

lymphoma & myeloma

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**EXPERTS KNOWLEDGE SHARE**

**SELECTING THE APPROPRIATE TREATMENT FOR  
INDOLENT NHL: THE NOW AND THE NEXT**

**Prof. Alexey Danilov, MD, PhD  
Assoc. Prof. Stefan K. Barta, MD, MRCP  
Dr. Jessica Okosun, MD, PhD**

**Monday May 3<sup>rd</sup>, 2021**

## THE OBJECTIVE OF THIS MEETING IS TO DISCUSS SELECTING THE APPROPRIATE TREATMENT FOR INDOLENT NHL: THE NOW AND THE NEXT



A CHANCE TO **HEAR THE VIEWS OF EXPERTS**  
AND ALLOW THEM TO ANSWER THE  
QUESTIONS THAT ARE IMPORTANT TO YOU



YOUR OPPORTUNITY TO **DISCUSS AND**  
**SHARE LEARNINGS**



REVIEW AND DISCUSS **PATIENT CASE**  
**STUDIES** USING THE QUESTIONS THAT YOU  
HAVE SENT IN ADVANCE OF THIS EVENT

# EXPERTS KNOWLEDGE SHARE EDUCATIONAL OBJECTIVES

## YOU WILL LEARN MORE ABOUT AND DISCUSS:



The current and future treatment landscape in indolent non-Hodgkin lymphoma (NHL)



Considerations regarding treatment selection for patients with indolent NHL

- Including the future use of targeted therapies, chimeric antigen receptor (CAR)-T cell therapy and bispecifics

# INTRODUCING THE SCIENTIFIC COMMITTEE



**Prof. Alexey Danilov, MD, PhD**

City of Hope National Medical Centre,  
Duarte, CA, USA



**Assoc. Prof. Stefan K. Barta,  
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**Dr. Jessica Okosun, MD, PhD**

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- The programme is therefore independent, the content is not influenced by the supporters and is under the sole responsibility of the experts

# EXPERTS KNOWLEDGE SHARE AGENDA

## SELECTING THE APPROPRIATE TREATMENT FOR INDOLENT NHL: THE NOW AND THE NEXT

Time	Topic	Facilitator
5 minutes	Welcome and introductions	COR2ED
5 minutes	Overview and scene setting	Alexey Danilov
15 minutes	<b>First-line treatment</b> selection for indolent NHL	Stefan Barta
15 minutes	Treatment selection for <b>relapsed/refractory indolent NHL</b>	Jessica Okosun
5 minutes	Lead-in to breakout sessions	COR2ED
25 minutes	Three breakout groups Groups discussing questions and case studies and sharing experience	All (moderated by Faculty)
15 minutes	The <b>future treatment landscape</b> in indolent NHL	Alexey Danilov
5 minutes	Closing remarks	COR2ED

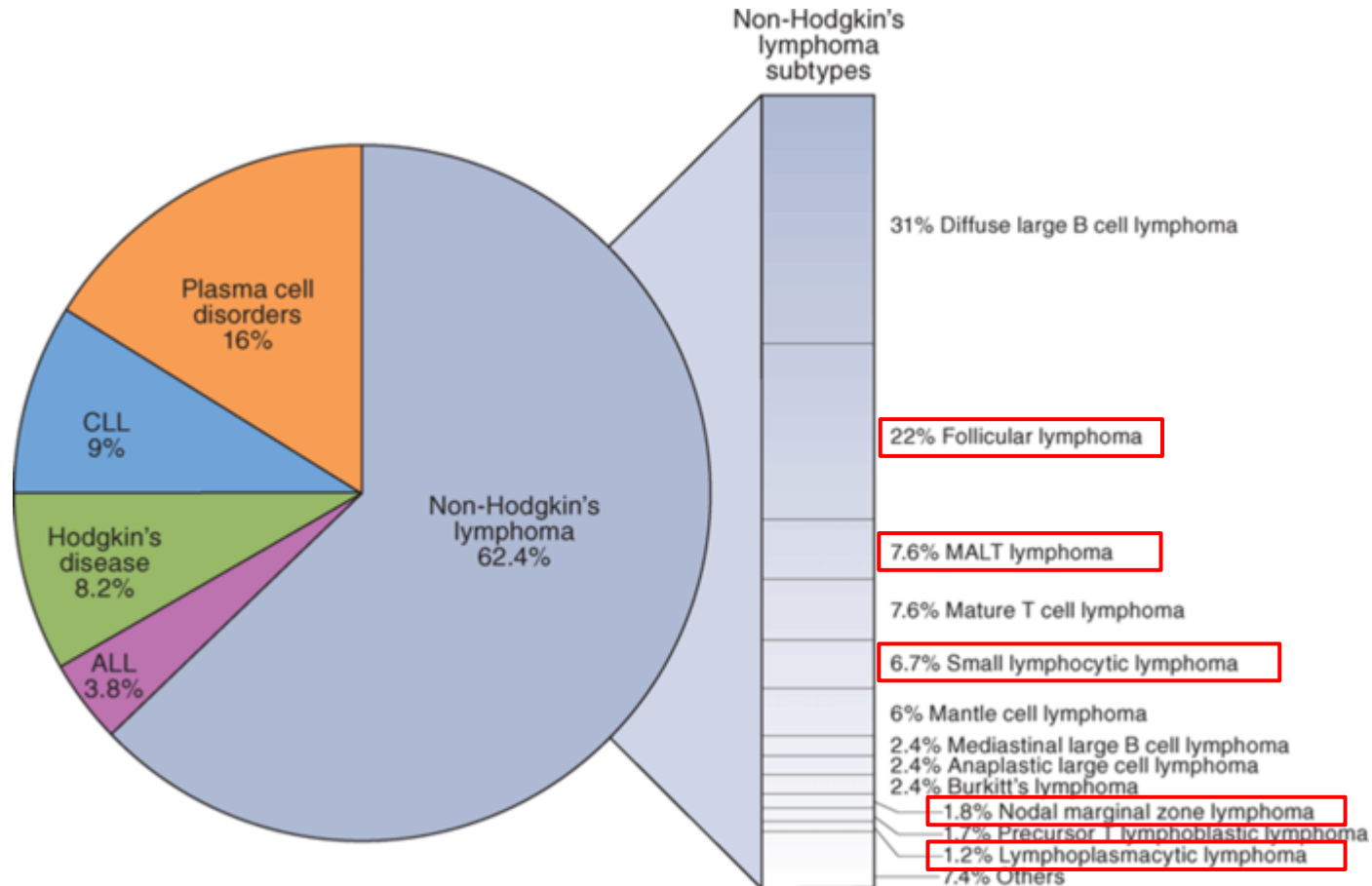
# FIRST-LINE TREATMENT SELECTION FOR INDOLENT NHL

**Stefan K. Barta, MD, MS, MRCP (UK)**

**Associate Professor of Medicine  
University of Pennsylvania, Philadelphia, PA, USA**



# INDOLENT B-CELL LYMPHOMAS – OVERVIEW



Source: Longo DL, Fauci AS, Kasper DL, Hauser SL, Jameson JL, Loscalzo J: *Harrison's Principles of Internal Medicine, 18th Edition*: www.accessmedicine.com  
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- Indolent lymphomas are generally considered **incurable, but treatable** lymphomas, with survival usually measured in the current era in “decades”
- **Most common indolent B-cell lymphomas** are follicular lymphoma (**FL**) >> marginal zone lymphoma (**MZL**) (MALT [mucosa-associated lymphoid tissue], nodal, splenic) > small lymphocytic lymphoma (**SLL**) > lymphoplasmacytic lymphoma (**LPL**)
- Median age of diagnosis 65, but can occur at much younger ages
- Risk of **transformation** to an aggressive B-cell malignancy varies by histology (FL [2-3%/year] > SLL > MZL)

- Treatment depends largely on stage, disease “bulk”, and symptoms, therefore **adequate staging is paramount**
  - Staging with positron emission tomography/computed tomography (PET/CT) or computed tomography of chest, abdomen, pelvis (CT CAP) +/- neck
  - Bone marrow biopsy in certain circumstances
- **Prognostic tools** take into account mainly clinical factors, such as age, stage, lactate dehydrogenase (LDH), number of involved sites, bone marrow involvement +/- molecular information and response to initial therapy:
  - Follicular Lymphoma International Prognostic Index (FLIPI); FLIPI2; PRIMA-PI; M7-FLIPI<sup>1-4</sup>
  - MALT Lymphoma prognosis index (MALT-IPI)<sup>5</sup>
  - CLL-IPI<sup>6</sup>
  - Positive PET after induction chemoimmunotherapy (CIT)<sup>7</sup>
  - Early relapse after completion of initial CIT<sup>8</sup>

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CLL, chronic lymphocytic leukaemia; IPI, International Prognostic Index; MALT, mucosa-associated lymphoid tissue

1. Solal-Celigny P, et al. Blood. 2004;104:1258-65; 2. Federico M, et al. J Clin Oncol. 2009;27:4555-62; 3. Bachy E, et al. Blood. 2018;132:49-58; 4. Huet S, et al. Lancet Oncol. 2018;19:549-61; 5. Thieblemont C, et al. Blood. 2017;130:1409-17; 6. International CLL-IPI working group. Lancet Oncol. 2016;17:779-90; 7. Trotman J. Lancet Oncol. 2018; 19: 1530-42; 8. Casulo C, et al. J Clin Oncol. 2015;33:2516-22; 9.

Launonen A, et al. Blood. 2017;130 (suppl 1):1490

# FOCUS ON FL AND NODAL MZL – WHEN TO TREAT?

## Early stage:

- Select patients may be treated with local therapy with “curative intent”

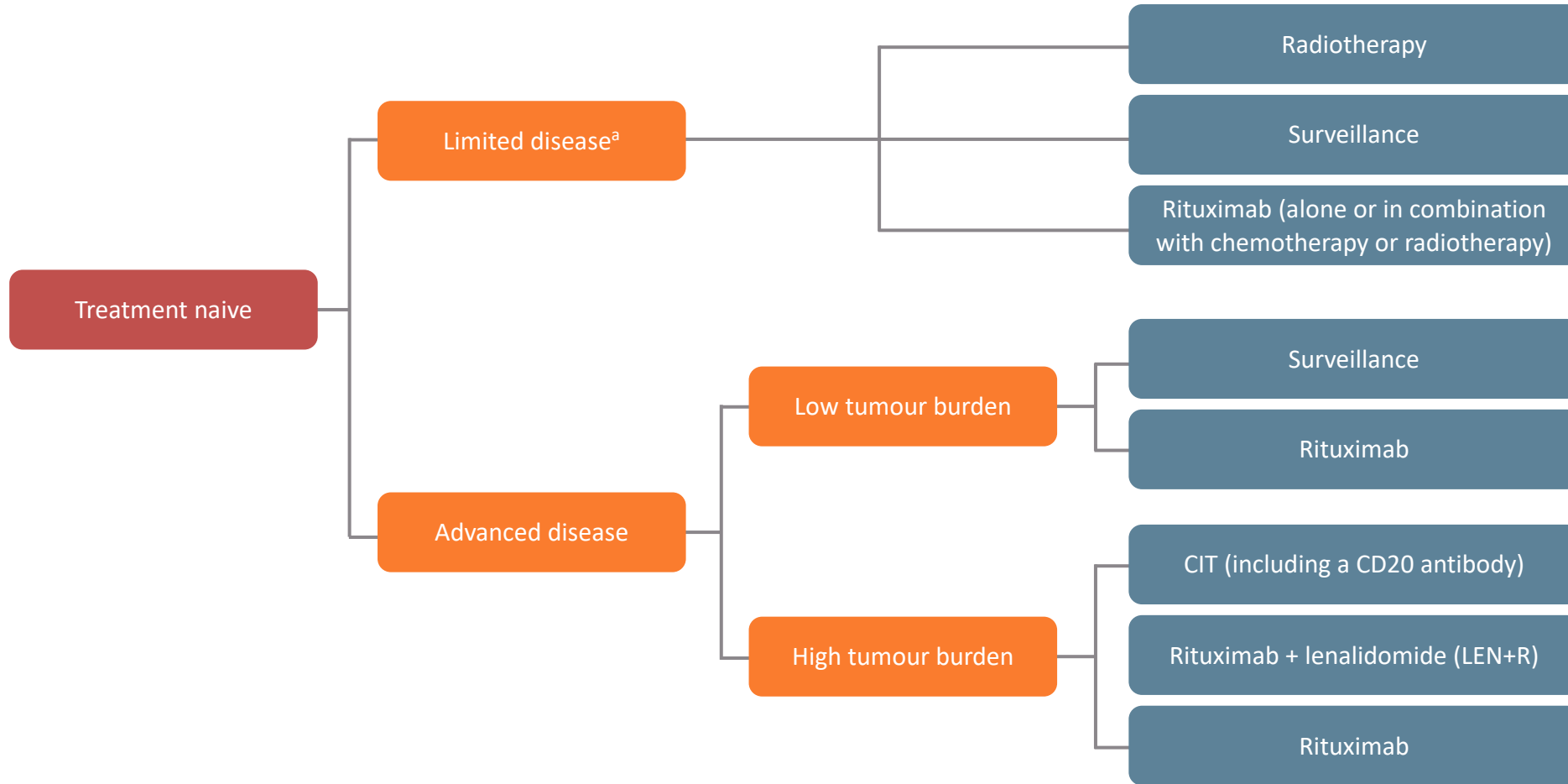
## Advanced disease:

- **Candidates for “watchful waiting”**
  - Asymptomatic; low bulk, slowly progressive disease; no impending organ compromise
- **Indicators to initiate treatment**
- **Groupe d'Etude des Lymphomes Folliculaires (GELF) criteria:**
  - Tumour size: any site >7 cm or ≥3 sites >3 cm
  - B symptoms
  - Spleen: below umbilical line
  - Compressive symptoms
  - Pleural or peritoneal effusion
- **Other criteria:**
  - Cytopenias
  - Impairment of major organ function
  - Marked blood lymphocytosis
  - Steady or rapid progression

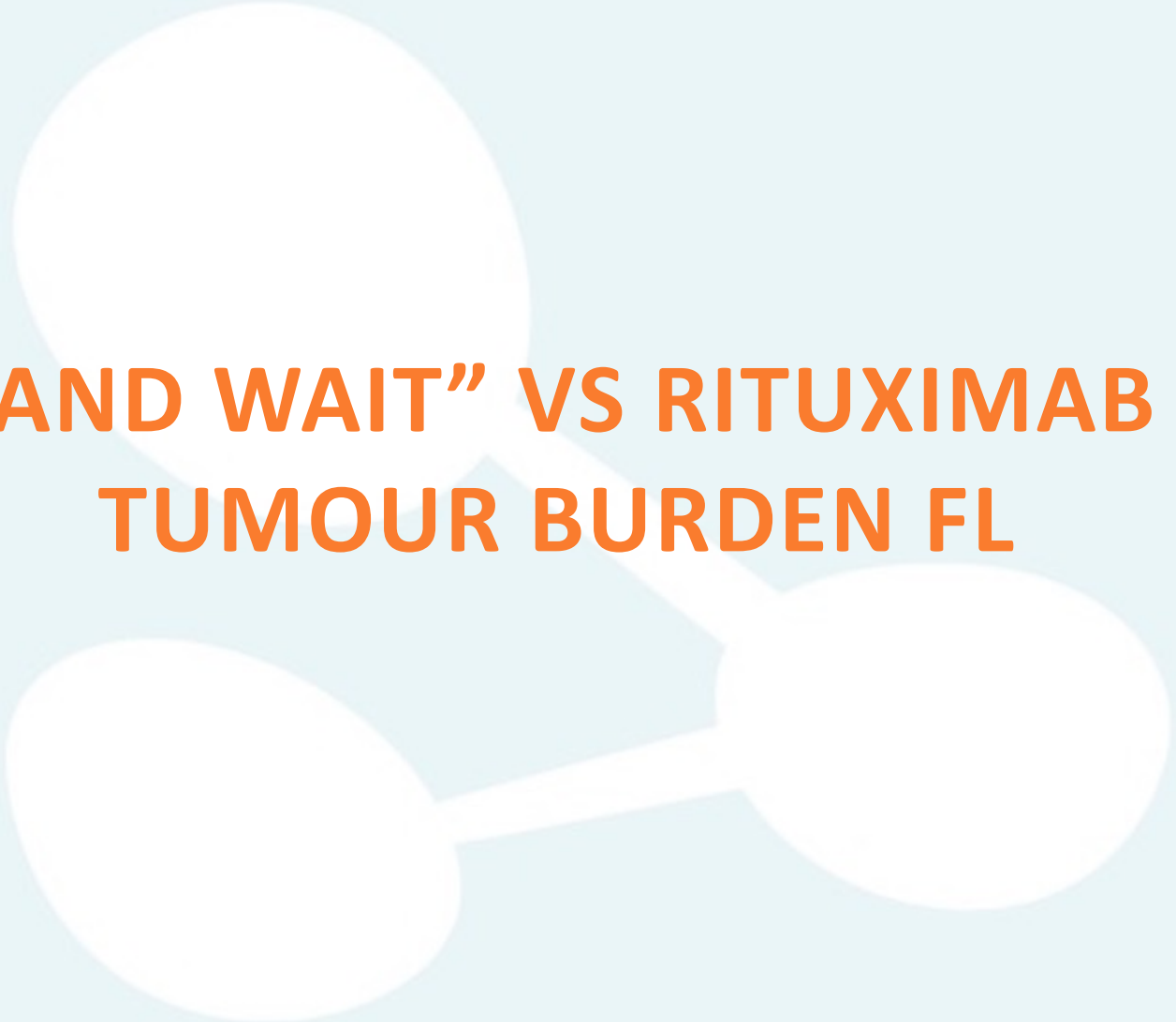
### Watch and wait:

- No overall survival (OS) benefit of initiation of CIT at diagnosis over delayed initiation has been shown
- Assumes that delay in exposure to therapy and its attendant side-effects results in an improved quality of life (QoL)
- Average time from diagnosis to treatment: 30 months
- At 10 years, ca. 20% still do not require therapy

# PROPOSED TREATMENT ALGORITHM FOR NEWLY DIAGNOSED FOLLICULAR OR NODAL MZL REQUIRING TREATMENT

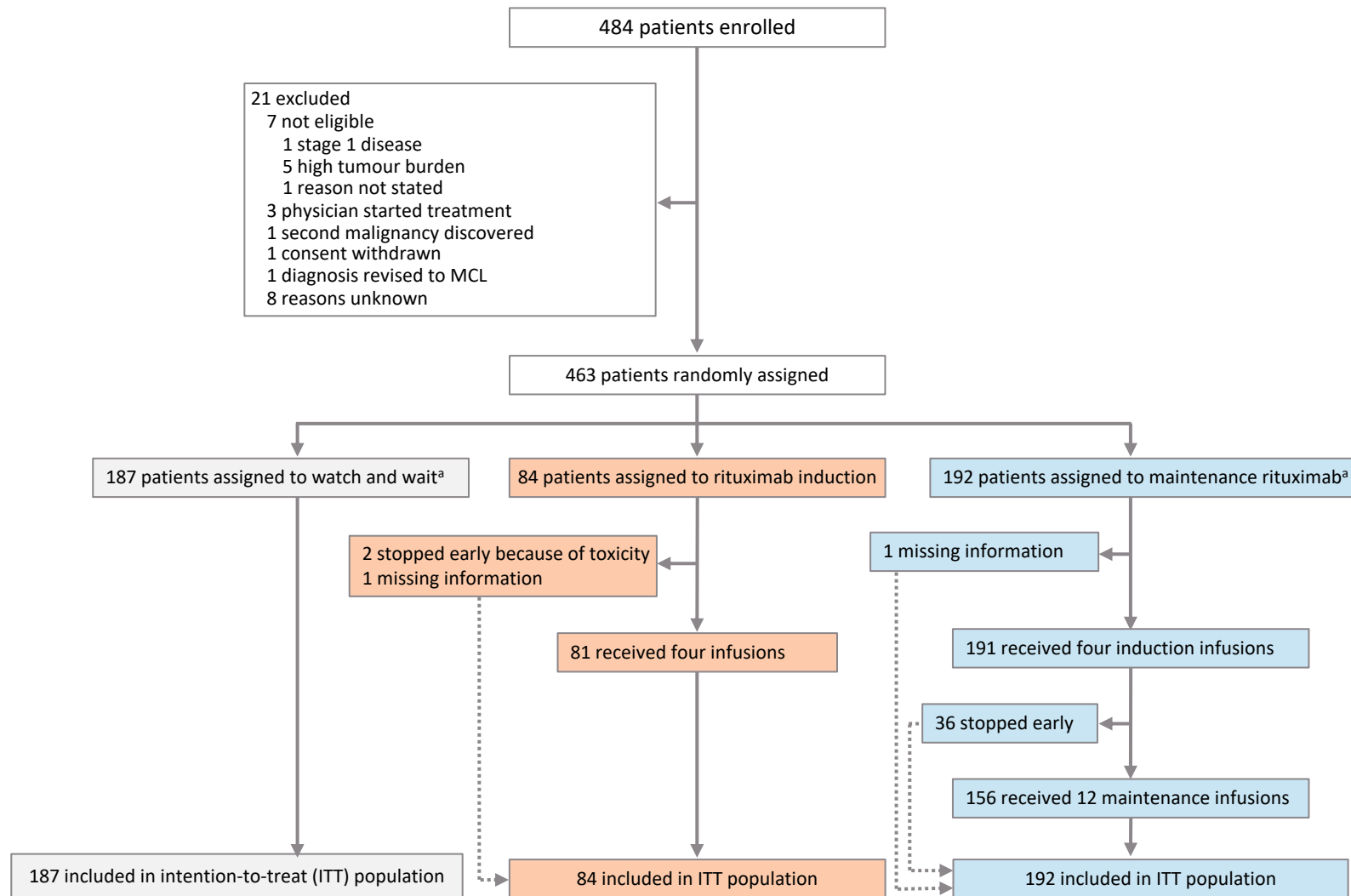


<sup>a</sup> Patients with limited disease but high tumour burden should be treated as per patients with advanced disease and high tumour burden  
CD20, cluster of differentiation 20; CIT, chemoimmunotherapy; MZL, marginal zone lymphoma  
Modified from Matasar MJ, et al. Oncologist. 2019;24:e1236-50



