

How Do We Choose among non-CAR T Options for Patients with Recurrent Aggressive Lymphoma?

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Disclosures

- Astra Zeneca - consultant

Choosing a Non-CAR-T Treatment Strategy

Decision Factors

- Disease course
 - Bridging to ASCT?
 - Consider CAR-T in future?
 - Relapse after CAR-T
- Disease biology
 - High-grade/Double-Hit?
 - Concerned for CNS disease?
 - GCB vs ABC

Learning Objectives

After completing this activity, learners should be able to:

1. Assess the mechanisms, safety, and efficacy of new and emerging agents for the treatment of R/R DLBCL
2. Evaluate new and emerging agents for proper sequencing in the individualized care of R/R DLBCL patients
3. Devise strategies to properly sequence therapy for individualized patient care and to mitigate potential adverse effects and toxicities associated with new and emerging R/R DLBCL treatments

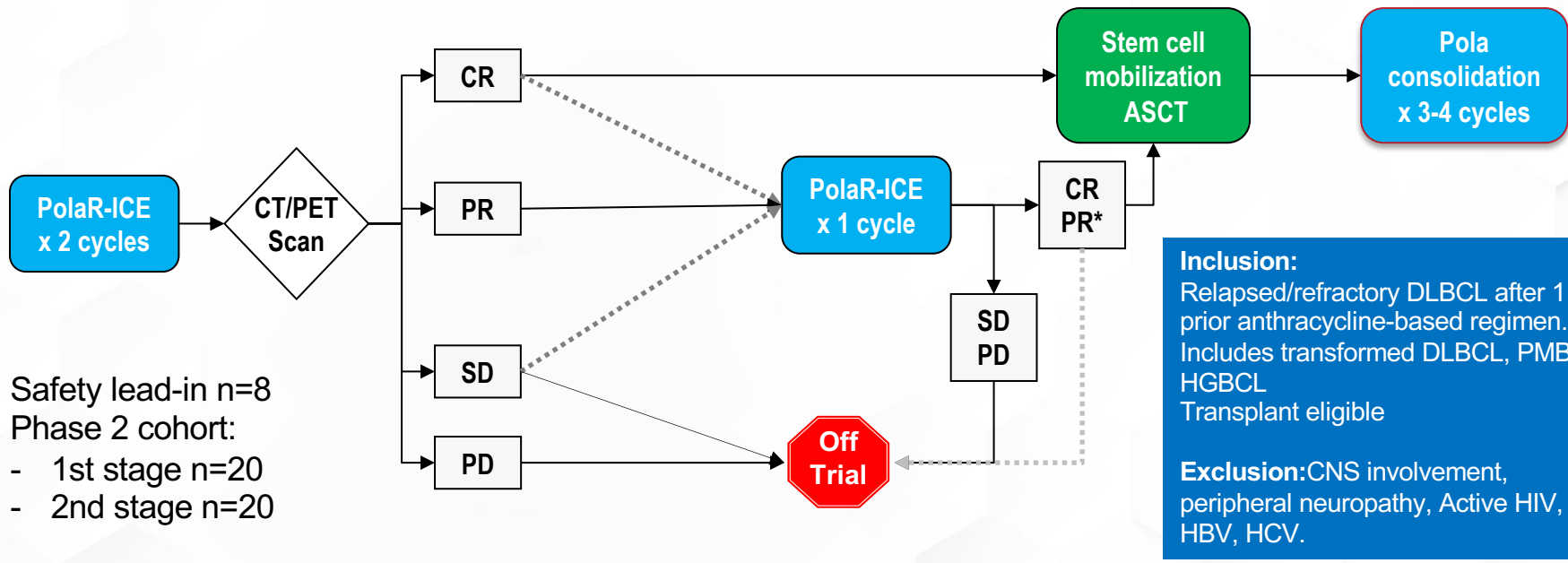


Disease Course

Case 1

- A 52-year-old man with AIDs-associated, triple-hit DLBCL was treated with R-EPOCH. He was successfully treated and remained disease-free for nearly 2 years after which he began to notice new cervical LAD. The patient was found to have relapsed disease
- Given the time to relapse was greater than 1 year, he was determined not to be a candidate for CART
- Plans for ASCT were made, and salvage chemotherapy was initiated

Polatumumab Vedotin Plus R-ICE (PolaR-ICE) as Second-line Therapy in Relapsed/Refractory DLBCL



Hypothesis: Improvement in CR rate from 40% with R-ICE to 60% with Pola-RICE

R-ICE = rituximab, ifosfamide, carboplatin, and etoposide.
 Herrera AF, et al. Presented at: ASH;2022. Abstract 442.

Characteristics and Outcomes

49% Primary refractory

Histology:

- 66% DLBCL
- 27% Transformed from indolent lymphoma
- 59% non-GCB
- 17% Double hit

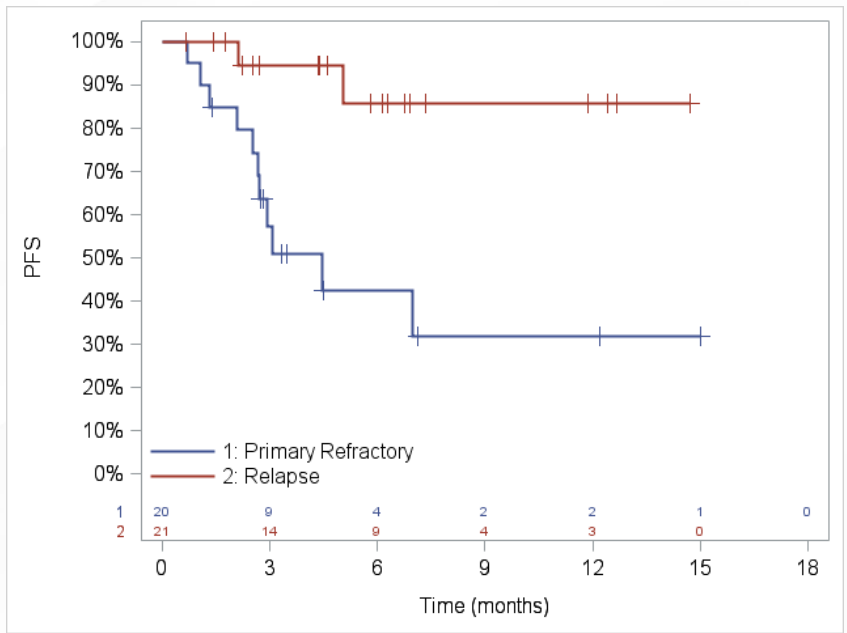
Disposition:

- 22/41 patients proceeded to transplant,
 - 16 of these had pola consolidation
 - 16 did not proceed to transplant.
 - Most common reasons were lack of response/death (n=7), PD before collection (n=5), Toxicity/MD decision (n=5)
 - 5 went to Car-T in PD
 - 1 collection failure

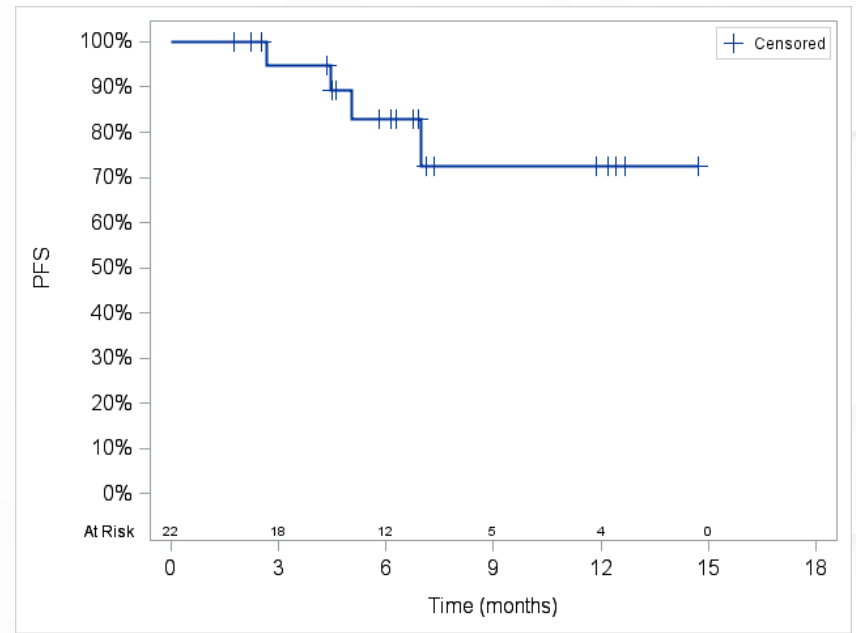
Response	Overall (n=41)	Refractory (n=20)	Relapsed (n=21)
After 2 cycles			
ORR	36 (88%)	16 (80%)	20 (95%)
CR	22 (54%)	6 (30%)	16 (76%)
End of treatment			
ORR	33 (80%)	14 (70%)	19 (90%)
CR	23 (56%)	7 (35%)	16 (76%)

