2024:

È già ora di abbandonare la **chemioterapia** nella **malattia recidivata/refrattaria?**

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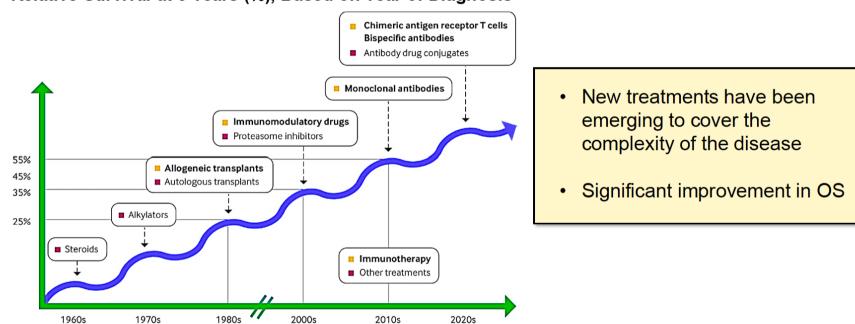
Caratteristiche clinico/biologiche della malattia R/R. L'importanza della I linea effettuata



Company name	Research support	Employee	Consultant	Stockholder	Speakers bureau	Advisory board	Other
CELGENE					Х	X	
JANSSEN-CILAG					х	X	
BMS					х	X	
GSK					Х	Х	
ABBVIE					х	X	
RECORDATI - EUSAPHARMA					x	x	
NOVARTIS					x	X	
ASTRAZENECA					X	X	
SOBI					х	Х	
INCYTE					х	Х	
GILEAD					X	X	
ELI LILLY					Х		
TEVA - GENTILI					X	X	

Disclosures of Ferdinando Frigeri

Treatment Overview

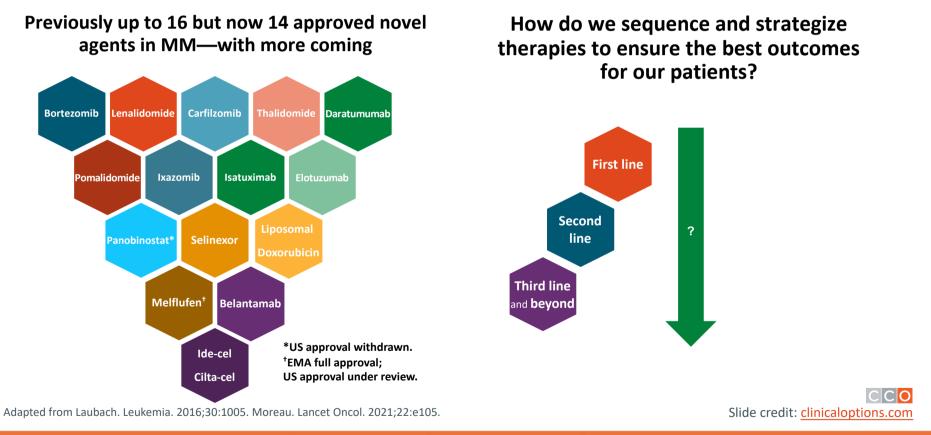


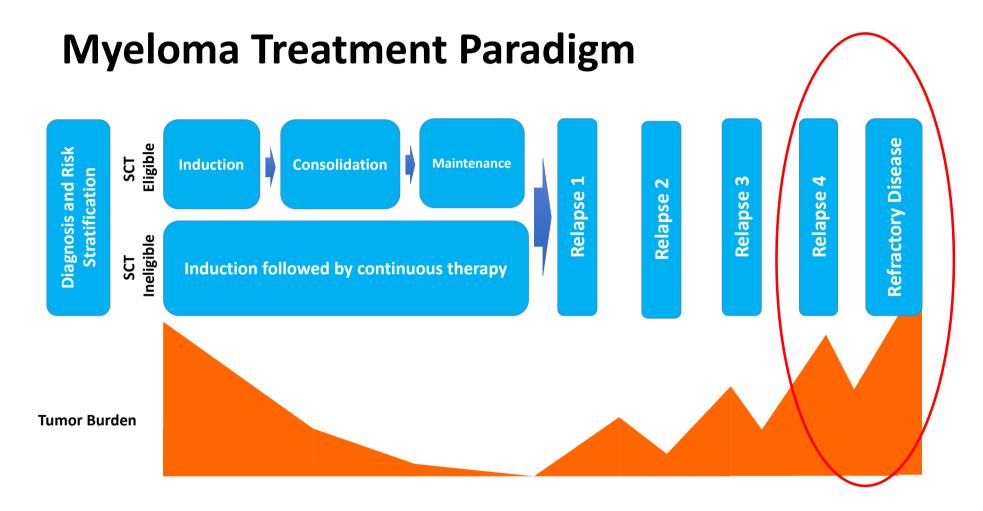
Relative Survival at 5 Years (%), Based on Year of Diagnosis

Timeline of drug discovery and year of multiple myeloma diagnosis (by decade)

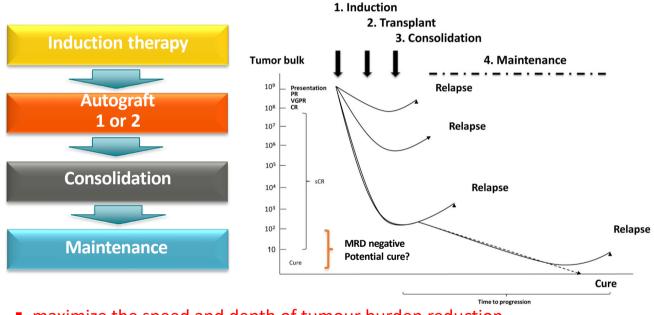
Mateos MV, personal communication. Image reproduced from Shah UA, et al. BMJ. 2020;370:m3176. Moreau P, et al. Ann Oncol. 2017;28(Suppl 4):iv52-61.

