



lymphoma & myeloma

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HIGHLIGHTS IN MULTIPLE MYELOMA

HOW TO TREAT TRIPLE- OR PENTA-REFRACTORY MULTIPLE MYELOMA?

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CONFLICT OF INTEREST AND FUNDING

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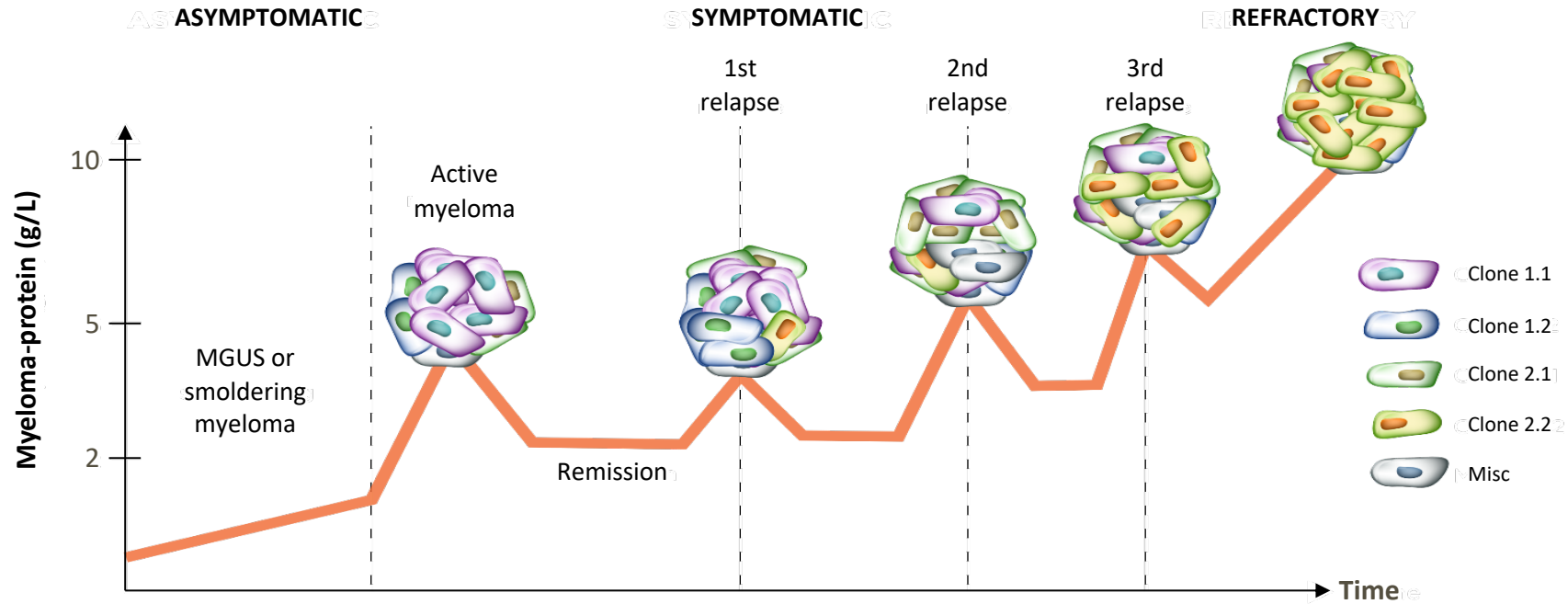
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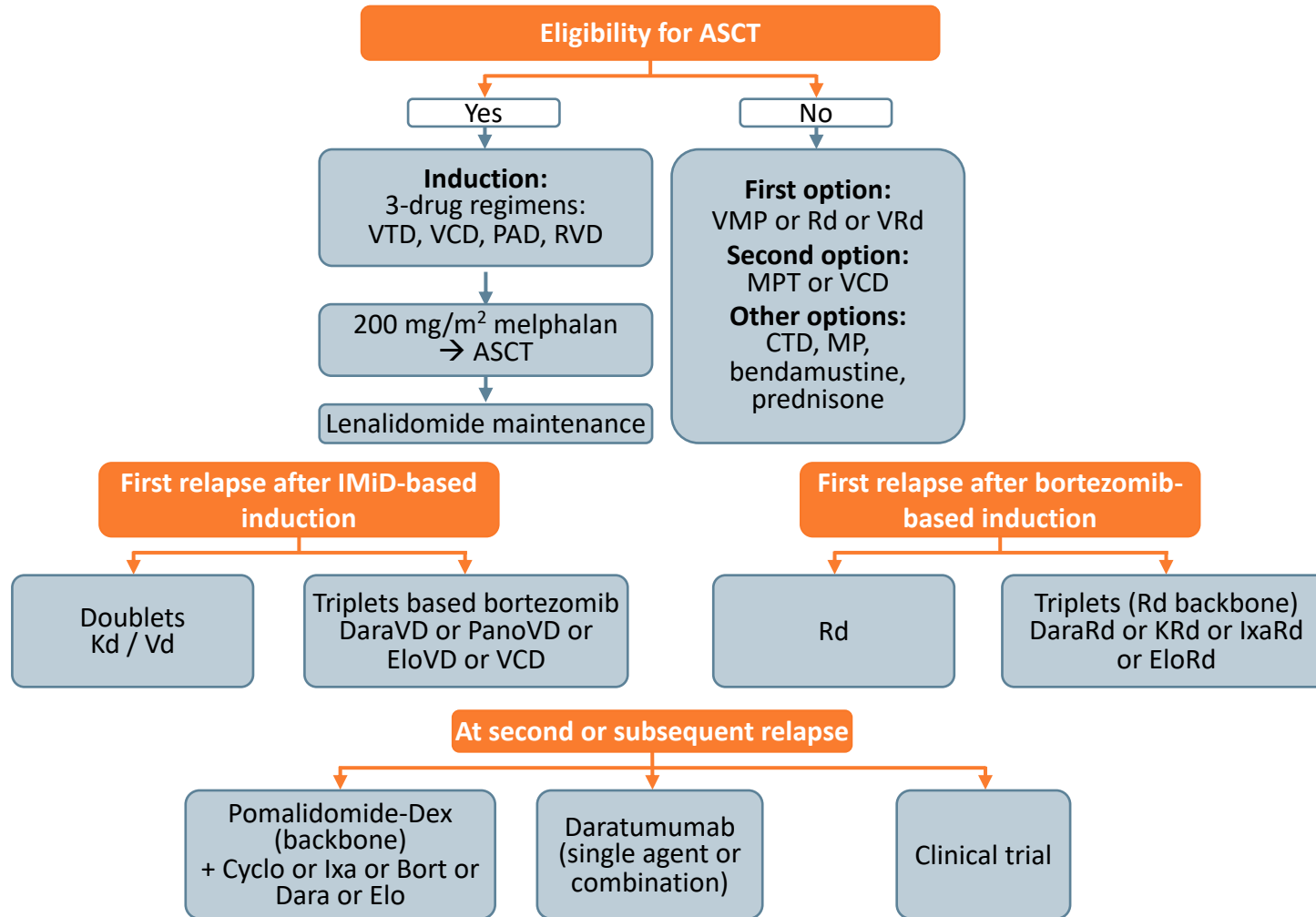
POOR PROGNOSIS AND HIGH RISK OF RELAPSE IN RELAPSED/REFRACTORY MULTIPLE MYELOMA (RRMM) DESPITE ADVANCES IN TREATMENT

MULTIPLE MYELOMA (MM) DISEASE EVOLUTION



SUMMARY OF MANAGEMENT OF MM PATIENTS

ESMO 2017 GUIDELINES



- After 2nd and especially 3rd line of therapy, most MM patients have been exposed to proteasome inhibitors, IMiDs and anti-CD38 monoclonal antibodies