PFS According to Subgroups

PFS by response to 1L tx (n=41)



PFS in pts who went to ASCT (n=22)



Median follow-up in survivors, 6.6 months (range, 0.7-20.2)

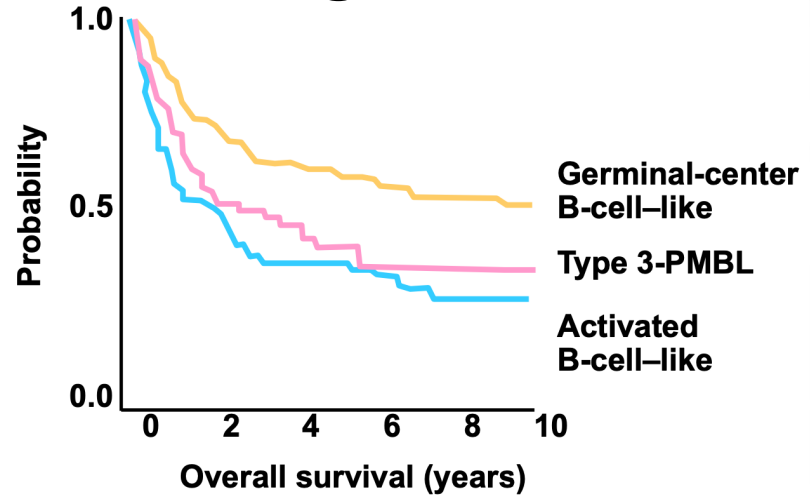
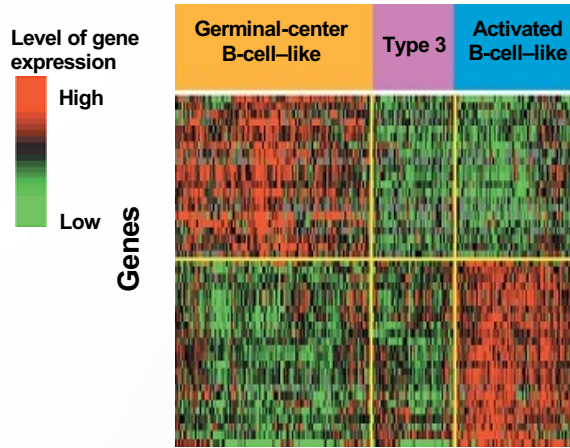
Conclusions: PolaR-ICE

- PolaR-ICE produced high CR rate
 - CR rate: Relapse >> Primary refractory
- No excess toxicity compared to RICE historically.
- 61% bridged to ASCT vs 36-47% (ZUMA-7, TRANSFORM)
- BUT Pola-RICE included fewer patients with primary refractory disease



Consideration of Biology

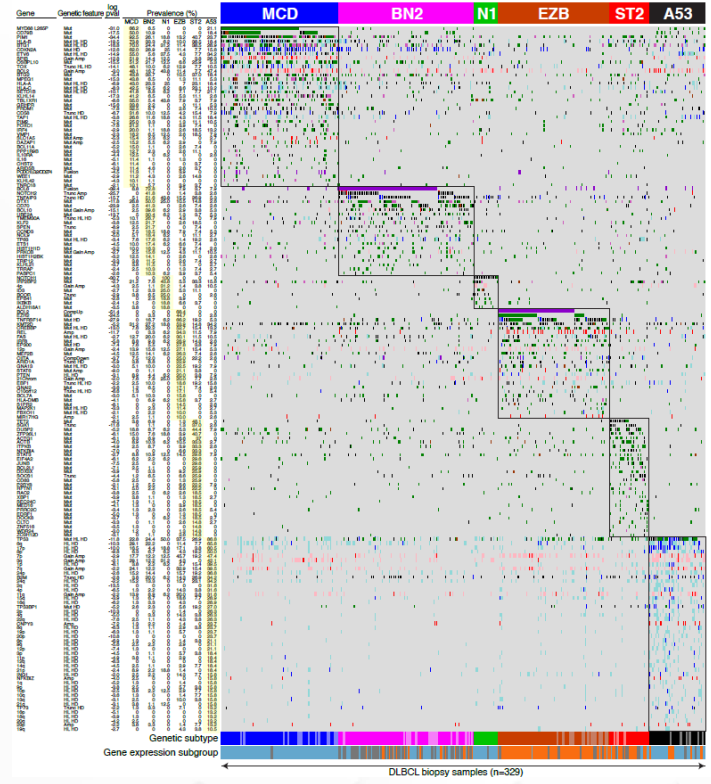
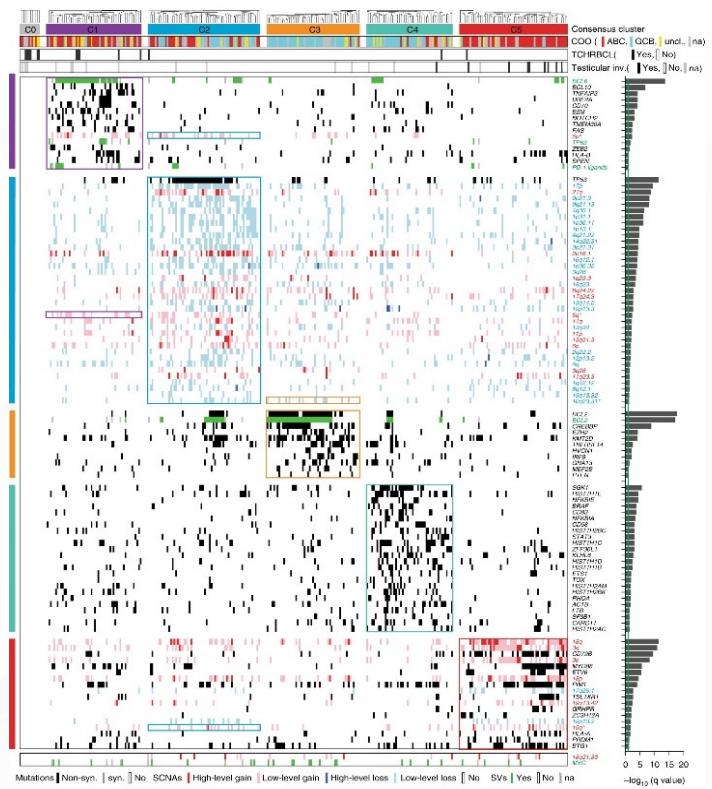
DLBCL Cell of Origin



In *germinal center-type*, mutations of **BCL6**, **histone acetyltransferases** and **EZH2** lead to a repressed transcriptional state

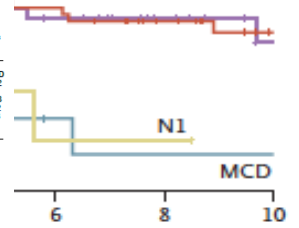
In *ABC-type*, mutations in the **B-cell receptor pathway** lead to unchecked activation of **NFkB**