Multiple Novel Agents Now Available to Treat Newly Diagnosed and Relapsed/Refractory Myeloma in 2022





Treatment paradigm for autotransplant-eligible patients

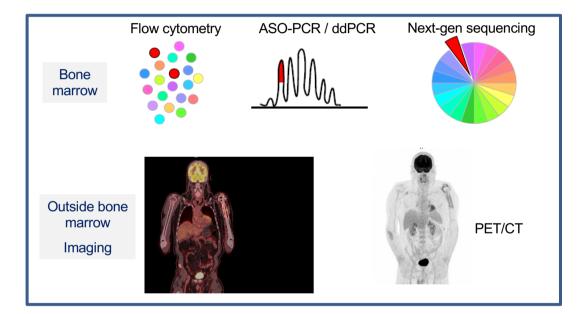


- maximize the speed and depth of tumour burden reduction
- quickly reverse disease-related complications
- prolong disease control

Cavo M, et al. Blood 2011;117(23):6063-73 Cavo M, et al. Blood 2012;120(1):9-19 Morgan GJ, et al. Blood. 2013;122(8):1332-4 Kumar S, et al. Lancet Oncology 2016;17:e328-46

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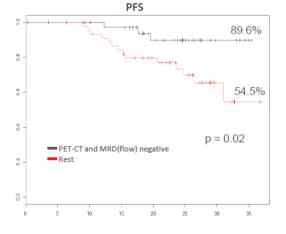
MRD



 86 subjects with paired PET-CT and MRD(flow) data

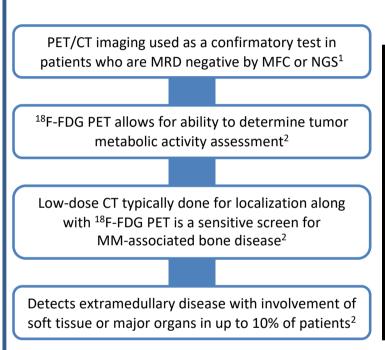
pos	
	neg
11	20
14	41

McNemmar test: p = 0.39

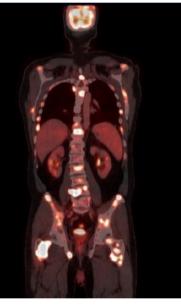


Improved outcome for double negative subjects

Adapted from Moreau et al. Blood 2015;126: abstract 395



PET/CT Image of a Patient with Multiple Myeloma



Advantages³:

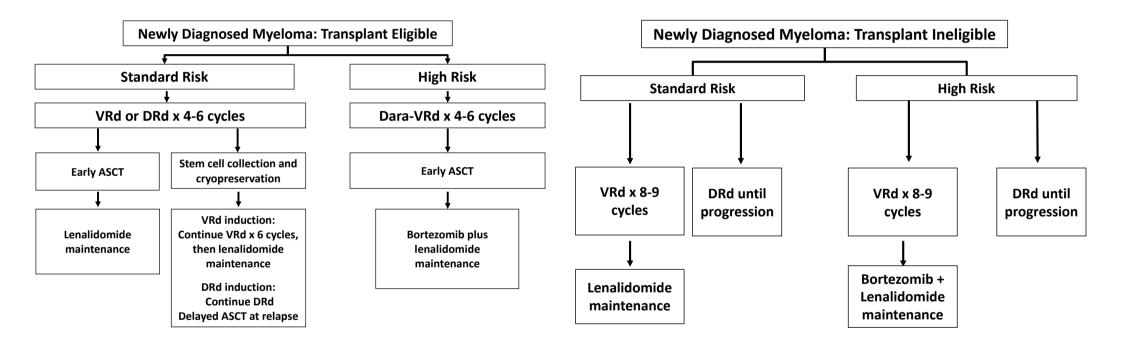
 Potentially powerful tool that complements MRD evaluation by NGF or NGS by detecting pockets of residual cells missed by sampling

Disadvantages³:

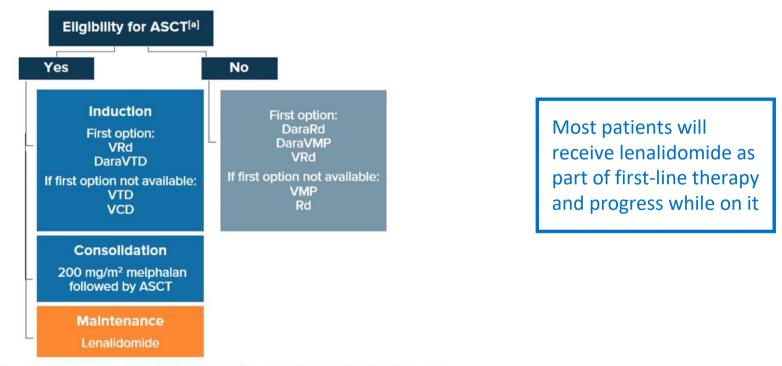
- Lack of standardization
 - High variability between sites
 - False negatives and false positives
- Only applicable in ~75% of patients
- Limited availability
- High costs
- Further clinical trial evaluation is needed

18F-FDG, 18-fluorine-fluoro-deoxyglucose; PET, positron-emission tomography; CT, computed tomography; MFC, multiparameter flow cytometry. Image adapted from http://www.myelomapennstate.net/Contents/10a-BoneDis-PET.htm. Accessed 17 April 2018.

1. Yanamandra U, Kumar SK. Leuk Lymphoma. 2017;11:1-13. 2. Kumar S, et al. Lancet Oncol. 2016;17:e328-e346. 3. Cavo M, et al. Lancet Oncol. 2017;18(4):e206-e217.

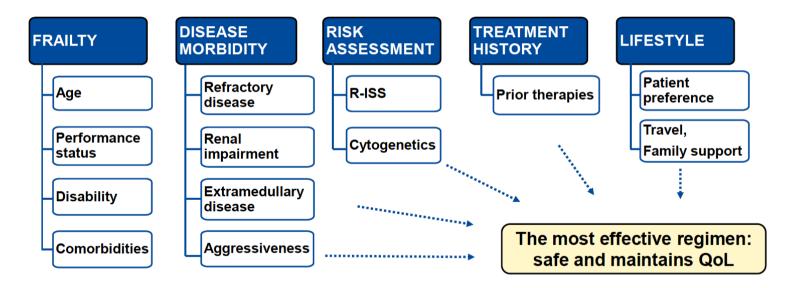


EHA-ESMO Guidelines for NDMM Management, 2021



ASCT, autologous stem cell transplantation; Dara, daratumumab; NDMM, newly diagnosed MM; Rd, lenalidomide plus low-dose dexamethasone; VCD, bortezomib, cyclophosphamide, and dexamethasone; VMP, bortezomib, melphalan, and prednisone; VRd, lenalidomide plus low-dose dexamethasone plus bortezomib; VTD, bortezomib, thalidomide, and dexamethasone. Dimopoulos MA, et al. Ann Oncol. 2021;32:309-322.

