

TNE = transplant not eligible; TNI = transplant not intended

Quadruplet in TI

	CEPHEUS	IMROZ	BENEFIT
	<p>Dara VRD vs VRD 8 cycles x 21d Velcade 2 weekly Len for 14 days Dara every week 1 cycle, every 3 weeks for 8 cycles, than every 4 weeks Maintenance: DaraRD vs RD Cycle 28 days</p>	<p>Isa VRD vs VRD Induction 4 cycles x 42d Continue: Isa RD vs RD After cycle 18, Isa every 4 weeks) Crossover in case of progression</p>	<p>IsaVRD vs IsaRD Induction 12 cycles x 28-d Consolidation: IsaVR vs IsaR Cycle 13-18, 28-d (6 cycles) IsaR until progression</p>
N. of patients	395	446	270
Primary EP	Overall MRD 10^{-5}	PFS	MRD 10^{-5} on 18 months
Median follow up	58.7 months	59.7 months	
Age limit	Transplant non intent 27% transplant differed	TNE and ≤ 80	$65 \leq$ and ≤ 80
Frailty limit	<2	None	<2

CEPHEUS: Baseline Demographic and Clinical Characteristics (ITT Population)

	D-VRd (n = 197)	VRd (n = 198)
Age		
Median (range), years	70.0 (42-79)	70.0 (31-80)
Category, n (%)		
<65 years	36 (18.3)	35 (17.7)
65 to <70 years	52 (26.4)	53 (26.8)
≥70 years	109 (55.3)	110 (55.6)
Male, n (%)	87 (44.2)	111 (56.1)
ECOG PS score, n (%)^a		
0	71 (36.0)	84 (42.4)
1	103 (52.3)	100 (50.5)
2	23 (11.7)	14 (7.1)
Frailty score, n (%)^b		
0 (fit)	124 (62.9)	132 (66.7)
1 (intermediate fitness)	73 (37.1)	66 (33.3)
Transplant deferred, n (%)	53 (26.9)	53 (26.8)
Transplant ineligible, n (%)	144 (73.1)	145 (73.2)

	D-VRd (n = 197)	VRd (n = 198)
Type of myeloma by immunofixation or serum FLC assay, n (%)		
IgG	130 (66.0)	114 (57.6)
IgA	38 (19.3)	52 (26.3)
IgD	2 (1.0)	3 (1.5)
Light chain	22 (11.2)	25 (12.6)
Biclonal	5 (2.5)	3 (1.5)
Unknown	0	1 (0.5)
Extramedullary plasmacytomas, n (%)	11 (5.6)	13 (6.6)
ISS disease stage, n (%)^c		
I	68 (34.5)	68 (34.3)
II	73 (37.1)	75 (37.9)
III	56 (28.4)	55 (27.8)
Cytogenetic risk profile, n (%)^d		
Standard risk	149 (75.6)	149 (75.3)
High risk	25 (12.7)	27 (13.6)
Indeterminate ^e	23 (11.7)	22 (11.1)

Treatment arms were well balanced

ITT, intent-to-treat; FLC, free light chain; ISS, International Staging System.
^aECOG PS is scored on a scale from 0 to 5, with 0 indicating no symptoms and higher scores indicating increasing disability. ^bTotal additive frailty is scored on a scale of 0 to 5 based on age, comorbidities, and cognitive and physical conditions, with 0 indicating fit, 1 indicating intermediate fitness, and 2 indicating frail, per the Myeloma Geriatric Assessment score (<http://www.myelomafrailtyscorecalculator.net/>). ^cBased on the combination of serum β2-microglobulin and albumin levels. Higher stages indicate more advanced disease. ^dBased on fluorescence in situ hybridization; high risk was defined as the presence of del(17p), t(4,14), and/or t(14,16). ^eIndeterminate includes patients with missing or unevaluable samples.

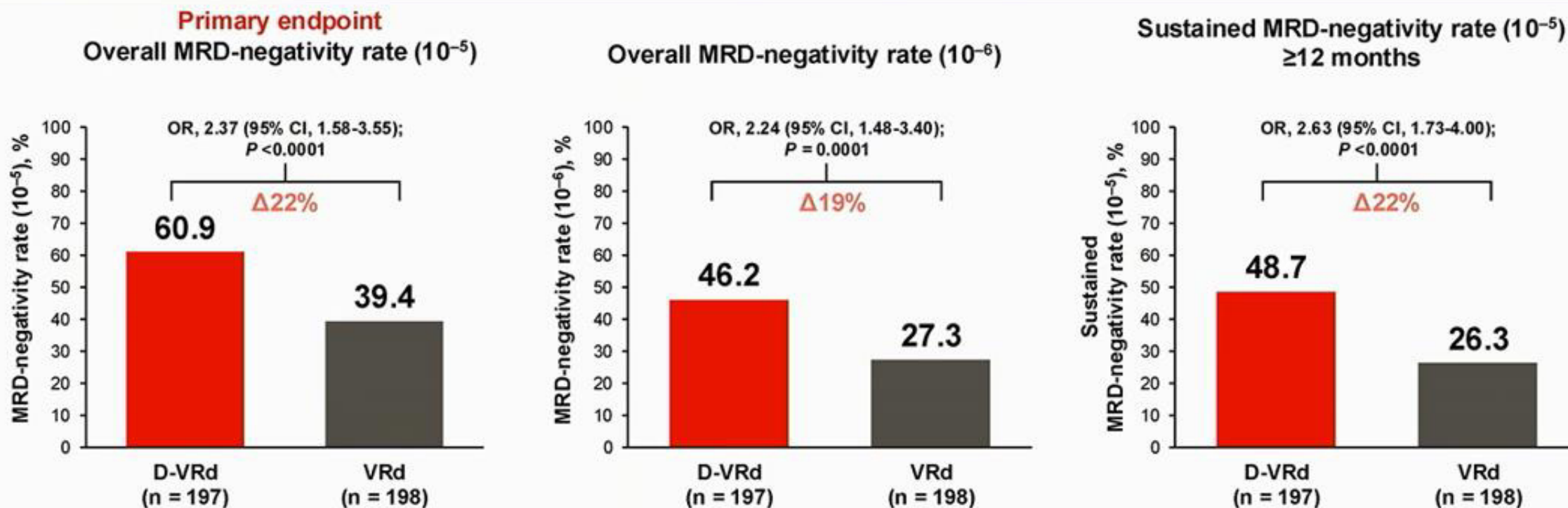


CEPHEUS: Patient Disposition (ITT Population)

Median follow-up: 58.7 months

	D-VRd	VRd
Randomized patients (ITT)	197	198
Number of patients treated	197	195
Median treatment duration, months	56.3	34.3
Patients who discontinued study treatment, ^a n (%)	95 (48.2)	128 (65.6)
Reason for treatment discontinuation, ^a n (%)		
Progressive disease	27 (13.7)	51 (26.2)
Adverse events	16 (8.1)	32 (16.4)
Death ^b	34 (17.3)	24 (12.3)
Death due to COVID-19	12 (6.1)	6 (3.1)
Other ^c	18 (9.1)	21 (10.8)