DLBCL Cell of Origin



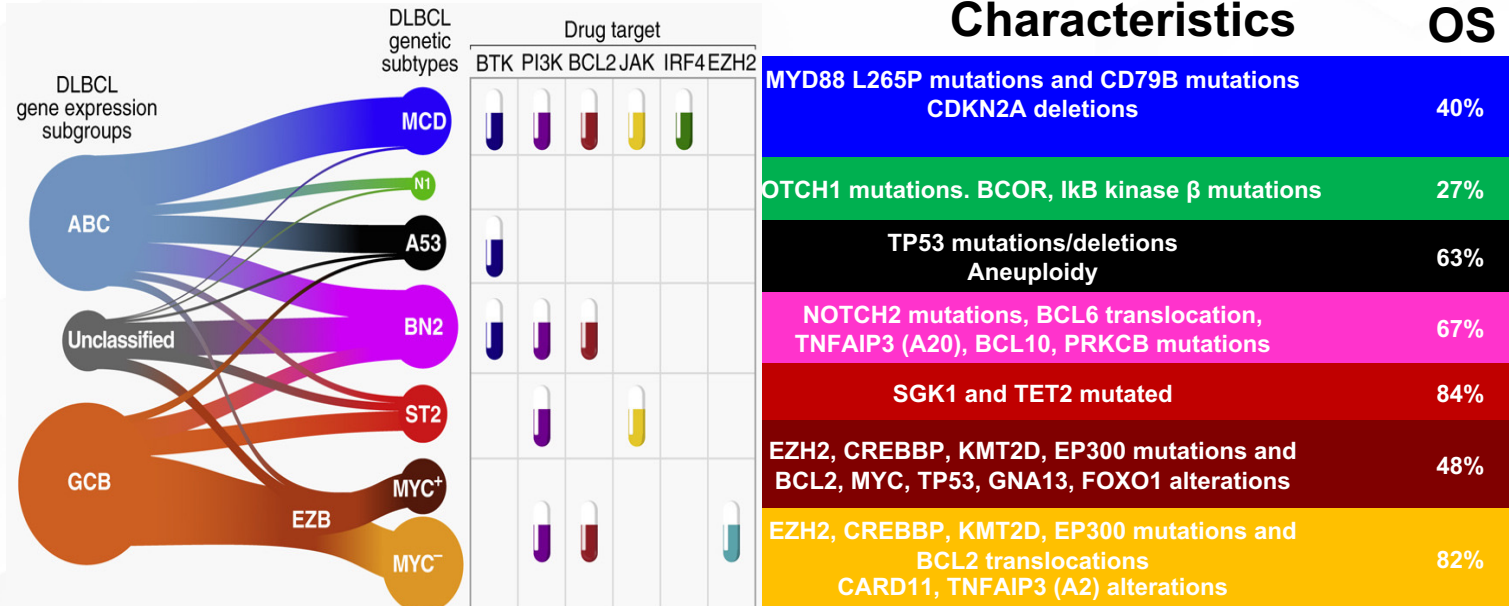
tumors Were Genetically

Comparison	P Value
4-Way	1.70×10^{-4}
EZB vs. MCD	2.13×10^{-4}
EZB vs. N1	0.005
EZB vs. BN2	0.86
N1 vs. BN2	0.008
MCD vs. N1	0.93
MCD vs. BN2	0.001



2	1	1
18	11	5
1	1	0
27	19	11

DLBCL Cell of Origin LymphGen Classification

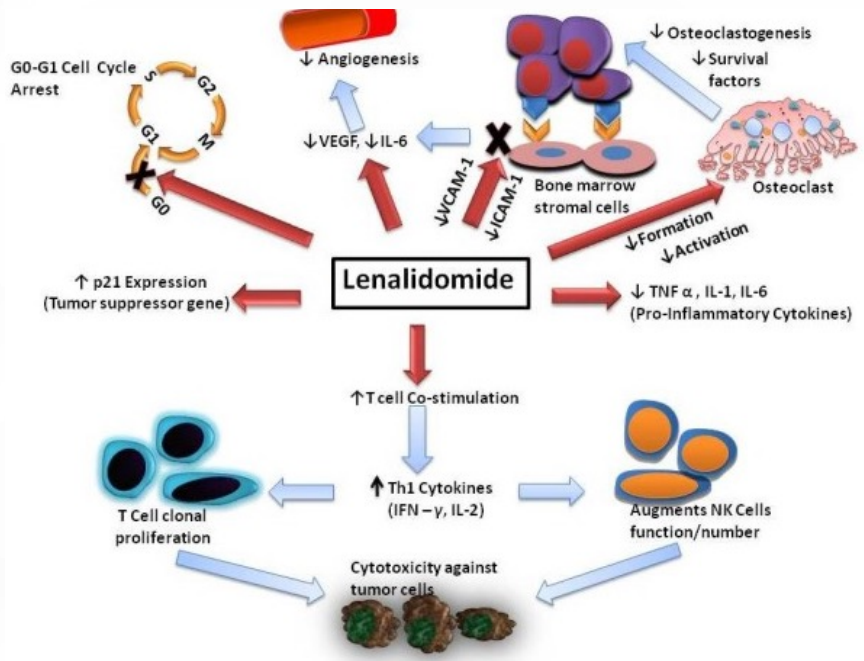


Case 2

- An 82-year-old patient was found to have FL transformed to DLBCL. He was initially treated with mini R-CHOP chemotherapy and obtained a complete remission
- Eight months later, the patient presented with fatigue, weight loss and night sweats. Imaging and biopsy confirmed relapsed disease
- The patient was considered unfit for transplant or CART
- What strategies could we use?

Treatment Strategies for ABC-DLBCL

Lenalidomide

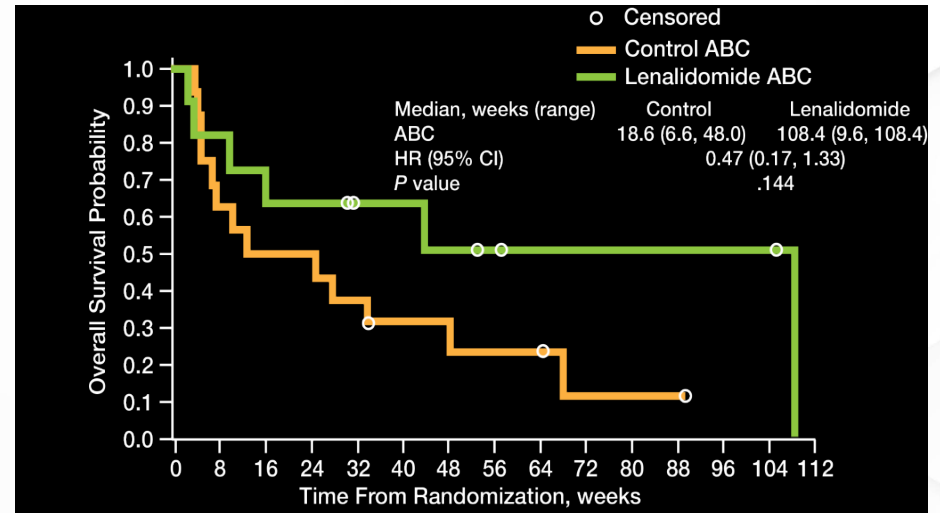


- Lenalidomide is an IMiD (immunomodulatory drug)
- FDA approved for mantle cell lymphoma, multiple myeloma, myelodysplastic syndrome (MDS)
- Given orally, cousin to thalidomide
- Side effects: thrombosis, cytopenias, ?? secondary malignancies

Treatment Strategies for ABC-DLBCL

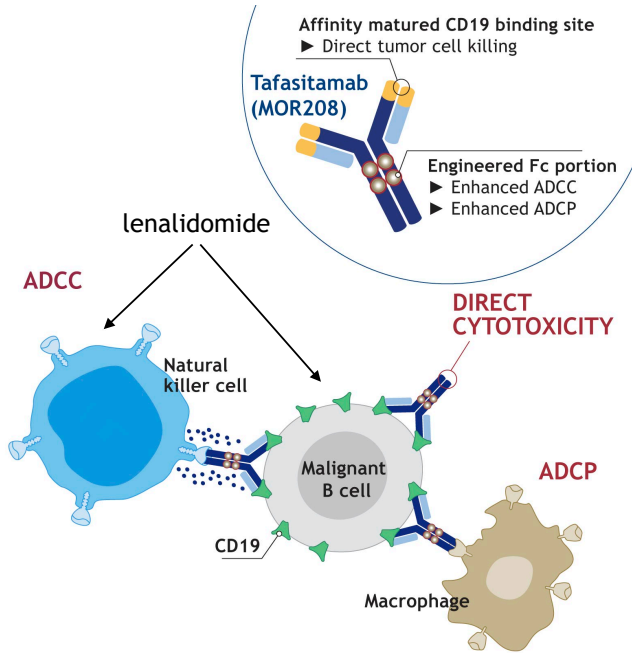
Lenalidomide

- DLBCL Relapsed Setting
 - Lenalidomide worked as a single agent in patients with relapse DLBCL of both GC and ABC subtypes
 - Lenalidomide demonstrated enriched activity in relapsed ABC DLBCL compared to other drugs



New Treatment Strategies for R/R DLBCL

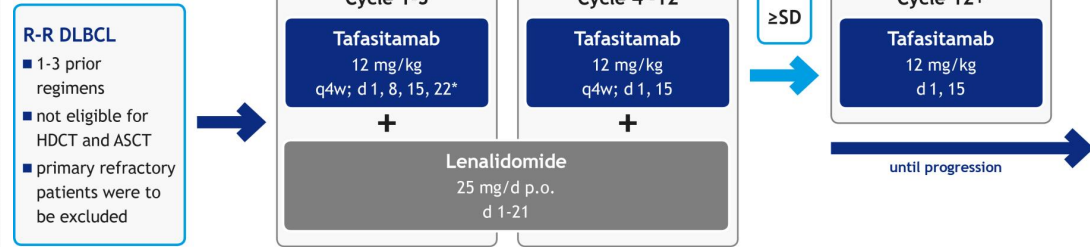
Tafasitamab + Lenalidomide



ADCC: Antibody-Dependent Cell-Mediated Cytotoxicity
 ADCP: Antibody-Dependent Cell-Mediated Phagocytosis

L-MIND: Study Design

phase 2, single-arm, open-label, multicenter study (NCT02399085)