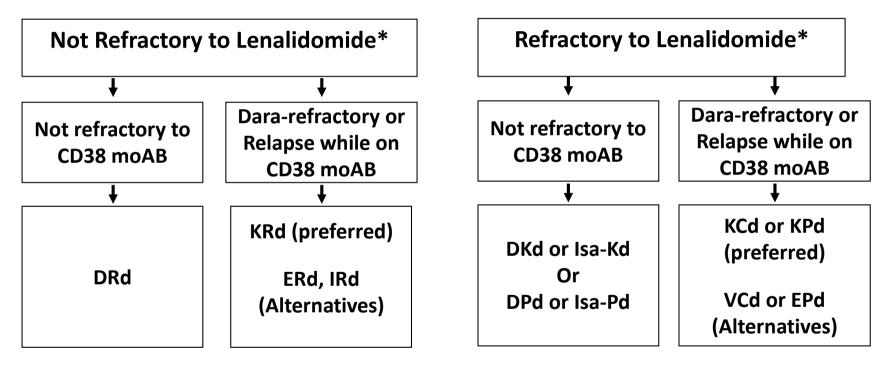
Disease and Patient Factors Influence Treatment Choices in Relapsed/Refractory Myeloma



QoL, quality of life.

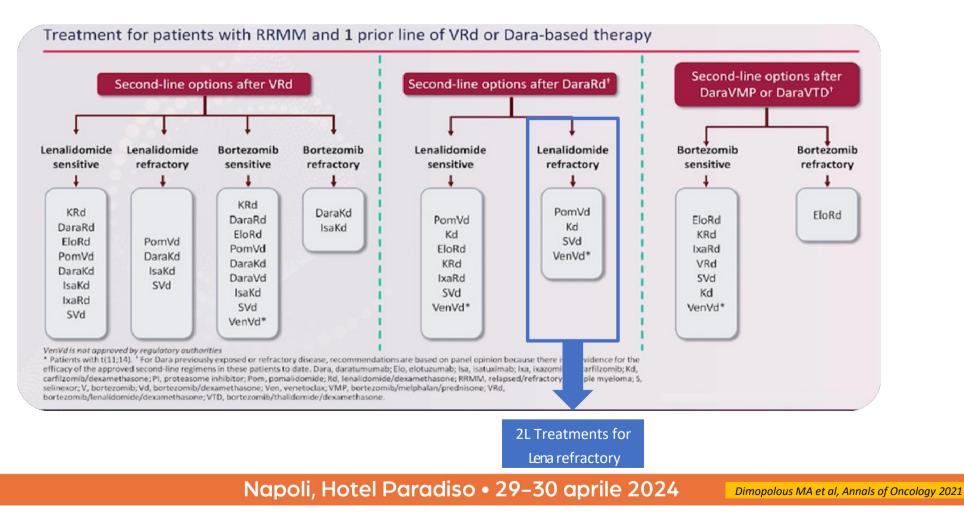
Chen X, et al. *Clin Interv Aging*. 2014;9:433-441. Chng WJ, et al. *Leukemia*. 2016;30(5):1071-1078. Chung T-H, et al. *PLoS One*. 2013;20:e66361. Clegg A, et al. *Lancet*. 2013;381(9868:752-762. Faiman BM, et al. *Clin J Oncol Nurs*. 2011;15(suppl):66-76. Greipp PR, et al. *J Clin Oncol*. 2005;23(15):3412-3420. Handforth C, et al. *Ann Oncol*. 2015;26(6):1091-1101. Jhaveri M, et al. *Haematologica*. 2016;101(suppl 1):E1312. Merz M, et al. *Haematologica*. 2016;101(suppl 1):P650. Miceli TS, et al. *Clin J Oncol Nurs*. 2011;15(suppl):9-23. Palumbo A, et al. *Blood*. 2015;125(13):2068-2074. Ramsenthaler C, et al. *BMC Cancer*. 2016;16:427. Sonneveld P, et al. *Leukemia*. 2013;27(10):1959-1969. Tatarczuch M, et al. *Haematologica*. 2017;102(suppl 2):E1457. Williams LA, et al. *J Clin Oncol*. 2016;34:e18127.

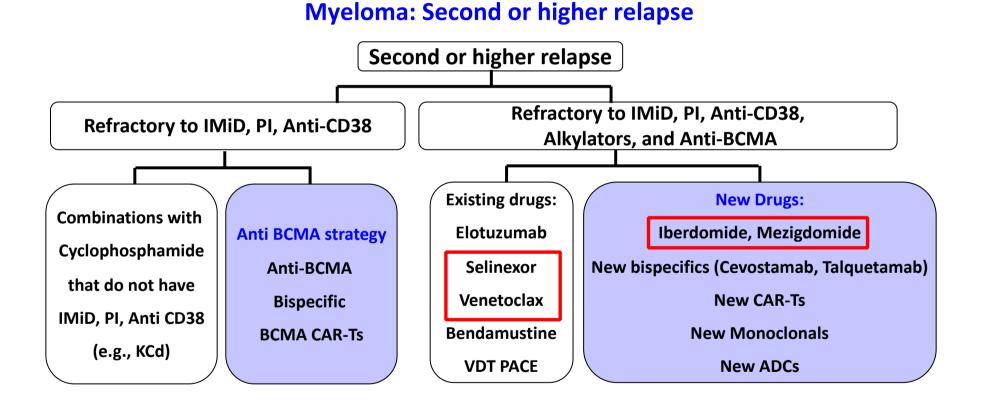
First Relapse



*Consider salvage ASCT in patients eligible for ASCT who have not had transplant before; Consider 2nd auto SCT if eligible and had >36 months response duration with maintenance to first ASCT

EHA-ESMO clinical practice guidelines 2021: first relapse



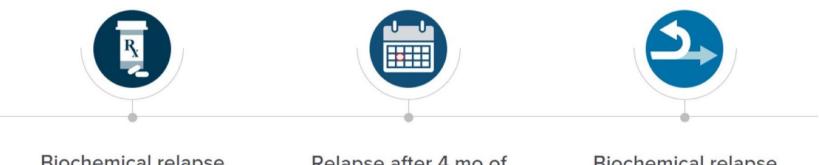


What Is Refractoriness to Therapy?