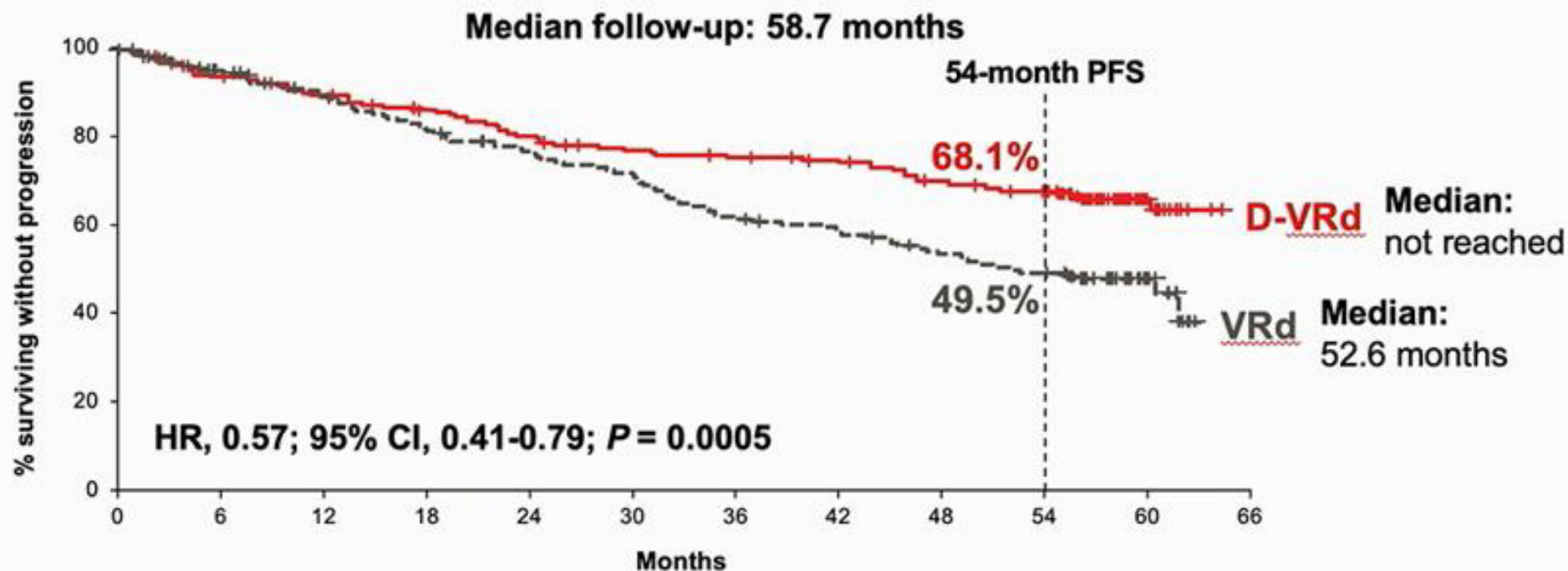
CEPHEUS: Overall and Sustained MRD-negativity Rates^a (ITT Population)



Daratumumab led to deeper MRD responses at 10^{-6} and a higher sustained MRD-negativity rate



CEPHEUS: PFS (ITT Population)

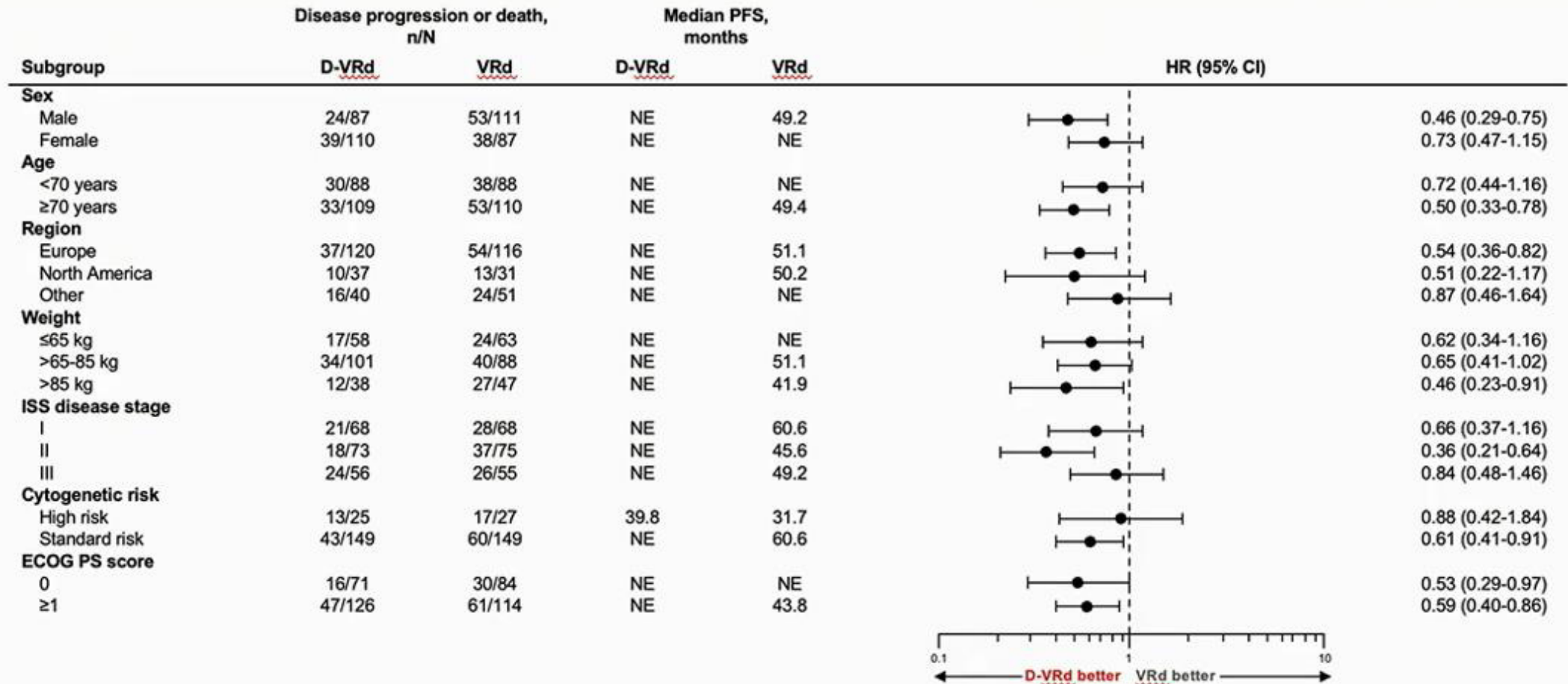


No. at risk	0	6	12	18	24	30	36	42	48	54	60	66
D-VRd	197	180	170	160	149	140	136	132	122	115	33	0
VRd	198	174	157	143	131	123	105	98	88	81	21	0

Daratumumab significantly improved PFS, with a 43% reduction in the risk of disease progression or death



CEPHEUS: PFS in Prespecified Subgroups (ITT Population)