- **Is this population an unmet medical need?**

THE MAMMOTH STUDY

Monoclonal Antibodies in MM: Outcomes After Therapy

PATIENTS FROM 14 US ACADEMIC INSTITUTIONS

Study population



Active MM and refractory to daratumumab or isatuximab, alone or in combination (index regimen)

At least 4 weeks of CD38 mAB-containing index **regimen treatment**

Evidence of PD while on index regimen or within 60 days of last dose^a



Excluded: patients with ongoing response to CD38 mAB or discontinued due to reasons other than PD



Retrospective analysis

- Patient characteristics
- Disease characteristics
- All therapies administered before and after T₀
- Survival status
- High-risk cytogenetics

^aAs defined by International Myeloma Working Group Response Criteria

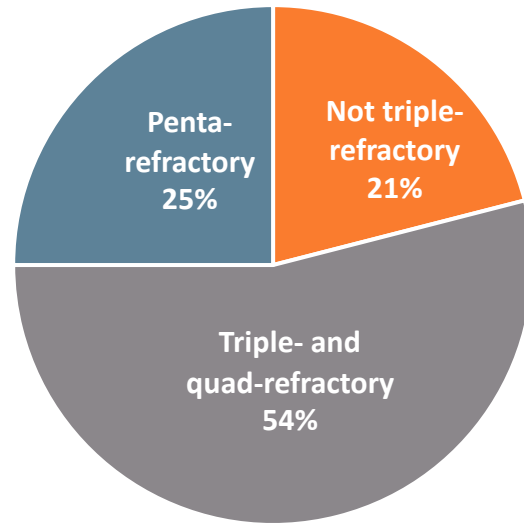
CD38 mAB, CD38-targeted monoclonal antibodies; MM, multiple myeloma; PD, progressive disease; T₀, time at which patients met PD criteria.

Gandhi UH, et al. Leukemia. 2019;33:2266-2275

MEDIAN OVERALL SURVIVAL WAS <1 YEAR IN ALL REFRACTORY STATUS GROUPS

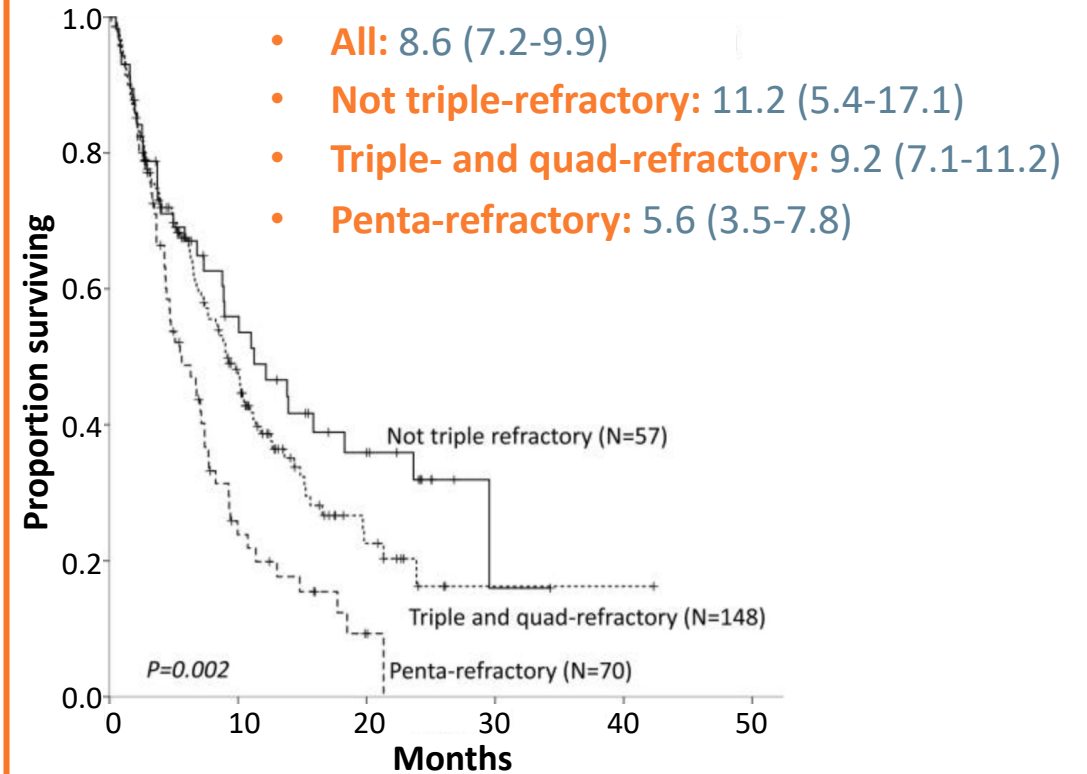
MOST PATIENTS ANALYSED WERE TRIPLE- OR QUAD-REFRACTORY (54%)

Refractory group status



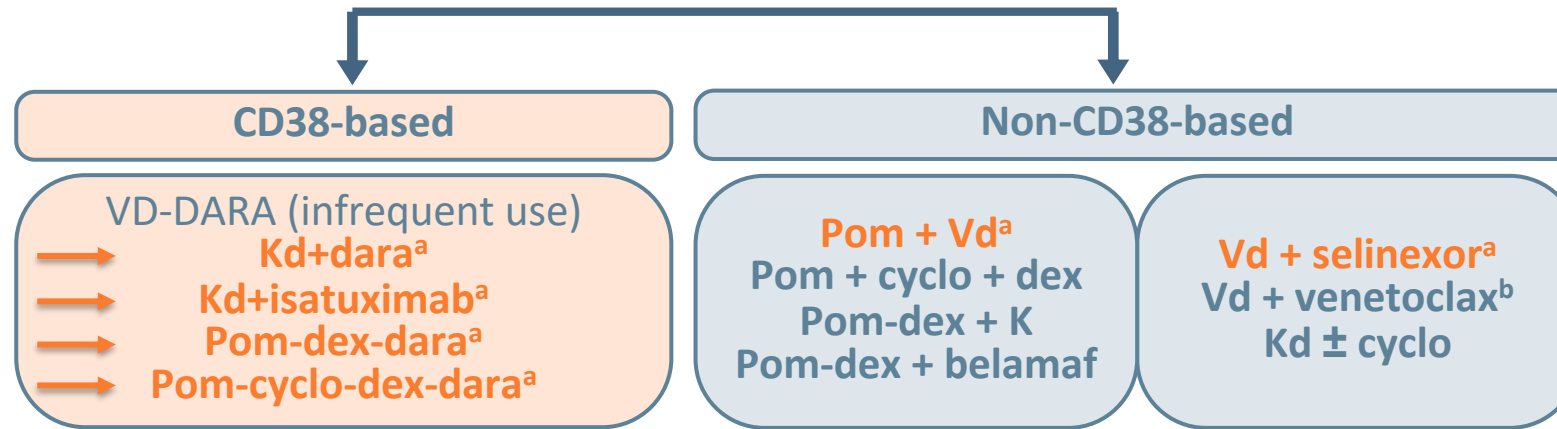
- **Most patients (93%) were daratumumab-refractory; 7% were isatuximab-refractory**
- **Most patients were refractory to lenalidomide (77%), pomalidomide (65%), and bortezomib (68%)**

Median OS, months (95% CI) from T₀



WHAT HAPPENS AT THIRD LINE AND BEYOND?

First relapse after PI and/or IMiD-based induction, LEN-refractory



2nd and subsequent relapses

Pom-dex + isatuximab
Pom-dex + elotuzumab

Selinexor
Melflufen

Belantamab mafodotin

Cell therapy
CAR-T cells

Pom-dex + isa or elo are approved but according to the label, they will move to earlier relapses if available

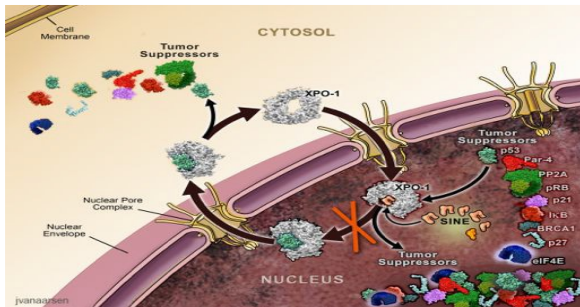
^a Based on phase 3 randomised trials. ^b Venetoclax-based combinations for patients with t(11;14) and/or overexpression of bcl-2.