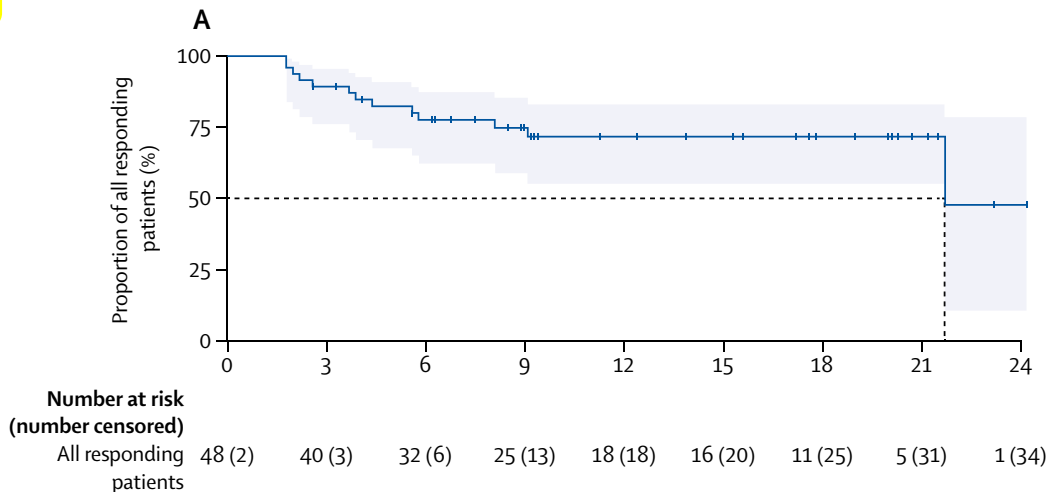
* a loading dose of MOR208 was administered on day 4 of cycle 1

New Treatment Strategies for R/R DLBCL

Tafasitamab + Lenalidomide

	Grade 1-2	Grade 3	Grade 4	Grade 5
Haematological events				
Neutropenia	1 (1%)	22 (27%)	17 (21%)	0
Anaemia	22 (27%)	6 (7%)	0	0
Thrombocytopenia	11 (14%)	10 (12%)	4 (5%)	0
Leukopenia	5 (6%)	6 (7%)	1 (1%)	0
Febrile neutropenia	0	8 (10%)	2 (2%)	0
Lymphopenia	2 (2%)	2 (2%)	1 (1%)	0
Agranulocytosis	0	0	1 (1%)	0
Non-haematological events				
All rash*	22 (27%)	7 (9%)	0	0
Diarrhoea	26 (32%)	1 (1%)	0	0
Asthenia	17 (21%)	2 (2%)	0	0
Cough	17 (21%)	1 (1%)	0	0
Peripheral oedema	18 (22%)	0	0	0
Pyrexia	16 (20%)	1 (1%)	0	0
Decreased appetite	10 (12%)	0	0	0
Hypokalaemia	10 (12%)	4 (5%)	1 (1%)	0
Back pain†	11 (14%)	2 (2%)	0	0
Fatigue	12 (15%)	2 (2%)	0	0
All urinary tract infection*	9 (11%)	3 (4%)	1 (1%)	0
Constipation	13 (16%)	0	0	0
Muscle spasms	12 (15%)	0	0	0
Nausea	12 (15%)	0	0	0
Bronchitis	10 (12%)	0	1 (1%)	0
Vomiting	11 (14%)	0	0	0
Dyspnea	9 (11%)	1 (1%)	0	0

- ORR 60.0% (95% CI 48.4% - 70.8%)
- CR-rate 42.5%

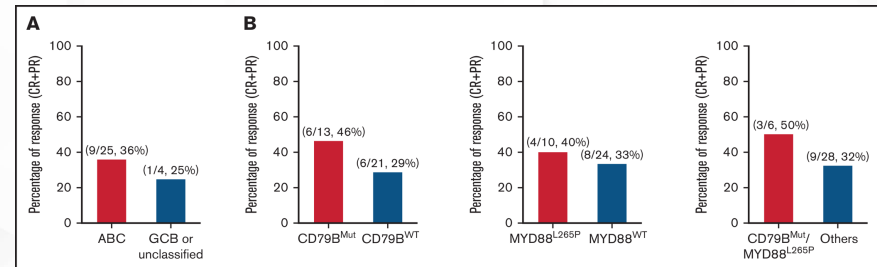
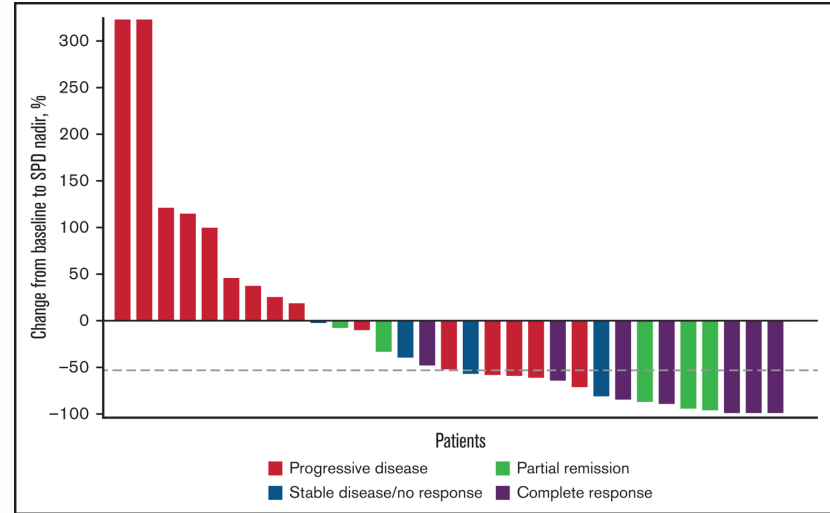


At 5 yr Follow-up:
PFS 11.6 m
OS 33.5 m, >60 m in 25% of pts

Treatment Strategies of ABC-DLBCL

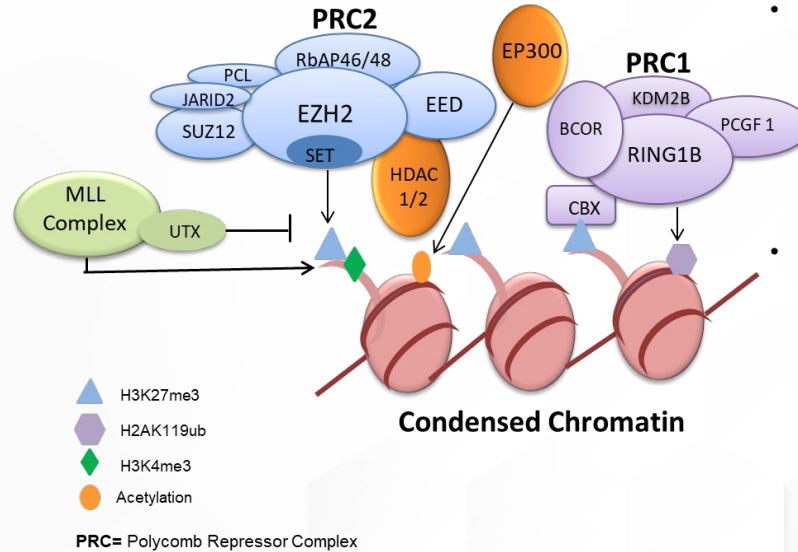
Zanubrutinib

- Phase 2 study N=41
- Zanu 160 mg BID
- ORR 29%, CR 17%
- DOR 4.5 m
- PFS 2.8 m
- OS 8.4 m
- Grade 3 adverse events (AEs) in 48.8%
- Responses enriched in patients with both CD79b and MYD88 mutations
- Perhaps ideal use will be in combination



Targeting the Germinal Center Tazemetostat Plus Belinostat

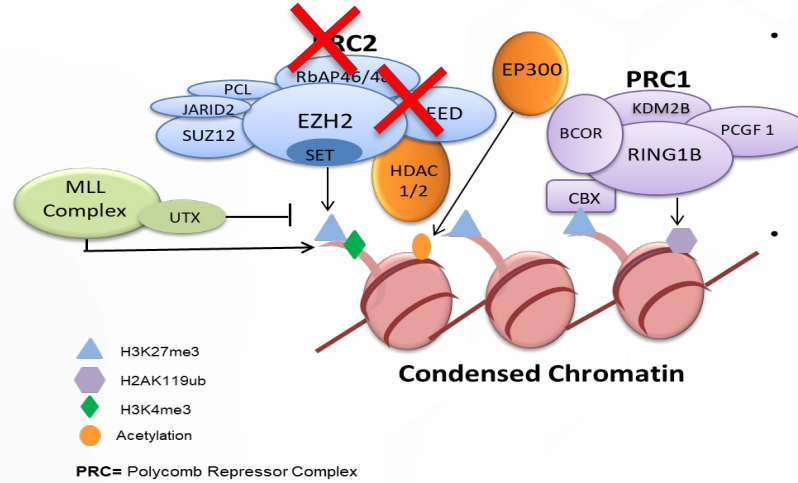
- Lymphomas derived from the germinal center harbor epigenetic derangements driving disease