- » Refractory MM is defined as disease that is:
 - ✓ Non-responsive while on primary or salvage therapy
 - ✓ OR progresses within 60 days of last therapy
- » Non-responsive disease is defined as failure to achieve minimal response or progressive disease on therapy
- » Can be primary refractory or relapsed/refractory

Definition of Lenalidomide-Refractory MM

Lenalidomide refractory is not well defined, with some issues



Biochemical relapse from 10 mg maintenance vs 25 mg Relapse after 4 mo of maintenance vs 4 y Biochemical relapse after 4 y of Rd vs symptomatic relapse after 6 mo of Rd

Moreau P, et al. Blood Cancer J. 2019;9:38.

Definition of Lenalidomide-Refractory MM and re-treatment

Lenalidomide maintenance

Salvage therapy listed in 2 of 3 studies of meta-analysis: no data on Lena dose increase ± Dex

Myeloma XI trial: data on salvage therapy are lacking

Insufficient data on full-dose Lena + Dex retreatment after maintenance Lena 10 mg

Lenalidomide full-dose

No patients Lena-refractory included in phase III trials containing Lena such as KRd, EloRd, DaraRd, IxaRd

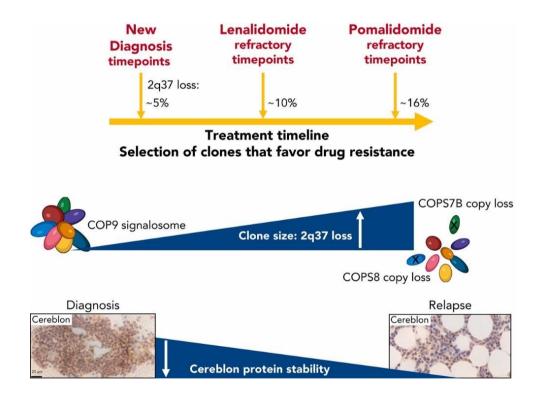


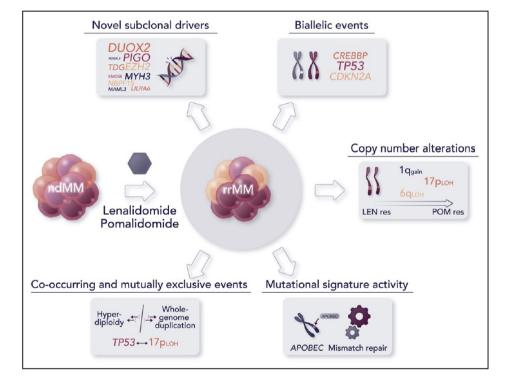
Insufficient data on full-dose Lena retreatment plus other drugs after first relapse

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Moreau P et al, Blood Cancer Journal 2019

Loss of COP9 signalosome genes at 2q37 is associated with IMiDs resistance in multiple myeloma





Major findings from the novel study by Ansari-Pour et al include the discovery of novel abnormalities associated with refractoriness to IMiDs and significant changes in the recurrence of high-risk alterations from diagnosis to relapse. Professional illustration by Somersault18:24.

Sarah Gooding et al, Blood 2022

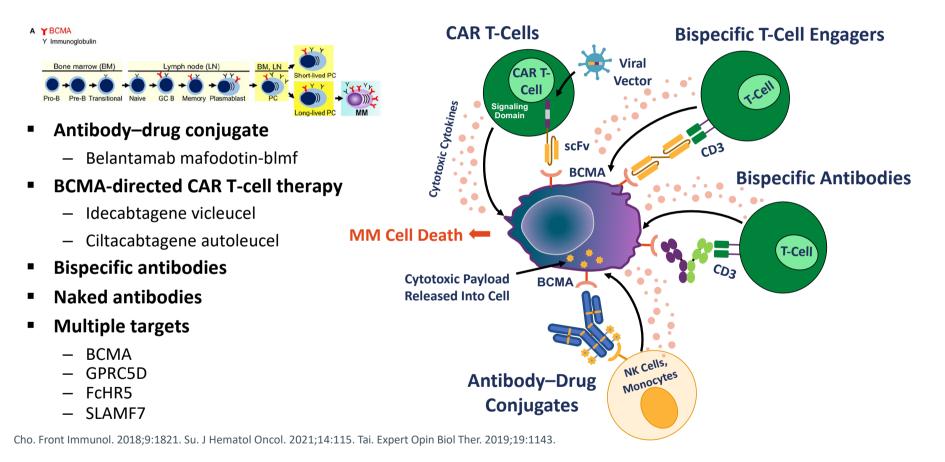
Alessandro Laganà, Blood 2023

Efficacy of 2L Options for R-Refractory Patients - Phase III Trials

	CASTOR DVd (251)	ENDEAVOR Kd (464)	OPTIMISMM PVd (281)	APOLLO DPd (151)	CANDOR [*] DKd (312)	IKEMA IsaKd (179)
No of median prior lines	2	2	2	2	2	2
Len-refractory %	24	24	71	79	32	32
≥ CR (%)	30	13	16	25	33	44
NGS MRD neg ^{10 -5} ITT (%)	15	NA	NA	9	23	33.5
mPFS ITT HR	17 0.31	19 0.53	11 0.61	12.4 0.63	29 0.59	35.7 0.58
mPFS 1PLoT HR	27 0.22	22 0.45	21 0.54	14.1 0.67	NR 0.66	38.2 0.72
mPFS Len-refr HR	8 0.44	9 0.36	9.5 0.65	9.9 0.64	28 0.46	NR 0.59
mPFS early relapse HR	15.4 0.51	13.9 0.59	NA	NA	NA	24.7 0.66