Cyclo, cyclophosphamide; dara, daratumumab; dex, dexamethasone; elo, elotuzumab; IMiD, immunomodulatory drug; isa, isatuximab; K, carfilzomib; Kd, carfilzomib, dexamethasone; LEN, lenalidomide; PI, protease inhibitor; pom, pomalidomide; Vd, bortezomib, dexamethasone

SELINEXOR AND MELFLUFEN

XPO1-INHIBITOR SELINEXOR IN RRMM

First-in-class, oral **Selective Inhibitor of Nuclear Export (SINE)** that inhibits XPO1 and activates tumour suppressor proteins & reduces oncoproteins¹



- Cancer cells (and MM) overexpress XPO1, causing increased export of tumour suppressors and growth regulatory proteins from the nucleus
- Selinexor inhibits XPO1 mediated nuclear-cytoplasmic transport by transiently binding to the XPO1 cargo binding site
- Accumulation of tumour suppressors in the nucleus amplifies the natural apoptotic function in cancer cells with damaged DNA

STORM study²

- 122 patients received **selinexor-dex** after a **median of 7 prior lines of therapy** (68% penta-refractory and 100% three-drug class refractory)
- **ORR 26%**, including two patients in stringent CR
 - Minimal response or better observed in 39% → sustained across different subgroups
- **Median PFS of 3.7 months and OS of 8.6 months**
- **Safety profile:** thrombocytopenia (58% grade 3-4) and some GI events (nausea and anorexia, grade 3 in 5-10%)

Selinexor-dex is approved by FDA in US and EMA in EU

CR, complete response; dex, dexamethasone; EMA, European Medicines Agency; XPO1, exportin 1; FDA, Food and Drug Administration; G, grade; GI, gastro-intestinal; MM, multiple myeloma; OS, overall survival; ORR, overall response rate; PFS, progression-free survival; RRMM, relapsed/refractory multiple myeloma

1. Tai YT, et al. Leukemia. 2014;28:155-165; 2. Chari A, et al. N Engl J Med. 2019;381:727-738

STOMP: SELINEXOR PLUS POM-DEX IN RRMM PATIENTS

- After the phase 1 part, the **RP2D was selinexor 60 mg qw plus Pom and Dex** at conventional doses in 4-weeks cycles
- 65 patients (20 at the RP2D) were included after a **median of 3 prior lines of therapy**, all len-exposed and 80% len-refractory; 90% bortezomib-exposed; 50% carfilzomib-exposed and 20% dara-exposed and refractory

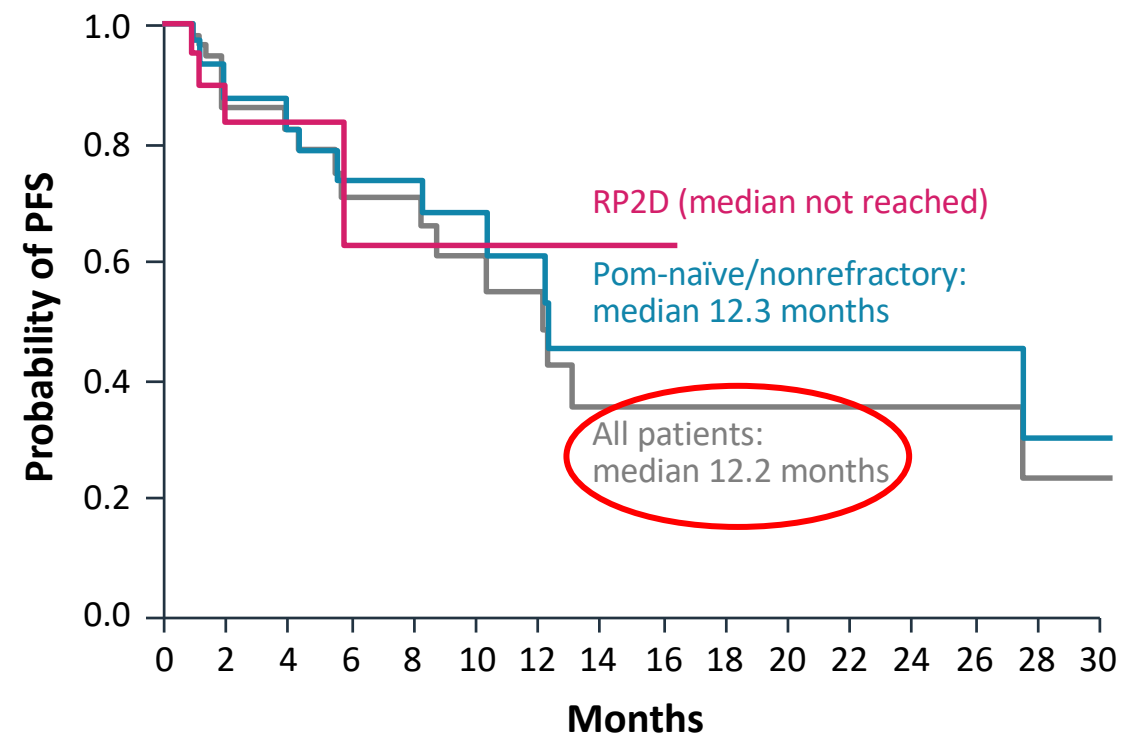
Clinical response

	N	ORR (%)	CBR (%)
POM naive or nonrefractory	46	25 (54)	33 (72)
POM refractory	14	5 (36)	9 (64)
RP2D: selinexor 60 mg qw + POM 4 mg	20	12 (60)	15 (75)

Safety

n (%)	Any grade	Grade 3/4
Neutropenia	38 (60)	34 (54)
Thrombocytopenia	34 (54)	20 (32)
Nausea	38 (60)	1 (2)
Decreased appetite	28 (44)	1 (2)
Fatigue	32 (51)	6 (10)

Progression-free survival



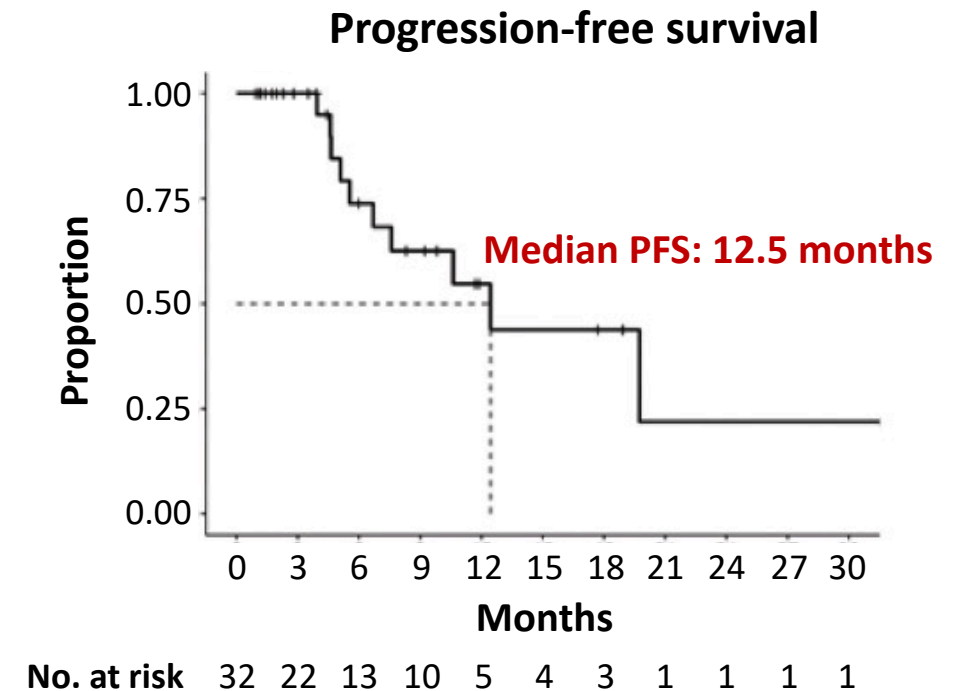
SELINEXOR PLUS DARA-DEX IN RRMM PATIENTS