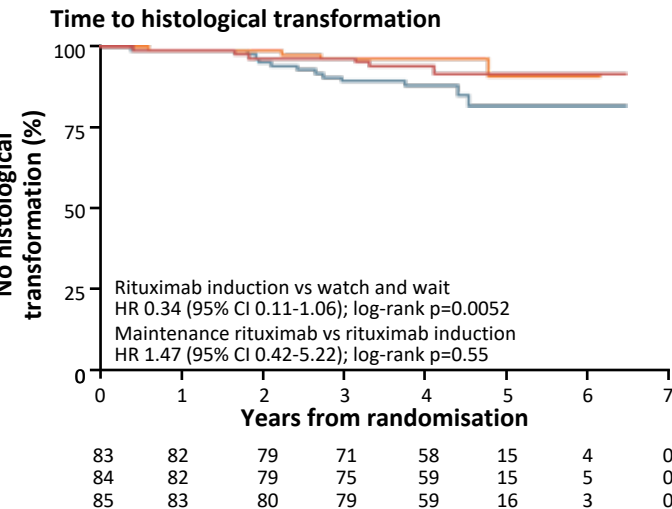
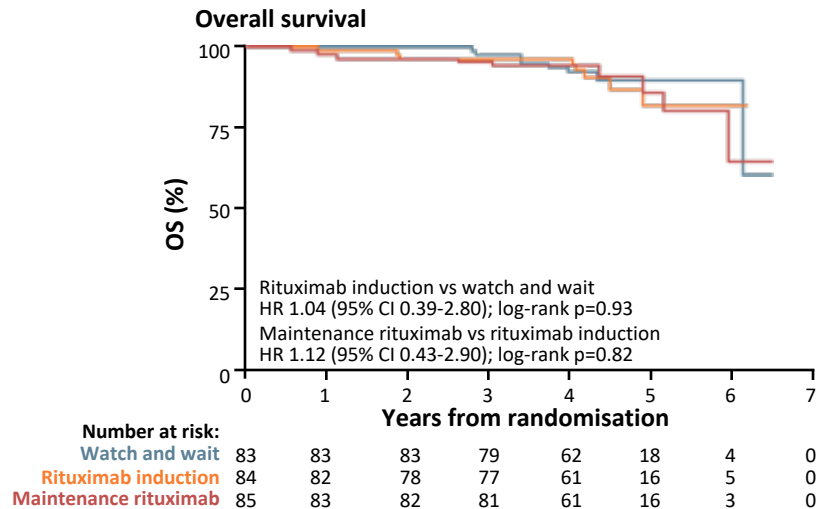
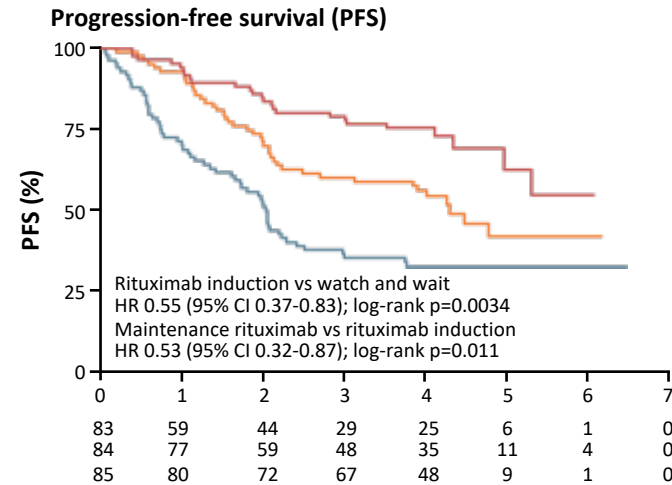
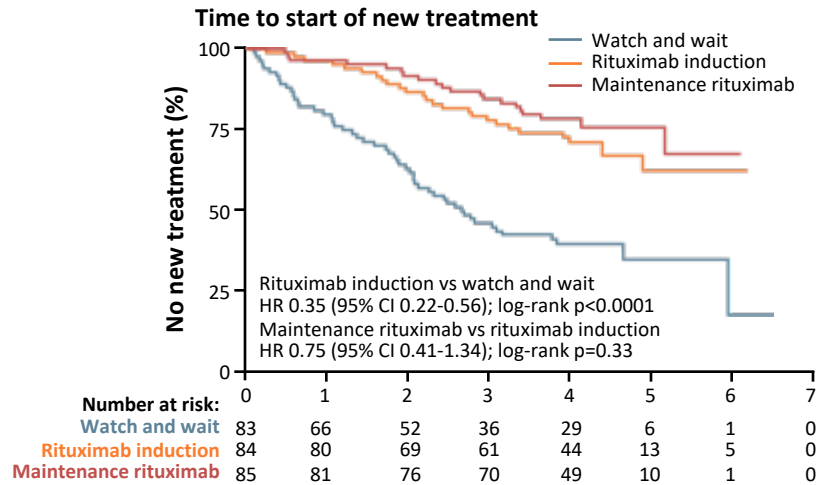
**“WATCH AND WAIT” VS RITUXIMAB IN LOW  
TUMOUR BURDEN FL**

# RITUXIMAB FOR LOW TUMOUR BURDEN FL



<sup>a</sup> Inclusive of the patients enrolled in the three-arm study (83 in the watch and wait group and 85 in the maintenance rituximab group)

# RITUXIMAB FOR LOW TUMOUR BURDEN FL



- **Overall response rate (ORR) improved** for rituximab maintenance vs rituximab induction:
  - 6 months 91% vs 77% (p=0.043)
  - 2 years 84% vs 57% (p=0.001)
- **QoL showed significant improvement** in the Mental Adjustment to Cancer scale & Illness Coping Style scores for rituximab maintenance over “watch and wait”
  - Only Mental Adjustment to Cancer scores better in rituximab maintenance vs rituximab induction

# TREATMENT OPTIONS FOR ADVANCED INDOLENT B-CELL LYMPHOMAS

*FOCUS ON FL AND NODAL MZL*

**Does everyone  
need CIT?**

**What is the  
optimal  
chemotherapy  
backbone in CIT?**

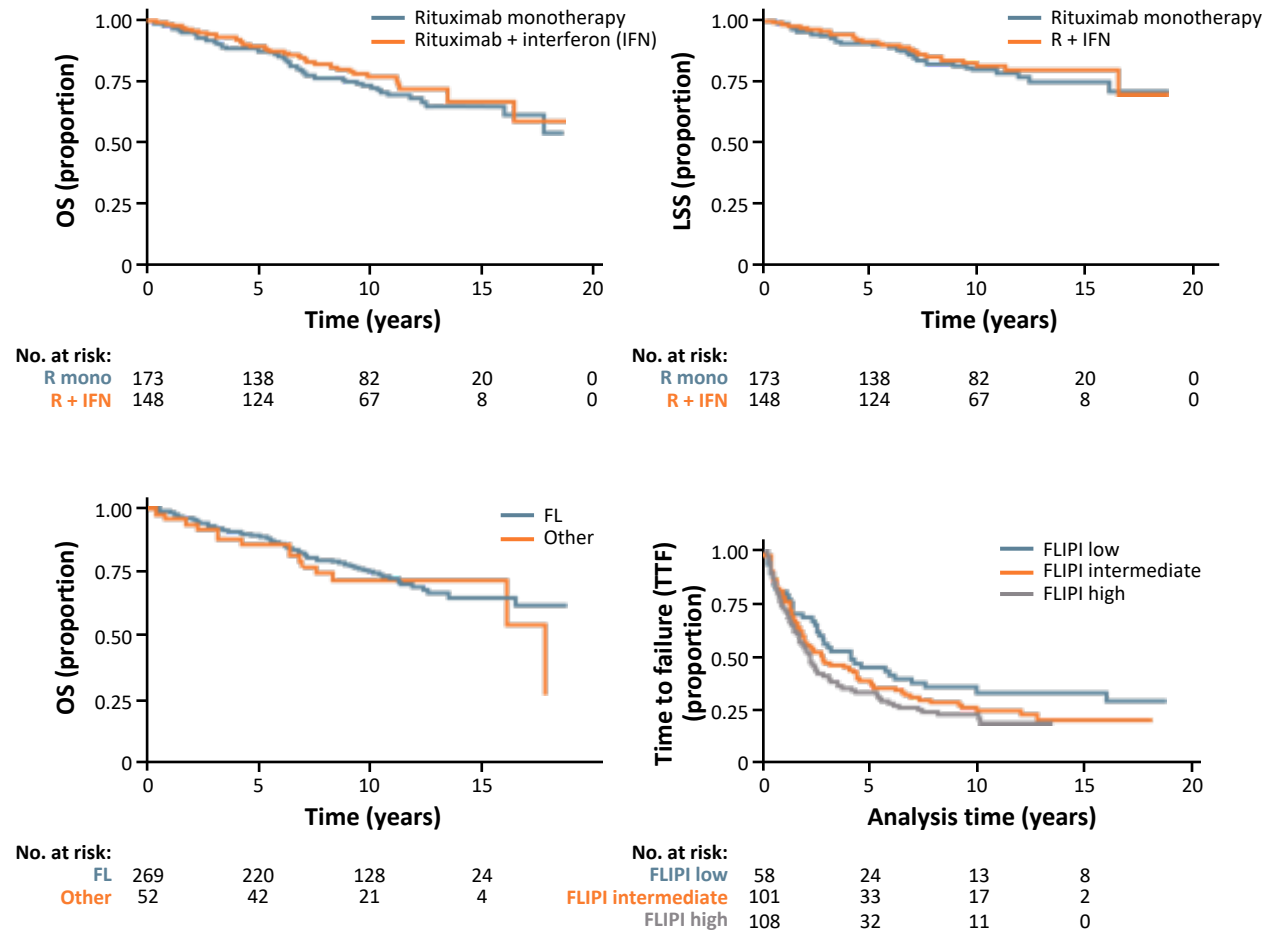
**Does the type of  
CD20 monoclonal  
antibody matter?**

**Has the time for  
“chemo-free”  
therapy arrived?**

**Maintenance  
or not?**



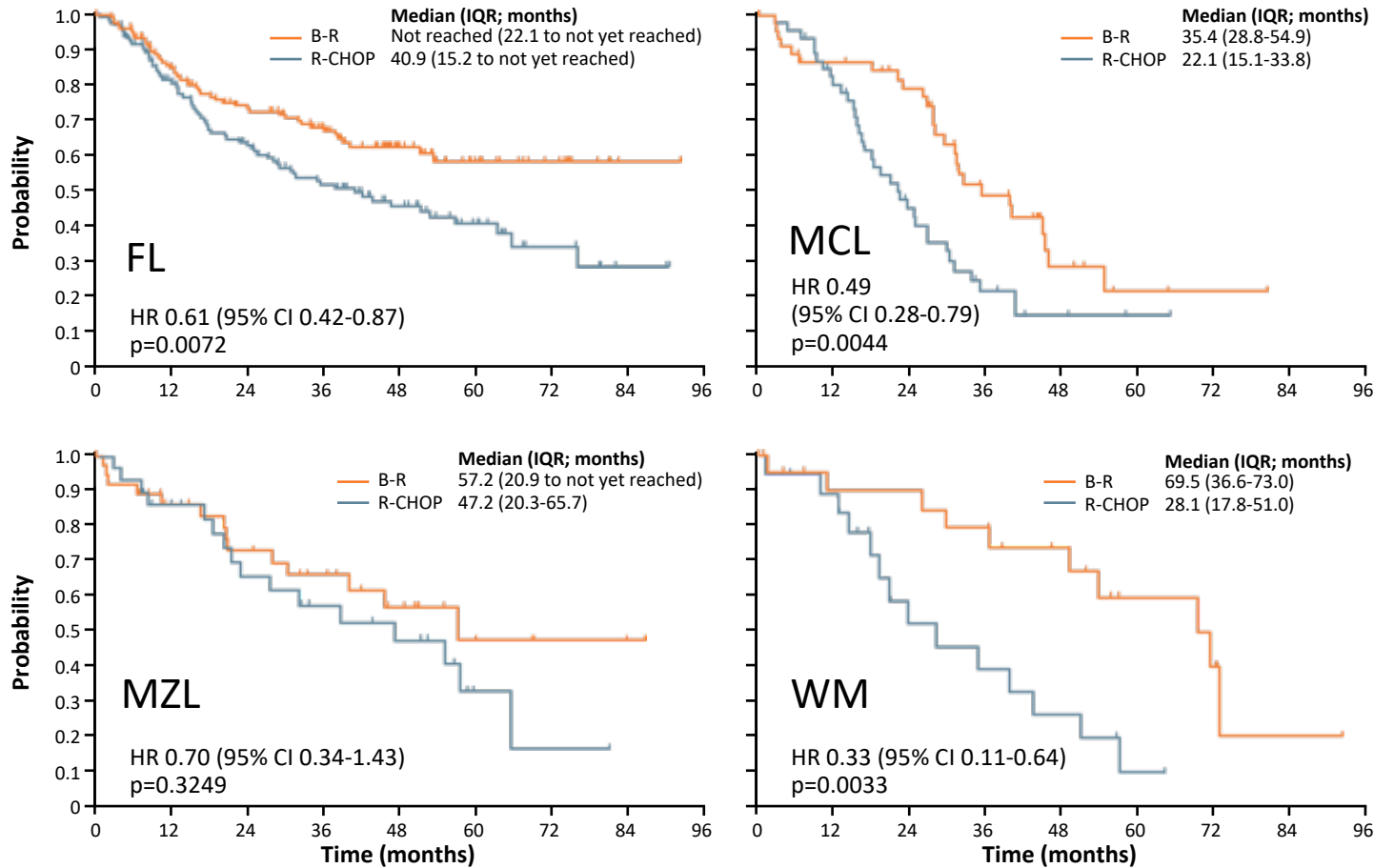
# RITUXIMAB ALONE FOR ADVANCED INDOLENT B-CELL NHL



- **Retrospective analysis** of 439 patients treated on two prospective Nordic Lymphoma Group (NLG) trials with rituximab monotherapy or rituximab + IFN $\alpha$ -2a
  - FL (Grade 1-3a): 84%; MZL 8%
  - Median follow-up: 10.6 years (range 0.1-18.8)
- **OS rate since randomisation**
  - 10-year OS rate 75% (LSS: 82%)
  - 15-year OS rate 65% (LSS: 77%)
- 36% never required chemotherapy during follow-up
- **Early progression of disease (POD) ( $\leq 2$  years)** associated with worse OS:
  - 10-year OS rates 62% vs 89%
  - 15-year OS rates 53% vs 78%
- At 10 and 15 years after random assignment, the cumulative **risk of transformation** was 20% and 24% (slightly higher in non-FL group)

# STiL STUDY: B-R VS R-CHOP AS FIRST-LINE TREATMENT IN INDOLENT AND MANTLE-CELL LYMPHOMAS

## PFS by subtype



	B-R (N=261)	R-CHOP (N=253)
<b>Age (years)</b>		
<60	64 (36%)	63 (31-82)
61-70	107 (41%)	105 (42%)
>70	60 (23%)	58 (23%)
<b>Stage</b>		
II	9 (3%)	9 (4%)
III	50 (19%)	47 (19%)
IV	202 (77%)	197 (78%)
<b>Histology</b>		
Follicular	139 (53%)	140 (55%)
Mantle cell	46 (18%)	48 (19%)
Marginal zone	37 (14%)	30 (12%)
Lymphoplasmacytic <sup>a</sup>	22 (8%)	19 (8%)
Small lymphocytic	10 (4%)	11 (4%)
Low grade, unclassifiable	7 (3%)	5 (2%)

<sup>a</sup> WM

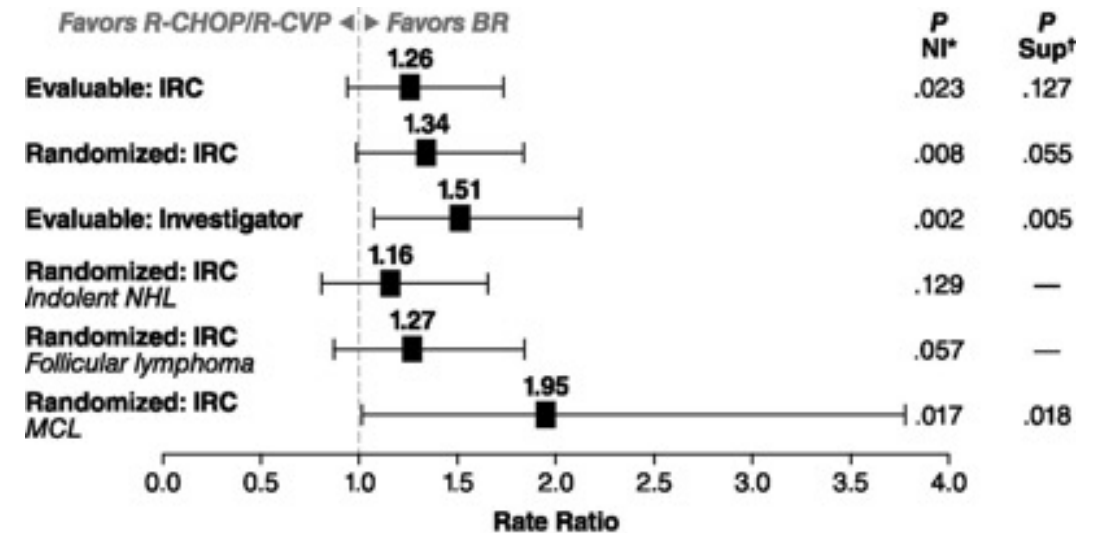
**Responses B-R vs R-CHOP:**  
 ORR 93% vs 91% (not significant)  
 Complete response (CR) rate  
 76% vs 40% (p=0.02)

# BRIGHT STUDY: B-R OR R-CHOP/R-CVP IN FIRST-LINE TREATMENT OF INDOLENT NHL OR MCL

## Patient characteristics at baseline

Characteristic	BR (N=224)	R-CHOP/R-CVP (N=223)
Age, median, years (range)	60 (28-84)	58 (25-86)
Sex (male/female, %)	61/39	59/41
Baseline ECOG PS, n (%)		
0	144 (64)	143 (64)
1	70 (31)	69 (31)
≥2	10 (4)	10 (4)
Histologic classification		
Lymphoplasmacytic	5 (2)	6 (3)
Marginal zone	28 (12)	18 (8)
Mantle cell	36 (16)	38 (17)
Follicular, Grade 1	84 (38)	70 (31)
Follicular, Grade 2	70 (31)	90 (40)
Missing	1 (<1)	1 (<1)