- EZH2: Histone Methyltransferase**
 - Activating Mutations
 - 30% of GC-DLBCL
 - 27% of FL
- EP300 and CREBBP: Histone Acetyltransferases**
 - Loss of function
 - 39% of GC-DLBCL
 - 41% of FL

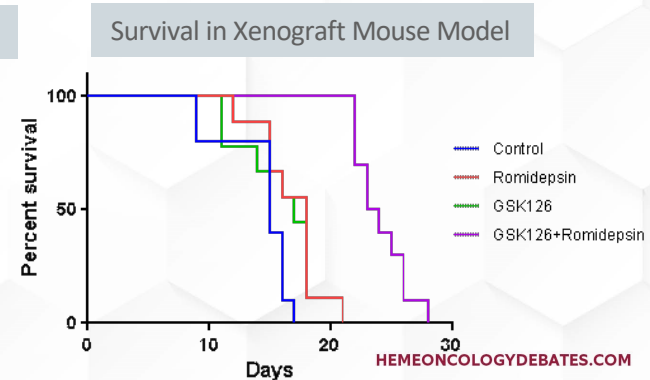
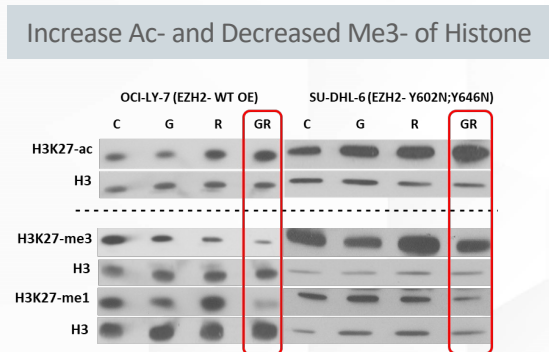
Tazemetostat Plus Belinostat Background and Rationale

- Lymphomas derived from the germinal center harbor epigenetic derangements driving disease



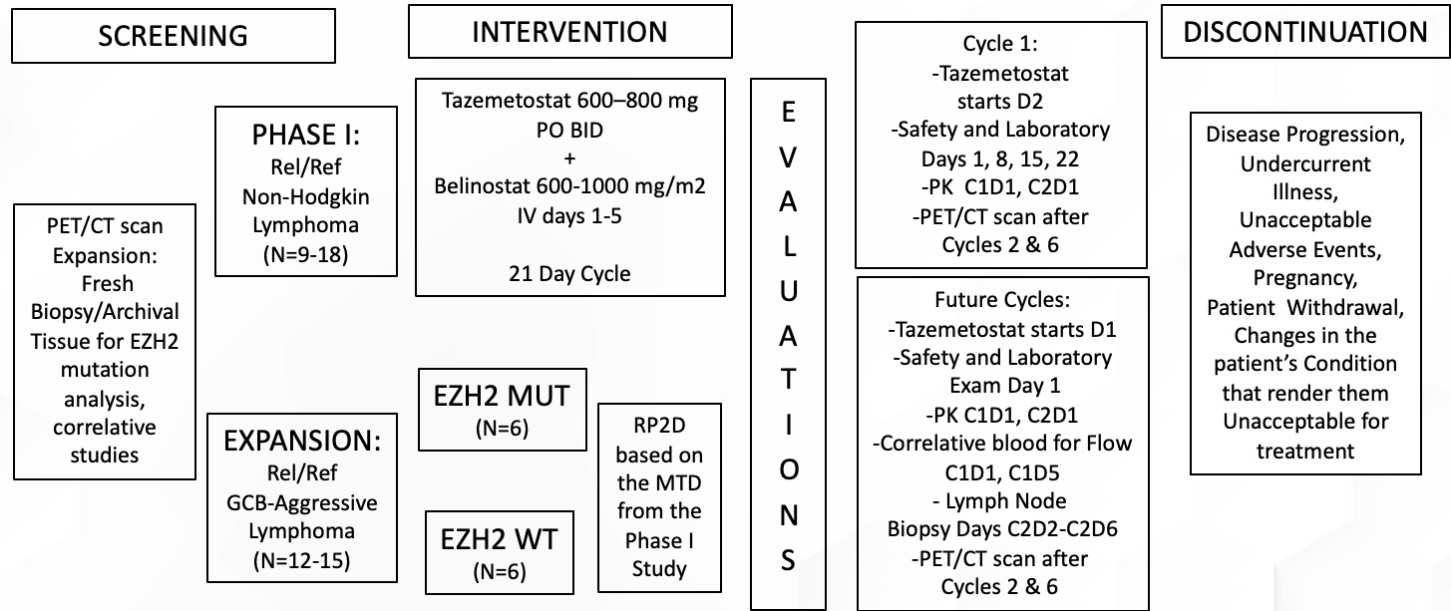
- EZH2: Histone Methyltransferase**
 - Activating Mutations
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 - Loss of function
 - 39% of GC-DLBCL
 - 41% of FL

- Dual targeting of EZH2 and HDAC in pre-clinical models
 - Modulation of histone methylation and acetylation
 - Prolonged survival



Tazemetostat Plus Belinostat ETCTN 10500

Study Design



EZH2/HAT mutational analysis (Integral/Integrated biomarker)
 Pretreatment/archival tissue will be prospectively evaluated for EZH2(integral) / HAT(integrated) mutations and correlated to response.
CUMC

Epiroteomic Histone Modification (Integrated biomarker)
 Paired samples will be assessed via mass spectrometry at the Northwestern Proteomics Core Facility (N=12).
NCLN

Epigenetic gene signature to inform combination therapy (Exploratory biomarker)
 A gene expression signature will be developed as a tool to identify response to epigenetic therapy.
NCLN

Dual Epigenetic Therapy Effects on Gene Expression (Integrated biomarker)
 Paired samples will be assessed via RNA seq to determine changes in GEP following EZH2/HDAC inhibition (N=12).
NCLN

Modulation of T-cell Activation (Exploratory biomarker)
 Paired peripheral blood will be collected to assess for changes in T-cell activation following exposure to dual epigenetic therapy.
CUMC



Biology Agnostic

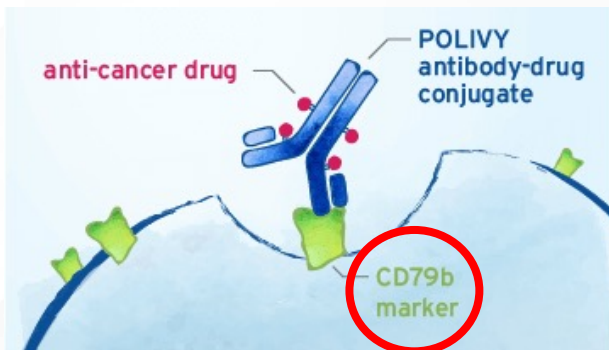
Case 3

- A 56-year-old patient was diagnosed with DLBCL and treated with RCHOP chemotherapy. She obtained a complete remission but less than one year later was found to have anthracycline-induced cardiomyopathy. In addition, she suffered from diabetes, with several negative sequelae from this
- Eight years later the patient again was found to have a new de novo DLBCL. She was treated with R-CEPP, however, could not tolerate procarbazine therefore the dosing was foreshortened and ultimately discontinued
- She obtained a CR but 3 years later relapsed with omental caking. She was highly symptomatic due to burden of disease
- She was evaluated for CAR-T however given her significant comorbidities she was deemed ineligible

New Treatment Strategies for R/R DLBCL

Polatuzumab

- Polatuzumab targets CD79b with MMAE warhead
- 80 patients randomized with rituxan-bendamustine in R/R DLBCL in phase 2