- After the phase 1 part, the **RP2D was selinexor 100 mg weekly plus Dex and Dara** at conventional doses in 4-weeks cycles
- 34 patients were included after a median of 3 prior lines, 65% len-refractory; 85% PI-refractory; **6% dara-exposed and refractory**

Group	No. of patients	No. of patients (%)			
		ORR	CBR	VGPR	PR
Overall	32	22 (69)	26 (81)	11 (34)	11 (34)
Daratumumab-naïve	30	22 (73)	26 (87)	11 (37)	11 (37)
Lenalidomide-refractory	20	13 (65)	15 (75)	6 (30)	7 (35)
Bortezomib-refractory	19	13 (68)	16 (84)	5 (26)	8 (42)
Pomalidomide-refractory	10	5 (50)	8 (80)	2 (20)	3 (30)
Bortezomib/lenalidomide-refractory	16	11 (69)	13 (81)	4 (25)	7 (44)

Patients with dara-refractory disease did not respond

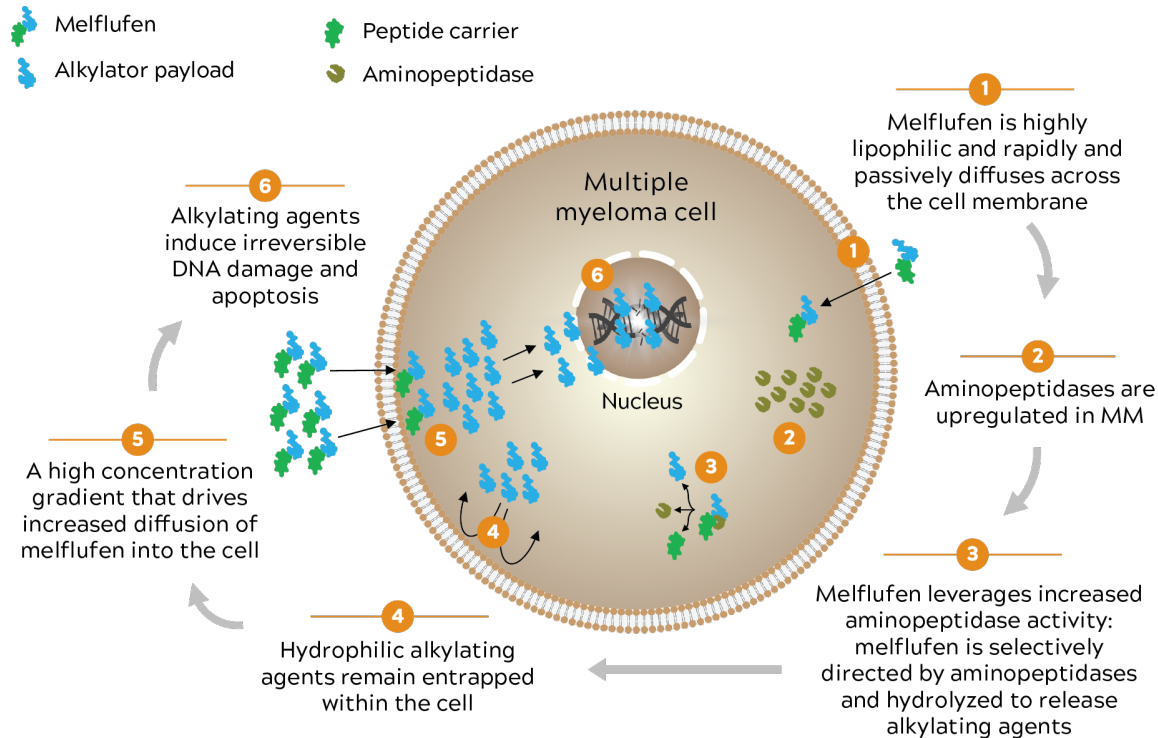
	Any grade	Grade 3/4
Neutropenia	50%	26.5%
Thrombocytopenia	70.6%	47%
Nausea	70.6%	8.8%
Decreased appetite	35.3%	-
Fatigue	61.8%	17.6%



CBR, clinical benefit rate; Dara, daratumumab; Dex, dexamethasone; len, lenalidomide; ORR, overall response rate; PFS, progression-free survival; PI, proteasome inhibitor; PR, partial response; RP2D, recommended phase 2 dose; RRMM, relapsed/refractory multiple myeloma; VGPR, very good partial response

MELFLUFEN IN RRMM

Melphalan flufenamide (melflufen) is an investigational first-in-class peptide-drug conjugate (PDC) that targets aminopeptidases and rapidly releases alkylating agents into tumour cells.¹⁻⁵



In the pivotal, phase 2, HORIZON study, **melflufen plus dexamethasone showed clinically meaningful efficacy and a safety profile** characterised primarily by clinically manageable haematologic AEs in patients with heavily pretreated and poor-risk RRMM.⁶

Outcome ⁶	Overall Population (N=157)
ORR (95% CI), %	29 (22-37)
OS, median (95% CI), months	11.6 (9.3-15.4)
PFS, median (95% CI), months	4.2 (3.4-4.9)
DOR (≥PR), median (95% CI), months	5.5 (3.9-7.6)

At ASH 2020, Melflufen has demonstrated to maintain the efficacy in:

- EMD
- Patients with HR CA (especially +1q)⁷
- Patients exposed and/or refractory to melphalan

Melflufen is approved by FDA

Mateos MV, et al. ASH 2020 #3237

AE, adverse event; ASH, American Society of Hematology; CI, confidence interval; DOR, duration of response; EMD, extramedullary disease; FDA, Food and Drug Administration; HR CA, high-risk cytogenetic abnormalities; MM, multiple myeloma; ORR, overall response rate; OS, overall survival; PFS, progression-free survival; PR, partial response; RRMM, relapsed/refractory multiple myeloma

1. Chauhan D, et al. Clin Cancer Res. 2013;19:3019-3031; 2. Ray A, et al. Br J Haematol. 2016;174:397-409; 3. Wickström M, et al. Oncotarget. 2017;8:66641-66655; 4. Wickström M, et al. Invest New Drugs. 2008;26:195-204; 5. Strese S, et al. Biochem Pharmacol. 2013;86:888-895; 6. Richardson PG, et al. EHA 2020. Abstract EP945. Poster presentation; 7. Mateos MV, et al. ASH 2020. Abstract #3237