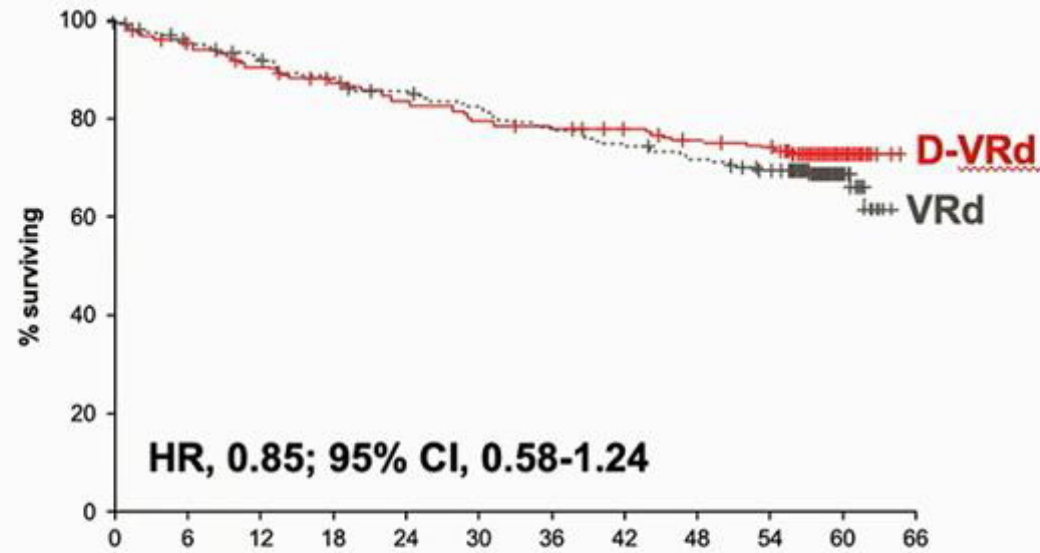


Daratumumab benefit was generally consistent across prespecified subgroups



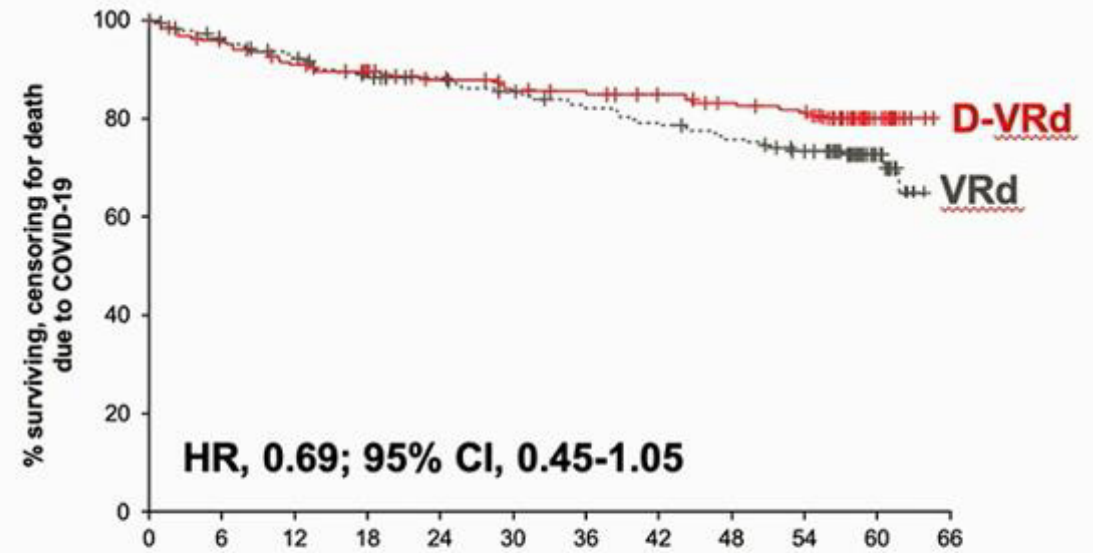
CEPHEUS: OS

OS (ITT population)



No. at risk	Months											
D-VRd	197	187	175	168	158	150	147	142	136	132	44	0
VRd	198	185	176	166	160	153	144	139	132	124	34	0

OS Censoring for death due to COVID-19



No. at risk	Months											
D-VRd	197	187	175	168	158	150	147	142	136	132	44	0
VRd	198	185	176	166	160	153	144	139	132	124	34	0

OS trended favorably for the daratumumab arm and further improved when censoring for death due to COVID-19



CEPHEUS: Safety^a

	<u>D-VRd</u> (n = 197)	<u>VRd</u> (n = 195)
Median (range) treatment duration, months	56.3 (0.1-64.6)	34.3 (0.5-63.8)
Any grade 3 or 4 TEAE, n (%)	182 (92.4)	167 (85.6)
TEAE leading to discontinuation of all study drugs, n (%)	15 (7.6)	31 (15.9)
Grade 5 non-COVID-19 <u>TEAE</u> , ^b n (%)	21 (10.7)	15 (7.7)
Grade 5 COVID-19 <u>TEAE</u> , ^{b,c} n (%)	12 (6.1)	6 (3.1)
Exposure-adjusted grade 5 TEAE rate, patient-months	0.39/100	0.31/100

- Comparable rate of grade 5 TEAEs, adjusting for a ~2-year difference in treatment duration
- The impact of COVID-19 on grade 5 TEAEs was greatest at the peak of the global pandemic

CEPHEUS: Safety^a

TEAE, n (%)	D-VRd (n = 197)		VRd (n = 195)			
	Any grade	Grade 3 or 4	Any grade	Grade 3 or 4		
HEMATOLOGIC						
Blood and lymphatic system disorders	163 (82.7)	126 (64.0)	126 (64.6)	98 (50.3)		
Neutropenia	110 (55.8)	87 (44.2)	76 (39.0)	58 (29.7)		
Thrombocytopenia	92 (46.7)	56 (28.4)	66 (33.8)	39 (20.0)		
Anemia	73 (37.1)	26 (13.2)	62 (31.8)	23 (11.8)		
NONHEMATOLOGIC						
Gastrointestinal disorder	157 (79.7)	41 (20.8)	159 (81.5)	40 (20.5)		
Diarrhea	112 (56.9)	24 (12.2)	115 (59.0)	18 (9.2)		
Constipation	75 (38.1)	4 (2.0)	82 (42.1)	5 (2.6)		
General disorders and administration-site conditions	159 (80.7)	40 (20.3)	147 (75.4)	28 (14.4)		
Peripheral edema	83 (42.1)	4 (2.0)	76 (39.0)	1 (0.5)		
Fatigue	63 (32.0)	18 (9.1)	60 (30.8)	16 (8.2)		
Psychiatric disorders	91 (46.2)	10 (5.1)	96 (49.2)	10 (5.1)		
Insomnia	63 (32.0)	4 (2.0)	63 (32.3)	2 (1.0)		
Infections	181 (91.9)	79 (40.1)	167 (85.6)	62 (31.8)		
Upper respiratory tract infection	78 (39.6)	1 (0.5)	64 (32.8)	1 (0.5)		
COVID-19	75 (38.1)	22 (11.2)	48 (24.6)	9 (4.6)		
Second primary malignancies	15 (7.6)	–	18 (9.2)	–		
	Any grade	Grade 2	Grade 3 or 4	Any grade	Grade 2	Grade 3 or 4
Peripheral sensory neuropathy	110 (55.8)	60 (30.5)	16 (8.1)	119 (61.0)	70 (35.9)	16 (8.2)

Safety data was consistent with the established safety profile of each individual drug



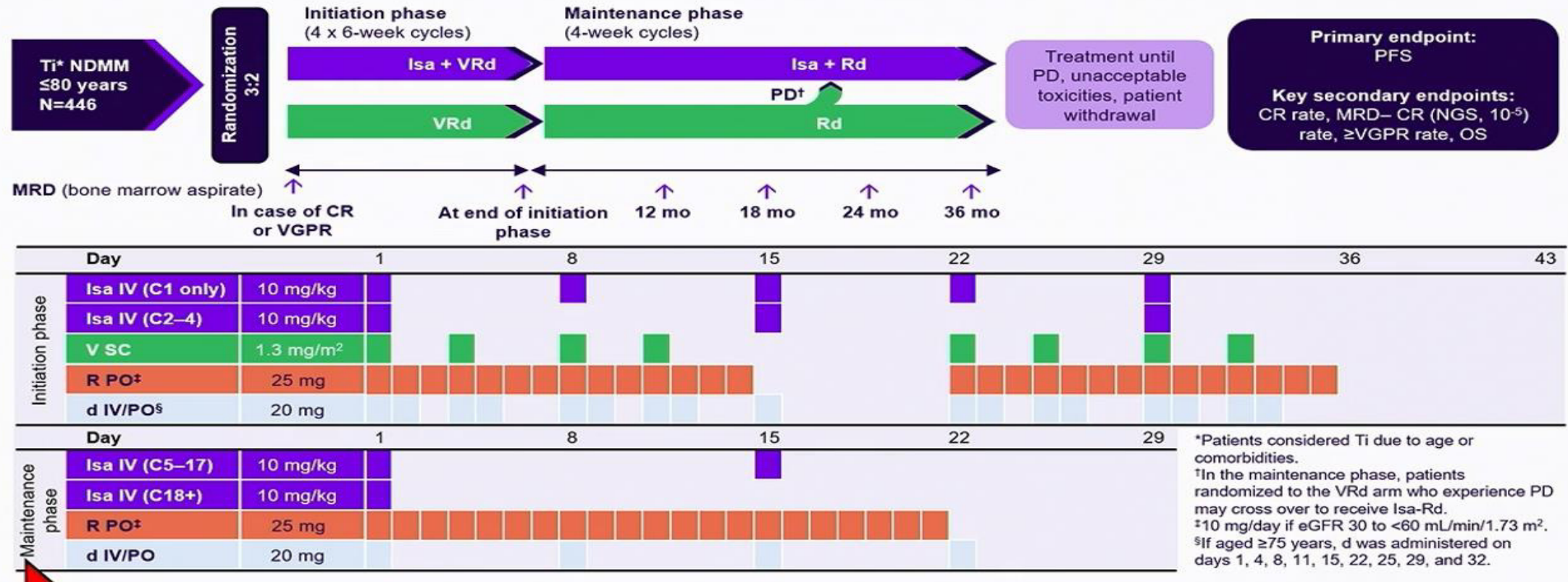
CEPHEUS: Conclusions

- CEPHEUS is the first phase 3 daratumumab trial with a primary endpoint of MRD negativity
- Adding daratumumab to VRd significantly improved depth and duration of response
 - Primary endpoint of overall MRD negativity (10^{-5}): 60.9% vs 39.4%
 - Overall MRD-negativity (10^{-6}): 46.2% vs 27.3%
 - Sustained MRD-negativity (10^{-5}): 48.7% vs 26.3%
- Risk of disease progression or death was 43% lower for D-VRd, HR: 0.57
- OS trended favorably for D-VRd, improving further when censored for COVID-19 deaths, HR: 0.69
- D-VRd quadruplet has the potential to improve clinical outcomes for TIE or transplant-deferred patients with NDMM who can tolerate bortezomib