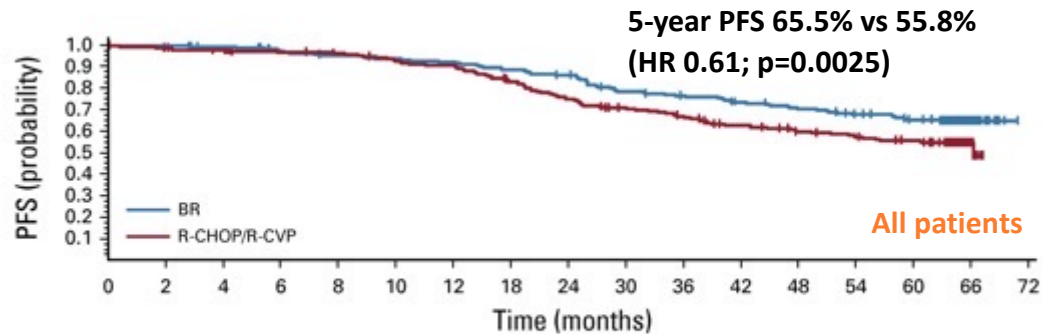
## Complete response rate (IRC) ratios as per treatment arm



## Independent review committee (IRC) assessment or response

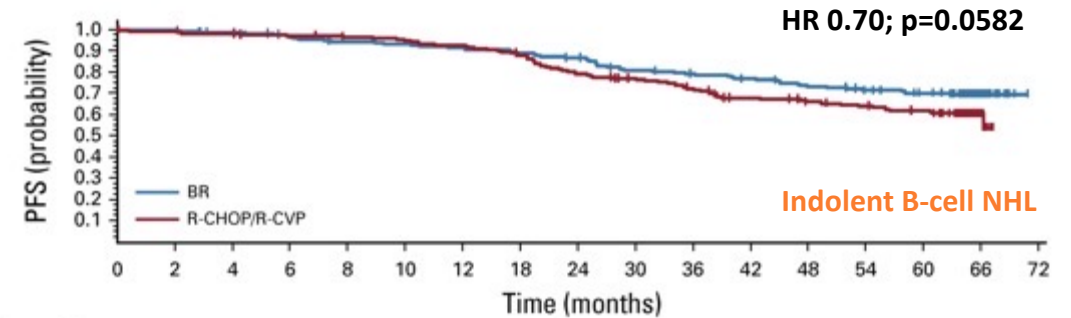
Response category, n (%)	B-R (N=213)	R-CHOP/R-CVP (N=206)	CR-rate ratio	p (NI)	p (Sup)
<b>CR</b>	67 (31)	52 (25)	1.26	0.0225	0.1269
95% CI	(25.3-38.2)	(19-31.7)	(0.93-1.73)		
<b>Partial response (PR)</b>	139 (65)	135 (66)	NA	NA	NA
Stable disease (SD)	6 (3)	18 (9)	NA	NA	NA
Progressive disease (PD)	1 (<1)	0	NA	NA	NA
Unknown	0	1 (<1)	NA	NA	NA
<b>Overall response (CR + PR)</b>	206 (97)	187 (91)	NA	NA	NA
95% CI	(93.3-98.7)	(86.0-94.4)	NA	NA	NA

# BRIGHT STUDY: B-R OR R-CHOP/R-CVP IN FIRST-LINE TREATMENT OF INDOLENT NHL OR MCL



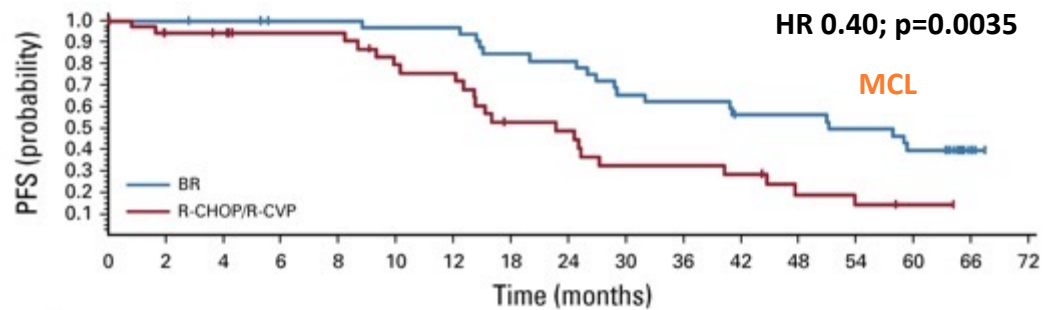
No. at risk:

	0	2	4	6	8	10	12	18	24	30	36	42	48	54	60	66	72
BR	224	218	210	202	197	194	191	183	177	160	154	146	139	131	122	37	0
R-CHOP/ R-CVP	223	205	201	194	191	183	179	162	147	134	126	114	105	100	94	11	0



No. at risk:

	0	2	4	6	8	10	12	18	24	30	36	42	48	54	60	66	72
BR	187	182	176	170	165	163	160	156	151	139	134	129	122	116	110	34	0
R-CHOP/ R-CVP	188	175	172	168	165	162	159	149	135	126	118	107	101	97	92	11	0

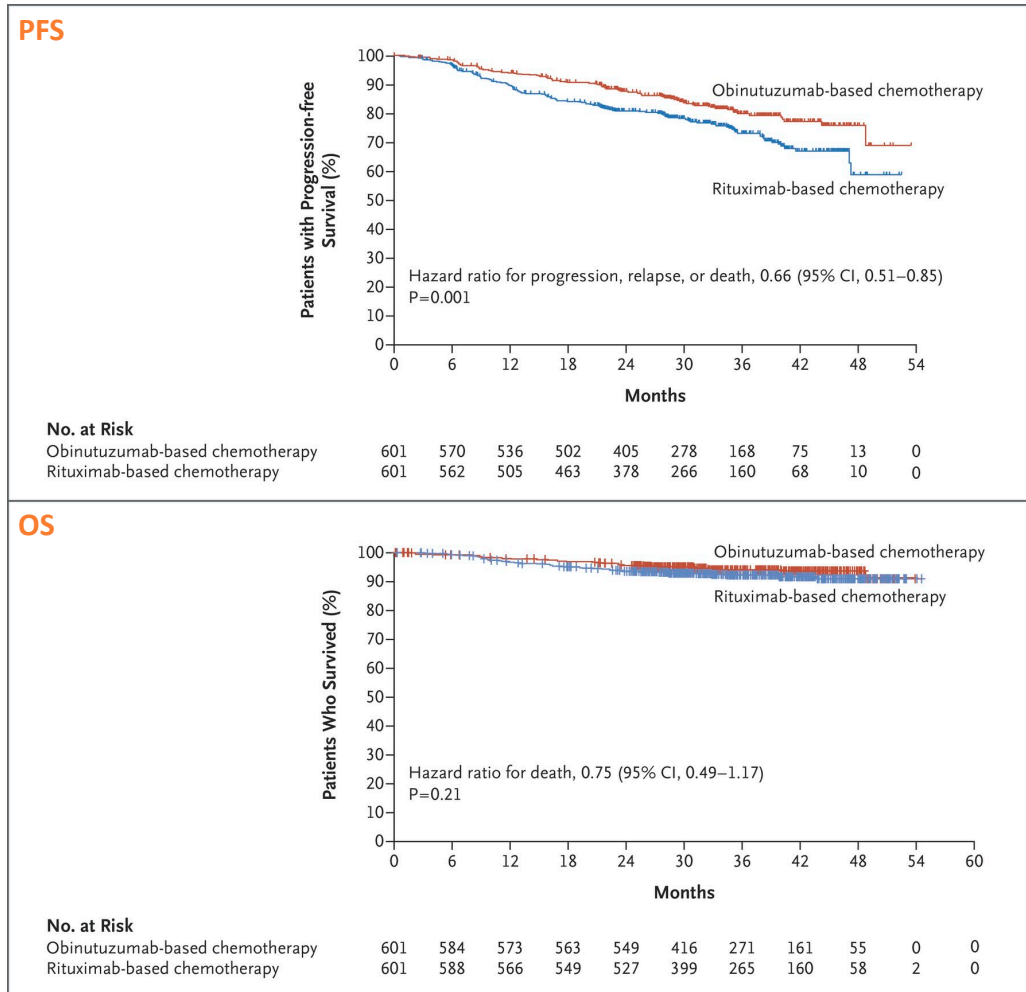


No. at risk:

	0	2	4	6	8	10	12	18	24	30	36	42	48	54	60	66	72
BR	37	36	34	32	32	31	31	27	26	21	20	17	17	15	12	3	0
R-CHOP/ R-CVP	37	30	29	26	26	21	20	13	12	8	8	7	4	3	2	0	0

**B-R vs R-CHOP: HR 0.65 (95% CI 0.4-1.06)**  
**B-R vs R-CVP: HR 0.59 (95% CI 0.38-0.90)**

# GALLIUM: OBINUTUZUMAB- VS RITUXIMAB-BASED CIT IN FL



	Obinutuzumab group	Rituximab group
<b>IRC-assessed PFS</b>		
Patients with progression, relapse, or death, n (%)	93 (15.5)	125 (20.8)
Rate of estimated 3-year PFS (95% CI), %	81 (77.9-85.2)	77.9 (73.8-81.4)
HR for progression, relapse, or death (95% CI)	0.71 (0.54-0.93)	
p value by log-rank test	0.01	
<b>Treatment response at end of induction phase</b>		
CR or PR	532 (88.5)	522 (86.9)
Difference (95% CI) – percentage points	1.6 (–2.1 -5.5)	
p value by Cochran–Mantel–Haenszel test	0.33	
CR	117 (19.5)	143 (23.8)
Difference (95% CI) – percentage points	–4.3 (–9.1 to 0.4)	
p value by Cochran–Mantel–Haenszel test	0.07	

# GALLIUM: OBINUTUZUMAB- VS RITUXIMAB-BASED CIT IN FL

Event	Induction phase		Maintenance and observation phases		Follow-up	
	Obinutuzumab	Rituximab	Obinutuzumab	Rituximab	Obinutuzumab	Rituximab
<b>Infection</b>						
Bendamustine	27/338 (8.0)	26/338 (7.7)	52/312 (16.7)	39/305 (12.8)	25/270 (9.3)	6/263 (2.3)
CHOP	14/193 (7.3)	13/203 (6.4)	7/179 (3.9)	11/187 (5.9)	2/128 (1.6)	2/143 (1.4)
CVP	3/61 (4.9)	4/56 (7.1)	5/57 (8.8)	1/43 (2.3)	1/44 (2.3)	2/45 (4.4)
<b>Second neoplasm</b>						
Bendamustine	0	0	21/312 (6.7)	18/305 (5.9)	14/270 (5.2)	2/263 (0.8)
CHOP	0	0	8/179 (4.5)	8/187 (4.3)	1/128 (0.8)	1/143 (0.7)
CVP	0	0	0	1/43 (2.3)	0	0

# RELEVANCE TRIAL: RITUXIMAB + LENALIDOMIDE (LEN+R) VS R-CHEMO

## Baseline demographic and disease characteristics (ITT population)

Characteristic	LEN+R group (N=513)	R-chemo group (N=517)	Total (N=1,030)
Median age (range), years	59 (30-89)	59 (23-83)	59 (23-89)
Age >70 years, n (%)	80 (16)	78 (15)	158 (15)
Male sex, n (%)	251 (49)	251 (49)	502 (49)
Ann Arbor stage, n (%)			
I or II	30 (6)	40 (8)	70 (7)
III or IV	483 (94)	477 (92)	960 (93)
Bulky disease, n (%)	218 (42)	199 (38)	417 (40)
FL, Grade, n (%)			
1 or 2	437 (85)	443 (86)	880 (85)
3a	65 (13)	63 (12)	128 (12)
Unspecified or grade other than 1, 2 or 3a	11 (2)	11 (2)	22 (2)
LDH >ULN, n (%)	156 (30)	137 (26)	293 (28)
B symptoms, n (%)	141 (27)	134 (26)	275 (27)
FLIPI score, n (%)			
0 or 1	77 (15)	76 (15)	153 (15)
2	183 (36)	191 (37)	374 (36)
3 to 5	253 (49)	250 (48)	503 (49)

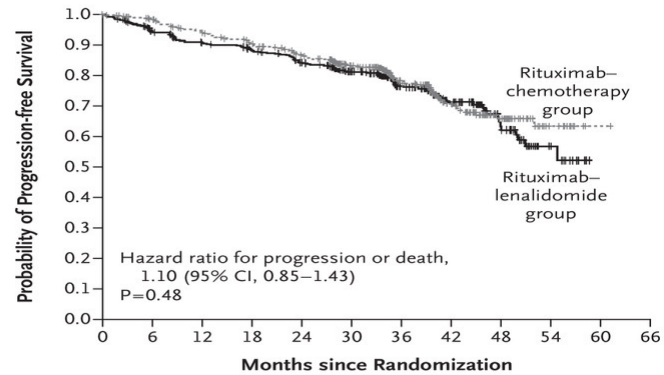
**R-chemo:** 372 (72%) R-CHOP; 117 (23%) B-R; 28 (5%) R-CVP

## Efficacy (ITT population)

Variable	LEN+R group (N=513)	R-chemo group (N=517)	HR (95% CI)	p value
<b>Response status at 120 weeks, as assessed by IRC</b>				
Overall response, n (% [95% CI])	312 (61 [56-65])	336 (65 [61-69])		
Confirmed or unconfirmed CR, n (% [95% CI])	247 (48 [44-53])	274 (53 [49-57])		0.13
PR, n (%)	65 (13)	62 (12)		
SD, n (%)	2 (<1)	0		
PD or death, n (%)	87 (17)	79 (15)		
Not evaluated or data missing, n (%)	112 (22)	102 (20)		
<b>PFS at 3 years</b>				
Rate, per IRC, % (95% CI)	77 (72-80)	78 (74-82)	1.0 (0.85-1.43)	0.48
Rate, per investigator, % (95% CI)	77 (72-80)	78 (74-81)	0.94 (0.73-1.22)	0.63
<b>OS rate at 3 years, % (95% CI)</b>	94 (91-96)	94 (91-96)	1.16 (0.72-1.86)	

# RELEVANCE: PFS AND OS SIMILAR, BUT DIFFERENT TOXICITY PROFILE

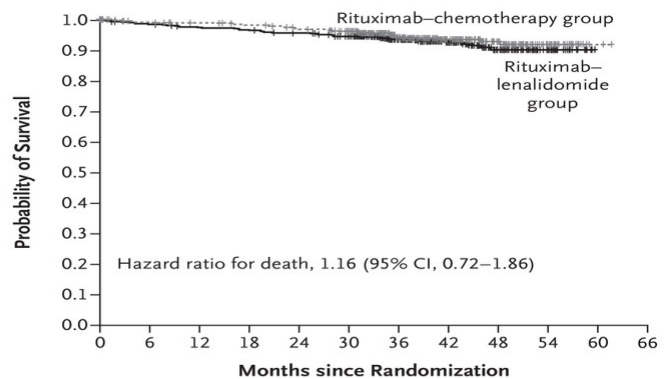
## PFS



### No. at Risk

	0	6	12	18	24	30	36	42	48	54	60	66
Rituximab-lenalidomide group	513	435	409	393	364	282	174	107	49	13	0	
Rituximab-chemotherapy group	517	474	446	417	387	287	175	109	51	14	1	0

## OS



### No. at Risk

	0	6	12	18	24	30	36	42	48	54	60	66
Rituximab-lenalidomide group	513	499	491	486	479	459	312	194	105	24	0	
Rituximab-chemotherapy group	517	496	487	481	470	453	298	193	115	32	2	0

## Adverse events (AEs) during the treatment period in the safety population

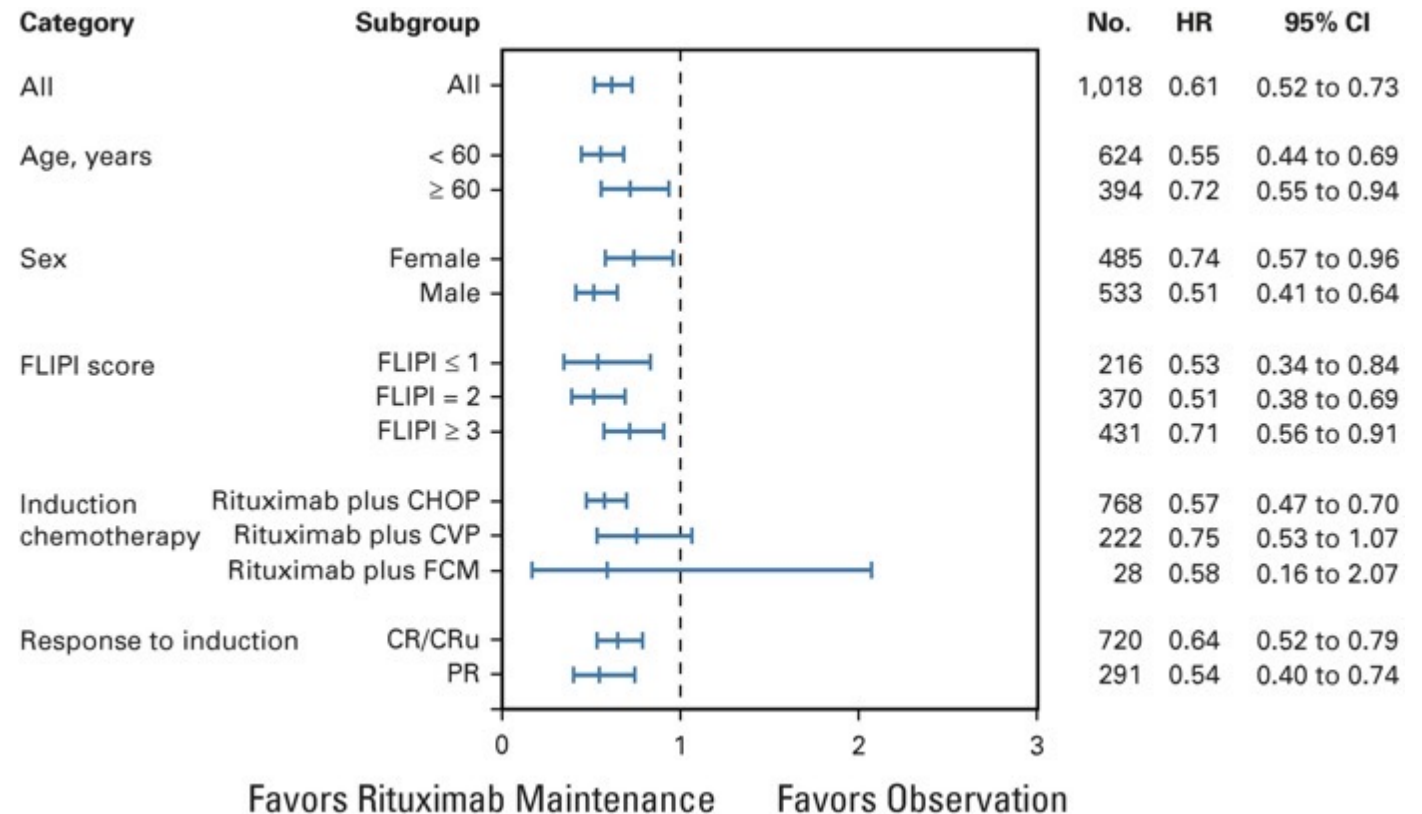
AE, n (%)	LEN+R group (N=507)		R-chemo group (N=503)	
	Any grade	Grade 3 or 4	Any grade	Grade 3 or 4
Neutropenia	381 (75)	160 (32)	386 (77)	252 (50)
Anaemia	333 (66)	0	446 (89)	0
Thrombocytopenia	268 (53)	11 (2)	266 (53)	8 (2)
Cutaneous reactions	220 (43)	36 (7)	120 (24)	5 (1)
Diarrhoea	187 (37)	10 (2)	95 (19)	6 (1)
Constipation	178 (35)	1 (<1)	167 (33)	5 (1)
Rash	146 (29)	20 (4)	39 (8)	1 (<1)
Fatigue	115 (23)	1 (<1)	147 (29)	4 (<1)
Nausea	100 (20)	0	209 (42)	8 (2)
Abdominal pain	78 (15)	4 (<1)	46 (9)	4 (<1)
Myalgia	73 (14)	0	29 (6)	1 (<1)
Arthralgia	71 (14)	3 (<1)	70 (14)	1 (<1)
Peripheral oedema	69 (14)	0	47 (9)	1 (<1)
Muscle spasms	68 (13)	0	21 (4)	0
Infusion-related reaction	66 (13)	7 (1)	56 (11)	1 (<1)
Upper respiratory tract infection	47 (9)	0	55 (11)	0
Vomiting	34 (7)	2 (<1)	94 (19)	7 (1)
Peripheral neuropathy	35 (7)	1 (<1)	79 (16)	3 (<1)
Tumour flare reaction	30 (6)	7 (1)	1 (<1)	0
Leucopenia	21 (4)	8 (2)	48 (10)	30 (6)
Febrile neutropenia	11 (2)	11 (2)	34 (7)	33 (7)
Tumour lysis syndrome	7 (1)	6 (1)	5 (1)	3 (<1)
Alopecia	5 (1)	0	45 (9)	3 (<1)