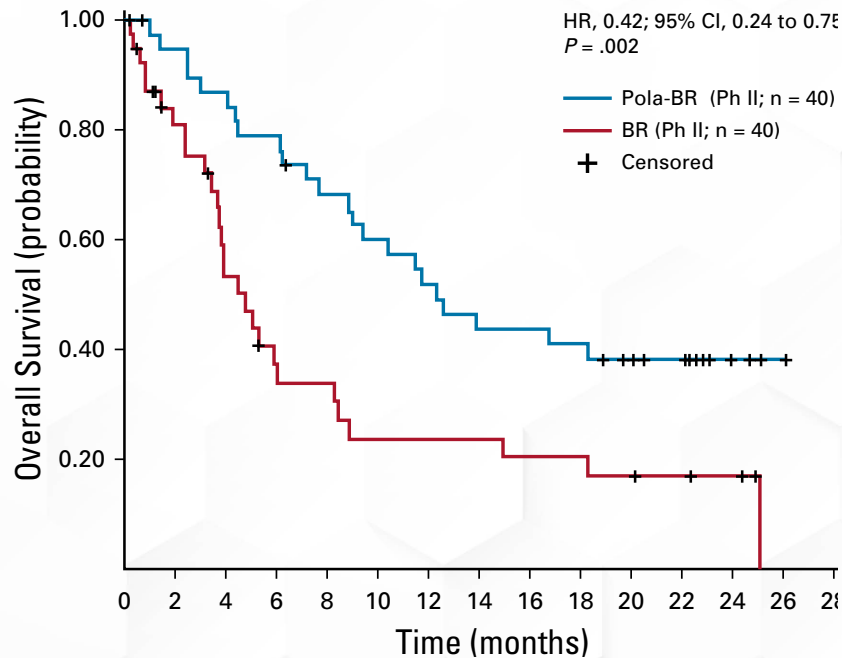
Adverse Event	Pola-BR (n = 39)*		BR (n = 39)*	
	All Grades, No. (%)	Grades 3-4, No. (%)	All Grades, No. (%)	Grades 3-4, No. (%)
Blood and lymphatic system disorders				
Anemia	21 (53.8)	11 (28.2)	10 (25.6)	7 (17.9)
Neutropenia	21 (53.8)	18 (46.2)	15 (38.5)	13 (33.3)
Thrombocytopenia	19 (48.7)	16 (41.0)	11 (28.2)	9 (23.1)
Lymphopenia	5 (12.8)	5 (12.8)	0	0
Febrile neutropenia	4 (10.3)	4 (10.3)	5 (12.8)	5 (12.8)
GI disorders				
Diarrhea	15 (38.5)	1 (2.6)	11 (28.2)	1 (2.6)
Nausea	12 (30.8)	0	16 (41.0)	0
Constipation	7 (17.9)	0	8 (20.5)	1 (2.6)
General disorders and administration site conditions				
Fatigue	14 (35.9)	1 (2.6)	14 (35.9)	1 (2.6)
Pyrexia	13 (33.3)	1 (2.6)	9 (23.1)	0
Metabolism and nutrition disorders				
Decreased appetite	10 (25.6)	1 (2.6)	8 (20.5)	0
Peripheral neuropathy				
Peripheral neuropathy†	17 (43.6)	0	3 (7.7)	0

MMAE = monomethyl auristatin E.
 Sehn LH, et al. *J Clin Oncol.* 2020;38(2):155-165.

New Treatment Strategies for R/R DLBCL

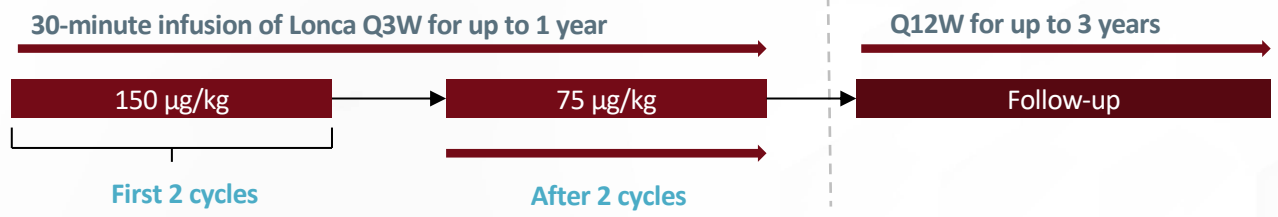
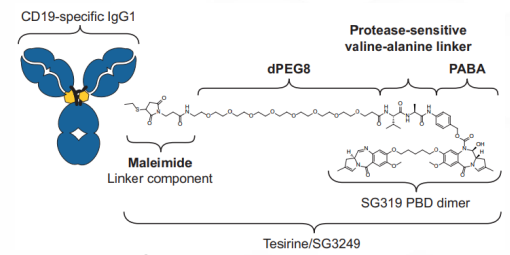
Polatuzumab

Outcome	Phase II Randomized	
	Pola-BR (n = 40)	BR (n = 40)
End of treatment		
IRC, objective response	18 (45.0)	7 (17.5)
Complete response	16 (40.0)	7 (17.5)
Partial response	2 (5.0)	0
Stable disease	6 (15.0)	1 (2.5)
Progressive disease	8 (20.0)	10 (25.0)
Missing or unevaluable†	8 (20.0)	22 (55.0)
Median duration of response, months (95% CI)		
IRC	12.6 (7.2 to NE)	7.7 (4.0 to 18.9)
INV assessed	10.3 (5.6 to NE)	4.1 (2.6 to 12.7)
Median progression-free survival, months (95% CI)		
IRC	9.5 (6.2 to 13.9)	3.7 (2.1 to 4.5)
INV assessed	7.6 (6.0 to 17.0)	2.0 (1.5 to 3.7)
Median overall survival, months (95% CI)	12.4 (9.0 to NE)	4.7 (3.7 to 8.3)



Loncastuximab Tesirine (ADCT-402)

- Patients with R/R DLBCL have a poor prognosis and unmet need for new treatment options
- Lonca had substantial antitumor activity and an acceptable safety profile in this single-arm open-label Phase 2 study (NCT03589469) in adult patients with R/R DLBCL, who had failed ≥ 2 established therapies



Most common ($\geq 10\%$) grade ≥ 3 TEAEs were:

- Neutropenia (38 patients; 26.2%)
- Thrombocytopenia (26 patients; 17.9%)
- GGT increased (25 patients; 17.2%)
- Anemia (15 patients; 10.3%)

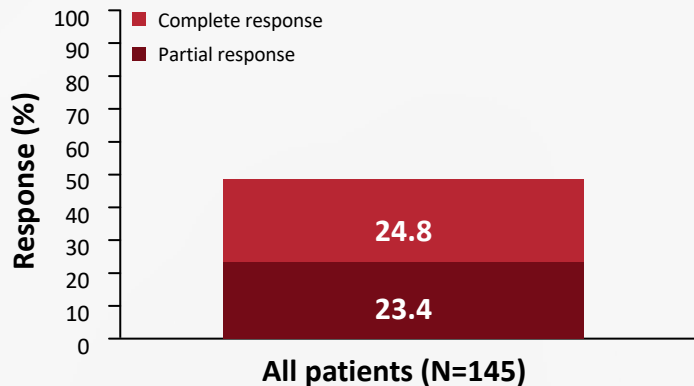
Treatment-related TEAEs leading to treatment discontinuation occurred in 26 (17.9%) patients, most commonly ($\geq 2\%$):

- GGT increased (16 patients; 11.0%)
- Peripheral edema (4 patients; 2.8%)
- Localized edema (3 patients; 2.1%)

**Dexamethasone
4mg BID Days -1 to +1**

No increase in toxicity was seen in patients aged ≥ 65 years compared with younger patients

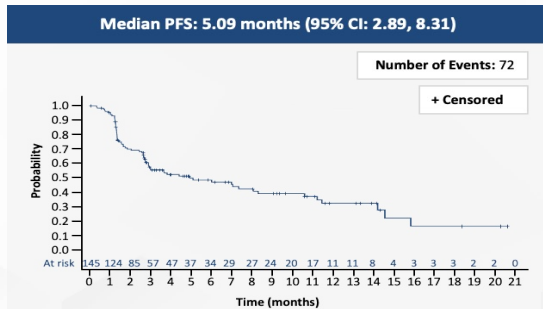
Loncastuximab Tesirine (ADCT-402)



Lonca ORR:
48.3%
 (95% CI: 39.9, 56.7)

Lonca CRR:
24.8%
 (95% CI: 18.0, 32.7)

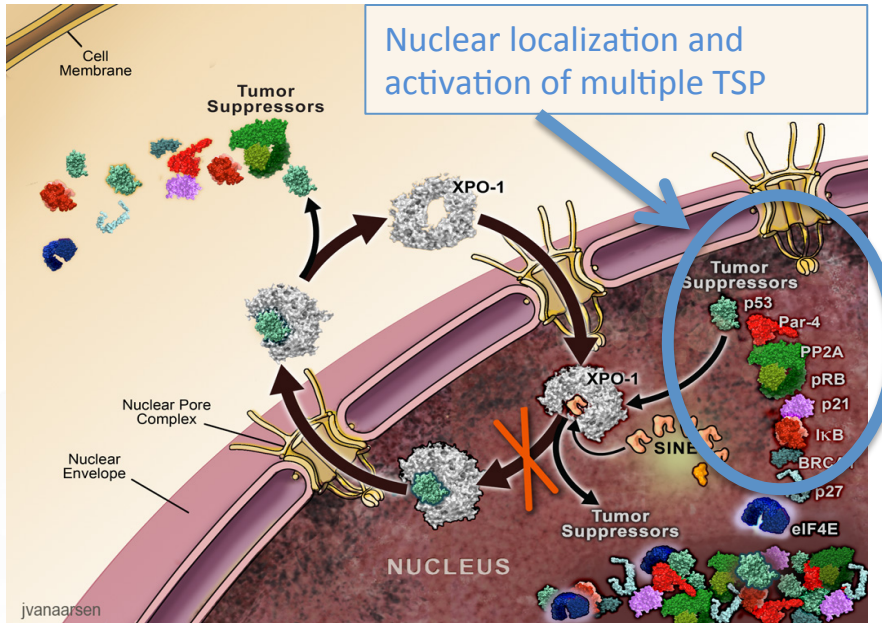
Most responders had a response after 2 cycles; median time to first response was 41.0 days (range: 35–247)
 Mean Lonca cycles: 4.5 (Std: ± 3.89) (Min, max: 1, 18)*