ANCHOR: MELFLUFEN PLUS DEX AND DARA OR BORTEZOMIB

Study design – daratumumab cohort

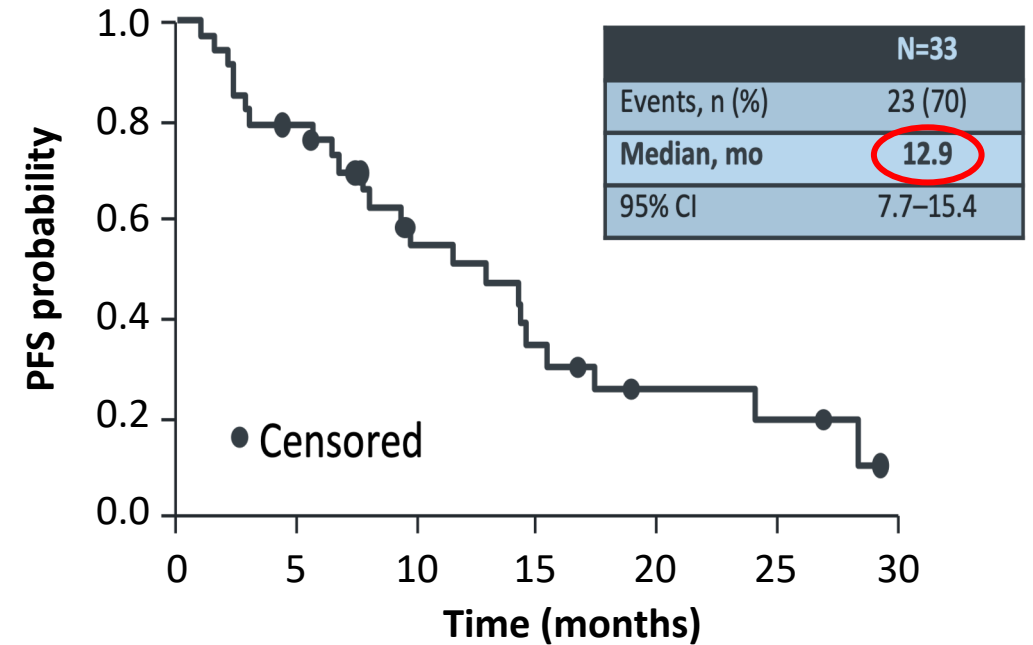
- 33 patients with median of 2 prior lines of therapy (36% double-refractory; 64% IMiD refractory) received 28-day treatment cycles until PD or unacceptable toxicity
 - Malflufen (iv):** 40/30/20 mg on Day 1
 - Daratumumab (iv):** 16 mg/kg on Days 2/1, 8, 15, 22 (cycles 1/2), Days 1 and 15 (cycles 3-6), and Day 1 from cycle 7 onward
 - Dexamethasone (po):** 40 mg weekly

Subgroup	Best confirmed response (n)							Patients (%)	
	>CR	VGPR	PR	MR	SD	PD	NA	ORR	CBR
Melflufen 30 mg (n=6)	0	4	1	0	0	0	1 ^a	83	83
Melflufen 40 mg (n=27)	2	6	11	1	2	1	4 ^b	70	74
Total (N=33)	2	10	12	1	2	1	5	73	76

^a 1 patient had unconfirmed PD in 30 mg group

^b 4 patients had unconfirmed responses in the 40 mg group (2 PD, 1 SD, 1 PR)

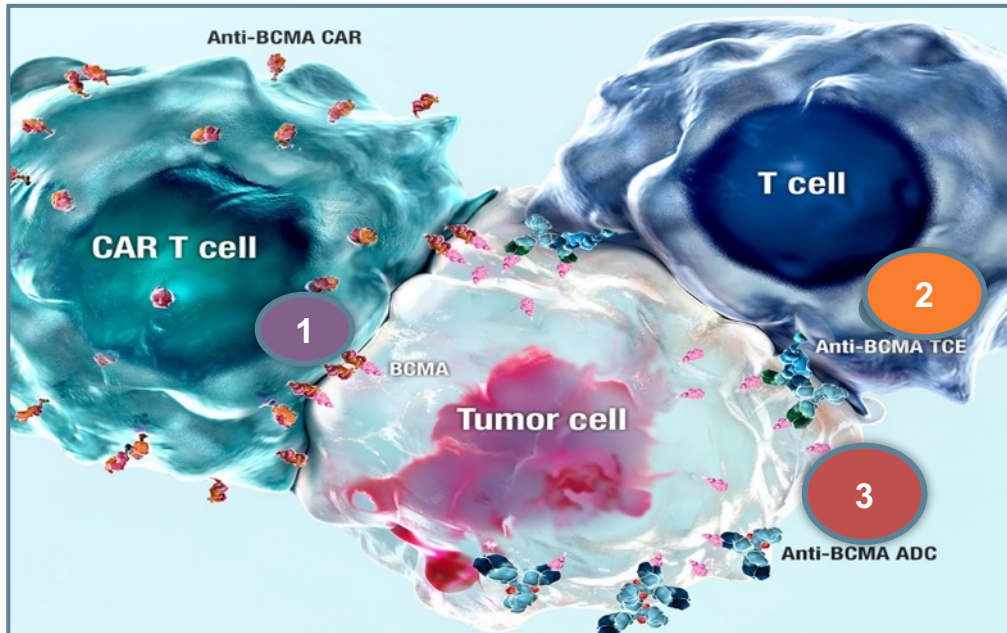
Progression-free survival



Safety profile:

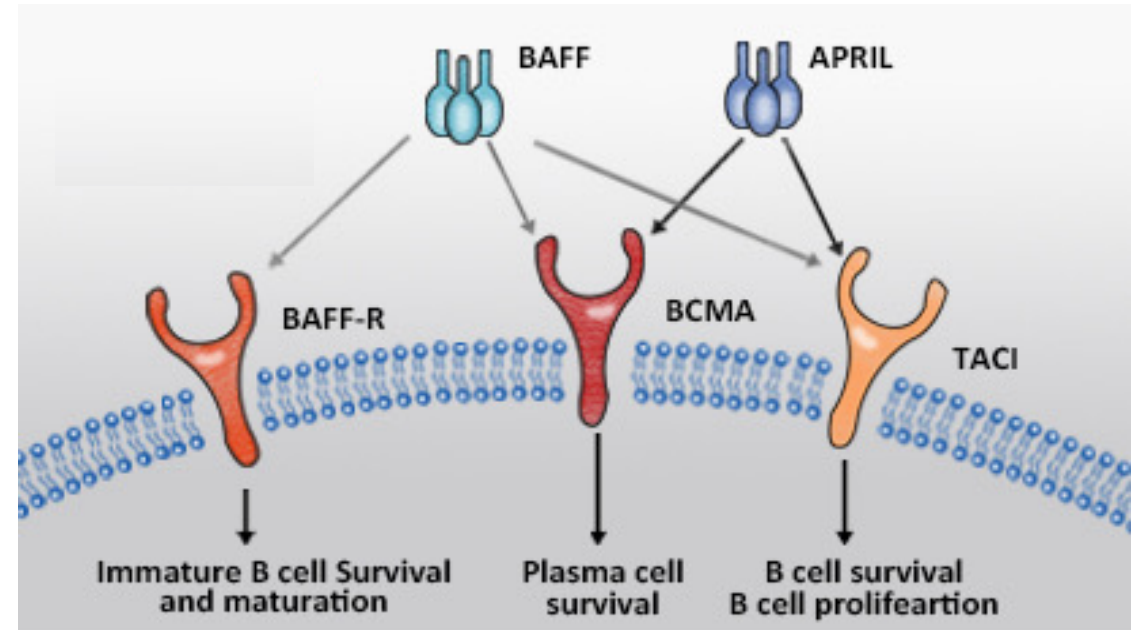
- Grade ≥ 3 thrombocytopenia, 73%
- Neutropenia 67%
- Pneumonia 6%
- 2 fatal sepsis

WHAT ARE THE CELL THERAPY OPTIONS FOR MM?