Anti-CD38 based regimens (DKd not reimbursed)

Immunotherapy Era in Multiple Myeloma



New Drugs: CELMoDs

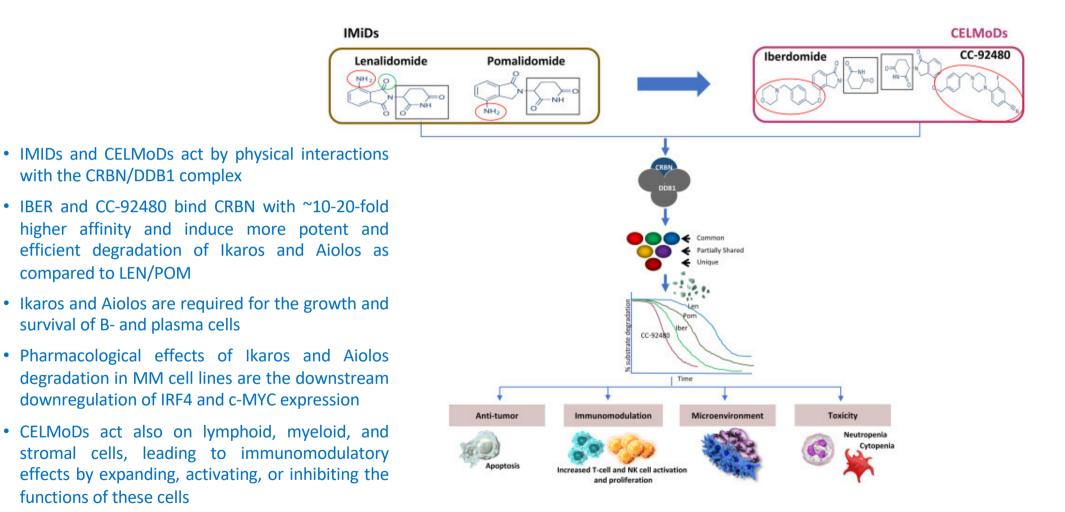
- » Cereblon (CRBN) E3 ligase modulators (CELMoDs) are a new class of immunomodulatory drugs (IMIDs) containing an imide group
- » CELMoDs are oral medications that have many similarities to other IMIDs (Thalidomide, Lenalidomide, Pomalidomide)
- » CELMoDs not only kill myeloma cells directly but also by engaging other immune cells
- » Iberdomide and Mezigdomide are being investigated in relapsed/refractory disease and (Iberdomide) as maintenance therapy post SCT in NDMM

with the CRBN/DDB1 complex

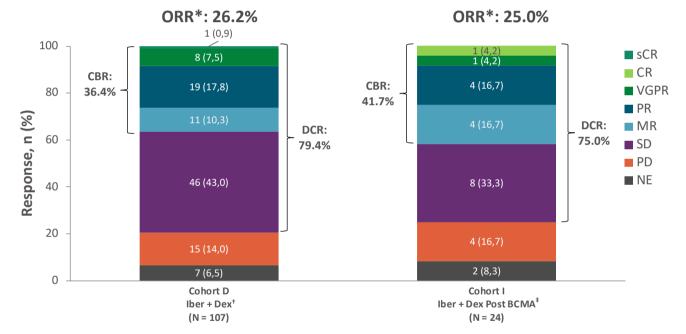
survival of B- and plasma cells

compared to LEN/POM

functions of these cells



CC-220-MM-001 Iberdomide + Dexamethasone Dose Expansion: Response

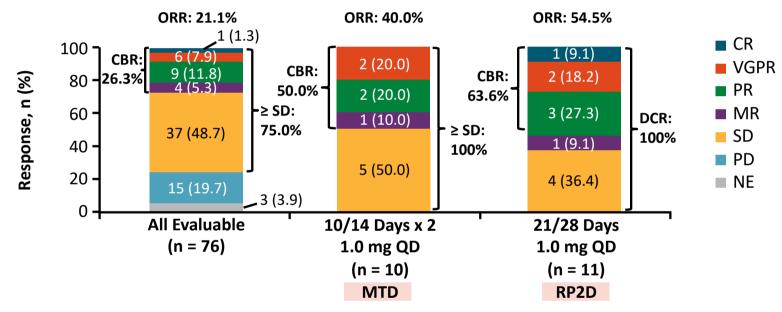


*PR or better. ⁺2 patients in SD and MR discontinued tx due to death caused by COVID-19. [‡]Includes all treated patients with post-BL efficacy assessment or patients who discontinued tx before any postbaseline efficacy assessment; 2 patients in cohort 1 with no post-BL efficacy assessments were excluded from analysis.

Lonial. ASH 2021. Abstr 162.

Slide credit: clinicaloptions.com

Mezigdomide + Dexamethasone in Heavily Pretreated R/R MM: Best Response



- 7 of 11 patients at RP2D of 1 mg QD 21/28 days were triple-class refractory (to ≥1 IMiD, 1 PI, and 1 anti-CD38 mAb)
 - Of these patients, 1 had CR, 1 VGPR, 2 PR, and 1 MR

Richardson. ASCO 2020. Abstr 8500.

Slide credit: clinicaloptions.com

Mezigdomide + Dexamethasone: Response Dynamics and PFS in the Dose-Expansion Cohort.