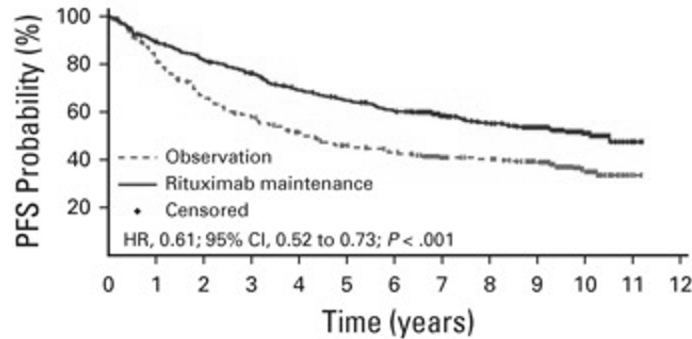
# PRIMA STUDY – 10 YEAR FOLLOW UP

## N=1,018

- **Observation vs rituximab maintenance**  
(every 8 weeks × 12)
- **Median duration of follow-up:**  
9.0 years (range 0.0-11.5)
- **Median PFS:**
  - Observation: 4.1 years
  - Rituximab maintenance 10.5 years
  - HR 0.61; 95% CI, 0.52-0.73; p<0.001
- **10-year OS rate estimates:**
  - Observation: 79.9%
  - Rituximab maintenance: 80.1%
  - HR 1.04; 95% CI 0.77-1.40; p=0.7948

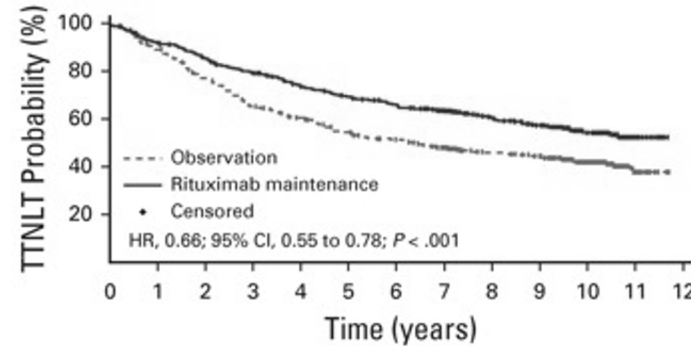


# PRIMA STUDY – 10 YEAR FOLLOW UP<sup>1</sup>



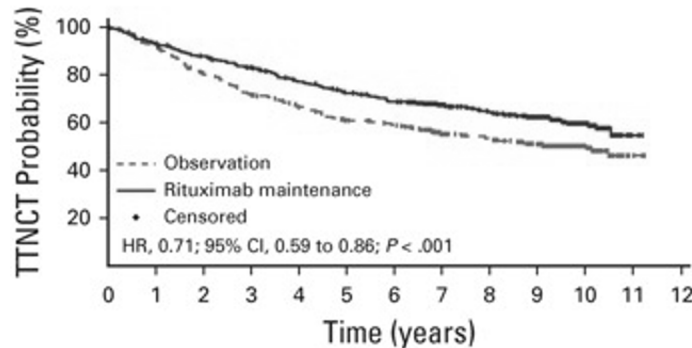
No. at risk:

-----	513	415	336	290	251	217	200	155	147	122	41	1	0
————	505	445	406	372	333	309	284	231	208	170	67	4	0



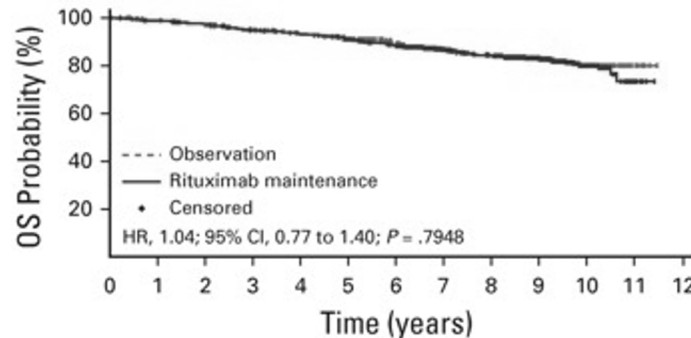
No. at risk:

-----	513	453	385	324	291	253	234	181	167	138	49	2	0
————	505	455	417	384	349	323	301	247	221	174	68	5	0



No. at risk:

-----	513	460	402	357	325	290	274	216	198	165	62	2	0
————	505	459	432	401	369	341	320	265	241	192	76	5	0



No. at risk:

-----	513	501	485	472	460	440	412	319	297	256	91	8	0
————	505	492	480	464	449	432	407	341	313	261	107	8	0

## How about MZL?

### • StiL NHL7-2008 MAINTAIN<sup>2</sup>

- 2-year PFS superior with rituximab maintenance vs observation
  - Median PFS NR vs 92.2 months (HR 0.35;  $p=0.008$ )
- OS rate at 6 years 92% with rituximab maintenance vs 86% with observation
  - HR 0.52 (95% CI 0.20-1.39)

## Extended maintenance?

- PFS numerically superior with 4 vs 2 years of rituximab maintenance<sup>3</sup>
  - HR 0.75 (95% CI 0.45-1.24)

# WHAT DO THE GUIDELINES SAY?



NCCN

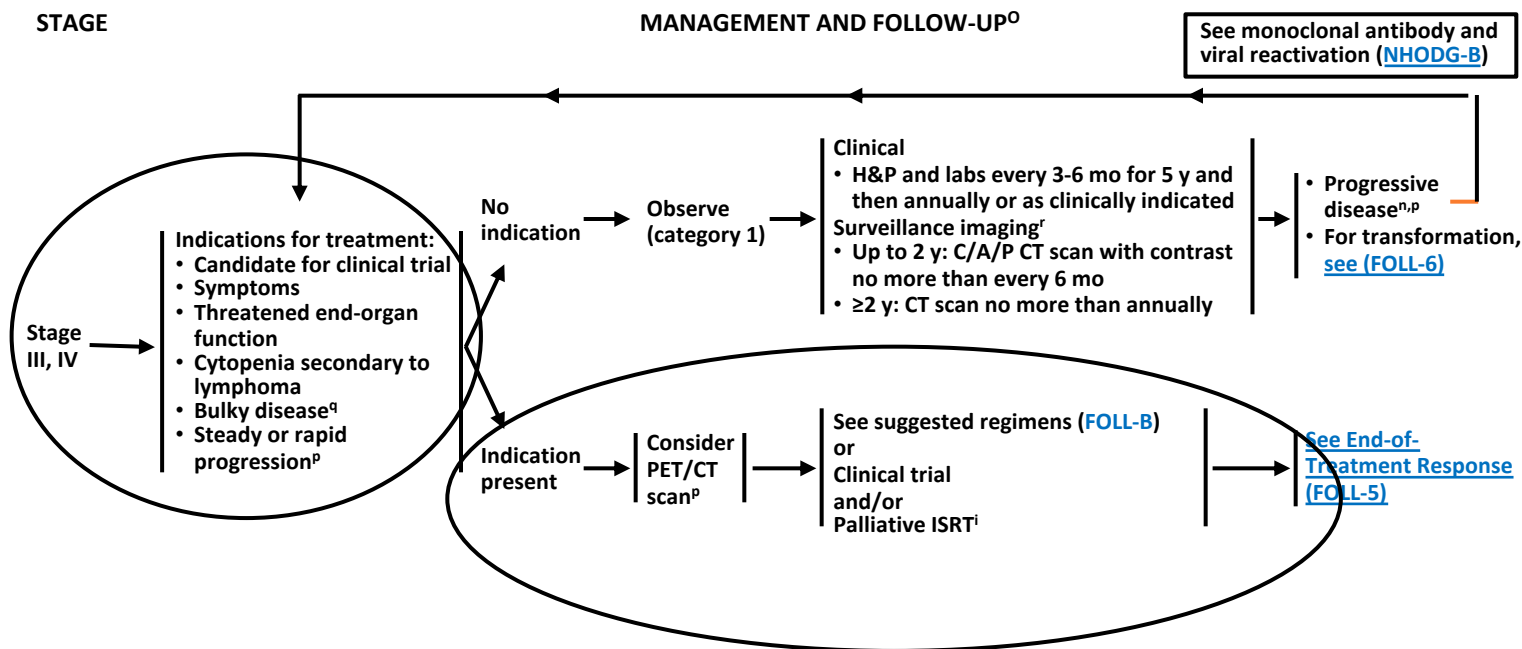
ESMO

# NCCN GUIDELINES FOR ADVANCED FL



## NCCN Guidelines Version 3.2021 Follicular Lymphoma (grade 1-2)

[NCCN Guidelines Index](#)  
[Table of Contents](#)  
[Discussion](#)



### FIRST-LINE THERAPY

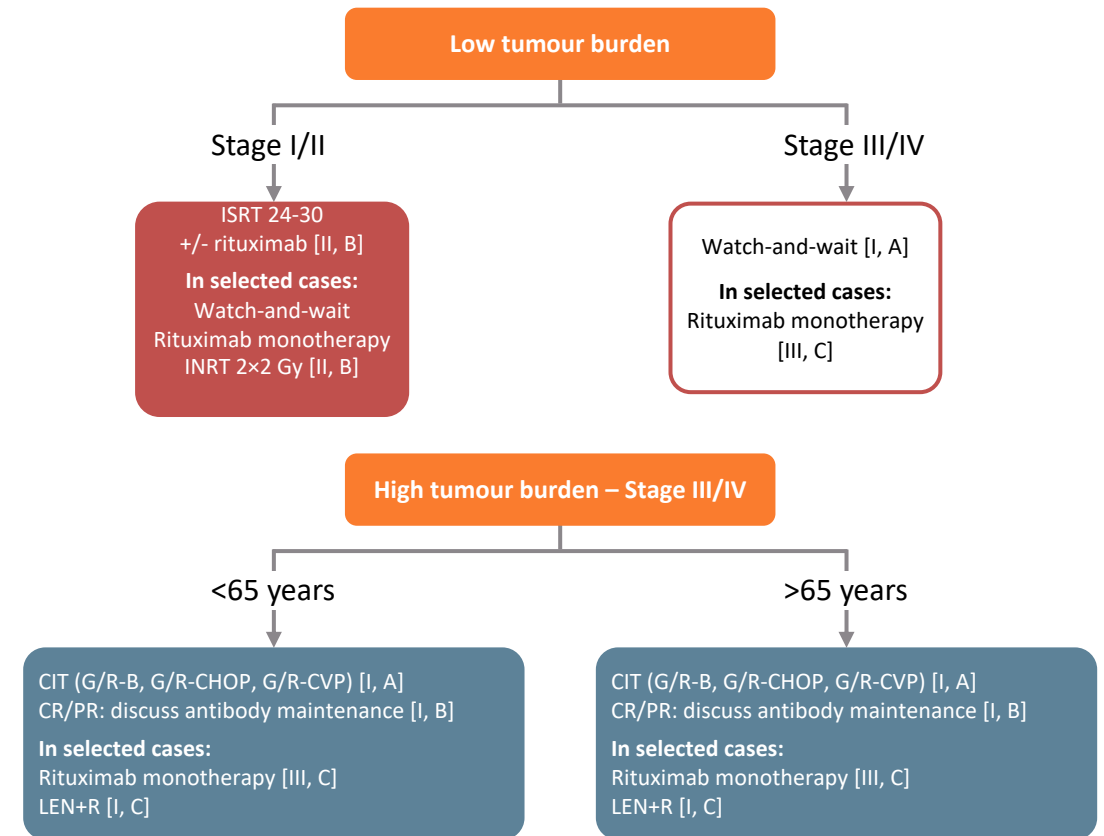
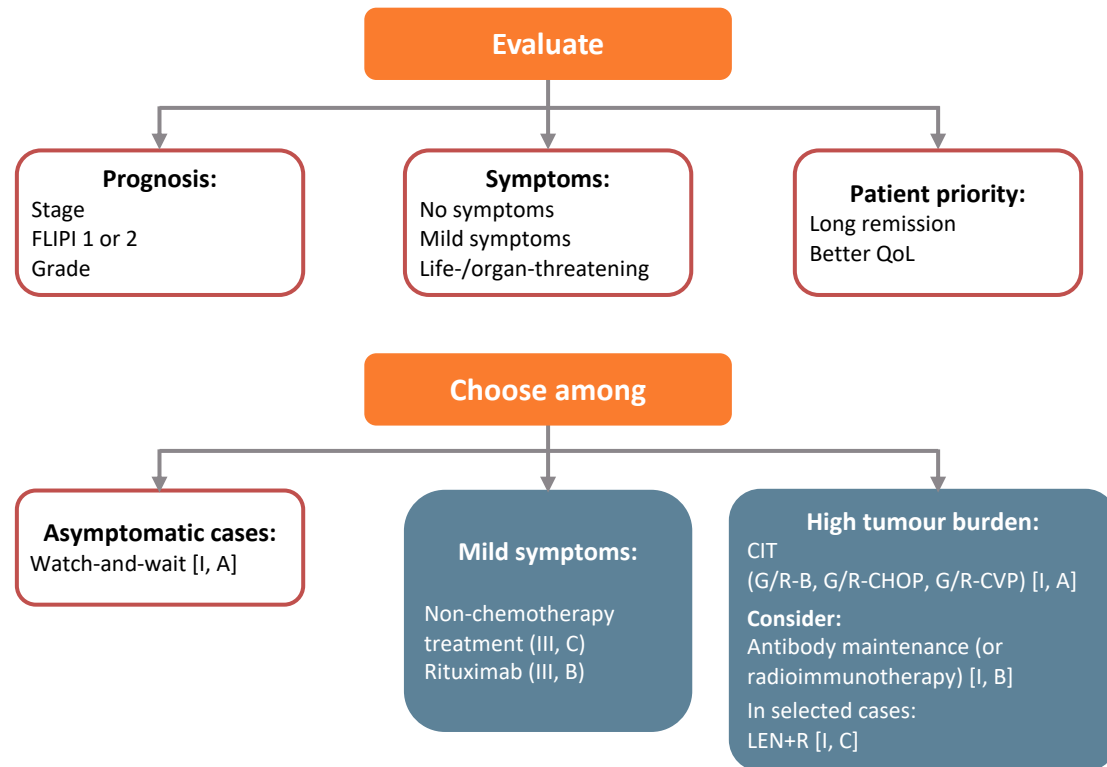
- Preferred regimens** (in alphabetical order)
- Bendamustine + obinutuzumab or rituximab
  - CHOP (cyclophosphamide, doxorubicin, vincristine, prednisone) + obinutuzumab or rituximab
  - CVP (cyclophosphamide, vincristine, prednisone) + obinutuzumab or rituximab
  - Lenalidomide + rituximab
- Other recommended regimens**
- Lenalidomide + obinutuzumab (category 2B)
  - Rituximab (375 mg/m<sup>2</sup> weekly for 4 doses) (consider for low tumour burden)

### FIRST-LINE THERAPY FOR ELDERLY OR INFIRM (if none of the above are expected to be tolerable in the opinion of the treating physician)

- Preferred regimens**
- Rituximab (375 mg/m<sup>2</sup> weekly for 4 doses)
- Other recommended regimens**
- Chlorambucil ± rituximab
  - Cyclophosphamide ± rituximab
  - Ibrutinomab tiuxetan (category 2B)

### FIRST-LINE CONSOLIDATION OR EXTENDED DOSING (optional)

- Preferred regimens following chemoimmunotherapy**
- Rituximab maintenance 375 mg/m<sup>2</sup> one dose every 8-12 weeks for 2 years for patients initially presenting with high tumour burden (category 1)
  - Obinutuzumab maintenance (1,000 mg every 8 weeks for 12 doses)
- Other recommended regimens**
- If initially treated with single-agent rituximab, consolidation with rituximab 375 mg/m<sup>2</sup> one dose every 8 weeks for 4 doses
  - Ibrutinomab tiuxetan (category 2B)





**HOW DO YOU CHOOSE THE RIGHT  
TREATMENT FOR YOUR PATIENT?**

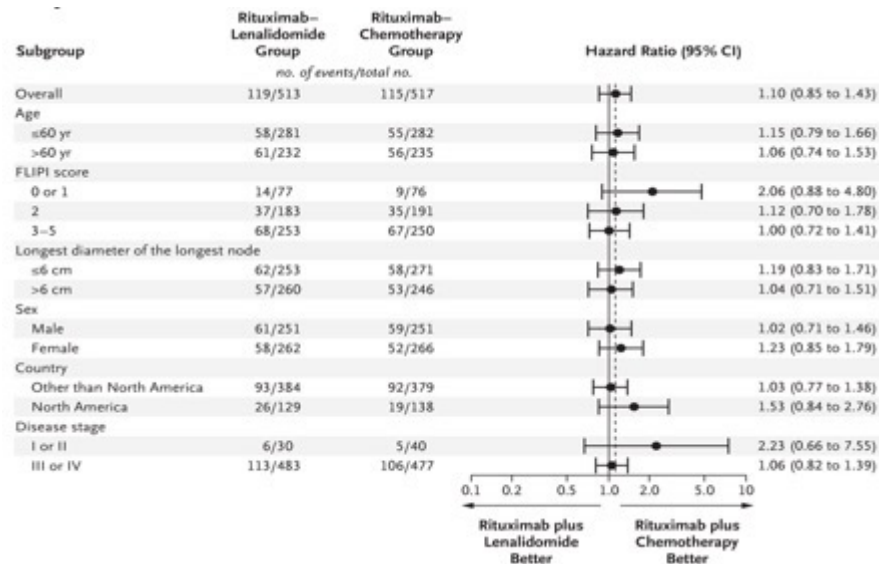
# CAN CLINICAL FACTORS GUIDE US?

## StiL study: B-R vs R-CHOP/R-CVP

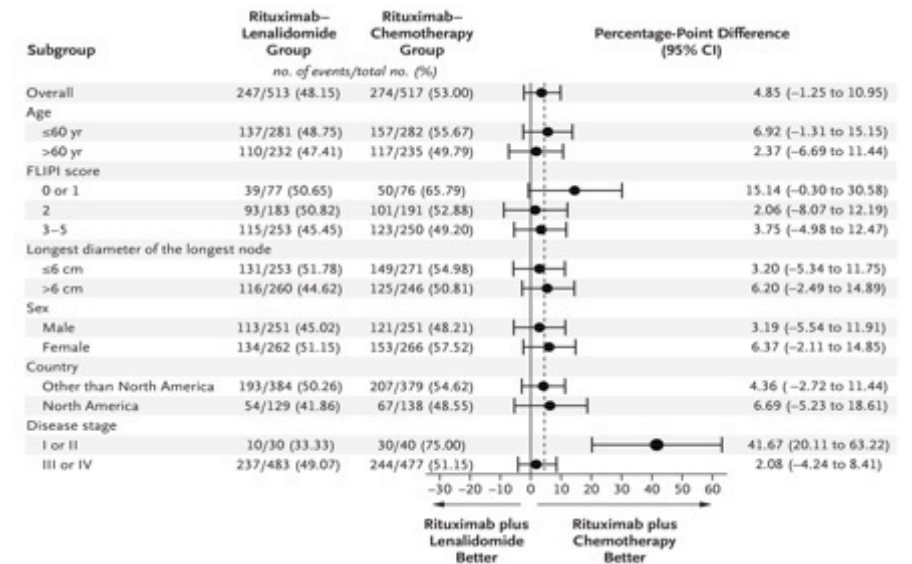
	HR (95% CI)	p value
<b>Age (years)</b>		
≤60 (n=199)	0.52 (0.33-0.79)	0.002
>60 (n=315)	0.62 (0.45-0.84)	0.002
<b>LDH concentration</b>		
Normal (n=319)	0.48 (0.34-0.67)	<0.0001
Elevated (n=184)	0.74 (0.50-1.08)	0.118
<b>FLIPI subgroup</b>		
Favourable (0-2 risk factors; n=143)	0.56 (0.31-0.98)	0.043
Unfavourable (3-5 risk factors; n=127)	0.63 (0.38-1.04)	0.068

## RELEVANCE study: LEN+R vs R-chemo

### PFS



### Confirmed or unconfirmed CR at 120 weeks



B-R, bendamustine plus rituximab; CI, confidence interval; CR, complete response; FLIPI, Follicular Lymphoma International Prognostic Index; HR, hazard ratio; LDH, lactate dehydrogenase; PFS, progression-free survival; LEN+R, rituximab plus lenalidomide; R-chemo, rituximab plus chemotherapy; R-CHOP, cyclophosphamide, doxorubicin, vincristine, prednisone plus rituximab; R-CVP, rituximab plus cyclophosphamide, vincristine, prednisone; yr, years  
Rummel MJ, et al. Lancet. 2013;381:1203-10; Morschhauser F, et al. N Engl J Med. 2018;379:934-47

# QUESTIONS TO CONSIDER WHEN CHOOSING INITIAL TREATMENT

Does the patient need treatment?