1 CAR T-cell therapy (CAR-T)

2 T-cell engager antibody (TCE)



BCMA is extensively studied and is an approved target^{1,2}

BCMA expression in PC

In normal physical functions

- Survival of long-lived PCs
- Production of antibodies
- Class switching of immunoglobulin

In MM

- Promotes proliferation and survival of MM cells
- Associated with immunosuppressive BM microenvironment
- Increased sBCMA level is associated with disease progression and poorer outcome

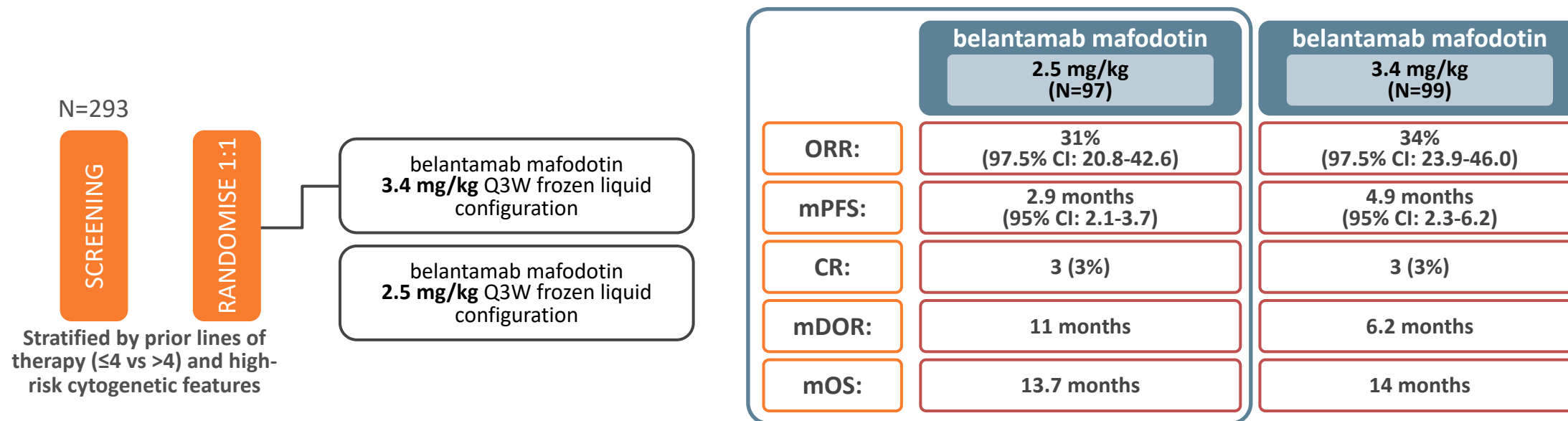
ADC, antibody-drug conjugate; APRIL, a proliferation-inducing ligand; BAFF, B-cell activating factor; BAFF-R, BAFF receptor; (s)BCMA, (serum) B-cell maturation antigen; BM, bone marrow; CAR-T, chimeric antigen receptor T-cell; IMiD, immunomodulatory agent; mAb, monoclonal antibody; MM, multiple myeloma; PC, plasma cell; TACI, transmembrane activator and calcium-modulating cyclophilin ligand interactor; TCE, T-cell engager antibody

1. https://www.ema.europa.eu/en/documents/product-information/blenrep-epar-product-information_en.pdf. Accessed Sept 2020; 2. Yu B, et al. J Hematol Oncol. 2020;13:125

BCMA-ADC

BELANTAMAB MAFODOTIN

Pivotal DREAMM-2 study: single-agent belantamab mafodotin (GSK2857916) in patients with RRMM refractory to PIs, IMiDs, and refractory and/or intolerant to anti-CD38 mABs



Toxicity profile: Ocular events (keratopathy in >70% of any grade [25% G3-4 in both arms]); thrombocytopenia in 35% and 57% of any grade in 2.5 and 3.4 mg/kg cohorts, respectively

Responders: half of them had a treatment hold for ≥3 cycles and were able to re-start. Most (88%) maintained their response

Belantamab mafodotin (2.5 mg/kg Q3W) has been approved by EMA for the treatment of adult patients with RRMM who have received at least 4 prior therapies including lenalidomide, a PI and anti-CD38 mAB and have demonstrated disease progression on the last therapy

ALGONQUIN: BELANTAMAB MAFODOTIN + POM-DEX

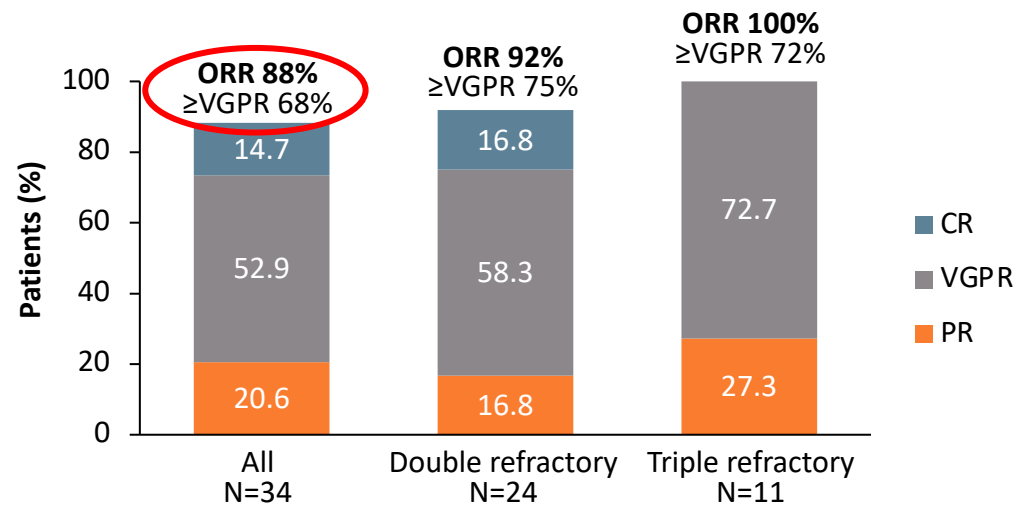
Study design

PART 1: DLT 3+3	PART 1: RP2D determination phase ≤12 patients/cohort									
	D1	D8	D15	D21	C2D1				C3D1	
POM 4 mg po	→ → → → → → → → → →									
Dex 40 mg po	D	D	D	D	D	D	D	D	D	D
1.92/2.5 mg/kg SINGLE iv	B				B				B	
2.5/3.4 mg/kg SPLIT iv	B	B			B	B			B	B
BELAMAF loading iv	2.5				1.92				1.92	

PART 2

RP2D
N=23 (+12 in
PART 1 = 35
evaluative
for ORR)

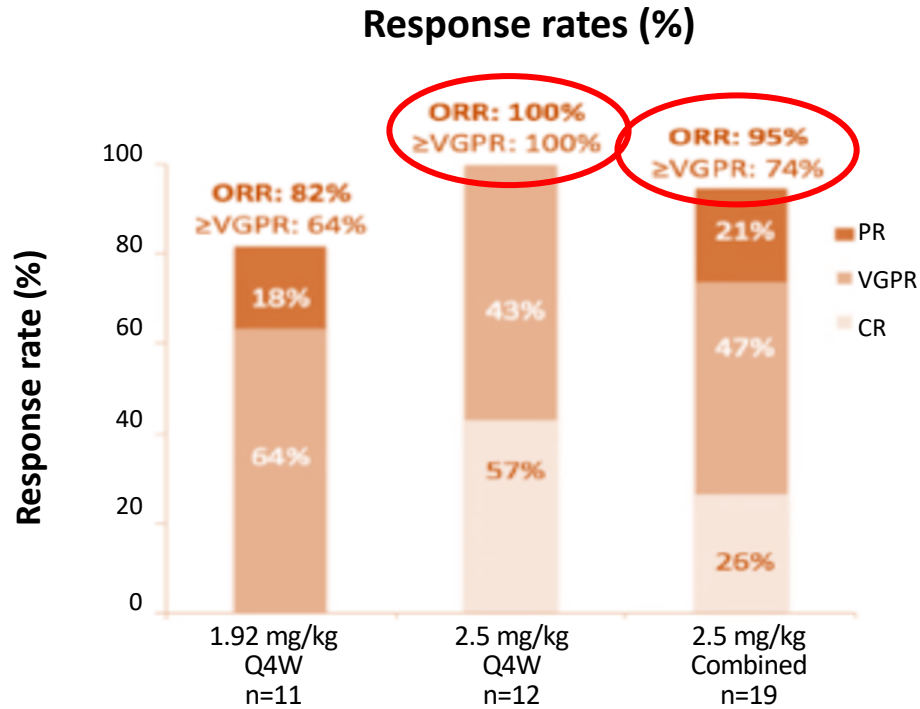
	N=37
Median (range) no. prior lines of therapy	3 (1-15)
Lenalidomide status	
Exposed	37 (100.0)
Refractory	33 (89.2)
PI status	
Exposed	37 (100.0)
Refractory	30 (81.1)
DARA status	
Exposed	16 (43.2)
Refractory	16 (43.2)
Lenalidomide and PI refractory	27 (73.0)
Lenalidomide, PI and DARA refractory	13 (35.1)