Table 3. Summary of Best Overall Response.*							
Variable		Dose-Escalation Cohort			Dose-Expansion Cohort		
	All Patients (N=77)	10-Day Schedule, Repeated† (N=10)	21-Day Schedule‡ (N=11) number of p	All Patients (N = 101) patients (perc :n	Patients with Plasmacytomas∬ (N=40) t)	Patients with Previous Anti-BCMA Therapy (N=30)	
Overall response	19 (25)	4 (40)	6 (55)	41 (41)	12 (30)	15 (50)	
Stringent complete response	0	0	0	2 (2)	0	0	
Complete response	1 (1)	0	1 (9)	3 (3)	2 (5)	1 (3)	
Very good partial response	9 (12)	2 (20)	3 (27)	20 (20)	7 (18)	9 (30)	
Partial response	9 (12)	2 (20)	2 (18)	16 (16)	3 (8)	5 (17)	
Minimal response	4 (5)	1 (10)	1 (9)	6 (6)	0	1 (3)	
Stable disease	34 (44)	4 (40)	4 (36)	39 (39)	21 (52)	11 (37)	
Progressive disease	17 (22)	1 (10)	0	10 (10)	4 (10)	3 (10)	
Response could not be evaluated**	3 (4)	0	0	5 (5)	3 (8)	0	

* Response was assessed according to the International Myeloma Working Group (IMWG) Uniform Response Criteria for Multiple Myeloma. Percentages may not total 100 because of rounding.

The 10-day schedule, repeated, was 10 days of consecutive treatment, followed by 4 days off, and then repeated, in 28-day cycles. Mezigdomide was administered at a maximum tolerated dose of 1.0 mg plus dexamethasone.

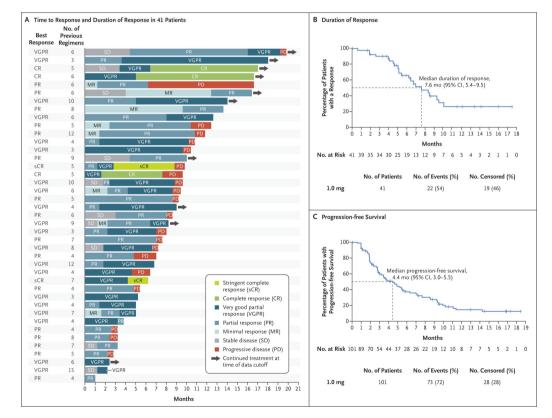
The 21-day schedule was 21 days of consecutive treatment, followed by 7 days off, in 28-day cycles. Mezigdomide was administered at the recommended phase 2 dose of 1.0 mg once daily plus dexamethasone.

🖇 Plasmacytomas included extramedullary soft-tissue only and bone-based plasmacytomas with a measurable soft-tissue component.

An overall response was defined as partial response or better. A stringent complete response was defined as a complete response with a normal serum free light-chain ratio and an absence of clonal plasma cells according to the IMWG response criteria.

Of the 15 patients who had a response and had received previous anti-BCMA therapy, 12 had received antibody-drug conjugates, 2 had received T-cell engagers, and 1 had received CAR T-cell therapy.

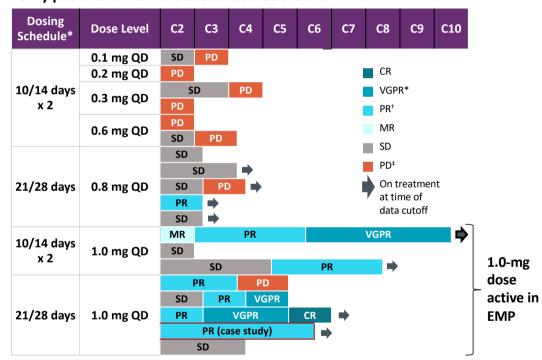
** Included are patients whose assessment could not be evaluated for response or who did not have response-assessment data.



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Richardson PG et al, N Engl J Med 2023

Responses in Patients With Extramedullary Plasmacytoma



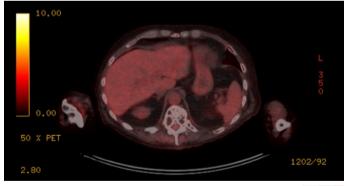
Only patients on continuous schedules are shown

*1 patient in 21/28-day 1.0 mg QD cohort had unconfirmed VGPR as of data cutoff date. [†]1 patient in 21/28-day 0.8 mg QD cohort had unconfirmed PR as of data cutoff date. [‡]1 patient in 21/28-day 0.8 mg QD cohort had unconfirmed PD as of data cutoff date.

Richardson. ASCO 2020. Abstr 8500.

PET Scan Pretreatment

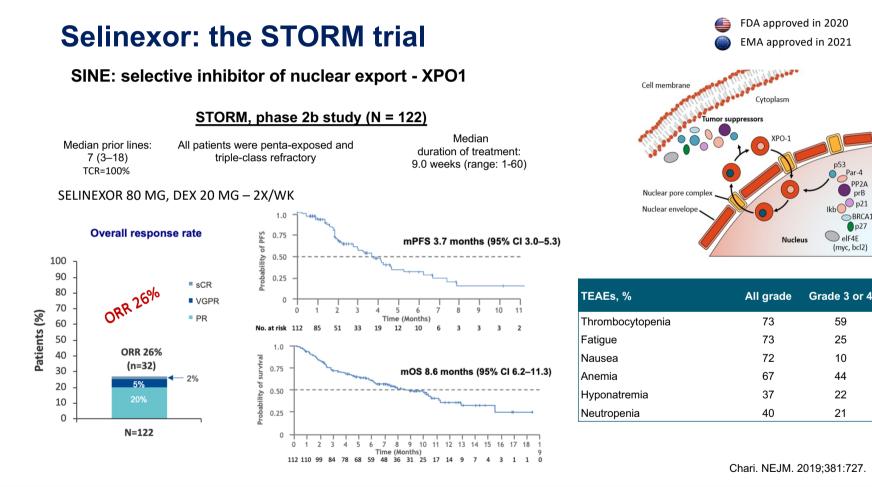
PET Scan Post-CC-92480 C3D1



Slide credit: clinicaloptions.com

CELMoDs ongoing trials

- » Excaliber RRMM (1-2 prior lines not including anti-CD38 mAbs) → Iberdomide-Dd vs DVd
- » Excaliber Maintenance (NDMM post-SCT) \rightarrow Iberdomide vs R
- » Sucessor 1 (RRMM and 1-3 prior lines with lenalidomide exposure)
 → Mezigdomide-Vd vs Pom-Vd
- Sucessor 2 (RRMM and 1-3 prior lines with lenalidomide exposure) → Mezigdomide-Vd vs Pom-Vd