Does the patient want treatment?

What is the goal of treatment?

What are the comorbidities?

→ In the upfront setting, we have multiple prognostic markers, but unfortunately there is a lack of predictive biomarkers

*“As **various therapeutic approaches may achieve durable responses in the vast majority of patients, the selection of optimal treatment is mainly based on clinical risk factors, symptoms and individual patient priorities.** PET- and MRD-based tailored treatments are currently being evaluated in ongoing studies but are not yet routine clinical practice.”* **ESMO Guidelines, Dreyling M, et al. Ann Oncol. 2021;32:298-308**



# TREATMENT SELECTION FOR RELAPSED/REFRACTORY INDOLENT NHL

Dr. Jessica Okosun, MD, PhD

# DISCLOSURES JESSICA OKOSUN



- Gilead Sciences
- BeiGene

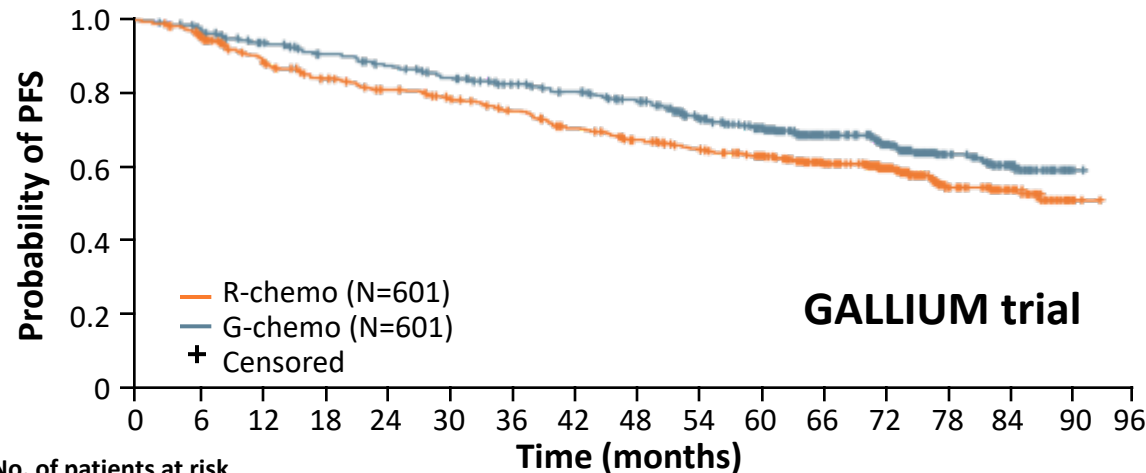
# MOST PATIENTS WITH INDOLENT NHL WILL RELAPSE

Despite the favourable outcomes for indolent NHL (FL and MZL)...

## FL<sup>1,2</sup>

### PFS: G-chemo vs R-chemo

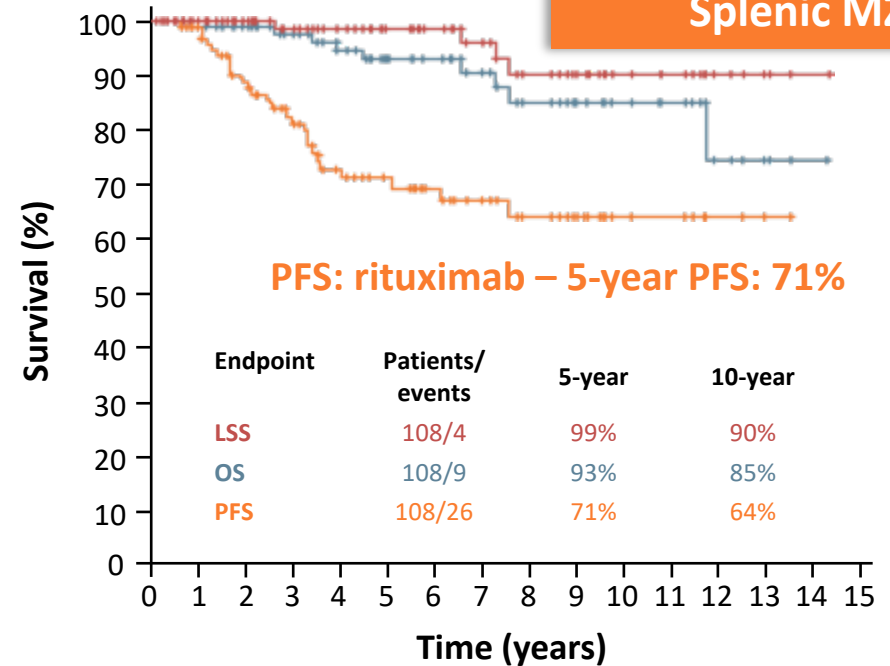
5-year PFS: **70.5%** vs **63.2%** (G vs R) HR 0.76; p=0.0043



No. of patients at risk

	0	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96
R-chemo	601	563	512	471	447	429	404	373	349	328	304	247	176	88	52	3	
G-chemo	601	574	539	512	491	467	446	430	406	368	334	269	182	98	53	4	

## Splenic MZL<sup>3</sup>



FL, follicular lymphoma; G-chemo, obinutuzumab plus chemotherapy; HR, hazard ratio; LSS, lymphoma-specific survival; MZL, marginal zone lymphoma; NHL, non-Hodgkin's lymphoma; OS, overall survival; PFS, progression-free survival; R-chemo, rituximab plus chemotherapy

1. Marcus R, et al. N Engl J Med. 2017;377:1331-44; 2. Townsend W, et al. ASCO 2020. Abstract #8023; 3. Kalpadakis C, et al. Blood. 2018;132:666-70

# CONSIDERATIONS AND APPROACH TO RELAPSED FL (AND INDOLENT NHL)

## TAKE A BIOPSY! to exclude transformation (especially for FL)

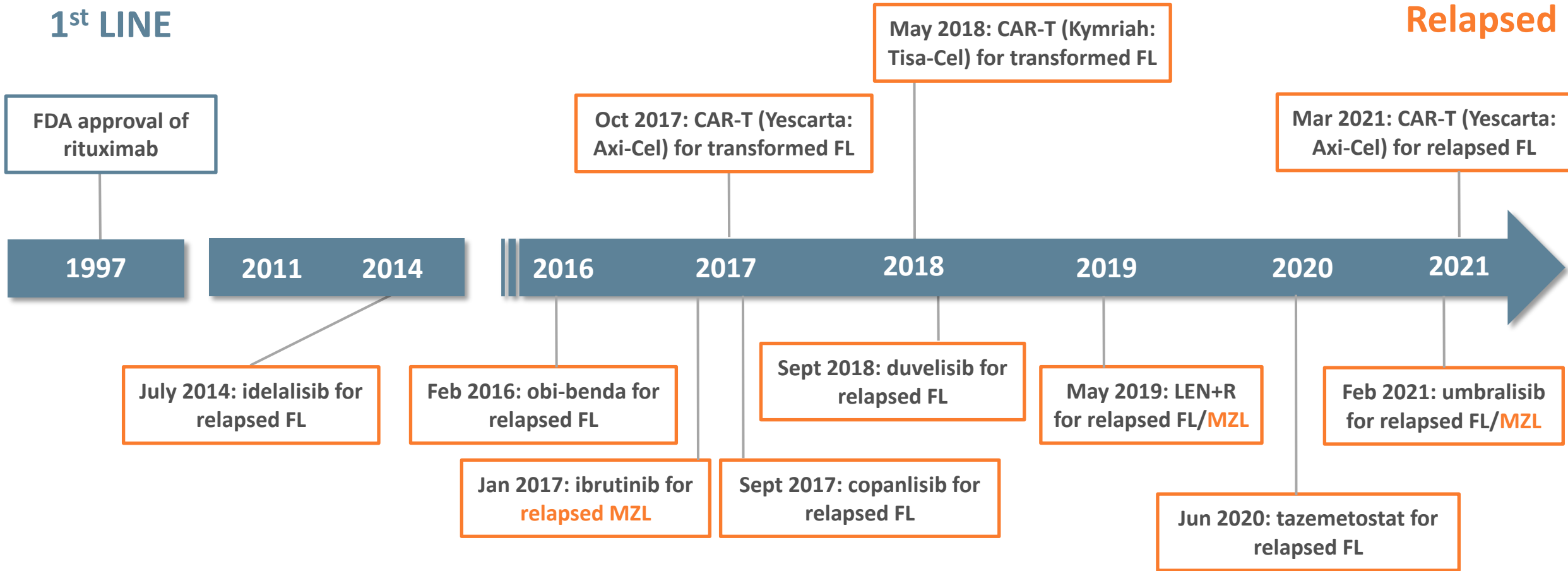
### Depends on:

- Is treatment actually required?
- Prior therapies (immunotherapy, chemotherapy)
- **Duration and quality of response – how well did they work?**
- Current clinical situation and risk factors at relapse
  - Patient's age, performance status, comorbidities
  - Disease burden
- Is the patient fit for a transplant? Auto/allo?
- Patient's goals

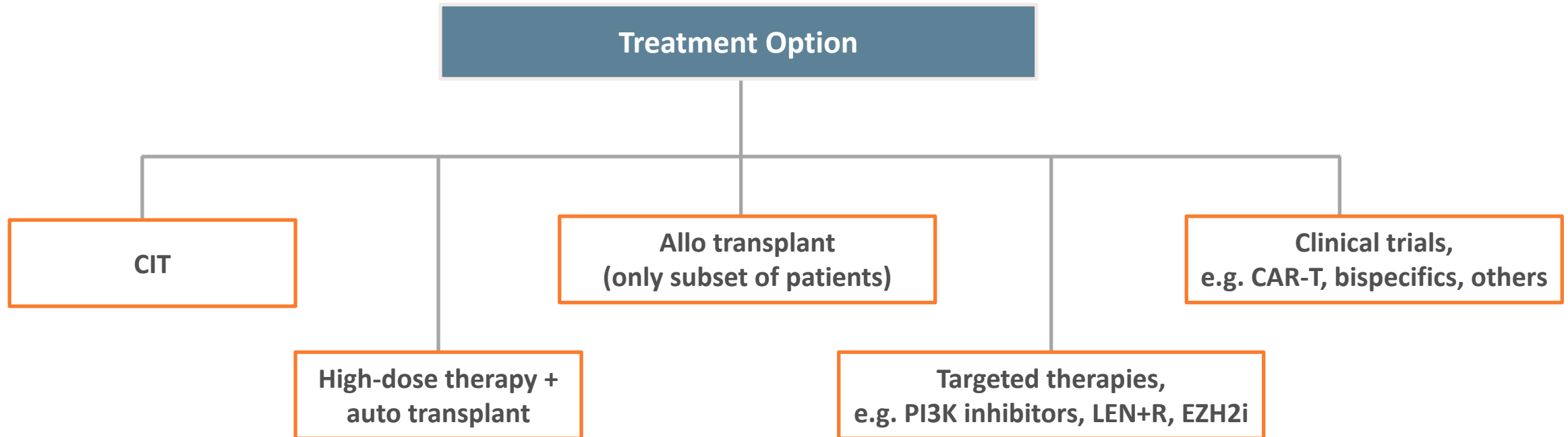
# TIMELINES AND KEY FDA DRUG APPROVALS IN FL/MZL

## 1<sup>st</sup> LINE

## Relapsed



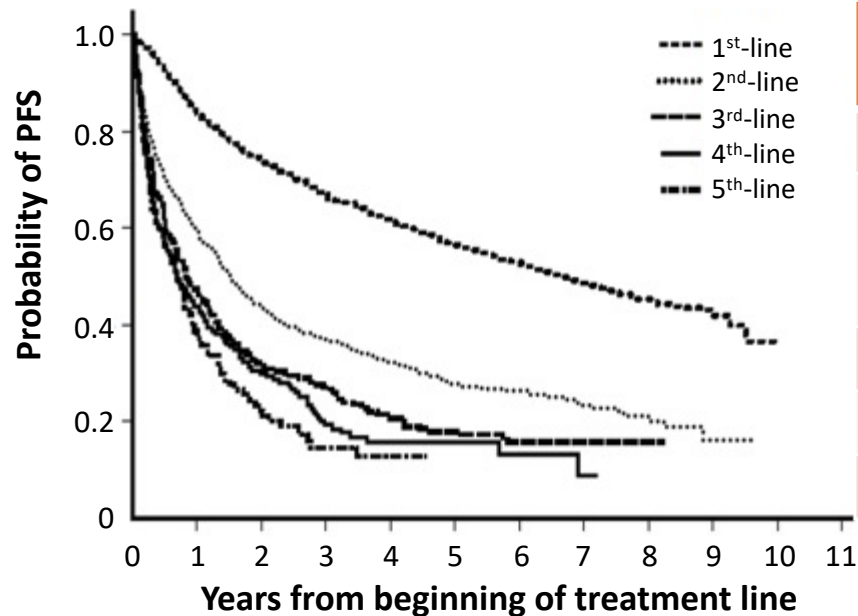
# MULTIPLE TREATMENT OPTIONS FOR R/R FL (STANDARD AND NOVEL)



- A standard approach for relapsed/refractory (R/R) FL remains challenging
- Sequencing therapies is particularly important

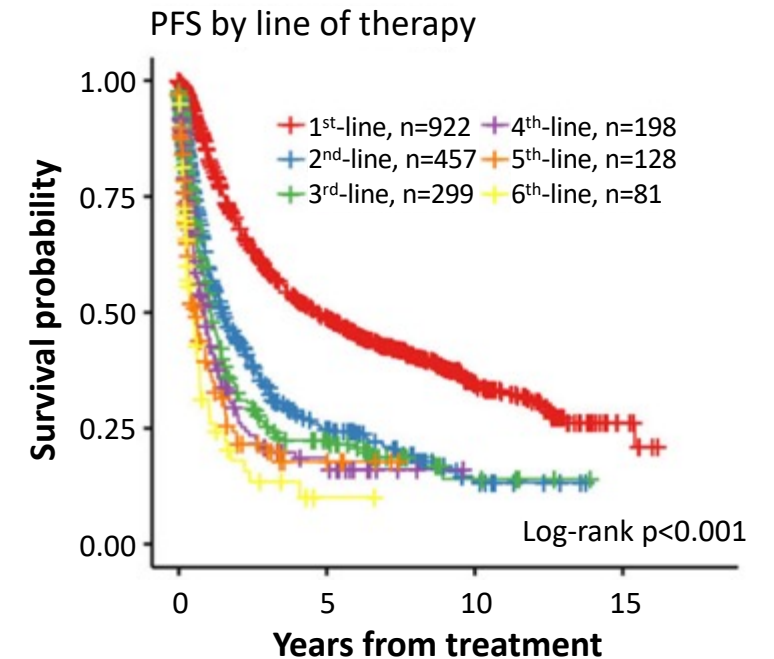
# OUTCOMES FOR 2L+ OF THERAPY NEEDS IMPROVING

## Data from National LymphoCare Study<sup>1</sup>



Treatment line	Median PFS years (95% CI)
<b>First</b>	6.62 (6.10-7.20)
<b>Second</b>	1.50 (1.35-1.70)
Rituximab	1.50 (1.26-2.11)
R-chemo	1.48 (1.08-1.77)
<b>Third</b>	0.83 (0.68-1.09)
<b>Fourth</b>	0.69 (0.50-0.97)
<b>Fifth</b>	0.68 (0.43-0.88)

## Data from Memorial Sloan Kettering Cancer Center<sup>2</sup>



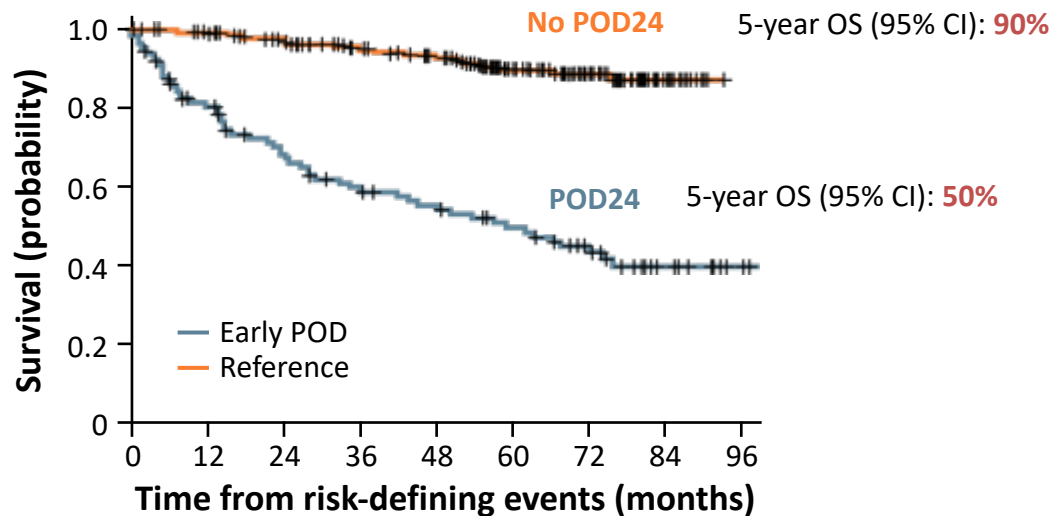
After 2<sup>nd</sup> lines of treatment:

- Median disease-free or progression-free period is 1 year or less (excl. transplants)

# NOT ALL FL RELAPSES ARE THE SAME: WHO ARE HIGH-RISK FL PATIENTS?

## Early progression of disease (POD 24)<sup>1</sup>

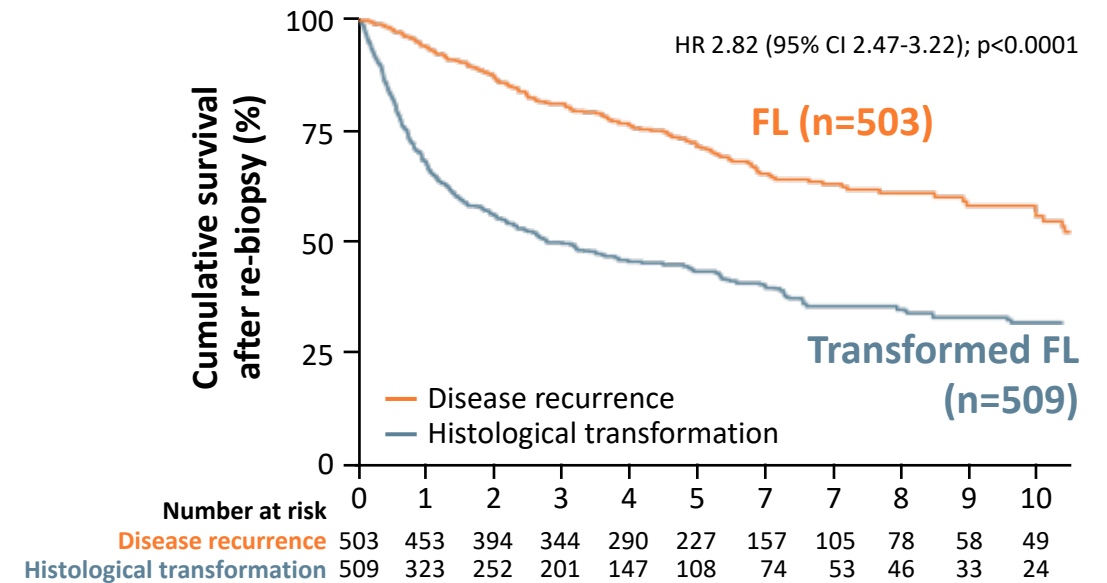
LymphoCare: 530 R-CHOP-treated patients



Applies to EFS12 and EFS24

## Transformation to aggressive lymphoma<sup>2</sup>

5-year OS post-transformed FL: 43%  
(34% with early [ $\leq 1$  year] transformation)



Survival poor after transformation

CI, confidence interval; EFS 12/24, event-free survival at 12/24 months; FL, follicular lymphoma; HR, hazard ratio; OS, overall survival; POD(24), progression of disease (within 2 years);

R-CHOP, cyclophosphamide, doxorubicin, vincristine, prednisone plus rituximab

1. Casulo C, et al. J Clin Oncol. 2015;33:2516-22; 2. Federico M, et al. Lancet Haematol. 2018;5:e359-67



# WHAT ARE THE OPTIONS FOR EARLY PROGRESSED FL PATIENTS?

## 1. HOW DO WE IDENTIFY EARLY PROGRESSORS?

- **Clinical tools:**
  - PRIMA-PI<sup>1</sup>
  - FLEX (FL Evaluation Index)<sup>2</sup>
- **Molecular tools:**
  - M7-FLIPI (mutations)<sup>3</sup>
  - Gene expression<sup>4</sup>



Is it **ACTIONABLE**?  
Low prognostic **ACCURACY**  
Is it widely **ACCESSIBLE/AFFORDABLE**?