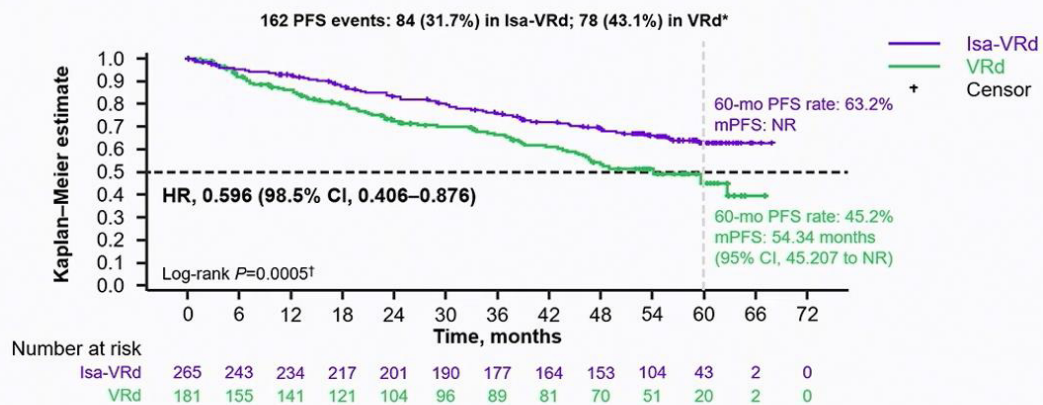
CEPHEUS complements MAIA (D-Rd), supporting a daratumumab-based quadruplet or triplet standard-of-care option across TIE patients and those deferring transplant

IMROZ Phase 3 Study Results of Isatuximab, Bortezomib, Lenalidomide, and Dexamethasone (Isa-VRd) Versus VRd for Transplant-Ineligible Patients With Newly Diagnosed Multiple Myeloma (IMROZ)

Thierry Facon,¹ Meletios-Athanasios Dimopoulos,² Xavier Leleu,³ Meral Beksac,^{4,5} Ludek Pour,⁶ Roman Hajek,⁷ Zhuogang Liu,⁸ Jiri Minarik,⁹ Philippe Moreau,¹⁰ Joanna Romejko-Jarosinska,¹¹ Ivan Spicka,¹² Vladimir Vorobyev,¹³ Michele Cavo,¹⁴ Hartmut Goldschmidt,¹⁵ Thomas Martin,¹⁶ Salomon Manier,¹⁷ Marie-France Brégeault,¹⁸ Sandrine Macé,¹⁸ Christelle Berthou,¹⁸ Robert Z. Orlowski¹⁹

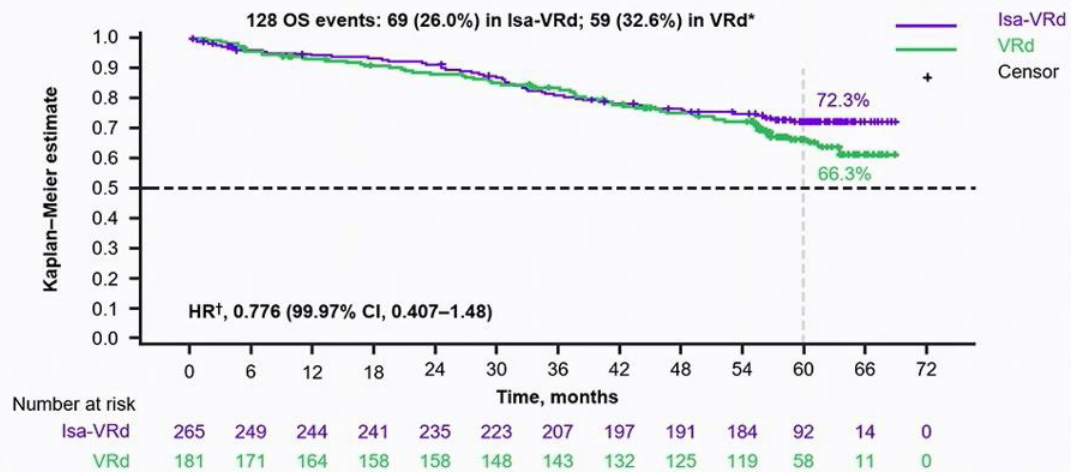


Primary endpoint met: Interim PFS analysis–IRC assessment in ITT population



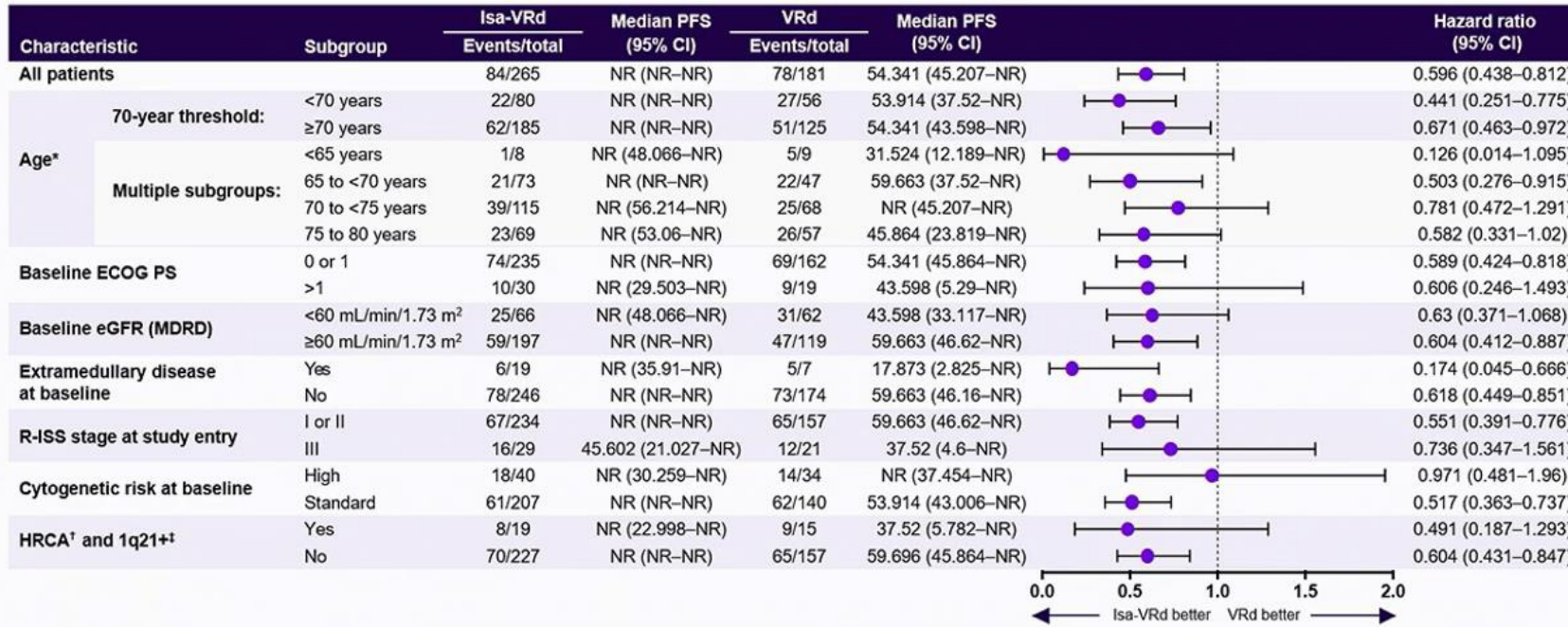
At a median follow-up of 5 years (59.7 months), Isa-VRd followed by Isa-Dd led to a statistically significant reduction in the risk of progression or death