- **15 patients** received CD19-directed CAR-T therapy with an investigator-assessed ORR of 46.7% (6 CR; 1 PR)
- **9 patients** proceeded to SCT as consolidation after Lonca response

New Treatment Strategies for R/R DLBCL

Selective Nuclear Export Inhibitors



Selective Nuclear Export Inhibitors (SINE) or exportin inhibitors block the exit of proteins from the nucleus

Forces retention of tumor suppressors: p53, p21 in the nucleus

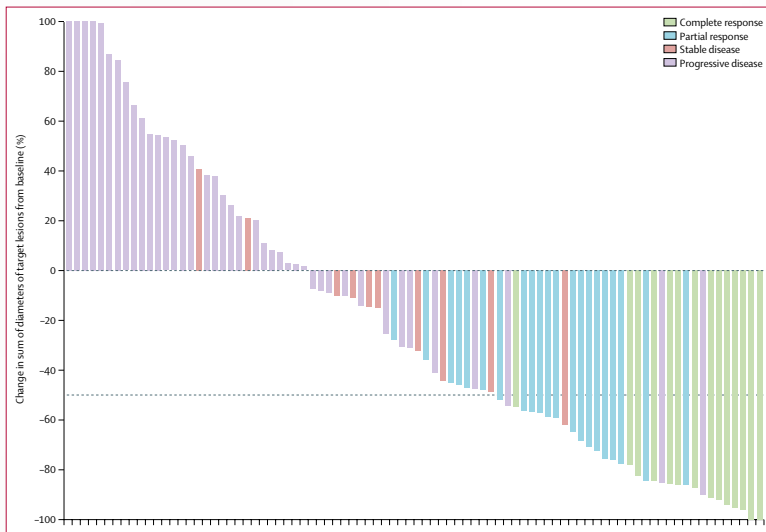
Reduces the entry oncogenes: Myc, Bcl2, Bcl6 into the nucleus

New Treatment Strategies for R/R DLBCL

Selective Nuclear Export Inhibitors

Selinexor given 60 mg PO days 1 and 3 each week
 Responses seen regardless of subtype
 Median duration of response 9.3 months

	Grade 1-2	Grade 3	Grade 4
Thrombocytopenia	20 (16%)	39 (31%)	19 (15%)
Nausea	66 (52%)	8 (6%)	0
Fatigue	46 (36%)	14 (11%)	0
Anaemia	26 (21%)	27 (21%)	1 (1%)
Decreased appetite	42 (33%)	5 (4%)	0
Diarrhoea	41 (32%)	4 (3%)	0
Constipation	39 (31%)	0	0
Neutropenia	7 (6%)	20 (16%)	11 (9%)
Weight loss	38 (30%)	0	0
Vomiting	35 (28%)	2 (2%)	0
Pyrexia	23 (18%)	5 (4%)	0
Asthenia	21 (17%)	6 (5%)	0
Cough	23 (18%)	0	0
Upper respiratory tract infection	18 (14%)	1 (1%)	0
Dizziness	18 (14%)	0	0
Hypotension	13 (10%)	4 (3%)	0
Oedema peripheral	14 (11%)	1 (1%)	0
Dyspnoea	12 (10%)	1 (1%)	1 (1%)
Hyponatraemia	4 (3%)	10 (8%)	0



	Overall response rate	Complete response	Partial response	Stable disease	Progressive disease or no response recorded
All patients	36/127 (28%) (20.7-37.0)	15 (12%) (6.8-18.7)	21 (17%) (10.5-24.2)	11 (9%) (4.4-15.0)	80 (63%) (54.0-71.4)
GCB subtype	20/59 (34%) (22.1-47.4)	8 (14%) (6.0-25.0)	12 (20%) (11.0-32.8)	7 (12%) (4.9-22.9)	32 (54%) (40.8-67.3)
Non-GCB subtype	13/63 (21%) (11.5-32.7)	6 (10%) (3.6-19.6)	7 (11%) (4.6-21.6)	3 (5%) (1.0-13.3)	47 (75%) (62.1-84.7)
Unclassified	3/5 (60%) (14.7-94.7)	1 (20%) (0.5-71.6)	2 (40%) (5.3-85.3)	1 (20%) (0.5-71.6)	1 (20%) (0.5-71.6)

Data are n/N (%; 95% CI). Responses were adjudicated according to central imaging assessment. GCB=germinal centre B cell. See results section in main text for one-sided 97.5% CI.

Table 2: Responses in evaluable patients



Trying to Convert PR to CR After CAR-T

Case 4

- A 42-year-old patient was diagnosed with high-grade DLBCL PTLD following kidney transplant. He was treated with R-EPOCH and obtained a complete remission
- Three months after completion of therapy he was found to have relapse of disease. He was eligible for CAR-T and received Liso-cel
- At his 30 day scan he was found to have a partial response
- What strategies can we use to convert this PR to a CR?

Fixed-course Glofitamab in Relapsed/Refractory DLBCL: Study Updates

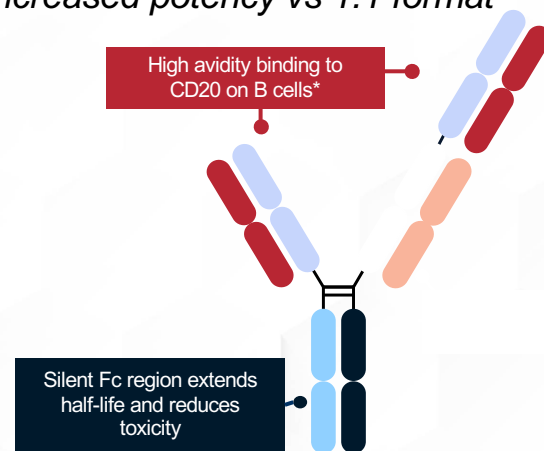
- **Glofitamab**

- Redirects T cells to eliminate B cells
- Off-the-shelf treatment, administered for a fixed duration of up to 12 cycles

- **Phase I/II experience (NCT03075696)**

- Glofitamab has induced frequent and durable complete responses (CRs) and demonstrated a manageable safety profile in patients with R/R LBCL and other B-cell NHL subtypes

Glofitamab: CD20xCD3 bispecific antibody with 2:1 format for increased potency vs 1:1 format



Study Design and Baseline Characteristics

- **Study Design**
- Glofitamab IV administration fixed dose (0.6–25mg) or with step-up dosing during C1 (target dose: 16mg or 30mg) every three weeks, maximum 13 infusions
- Obinutuzumab pretreatment (1 x 1000mg) to mitigate CRS
- Fixed duration treatment maximum 12 cycles (8.3 months)
- Optional re-treatment in patients with PD after prior response

Baseline Characteristics	N=154
Median age (range)	66 (21-90)
Median prior tx (range)	3 (2-7)
Prior ASCT	28 (18%)
Prior CAR	51 (33%)
Refractory to last tx	132 (86%)

Phase 2 Study Update for Glofitamab in R/R DLBCL

Most common adverse events

CRS: 63% (grade 3-4: 4%)

ICANS: 8% (grade 3-4: 3%)