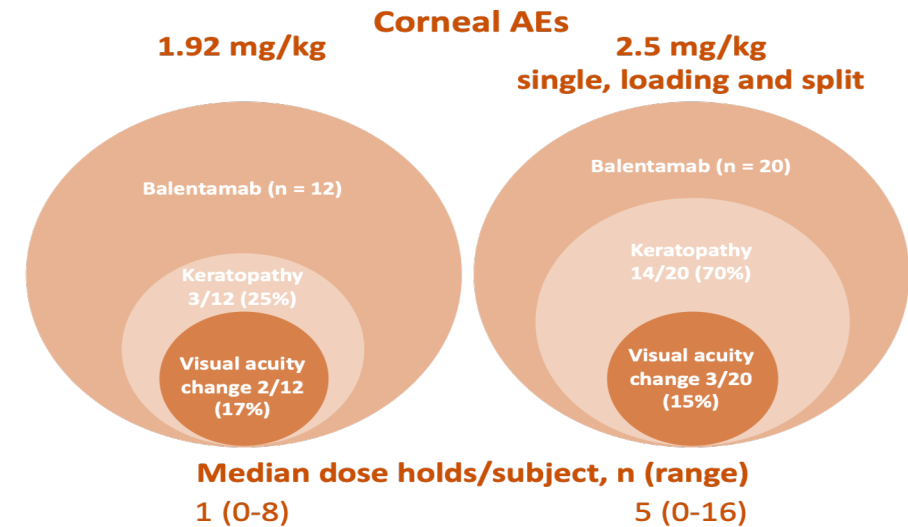
Outcome	All patients	IMiD/PI refractory	IMiD/PI/DARA refractory
Median PFS, mos (95% CI)	NR (10.8-NR)	NR (10.8-NR)	11.1 (4.9-NR)
Median follow-up, mos (range)	7.8 (1.9-20.3)	7.8 (1.9-18.9)	7.4 (2.1-16.1)

C, cycle; D, day; CI, confidence interval; CR, complete response; DARA, daratumumab; Dex, dexamethasone; DLT, dose limiting toxicity; IMiD, immunomodulatory drug; iv, intravenous; mos, months; NR, not reached; ORR, overall response rate; PFS, progression-free survival; PI, proteasome inhibitor; po, orally; POM, pomalidomide; PR, partial response; RP2D, recommended phase 2 dose; VGPR, very good partial response

ALGONQUIN: BELANTAMAB MAFODOTIN + POM-DEX



TEAE, n (%)	Any grade	Grade ≥3
Keratopathy	28 (75.7)	19 (51.4)
Neutropenia	21 (56.8)	15 (40.5)
Thrombocytopenia	18 (48.6)	12 (32.4)
Decreased visual acuity	17 (45.9)	6 (16.2)
Fatigue	15 (40.5)	4 (10.8)



AE, adverse event; C, cycle; D, day; CR, complete response; Dex, dexamethasone; DLT, dose limiting toxicity; iv, intravenous; ORR, overall response rate; po, orally; POM, pomalidomide; PR, partial response; Q4W, every 4 weeks; RP2D, recommended phase 2 dose; TEAE, treatment-emergent AE; VGPR, very good partial response

Trudel S, et al. ASH 2020. Abstract #725. Oral presentation

BCMA CAR-T

AUTOLOGOUS CAR-T CELL SUMMARY

	CARTITUDE-1 ¹ Cilta-cel Phase 1	CRB-401 ² Ide-cel Phase 1	CRB-402 ³ Bb21217 Phase 1	LUMMICAR-2 ⁴ CT053 Phase 1b	PRIME ⁵ BCMA-101 Phase 1/2	GC012F ⁶ Dual CAR-T BCMA + CD19
Patients	97	62	69	20	55	16
Median prior regimens	6	6	6	5	8	NR
Triple refractory	87.6%	69.4%	64%	85%	60%	NR
CAR-T dose	0.75 × 10 ⁶ (range 0.5-1.0 × 10 ⁶)	50, 150, 450 and 800 × 10 ⁶	150, 300 and 450 × 10 ⁶	1.5-1.8/2.5-3.0 × 10 ⁸	0.75-15 × 10 ⁶	1.0-3.0 × 10 ⁵
ORR	96.9%	75.8%	68%/84% ^a	94%	67%	93.8%
CR/sCR	67%	38.7%	28%/32% ^a	77%/83% ^b	NR	56.3%
CRS, all grades	94.8%	75.8%	NR	15%/17% ^b	17%	100%
CRS, grade 3/4	4%	6.5%	NR	0%	0%	12.5%
Neurotoxicity, all grades	20.6%	35.5%	NR	15%/17% ^b	3.8%	0%
Neurotoxicity, grade 3/4	10.3%	1.6%	NR	8%/0 ^c	3.8%	0%

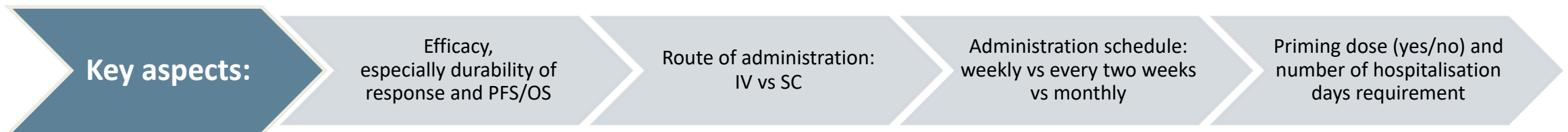
^a CAR-Ts made using original manufacturing process/updated manufacturing process

^b 1.5-1.8/2.5-3.0 × 10⁸ dose

BCMA X CD3 ANTIBODIES

BCMA X CD3 BISPECIFIC ANTIBODIES

Drug	Type and administration	N	Safety	Population	Response	DOR/PFS
Teclistamab¹	Bi-specific Administered weekly IV/SC (RP2D 1500 µg/kg SC)	40 at RP2D	CRS 70% at RP2D, all G1-2 Neurotoxicity 1% at RP2D (G1) Infections 45% at RP2D (23% G3-4)	Median of 5 prior lines 83% triple refractory 38% penta refractory	At RP2D, ORR: 65% with 40% sCR/CR	Median DOR not reached; 85% alive after median f/u of 7.1 months
AMG 701²	BiTe IV Weekly	85	CRS G1-2 55%, G3-4: 9% No ICANs 21% thrombocytopenia	Median of 6 prior lines 62% triple refractory	83% ORR at the top dose level and 50% VGPR	No mature data
REGN5458³	Bi-specific IV Weekly, every other week from C4	49	CRS 39%, no G3-4 ICANs 12% Cytopenias 47% and infections 18%	Median of 5 prior lines 100% triple refractory 57% penta refractory	ORR 62.5% at 96 mg (95% in VGPR) Some CR in lower dose levels	Preliminary median DOR: 6 months
TNB-383B⁴	Triple chain anti-BCMA bi-specific IV fixed doses Every 3 weeks	58	CRS 45%, no G3-4 No ICANs Anaemia 21% and ≥G3 infections 14%	Median of 6 prior lines 64% triple refractory 34% penta refractory	80% (13% CR) at dose levels 40-60 mg	No mature data
PF-3135⁵	Bi-specific SC Weekly	18	CRS 61% and no G3-4 No ICANs Cytopenias G3 in 11%	Median of 7 prior lines 100% dara exposed 22% prior BCMA-based therapy	75% at the top two dose levels	No mature data