Data From Phase I/IIb STOMP Trial With Selinexor-Based Triplets

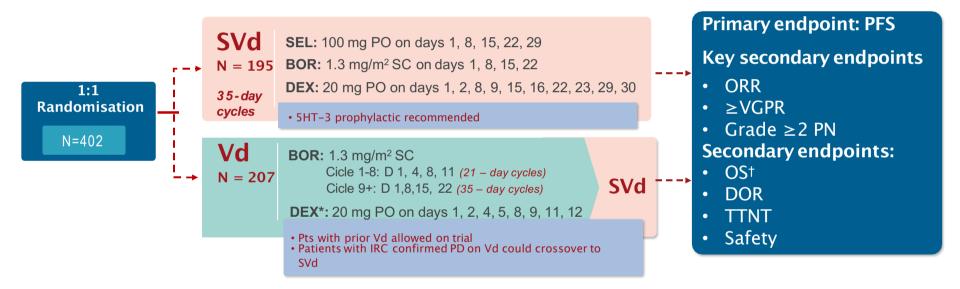
	SVd (N = 40) ¹	SKd (N = 32) ²	SPd (N	= 60) ³	Dara-Sc	l (N = 32) ⁴
Patient Population	3 mediar	refractory, n prior lines nerapy	9% with prior carfilzomib (3% refractory), 44%/22% bort/ixa refractory, 4 median prior regimens		87% Len refractory, 70% Pom naive, 3 median prior regimens		94% Dara naive, 85%/76% PI/IMiD refractory, 3 median prior regimens	
ORR, %	PI sens/ naive: 84	PI refractory: 43	All: 78.1	Triple class refractory: 66.7	Pom-sens/ naive: 54	Pom- refractory: 36	All: 69	Dara- naive: 73
■ ≥CR, %	11	5	15.7	0	2.2	0	0	0
 VGPR, % 	26	19	28.1	50.0	19.6	7.1	34	37
■ PR, %	47	19	34.4	16.7	32.6	26.8	34	37
Median PFS, mo	17.8	6.1	15.0	23.7	12.3		12.5	

1. Bahlis. Blood. 2019;132:2546. 2. Gasparetto. Br J Cancer. 2022;126:718. 3. Chen. ASH 2020. Abstr 726. 4. Gasparetto. ASCO 2020. Abstr 8510.

BOSTON: Phase 3 trial

Study Design

Phase 3, multicenter, randomised, open-label study [NCT03110562]



BOR, bortezomib; DEX, dexamethasone; DOR, duration of response; IRC, independent review committee; OS, overall survival; PD, progressive disease; PFS, progression free survival; PN, peripheral neurophathy; PO, taken orally; SC, subcutaneous; SEL, selinexor; SVd, selinexor + bortezomib + dexamethasone; TTNT, time to next treatment; Vd, bortezomib + dexamethasone; VGPR, very good partial response.

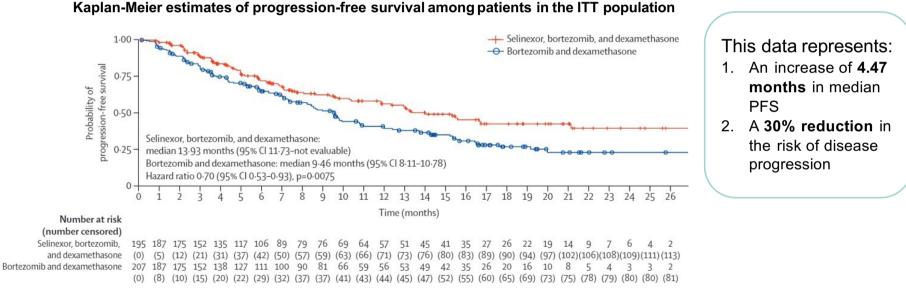
*DEX dosing presented is for cycles 1-8; for cycles ≥9 DEX w as given as 20 mg on days 1, 2, 8, 9, 15, 16, 22, 23, 29, and 30 of each 35-day cycle; †OS is not yet reached.

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Grosicki S. et al, Lancet. 2020

BOSTON trial: PFS

	SVd arm (n = 195)	Vd arm (n = 207)				
Median PFS, months (95% CI)*	13.93 (11.73, NE)	9.46 (8.11, 10.78)				
HR=0.70 (95% CI: 0.53, 0.93); one-sided P = .0075						



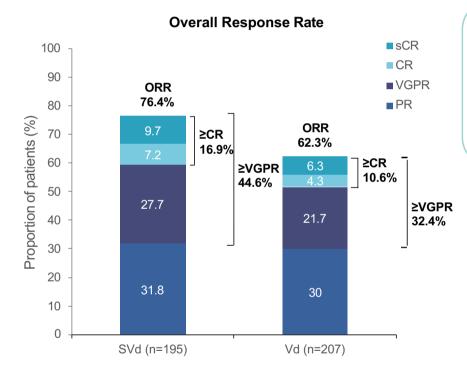
CI, confidence interval; HR, hazard ratio; ITT, intention-to-treat; NE, not evaluable; PFS, progression free survival; SVd, selinexor + bortezomib + dexamethasone; Vd, bortezomib + dexamethasone.

*The study was ongoing at the time of publication; the analysis was performed after a median follow -up period of 13.2 months for the SVd arm and 16.5 months for the Vd arm (data cutoff: 18 February 2020).

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Grosicki S. et al, Lancet. 2020

BOSTON trial: Treatment response



• Key evidence of deep responses:

○ ≥VGPR P = .0082*

o 6% absolute difference in ≥CR

• Clinical benefit was evident in the SVd arm vs the Vd arm:

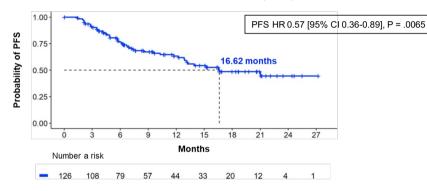
 Proportion of patients with progressive disease: 0.5% in the SVd arm vs 5% in the Vd arm

	SVd arm (n = 195)	Vd arm (n = 207)
Median Time to Response, months	1.1	1.4
Median Duration of Response, months	20.3	12.9
Median Time to Next Treatment, months	16.1	10.8

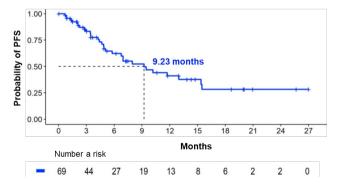
CR, complete response; ORR, overall response rate; PR, partial response; sCR, stringent complete response; SVd, selinexor + bortezomib + dexamethasone; Vd, bortezomib + selinexor; VGPR, very good partial response. *Statistical analyses using one-sided P value.