Neutropenia: 38%

Tumor flare grade ≥ 2 : 7%

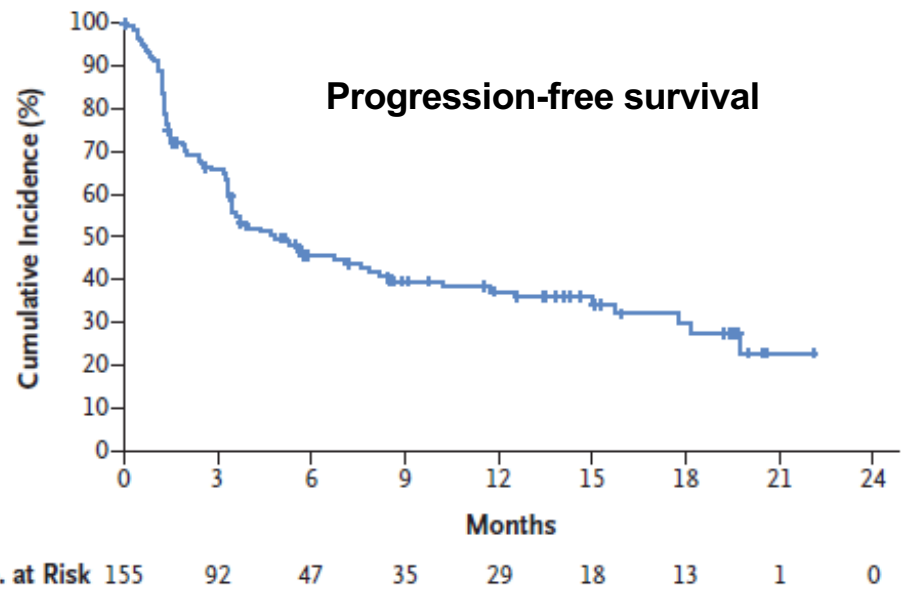
Best IRC-assessed overall response

ORR: 52%

CR: 39%

Median DoR: 18.4 mo

Median DoCR: NR, 24m DoCR 79%

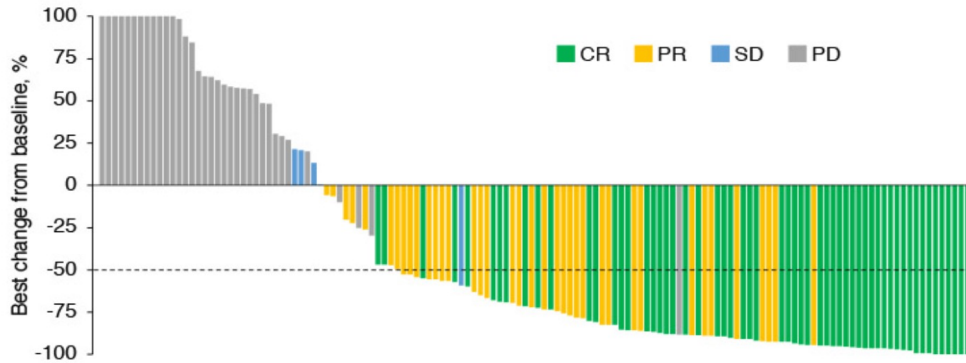


Median 4.9 months

Epcoritamab - Subcutaneous

- SC CD3/CD20 bispecific
- Phase 2 EPCORE NHL-1 study
- N=157 DLBCL, FL3B, PMBCL
- Priming and intermediate doses followed by full doses of 48 mg
- QW C1-3, Q2W C4-9, Q4W C>9

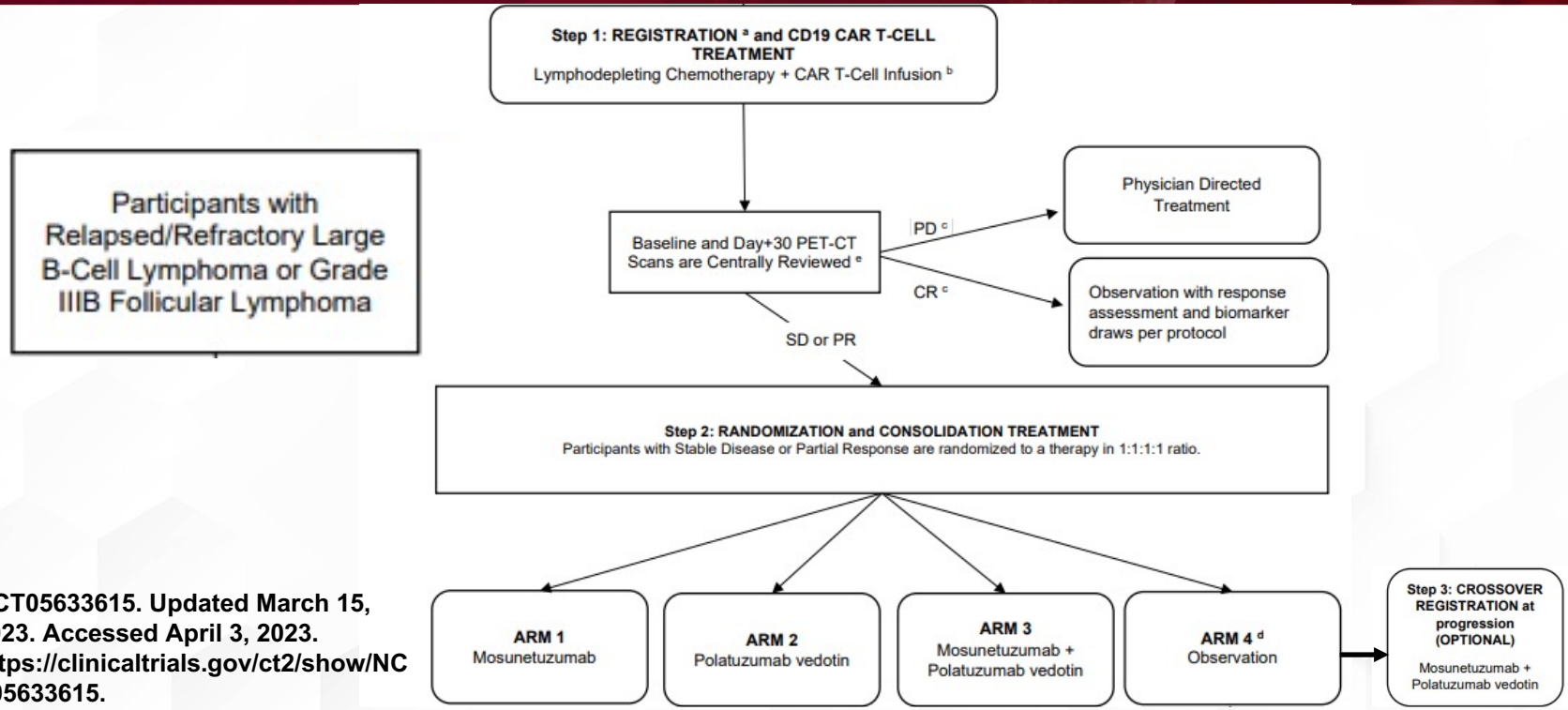
- N=61 had prior CAR TN=31 prior ASCT
- 61% Primary Refractory
- ORR 63%
- CR 39%
- mDOR 12 m
- mCR DOR not reached



CR, complete response; PD, progressive disease; PR, partial response; SD, stable disease.

- AEs: CRS 49.7% (only 2.5% G3), pyrexia 23.6%, fatigue 22.9%, neutropenia 21.7%, diarrhea 20.4%, ICANS 6.4%
- CRS mainly occurred C1D15 (20 h after first full dose)

SWOG 2114

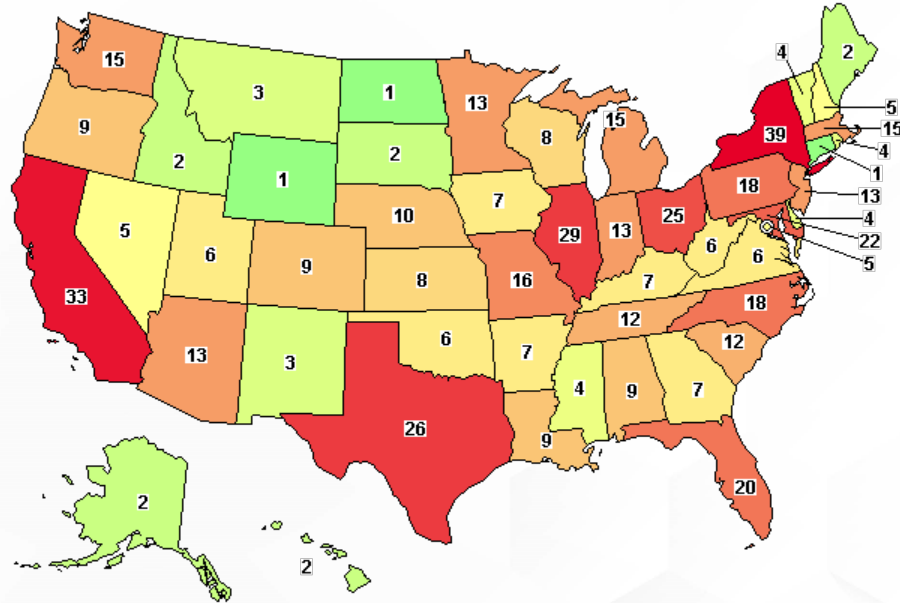


NCT05633615. Updated March 15, 2023. Accessed April 3, 2023. <https://clinicaltrials.gov/ct2/show/NCT05633615>.

Non-CAR-T Treatment Strategy

Decision Factors

- Bridging to ASCT?
 - Consider chemotherapy containing regimen: PolaR-ICE
- Consider CAR-T in future?
 - Perhaps avoid CD19 targeting agents
- Relapse after CAR-T?
 - Consider targeted agents, polatuzumab vedotin+benda, bispecifics
- Not a candidate for CAR-T or ASCT?
 - Avoid chemo containing regimens, consider tafa+len, lonca-T, bispecifics
- GCB vs ABC?
 - Consider drugs specifically targeting biology: lenalidomide or BTK vs epigenetic



Clinical trials are a tool to get the most ground-breaking scientific advances to patients

Thank You!

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Great
Debates
& Updates

**Hematologic
Malignancies**

Q&A Session