Interim OS analysis–ITT population



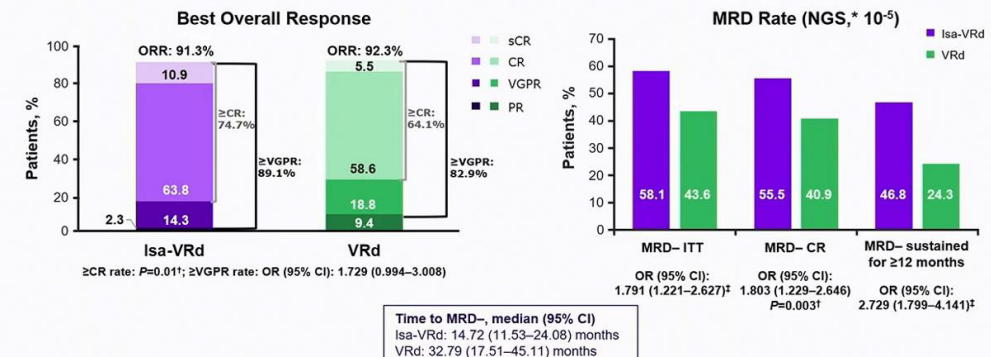
At a median follow-up of 5 years, OS is still immature; however, a favorable trend was observed for the Isa-VRd arm, with a 22.4% risk reduction compared with the VRd arm

PFS subgroup analyses



A PFS benefit was observed with Isa-VRd vs VRd across most subgroups, including some difficult-to-treat populations with negative prognostic factors

Depth of response in ITT population



Isa-VRd followed by Isa-Rd resulted in deep response rates, with a significant improvement in the MRD- CR rate, as well as higher rates of MRD- and sustained MRD- for ≥12 months

Safety summary (Safety population)

TEAE overview, n (%)	Isa-VRd (n=263)	VRd (n=181)
Median treatment duration	53.2 months	31.3 months
Patients still on treatment	125 (47.2)	44 (24.3)
Any TEAE	262 (99.6)	178 (98.3)
Grade ≥ 3 TEAEs	241 (91.6)	152 (84.0)
Grade 5 TEAEs*	29 (11.0)	10 (5.5)
Serious TEAEs	186 (70.7)	122 (67.4)
Any TEAE leading to definitive treatment discontinuation	60 (22.8)	47 (26.0)
Event rate per patient-year[†]		
Any TEAE	13.39	12.69
Grade ≥ 3 TEAEs	1.17	0.99
Grade 5 TEAEs	0.03	0.02
Serious TEAEs	0.37	0.43
Any TEAE leading to definitive treatment discontinuation	0.07	0.09

The exposure-adjusted incidence rates suggest the difference in incidence of grade 5 TEAEs between arms was largely driven by the difference in treatment exposure

Isatuximab Plus Bortezomib, Lenalidomide, and Dexamethasone (VRd) for Newly Diagnosed Multiple Myeloma (NDMM) Transplant-Ineligible Patients: Frailty Subgroup Analysis of IMROZ

Salomon Manier¹, Meletios-Athanasios Dimopoulos², Xavier P. Leleu³, Philippe Moreau⁴, Michele Cavo⁵, Hartmut Goldschmidt⁶, Robert Z. Orlowski⁷, Muriel Tron⁸, Christina Tekle⁹, Marie-France Brégeault,¹⁰ Andrea T. Shafer⁹, Meral Beksac^{11,12}, Thierry Facon^{1,13}

¹Department of Haematology, Lille University Hospital, Lille, France; ²Plasma Cell Dyscrasia Unit, Department of Clinical Therapeutics, National and Kapodistrian University of Athens, Greece; ³Service d'Hématologie et Thérapie Cellulaire, CHU and CIC Inserm 1402, Poitiers Cedex, France; ⁴Department of Hematology, University Hospital Hôtel-Dieu, Nantes, France; ⁵Dipartimento di Scienze Mediche e Chirurgiche, Università di Bologna, Italy; ⁶Department of Internal Medicine V, University of Heidelberg, Heidelberg, Germany; ⁷Department of Lymphoma and Myeloma, University of Texas MD Anderson Cancer Center, Houston, TX, USA; ⁸Sanofi, Vitry, France; ⁹Sanofi, Cambridge, MA, USA; ¹⁰Sanofi R&D, Vitry-sur-Seine, France; ¹¹Department of Hematology, Ankara University, Ankara, Turkey; ¹²Istinye University Ankara Liv Hospital, Ankara, Turkey; ¹³French National Academy of Medicine, Paris, France

Figure 2. (A) Depth of response and (B) MRD-negativity rates across the frail and non-frail subgroups

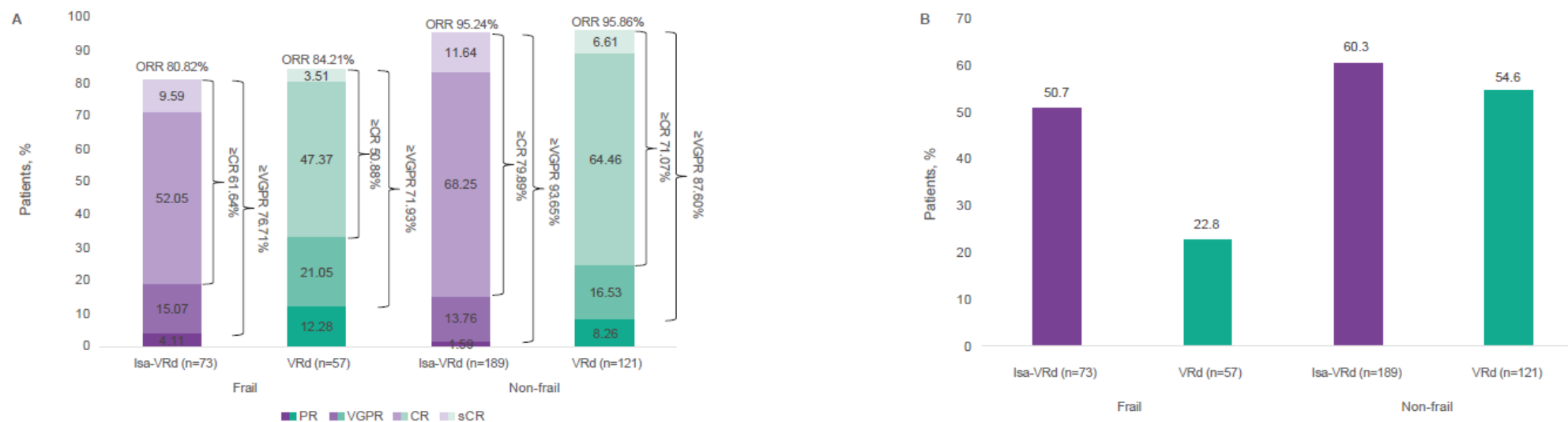


Table 2. Overview of TEAEs in the safety population by patient-year

	Frail (N=129)				Non-frail (N=309)			
	Isa-VRd (n=72)		VRd (n=57)		Isa-VRd (n=188)		VRd (n=121)	
	n (%)	Event rate per patient-year	n (%)	Event rate per patient-year	n (%)	Event rate per patient-year	n (%)	Event rate per patient-year
Patients with any TEAE	72 (100.0)	16.761	56 (98.25)	29.991	187 (99.47)	19.588	119 (98.35)	18.727
Patients with any grade ≥ 3 TEAE	66 (91.67)	2.221	49 (85.96)	3.248	172 (91.49)	1.832	100 (82.64)	2.141
Patients with any grade 5 TEAE*	9 (12.50)	0.975	5 (8.77)	1.979	20 (10.64)	0.509	5 (4.13)	0.416
Patients with any TEAE leading to definitive treatment discontinuation	21 (29.17)	0.957	20 (35.09)	0.965	39 (20.74)	0.530	27 (22.31)	0.525
Patients with any treatment-emergent SAE [†]	56 (77.78)	1.051	47 (82.46)	1.340	130 (69.15)	0.989	74 (61.16)	1.296