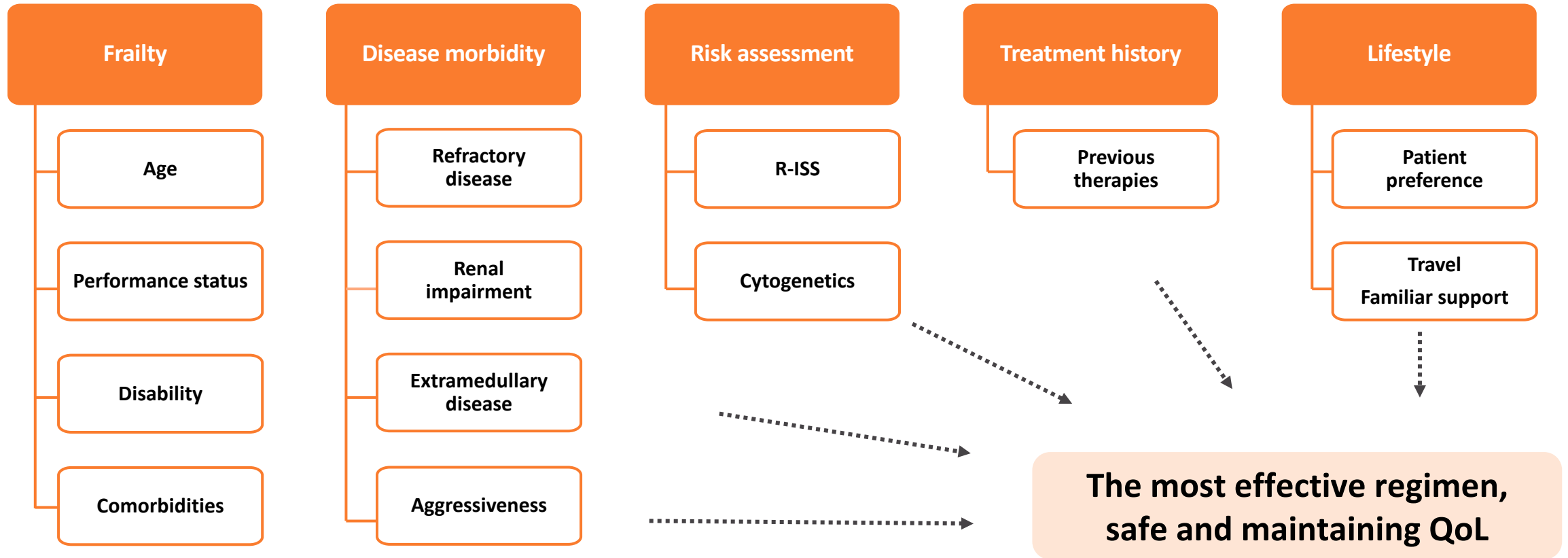


1. Krishnan AY, et al. ASCO 2021. Abstract #8007. Oral presentation; 2. Harrison SJ, et al. ASH 2020. Abstract #181. Oral presentation; 3. Madduri D, et al. ASH 2020. Abstract #291. Oral presentation; 4. Rodriguez C, et al. ASH 2020. Abstract #293. Oral presentation; 5. Lesokhin AM, et al. ASH 2020. Abstract #3206. Poster presentation

- **Patients exposed to three or more drug classes are an unmet medical need**
- New molecules are available, such as melflufen and selinexor
- BCMA-targeted therapy is also promising, using antibody-drug conjugates, CAR-T cells or bi-specific monoclonal antibody

**Challenging situations:
What is the optimal sequencing?
How to select the optimal BCMA-targeted therapy ?**

PATIENT- AND DISEASE-RELATED FACTORS ARE RELEVANT IN THE SELECTION OF THE RESCUE THERAPY



QoL, quality of life; R-ISS, Revised International Staging System.

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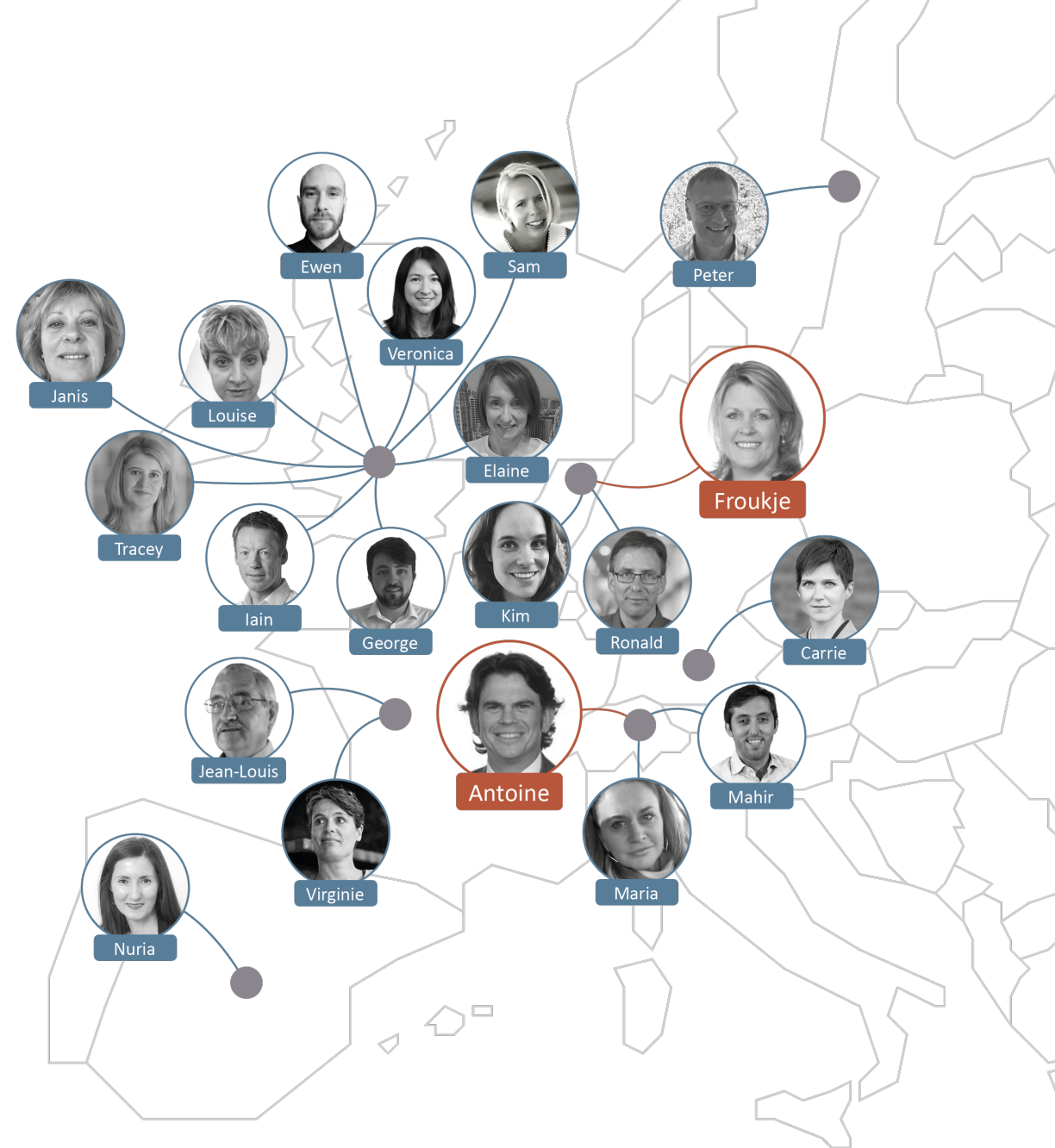
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