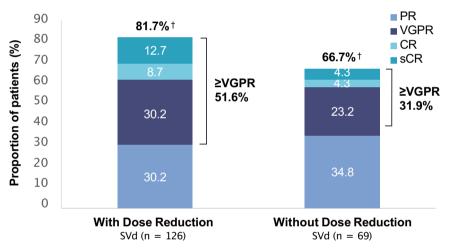
BOSTON trial: PFS and OS in Patients with Selinexor Dose Reductions

mPFS in Patients With Selinexor Dose Reduction (n=126)*



mPFS in Patients Without Selinexor Dose Reduction (n=69)





Overall Response Rates by Dose Reduction of Selinexor in the SVd arm*

These subgroup analyses were exploratory in nature, not included in the study objectives and do not control for type 1 error. The analyses were not powered or adjusted for multiplicity to assess efficacy outcomes across these subgroups.

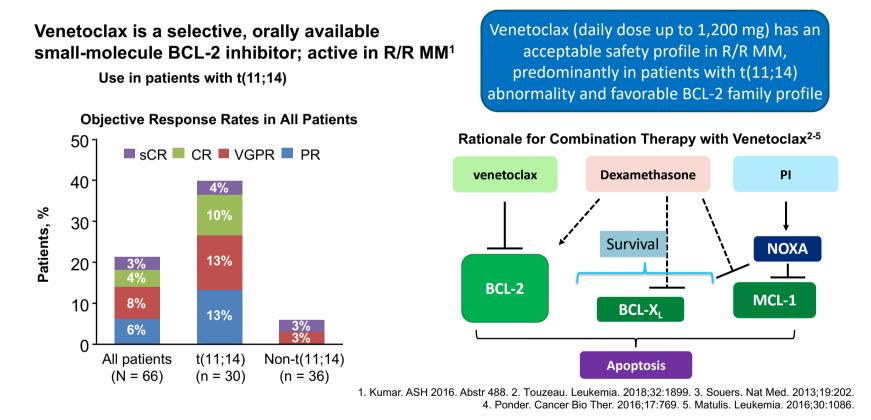
CR, complete response; HR, hazard ratio; IRC, independent review committee; mPFS, median progression free survival; PD, progressive disease PR, partial response; sCR, stringent complete response; SVd, selinexor + bortezomib + dexamethasone; VGPR, very good partial response.

[†]Overall response rate is the proportion of patients who achieve a partial response or better, before IRCconfirmed PD or initiating a new MM treatment or crossover.

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Jagannath S. et al, ASH Meeting 2021, Abstract 3793

Venetoclax in RRMM: BCL-2 Inhibition



in t(11;14)-Positive Myeloma PFS OS 1.0 1.0 0.8 0.8 0.6 0.6 PFS os 0.4 0.4 Ven + Bd Ven + Bd Pbo + Bd - Pbo + Bd 0.2 0.2 + Censored + Censored 0 n 27 30 33 12 15 18 21 24 9 6 9 0 Patients at Patients at Мо Мо Risk, n Risk, n 20 18 16 14 14 12 12 11 8 1 0 19 19 19 19 19 19 18 3 20 15 12 11 9 6 5 2 2 1 1 1 0 15 14 14 13 13 11 15 14 PFS Ven + Bd Pb o+ Bd OS Ven + Bd Median, mo Not reached 9.3 Median, mo Not reached HR (95% CI) 0.09 (0.02-0.44) HR (95% CI) P value .003 P value

BELLINI: Promise of Venetoclax + Bortez/Dex

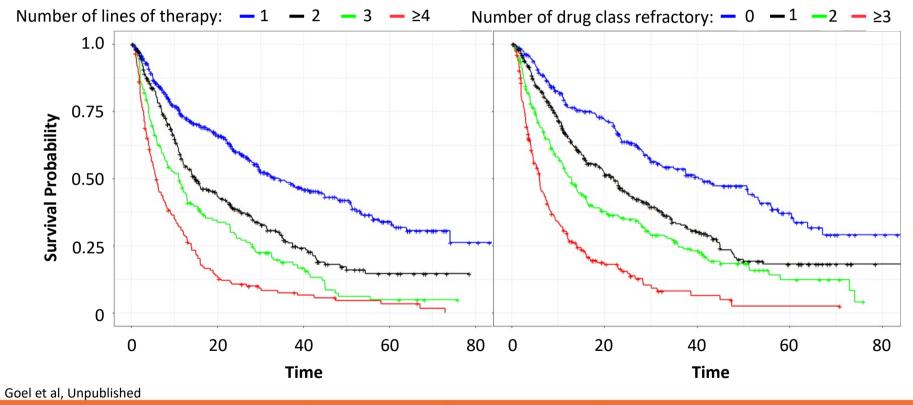
12 15 18 21 24 27 30 33 14 0 6 7 3 0 Pbo + Bd Not reached 0.68 (0.13-3.48) .647

Harrison. ASH 2019. Abstr 142.

Slide credit: clinicaloptions.com

CCO

Lines of Therapy or Drug Class Refractoriness



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Take home messages

- Treatment of RR MM is an ever-evolving scenario with a progressive increase of therapeutic options both as single agents and/or drug combinations
- The unmet medical need of lenalidomide-refractory patients is now nearly resolved by new regimens and new drugs
- The use of new classes of drugs within the first-line of therapy makes the therapeutic choice for relapsed MM even more challenging
- It would be desirable to have new drugs with different mechanism of action readily available, without regulatory restriction, to overcome drug resistance