Table 3. Most common grade ≥ 3 TEAEs within the frail subgroup

Grade ≥ 3 TEAEs, n (%)	Isa-VRd (n=72)	VRd (n=57)
Neutropenia	28 (38.89)	9 (15.79)
Pneumonia	18 (25.00)	12 (21.05)
Cataract	9 (12.50)	3 (5.26)
Diarrhea	7 (9.72)	5 (8.77)
COVID-19 pneumonia	7 (9.72)	1 (1.75)
Fall	6 (8.33)	2 (3.51)
Thrombocytopenia	6 (8.33)	9 (15.79)
Fatigue	4 (5.56)	1 (1.75)

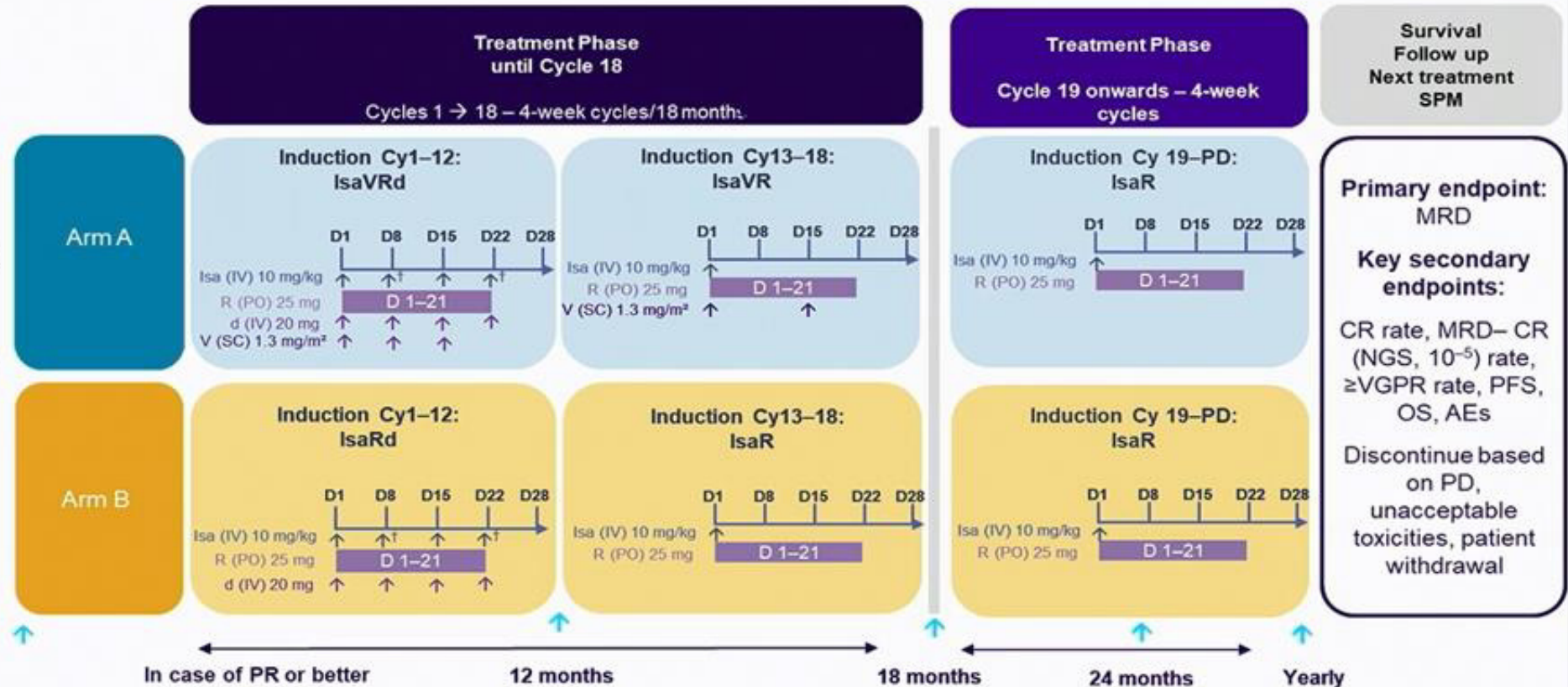
Isatuximab plus lenalidomide and dexamethasone with weekly bortezomib versus isatuximab plus lenalidomide and dexamethasone in newly diagnosed transplant ineligible Multiple Myeloma. The BENEFIT (IFM 2020-05) study

Xavier Leleu¹ and Cyrille Hulin², Lambert Jerome³, Arthur Bobin¹, Aurore Perrot⁴, Lionel Karlin⁵, Roussel Murielle⁶, Lydia Montes⁷, Brieuc Chere⁸, Thomas Chalopin⁹, Borhane Slama¹⁰, Marie-Lorraine Chretien¹¹, Kamel Laribi¹², Claire Dingremont¹³, Christophe Roul¹⁴, Clara Mariette¹⁵, Sophie Rigaudeau¹⁶, Claire Calmettes¹⁷, Mamoun Dib¹⁸, Mourad Tiab¹⁹, Laure Vincent²⁰, Jacques Delaunay²¹, Alberto Santagostino²², Margaret Macro²³, Emmanuelle Bourgeois²⁴, Frederique Orsini-Piocelle²⁵, Julie Gay²⁶, Benoit Bateau²⁷, Noemie Bigot³, François Vergez²⁸, Pierre Lebreton²⁹, Reza Tabrizi³⁰, Agathe Waultier-Rascalou³¹, Laurent Frenzel³², Ronan Le Calloch³³, Emilie Chalayer³⁴, Thorsten Braun³⁵, Florence Lachenal³⁶, Selim Corm³⁷, Celine Kennel³⁸, Rakiba Belkhir³⁹, Jean-Sebastien Bladé⁴⁰, Bertrand Joly⁴¹, Valentine Richez-Olivier⁴², Helene Demarquette⁴³, Daniela Robu-Cretu⁴⁴, Laurent Garderet⁴⁵, Muriel Newinger-Porte⁴⁶, Amine Kasmi⁴⁷, Bruno Royer⁴⁸, Olivier Decaux⁴⁹, Bertrand Arnulf⁴⁸, Karim Belhadj⁵⁰, Cyrille Touzeau⁵¹, Mohamad Mohty⁵², Salomon Manier⁵³, Philippe Moreau⁵¹, Hervé Avet-Loiseau²⁸, Jill Corre²⁸, Thierry Facon⁵³