## 2. HOW TO TREAT EARLY PROGRESSORS?

- No treatment shown to be superior to another in this setting
- Options:
  - High-dose therapy/stem cell transplantation for those who are fit
  - CIT options
  - Targeted therapies (lenalidomide, PI3K inhibitors)
  - Clinical trials

**Future approaches:  
auto vs  
bispecifics vs  
CAR-T?**

# COMPARISON OF EFFICACY IN PATIENTS WITH POD24 FL

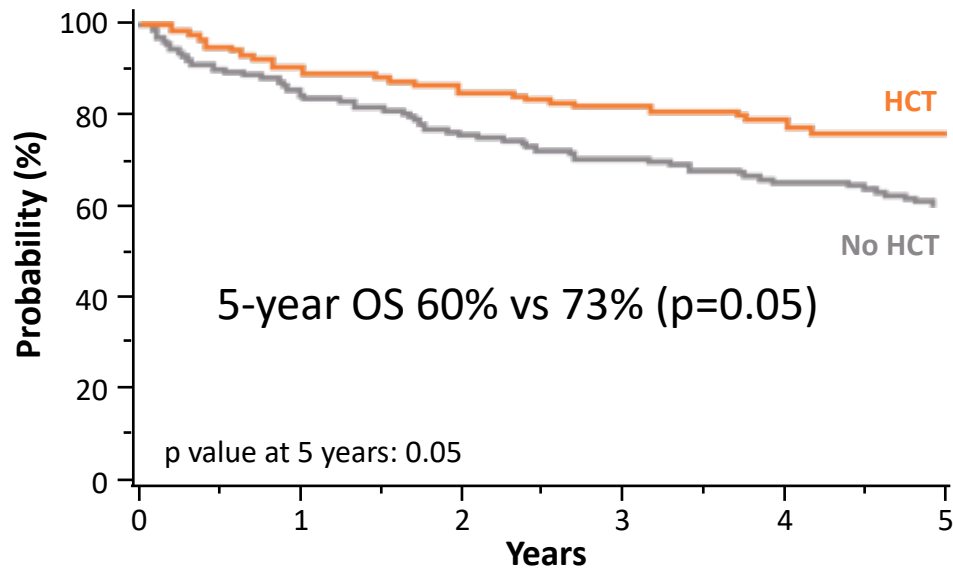
Agent	ORR, %	PFS	OS
<b>LEN+R (n=43)</b>	48	50% at 1 year	NA
<b>Lenalidomide-obinutuzumab (n=24)</b>	67	75% at 1 year	87% at 1 year
<b>Idelalisib (n=37)</b>	57	11 months (median)	NA
<b>Copanlisib (n=93)</b>	58	11 months (median)	43 months (median)

# VALUE OF HIGH-DOSE THERAPY AND ASCT FOR EARLY PROGRESSORS

**Retrospective study** (Center for International Blood and Marrow Transplant Research and National LymphoCare Study)<sup>1</sup>

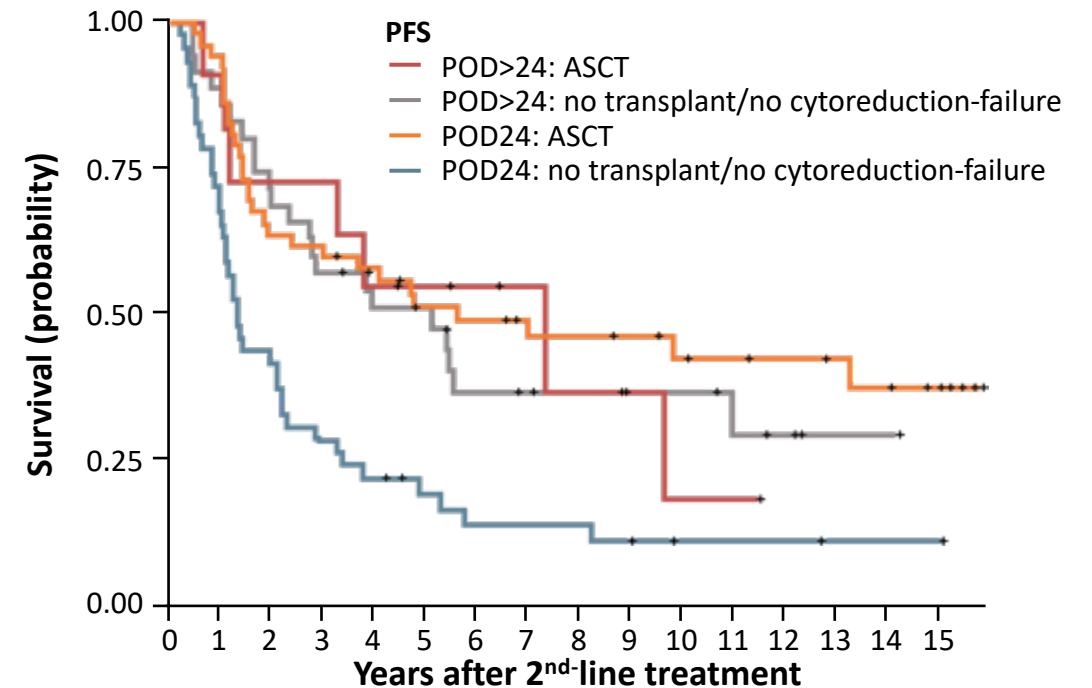
- Failed to achieve PR or early relapse ( $\leq 2$  years)
- N=349 (175 ASCT and 174 non-ASCT)

**OS of patients receiving HCT <1 year of therapy failure vs no HCT**

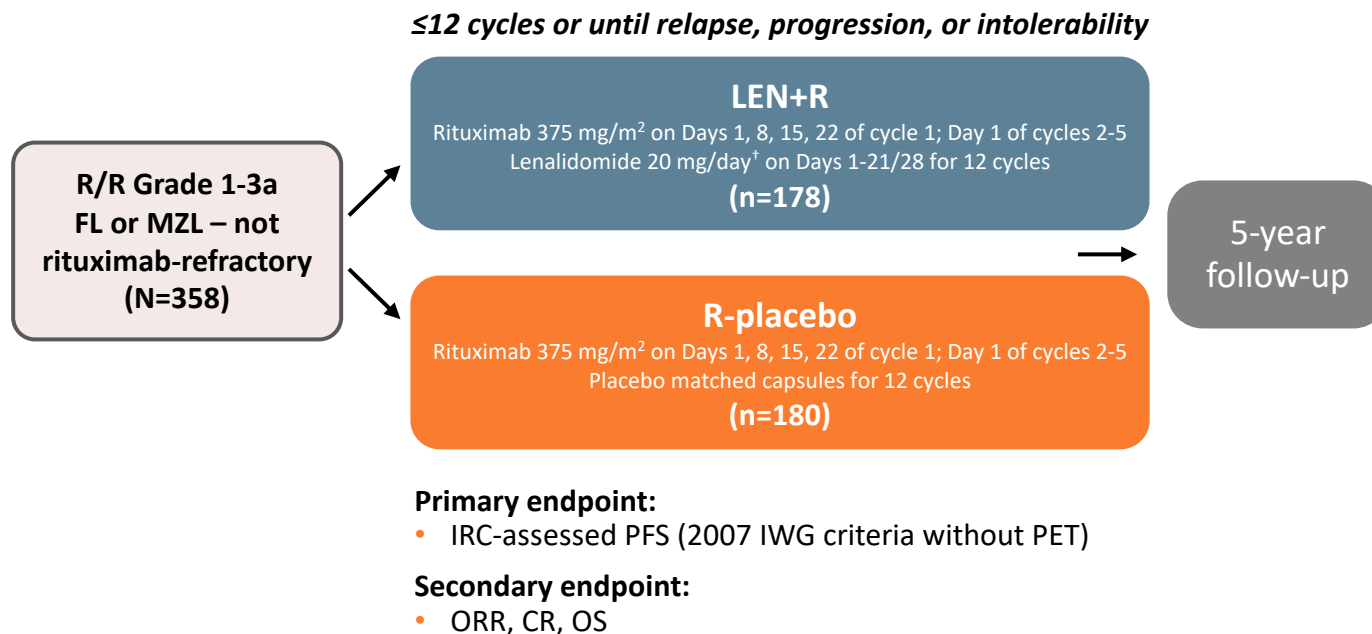


**Retrospective study** (GLSG1996 and GLSG2000)<sup>2</sup>

- 162 patients with progression, in need of treatment
  - POD24: n=113; POD>24: n=49

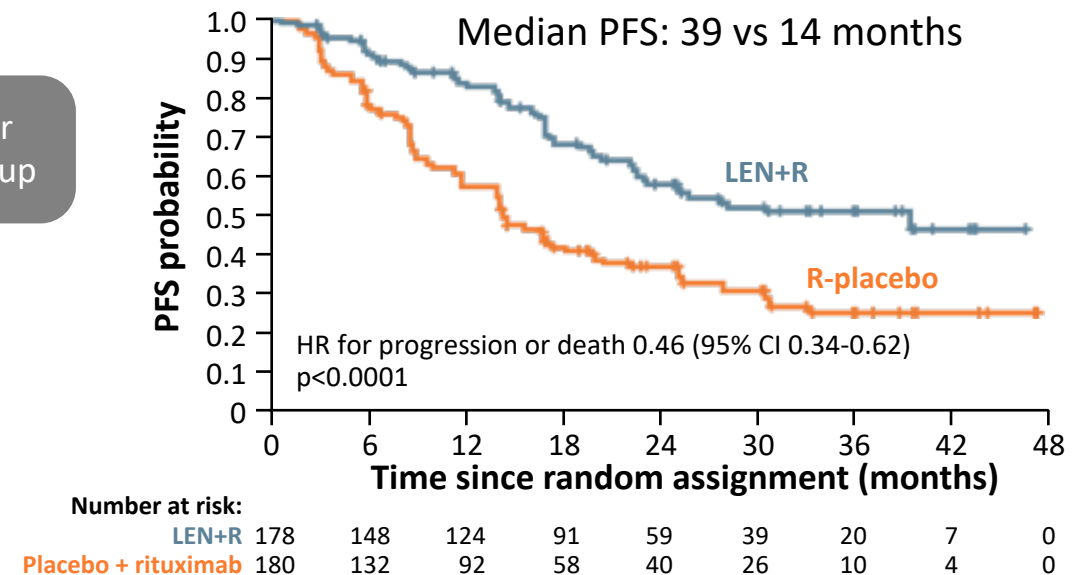


# AUGMENT: PHASE 3 STUDY FOR R/R FL: LEN+R VS R-PLACEBO



## PFS in R/R FL

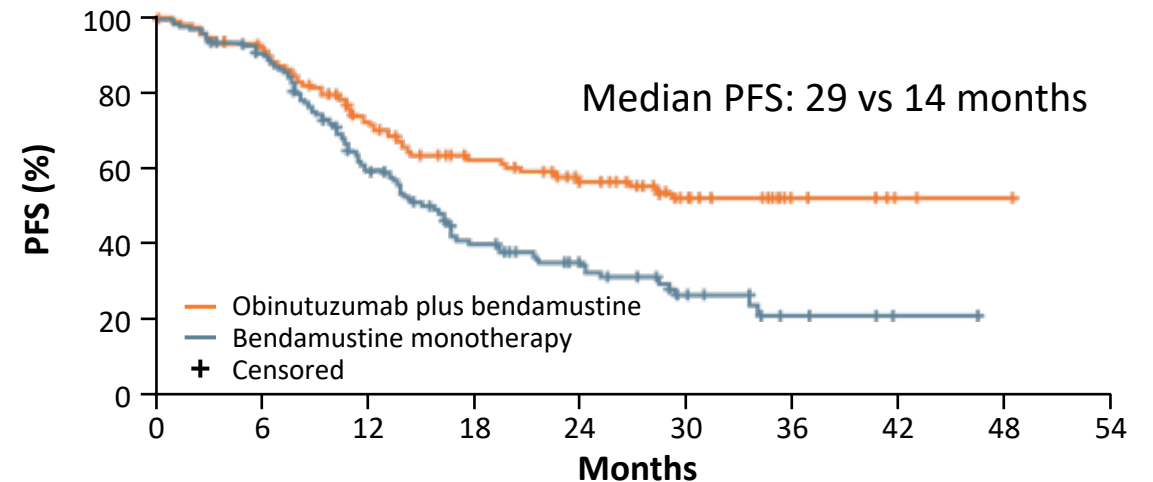
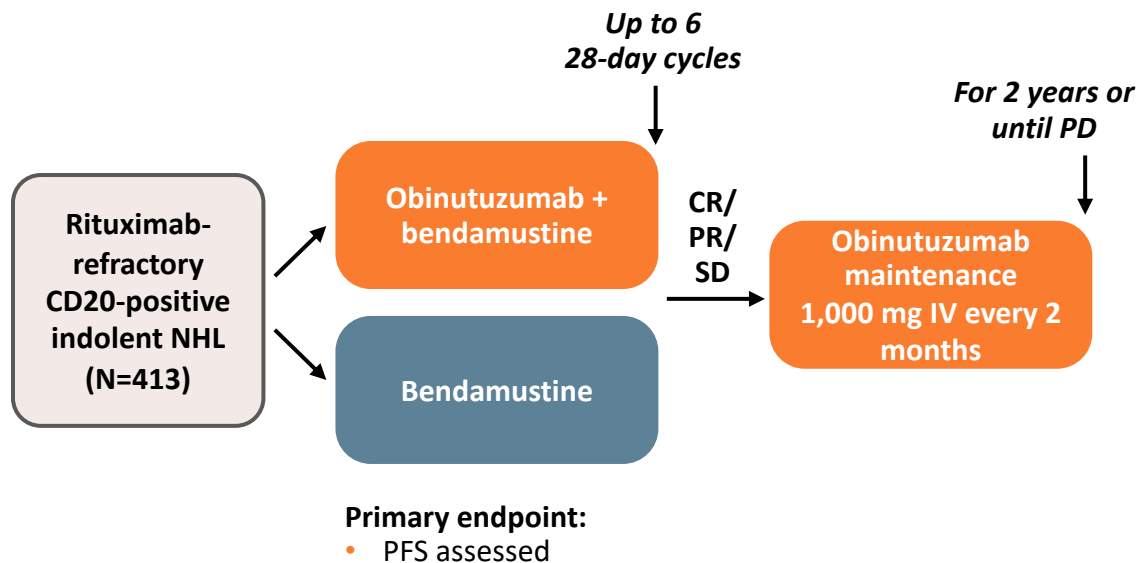
2-year PFS 58% (LEN+R) vs 36% (R-placebo)



## LEN+R is FDA-approved for previously treated FL

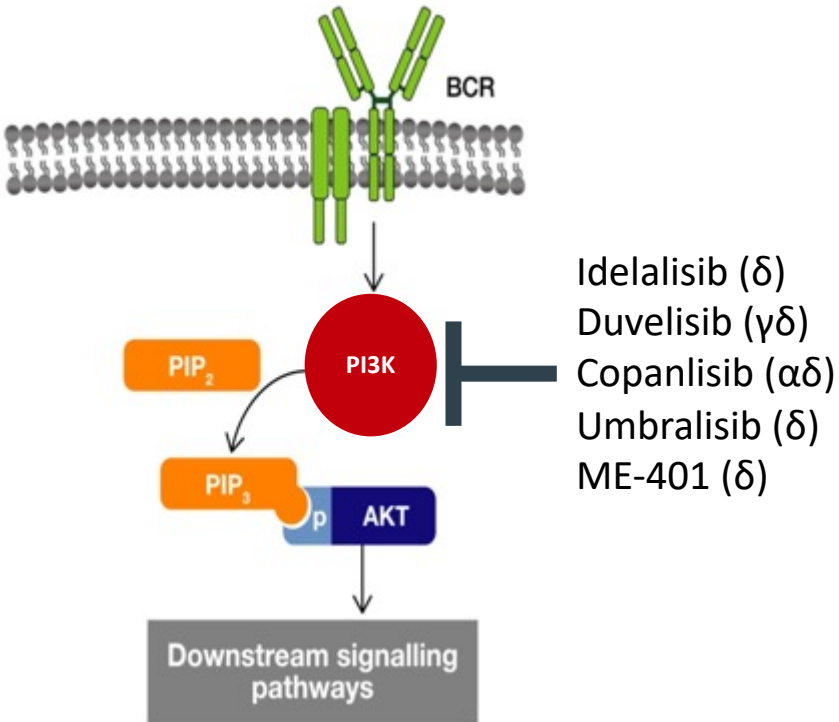
# BENDAMUSTINE +/- OBINUTUZUMAB IN RITUXIMAB-REFRACTORY FL

## GADOLIN – RANDOMIZED, INTERNATIONAL PHASE 3 TRIAL



Obinutuzumab + bendamustine followed by obinutuzumab:  
FDA-approved for patients with FL who have relapsed after or are refractory to  
a rituximab-containing regimen

# B-CELL RECEPTOR SIGNALLING AND PI3K INHIBITORS



## 4 FDA-approved PI3K inhibitors in relapsed FL; 1 in relapsed MZL

	Idelalisib <sup>1</sup>	Copanlisib <sup>2</sup>	Duvelisib <sup>3</sup>	Umbralisib <sup>4</sup>
Mechanism of action	Selective PI3K $\delta$	Pan-class I PI3K inhibitor	Dual inhibitor of PI3K $\gamma\delta$	PI3K $\delta$ and CK1- $\epsilon$
Indication	Relapsed FL after $\geq 2$ prior systemic therapies	Relapsed FL after $\geq 2$ prior systemic therapies	R/R FL after $\geq 2$ prior therapies	R/R FL after $\geq 3$ prior therapies
Dosing	150 mg orally (PO) twice daily (BID)	IV 60 mg on days 1, 8, and 15 of a 28-day cycle	25 mg PO BID	Oral 800 mg once daily (QD)

BCR, B-cell receptor; PI3K, phosphoinositide 3-kinase; FL, follicular lymphoma; MZL, marginal zone lymphoma; R/R, relapsed/refractory

1. Gopal AK, et al. N Engl J Med. 2014;370:1008-18; 2. Dreyling M, et al. J Clin Oncol. 2017;35:3898-905; 3. Flinn IW, et al. J Clin Oncol. 2019;37:984-91; 4. Fowler NH, et al. J Clin Oncol. 2021. DOI: 10.1200/JCO.20.03433