Study design: Isa-VRd vs Isa-Rd in Ti NDMM

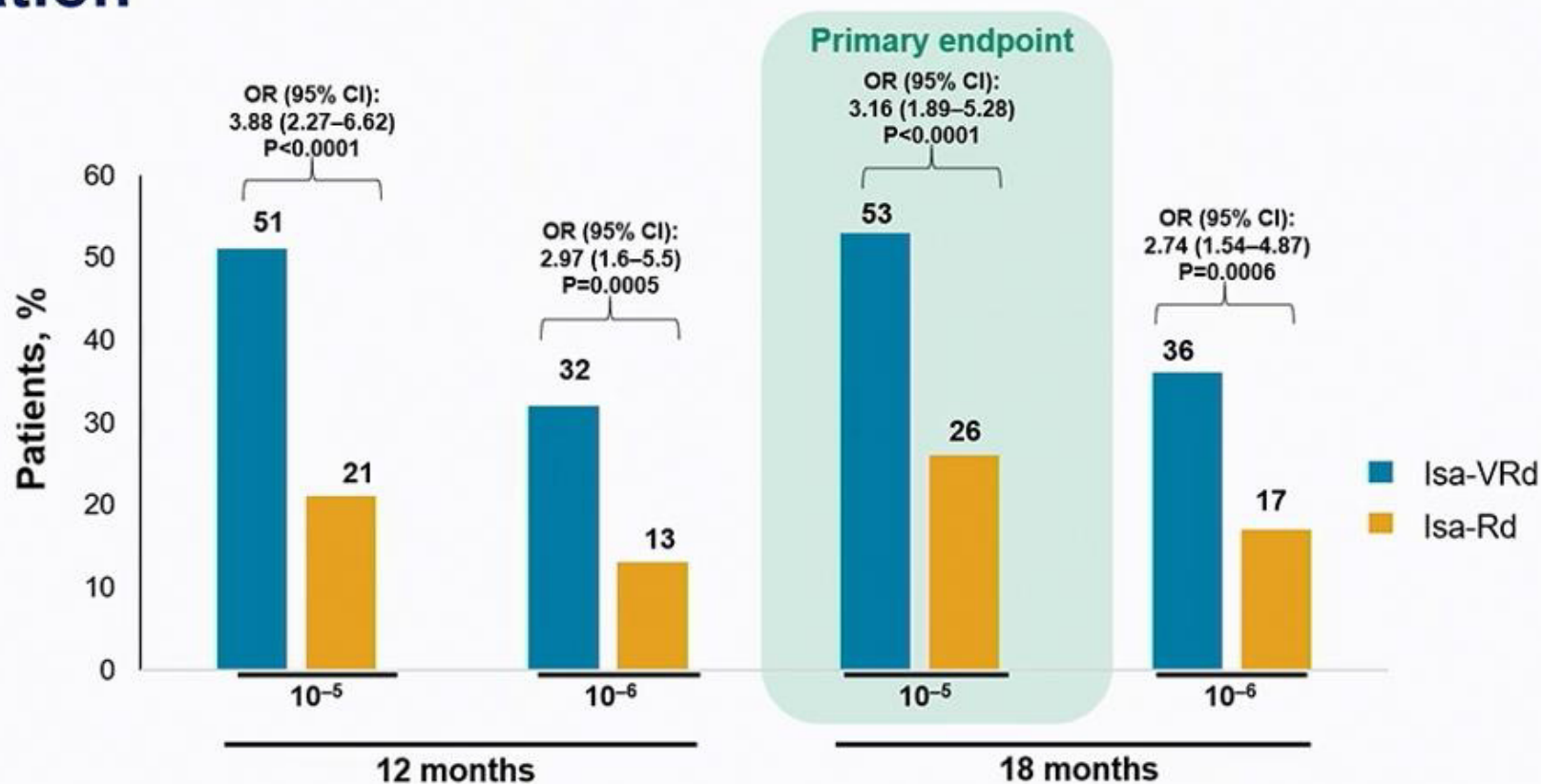
M18 Primary objective
(MRD at 10^{-5})

- N=270**
- Randomization 1:1
 - Stratified by:
 - Age: <75 and \geq 75yrs
 - Cytogenetic result by FISH (Modified Perrot score)
 - Center



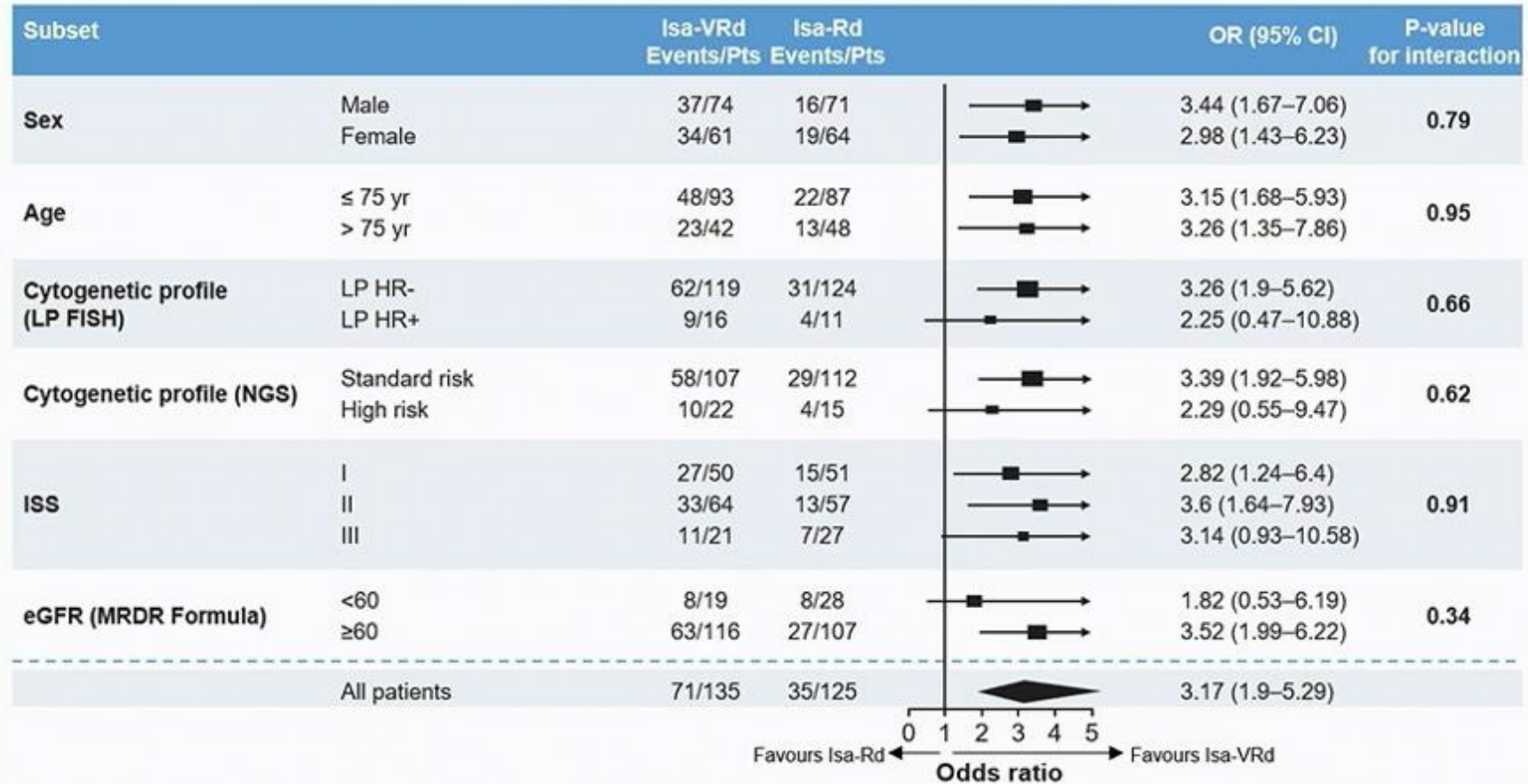
[†]Cycle 1 only. CR, complete response; Cy, cycle; d, dexamethasone; D, day; Isa, isatuximab; M, month; MRD, minimal residual disease; NDMM, newly diagnosed multiple myeloma; NGS, next generation sequencing; OS, overall survival; PD, progressive disease; PFS, progression-free survival; PR, partial response; R, lenalidomide; SPM, second primary malignancy; Ti, transplant-ineligible; V, bortezomib; VGPR, very good partial response.

Primary endpoint: MRD^{-*} rate at 18 months – ITT population



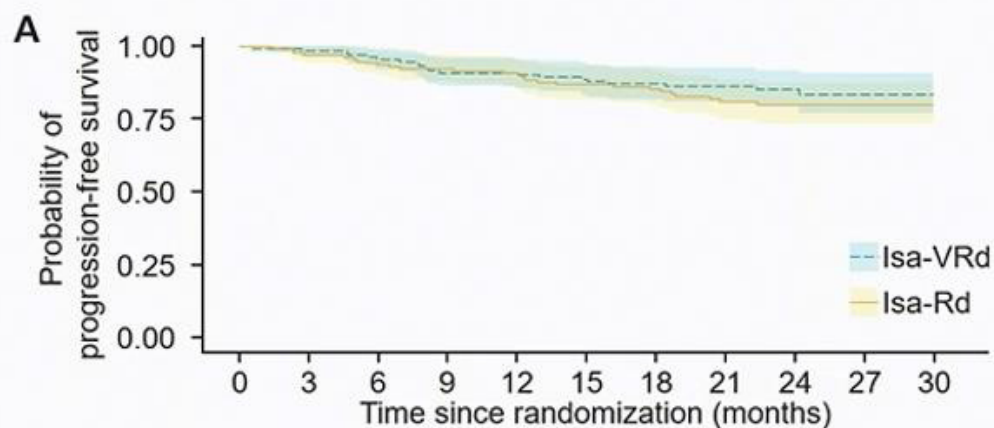
Isa-VRd resulted in deep response rates, with a significant improvement in the MRD at 12 and 18 months, and at 10⁻⁵ and 10⁻⁶ in the ITT population

MRD subgroup analyses



A consistent MRD benefit was observed with Isa-VRd vs Isa-Rd across most subgroups, including difficult-to-treat populations with negative prognostic factors

Survival analysis-IRC assessment in ITT population

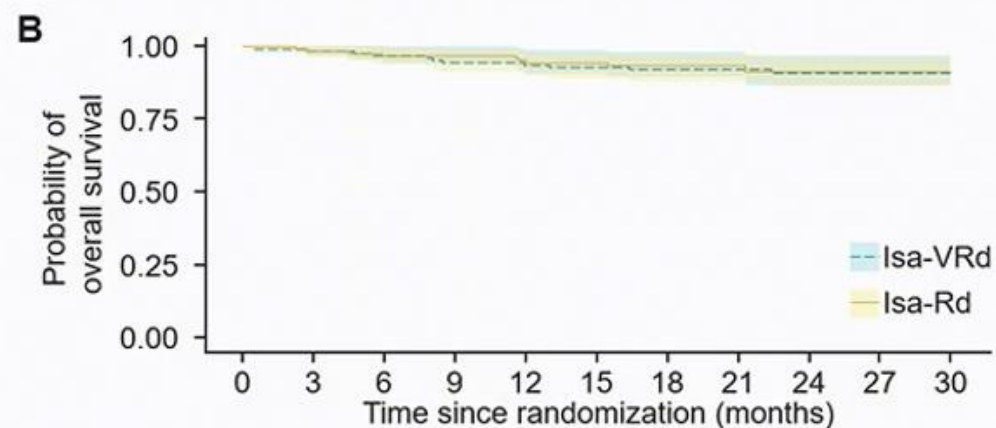


Isa-VRd	135	131	127	121	119	117	114	87	56	11	0
Isa-Rd	135	128	123	121	117	112	108	83	52	14	0

Estimated 24 months PFS

85.2% (95%CI 79.2–91.7) for Isa-VRd

80.0% (95% CI 73.3–87.4) for Isa-Rd



Isa-VRd	135	131	129	124	122	118	115	88	56	11	0
Isa-Rd	135	130	125	123	118	115	112	88	53	14	0

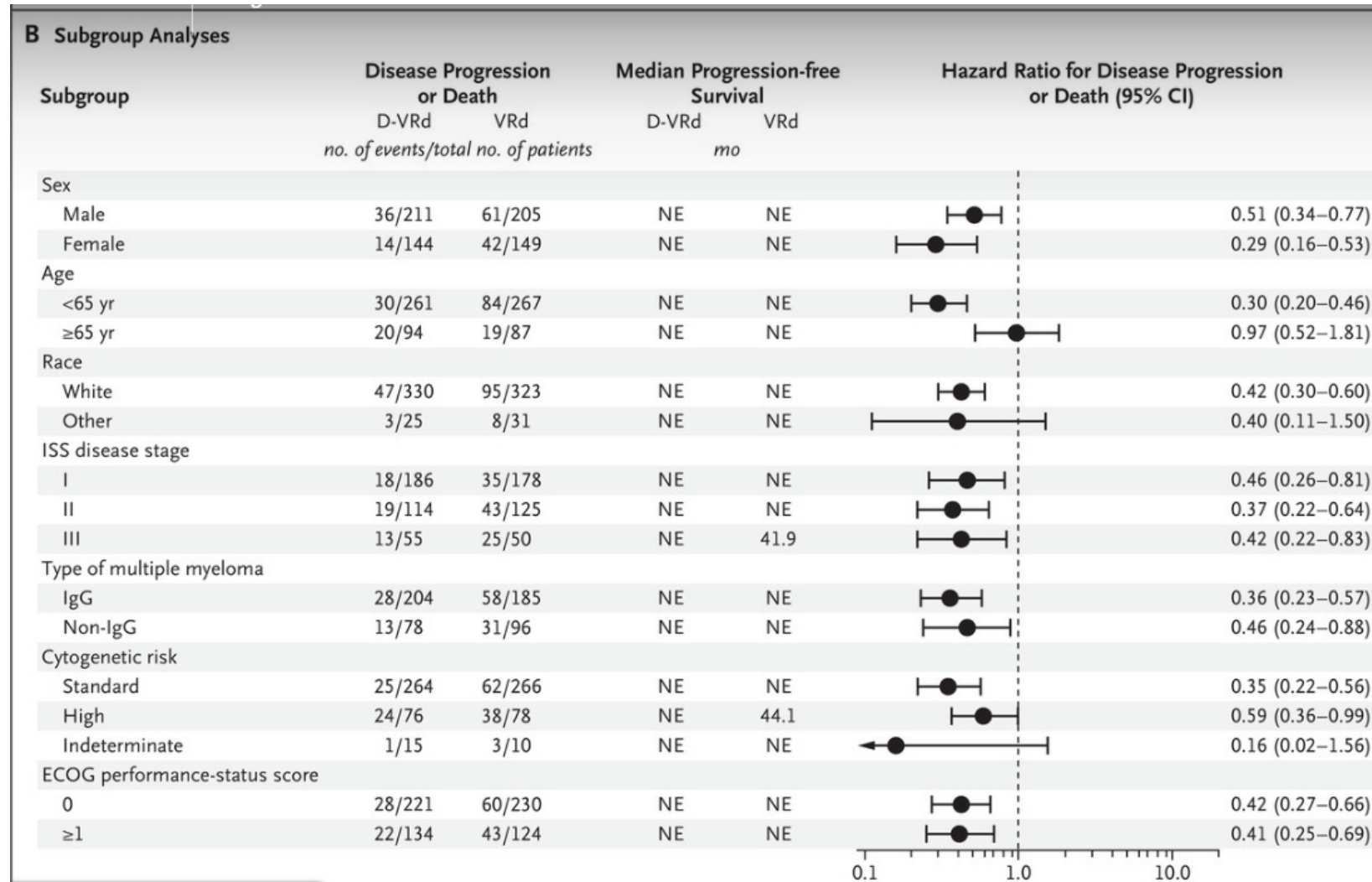
Estimated 24 months OS

91.1% (95%CI 86.1–96.4) for Isa-VRd

91.5% (95%CI 86.5–96.8) for Isa-Rd

At a median follow-up of 23.5 months, survival is still immature

Perseus subgroup analysis



Daratumumab Plus Bortezomib, Lenalidomide, and Dexamethasone in Transplant-eligible Patients With Multiple Myeloma: A Pooled Analysis of Patients Aged ≥ 65 Years From Both PERSEUS and GRIFFIN Studies

- ≥ 65 yrs 25.5% of pts in PERSEUS (D-VRd, 94/355; VRd, 87/354) and 27.1% of pts in GRIFFIN (D-VRd, 28/104; VRd, 28/103).
- aged ≥ 65 yrs, 9.0% in D-VRd and 13.0% in VRd
- Median PFS was not reached in either treatment group or study.
- Stratified by ISS and cytogenetic risk and not censoring pts on basis of 2 consecutive missing disease assessments,
- PFS HRs favored D-VRd in PERSEUS (HR 0.61 [95% CI 0.32-1.14]), GRIFFIN (HR 0.33 [95% CI 0.06-1.76]), and the pooled dataset (HR 0.56 [95% CI 0.31-1.01]).
- Rates of MRD neg (10^{-5}) were also higher with D-VRd vs VRd in PERSEUS (67.0% vs 49.4%; OR 2.08 [95% CI 1.14-3.79]), GRIFFIN (64.3% vs 17.9%; OR 6.40 [95% CI 1.80-22.75]), and the pooled dataset (66.4% vs 41.7%; OR 2.75 [95% CI 1.61-4.71]).