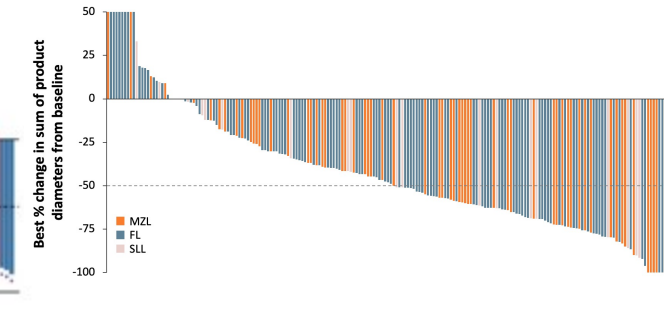
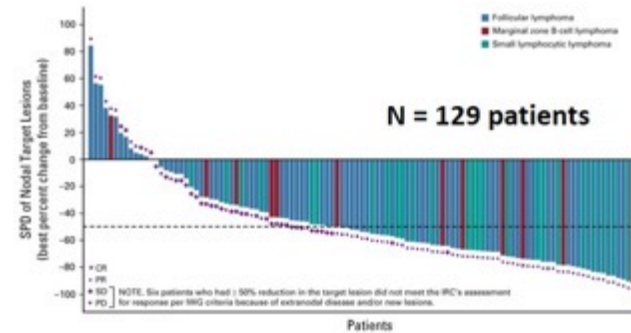
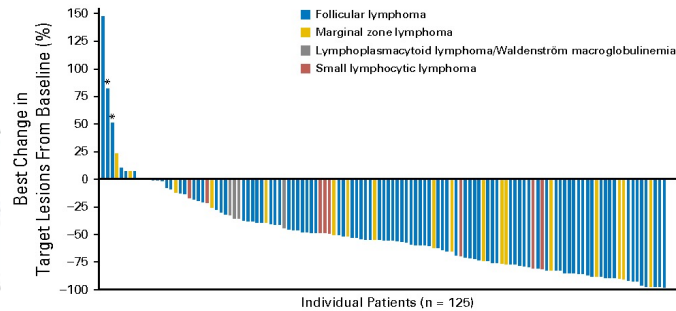
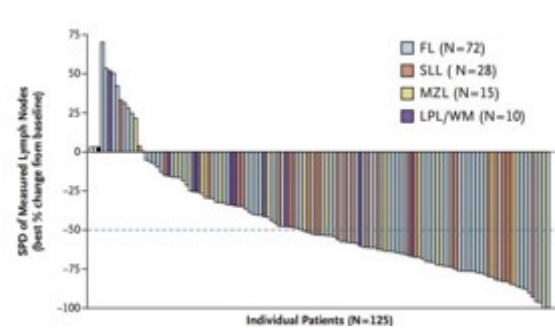
# CLINICAL EFFICACY AND SAFETY OF PI3K INHIBITORS IN R/R INDOLENT NHL

## Idelalisib

## Copanlisib

## Duvelisib

## Umbralisib



Transaminitis, colitis, pneumonitis, infections

Hyperglycaemia, hypertension, pneumonitis, diarrhoea

Colitis, pneumonitis, cutaneous reactions

Colitis, hepatotoxicity, cutaneous reactions

## TAKE-HOME:

**ORR:** 40-60%

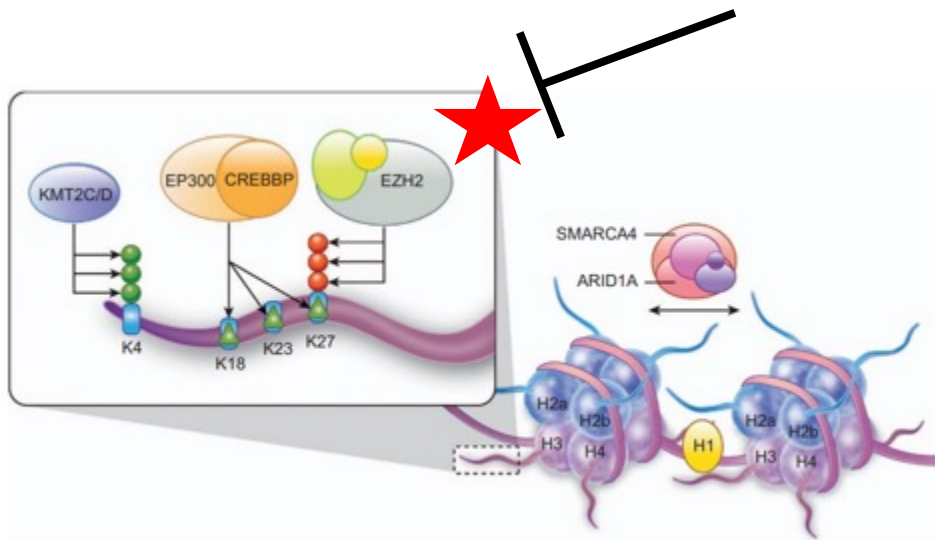
**Median DoR:** 10-14 months

**Median PFS:** 9-12 months

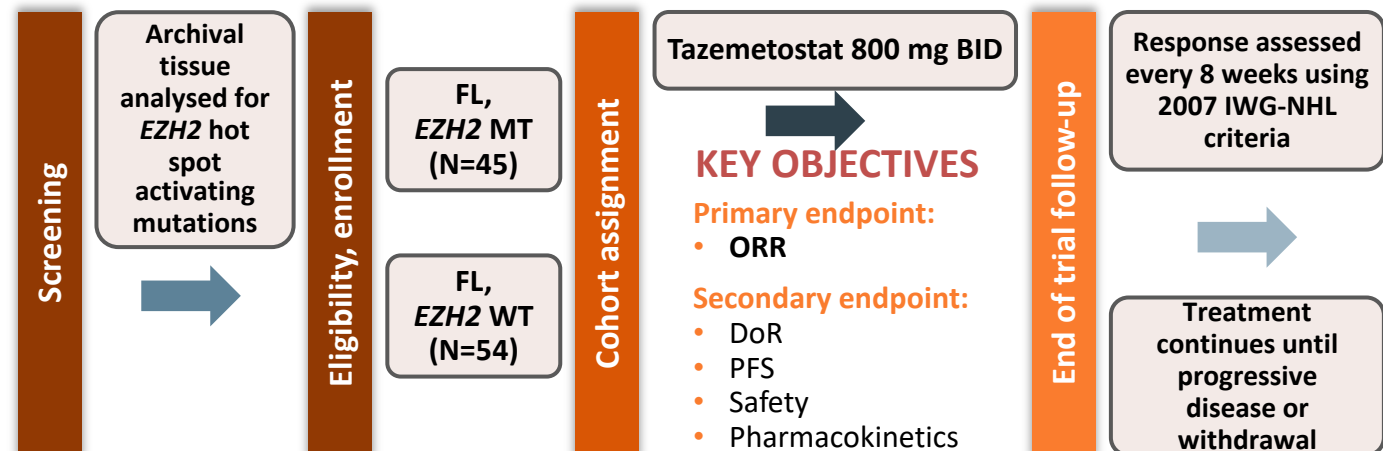
**Grade 3 or 4 AEs:** 55-88%

# EZH2 MUTATIONS IN FL

- EZH2 is a histone methyltransferase, an epigenetic regulator
- Oncogenic gain of function mutations in approx. 20% of FL and GCB-DLBCL



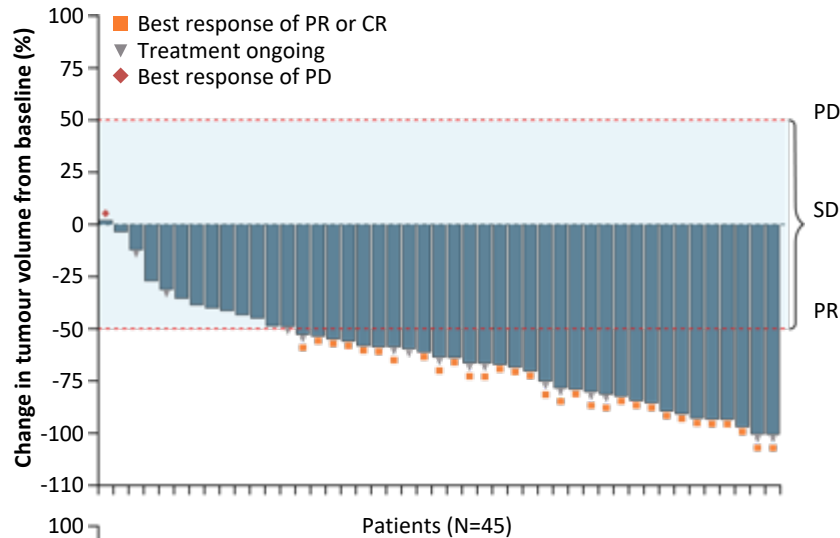
## Tazemetostat, first-in-class, selective, oral inhibitor of EZH2 – FDA approval



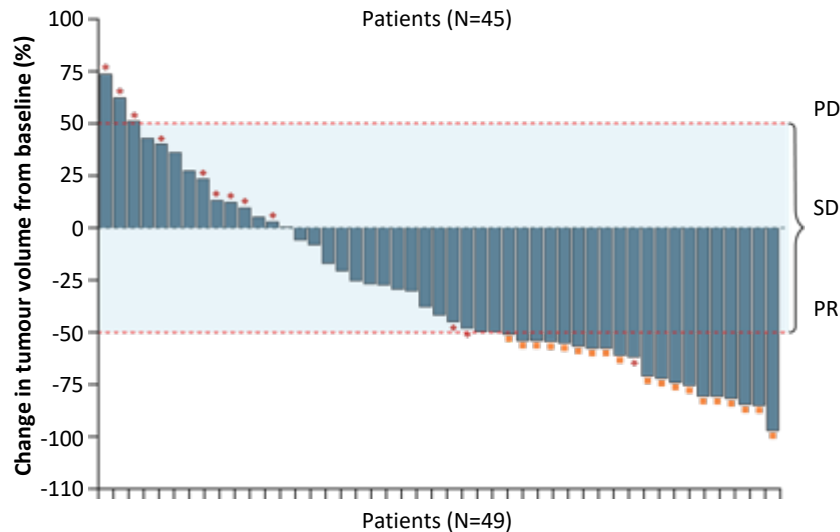


# TAZEMETOSTAT (EZH2i) FIRST TREATMENT TARGETING GENETIC MUTATIONS

**EZH2 MT**



**EZH2 WT**



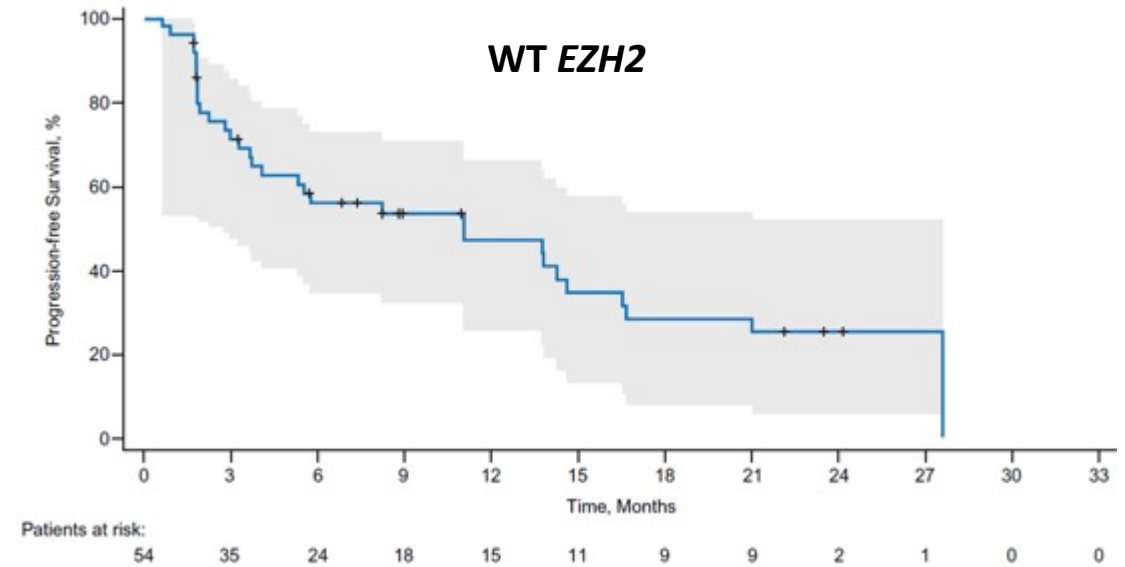
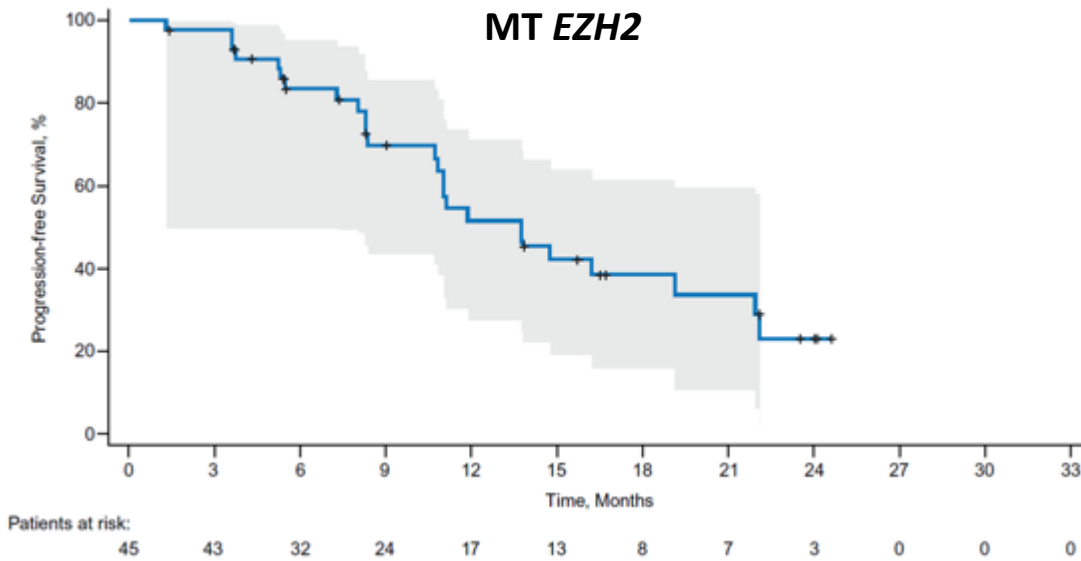
	<i>EZH2<sup>mut</sup></i> (N=45)	
	IRC-assessed	Investigator-assessed
<b>Objective response rate<sup>a</sup></b>	31 (69%; 53-82)	35 (78%; 63-89)
<b>Overall disease control rate<sup>b</sup></b>	44 (98%)	45 (100%)
<b>Best overall response</b>		
CR	6 (13%)	4 (9%)
PR	25 (56%)	31 (69%)
SD	13 (29%)	10 (22%)
PD	1 (2%)	0
Not estimable or unknown	0	0

	<i>EZH2<sup>wt</sup></i> (N=54)	
	IRC-assessed	Investigator-assessed
<b>Objective response rate<sup>a</sup></b>	19 (35%; 23-49)	18 (33%; 21-48)
<b>Overall disease control rate<sup>b</sup></b>	37 (69%)	34 (63%)
<b>Best overall response</b>		
CR	2 (4%)	3 (6%)
PR	17 (31%)	15 (28%)
SD	18 (33%)	16 (30%)
PD	12 (22%)	16 (30%)
Not estimable or unknown	5 (9%)	4 (7%)

**Safety:  
Very well  
tolerated**

<sup>a</sup> Objective response rate includes patients with CR or PR; <sup>b</sup> Overall disease control rate includes patients with a CR, PR, or SD

# PFS, BY IRC ASSESSMENT, IN MT AND WT *EZH2* COHORTS

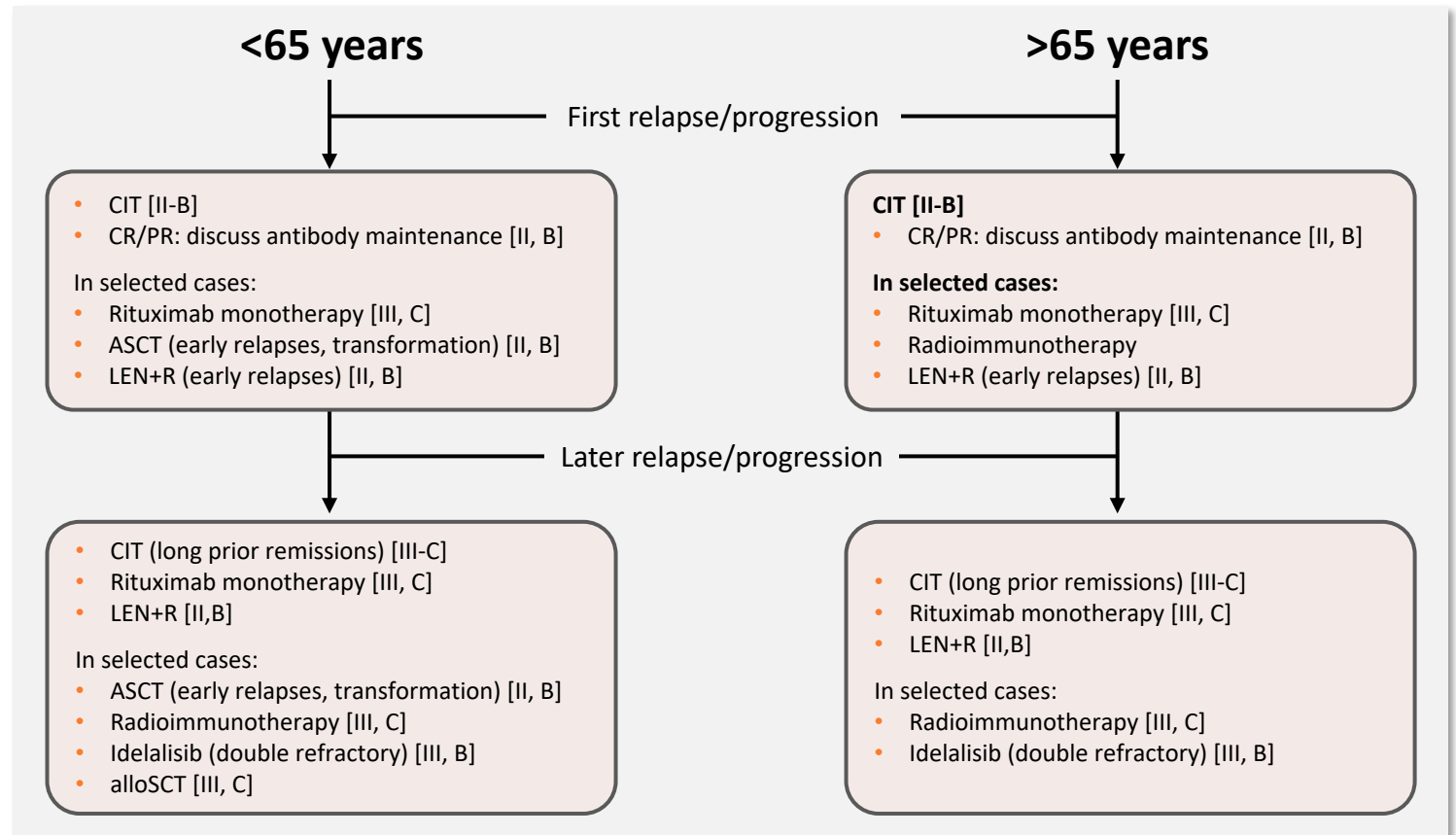


Endpoint	MT <i>EZH2</i> INV (n=45)	MT <i>EZH2</i> IRC (n=45)	WT <i>EZH2</i> INV (n=54)	WT <i>EZH2</i> IRC (n=54)
Median (95% CI) PFS, months	13.8 (8.4, 16.4)	13.8 (10.7, 22.0)	5.6 (3.3, 11.1)	11.1 (3.7, 14.6)
KM estimate of PFS (95% CI) at 6 months, %	83.3 (68.0, 91.7)	83.6 (68.6, 91.8)	46.4 (32.2, 59.4)	55.9 (40.7, 68.7)
KM estimate of PFS (95% CI) at 12 months, %	53.2 (36.2, 67.6)	51.7 (34.4, 66.6)	35.8 (22.8, 49.0)	47.1 (31.6, 61.1)
KM estimate of PFS (95% CI) at 18 months, %	31.0 (16.4, 46.8)	38.8 (22.7, 54.7)	22.5 (11.8, 35.)	28.3 (14.8, 43.4)

# WHAT DO THE GUIDELINES SUGGEST FOR R/R FL?

## Second-line and subsequent therapy

- Preferred regimens (alphabetical order)
  - Bendamustine + obinutuzumab or rituximab
  - CHOP + obinutuzumab or rituximab
  - CVP + obinutuzumab or rituximab
  - LEN+R
- Other recommended regimens (alphabetical order)
  - Ibritumomab tiuxetan
  - Lenalidomide (if not a candidate for anti-CD20 monoclonal antibody therapy)
  - Lenalidomide + obinutuzumab
  - Obinutuzumab
  - PI3K inhibitors (R/R after 2 prior therapies)
    - Copanlisib
    - Duvelisib
    - Idelalisib
  - Rituximab
  - Tazemetostat
    - *EZH2* mutation positive R/R disease after 2 prior therapies
    - *EZH2* wild type R/R disease in patients who have no satisfactory alternative treatment



# APPROACH TO TREATMENT SELECTION FOR R/R INDOLENT NHL

## For FL

- Consider a **clinical trial** as a first option
- **Early progressors** (POD24) – **younger patients** – *consider* high-dose therapy and ASCT
- In **rituximab-refractory patients** – *Obinutuzumab-chemotherapy (obinutuzumab-bendamustine, obinutuzumab-CHOP)*
- In **older patients** – *consider LEN+R, tazemetostat (in EZH2-mutated patients)*
- **Double-refractory patients:** *consider PI3K inhibitors (BUT mindful of toxicities, comorbidities, QoL)*

## For MZL

- **Clinical trial** as above
- **LEN+R, ibrutinib, umbralisib**

# THE FUTURE TREATMENT LANDSCAPE IN INDOLENT NHL

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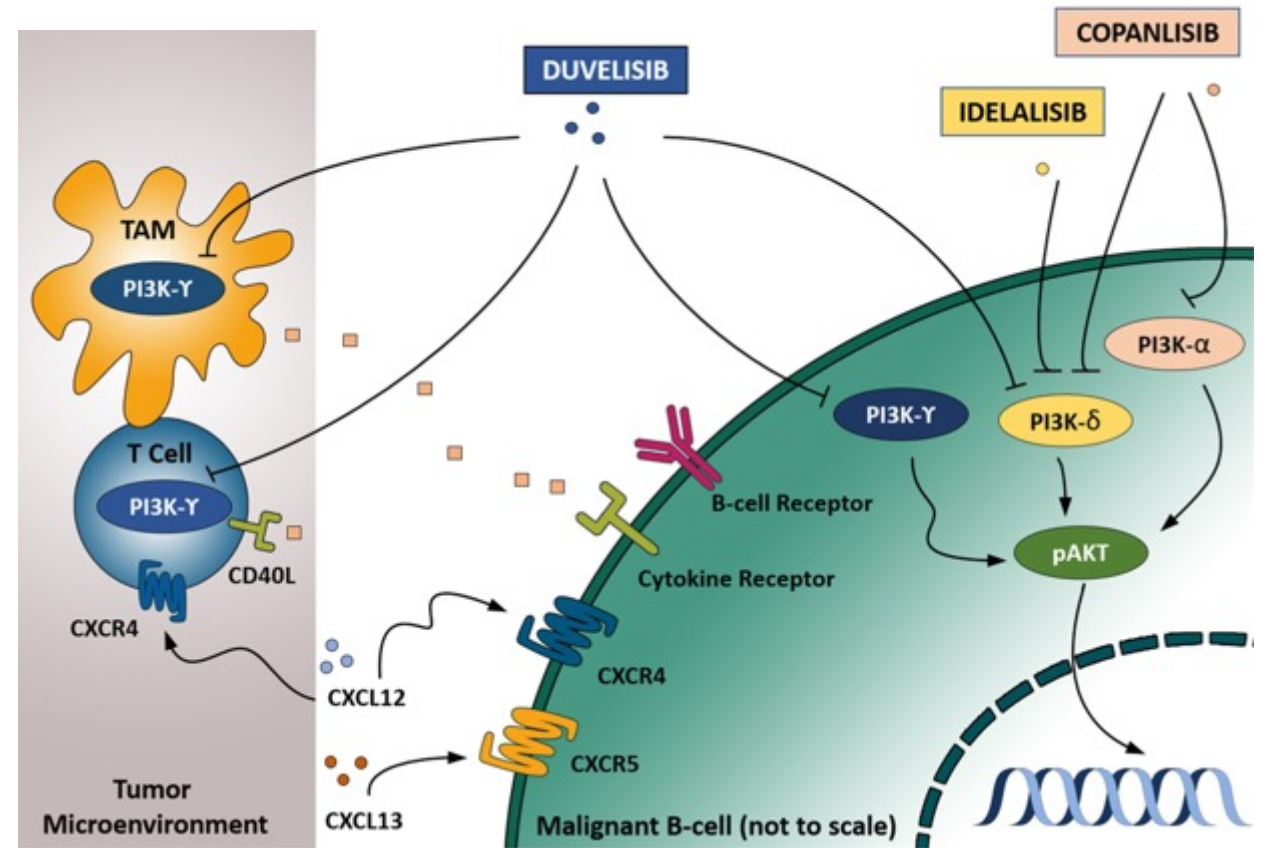
# DISCLOSURES ALEXEY DANILOV

- AstraZeneca
  - Gilead Sciences
  - Takeda Oncology
  - Genentech
  - TG Therapeutics
  - Bayer Oncology
  - Bristol-Myers Squibb
  - BeiGene
  - SecuraBio
  - Pharmacyclics
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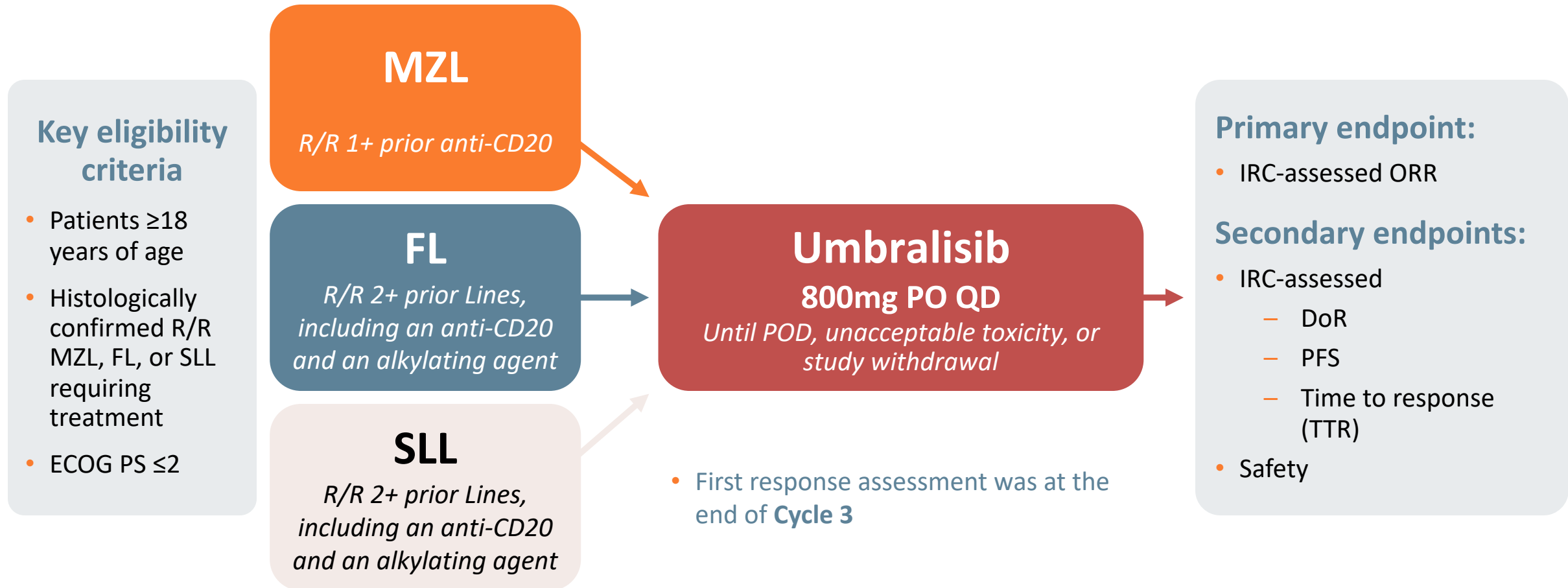
# PI3K INHIBITION: RATIONALE

- The **PI3K pathway is aberrantly activated in many cancers**, including NHL, contributing to proliferation and resistance to therapy
- The **delta isoform** of the p110 catalytic subunit is of particular interest in lymphoma
- **Several PI3K inhibitors approved** for R/R FL and  $\geq 2$  prior therapies

## Targeting PI3K isoforms



# UNITY-NHL STUDY DESIGN

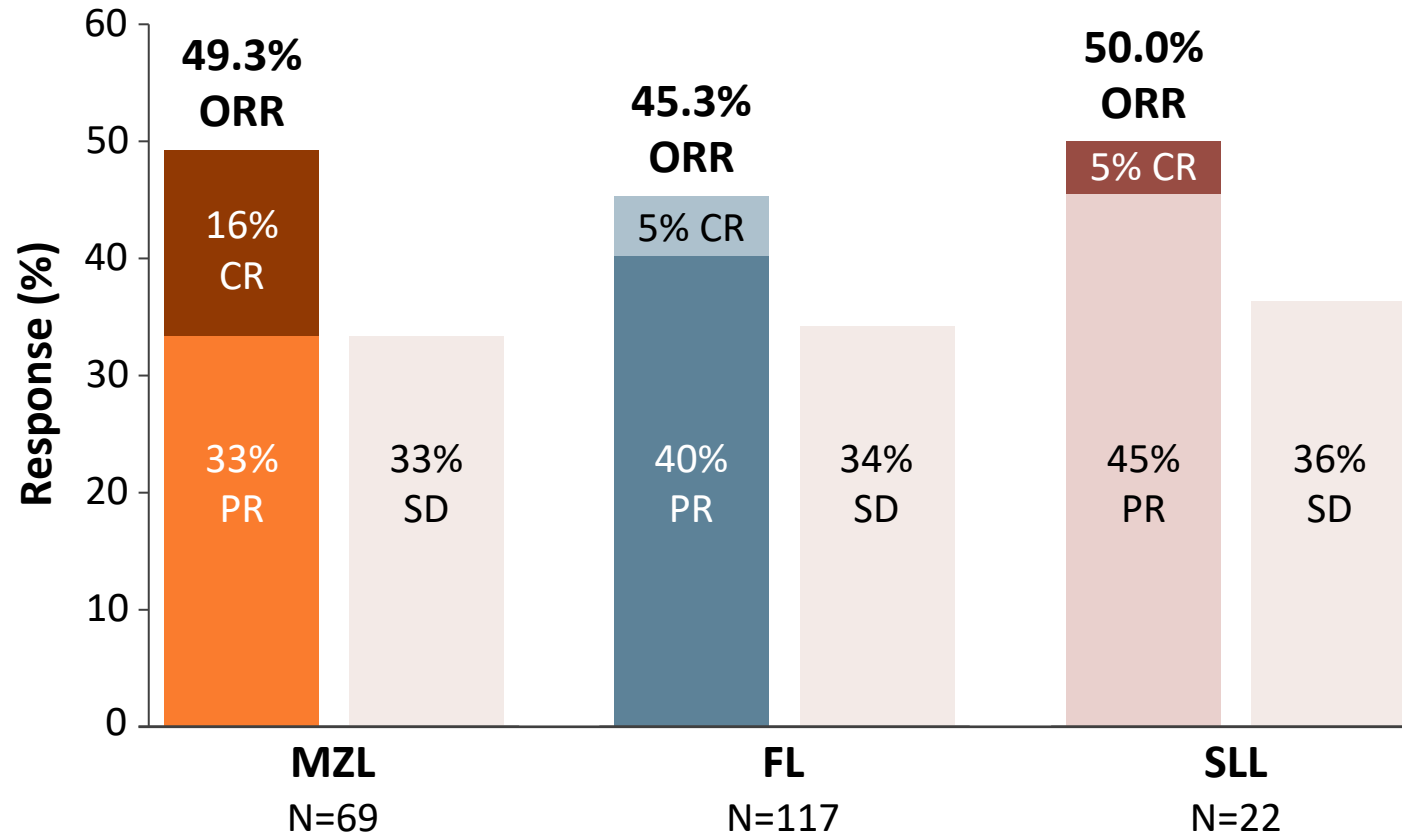




# ALL CAUSALITY ADVERSE EVENTS (>15%)

AE, n (%) (N=208)	Any Grade	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Diarrhoea	<b>123 (59.1)</b>	64 (30.8)	38 (18.3)	21 (10.1)	0	0
Nausea	<b>82 (39.4)</b>	52 (25.0)	29 (13.9)	1 (0.5)	0	0
Fatigue	<b>64 (30.8)</b>	38 (18.3)	19 (9.1)	7 (3.4)	0	0
Vomiting	<b>49 (23.6)</b>	29 (13.9)	19 (9.1)	1 (0.5)	0	0
Cough	<b>43 (20.7)</b>	35 (16.8)	8 (3.8)	0	0	0
ALT increased	<b>42 (20.2)</b>	13 (6.3)	15 (7.2)	11 (5.3)	3 (1.4)	0
AST increased	<b>39 (18.8)</b>	19 (9.1)	5 (2.4)	15 (7.2)	0	0
Decreased appetite	<b>39 (18.8)</b>	23 (11.1)	12 (5.8)	4 (1.9)	0	0
Dizziness	<b>38 (18.3)</b>	29 (13.9)	8 (3.8)	1 (0.5)	0	0
Neutropenia	<b>33 (15.9)</b>	5 (2.4)	4 (1.9)	10 (4.8)	14 (6.7)	0
Headache	<b>33 (15.9)</b>	22 (10.6)	9 (4.3)	2 (1.0)	0	0

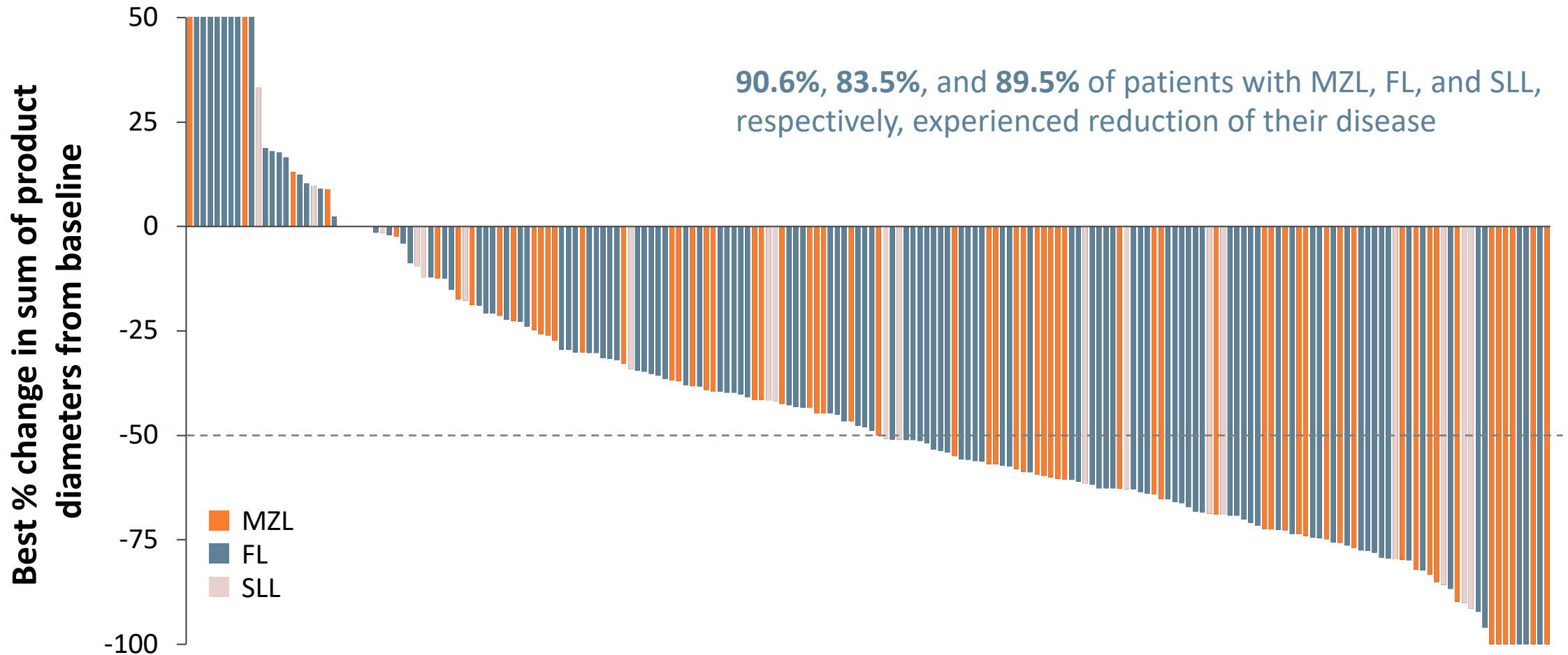
# IRC-ASSESSED OVERALL RESPONSE PRIMARY ENDPOINT



Cohort	DCR, %	Median TTR, months	Median follow-up, months
MZL	82.6	2.8	27.8
FL	79.5	4.6	27.5
SLL	86.4	2.7	29.3

Across entire indolent NHL population (n=208) umbralisib produced a **47.1% ORR** and **81.3% DCR**

# IRC-ASSESSED RESPONSE IN INDEX LESION SIZE

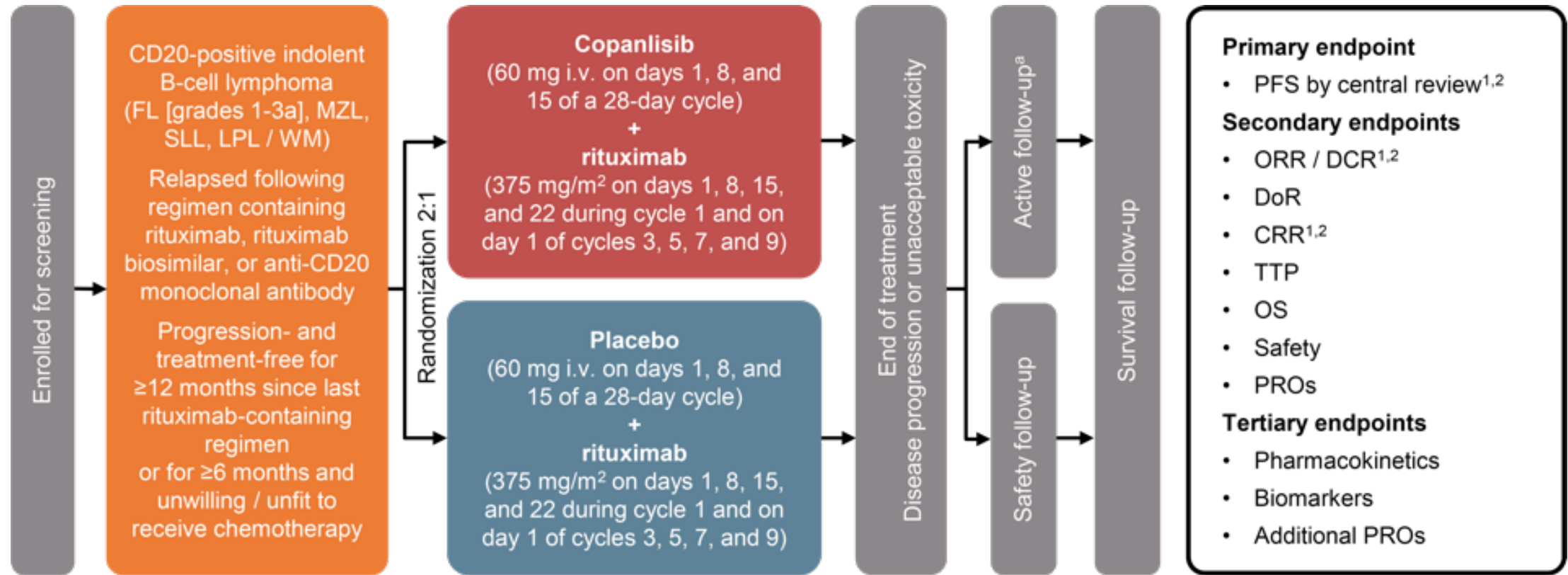


Note: Waterfall plot includes all patients with an evaluable post-baseline scan (N=198)

FL, follicular lymphoma; IRC, independent review committee; MZL, marginal zone lymphoma; SLL, small lymphocytic lymphoma

Zinzani PL, et al. ASH 2020. Abstract #2934

# CHRONOS-3 STUDY DESIGN



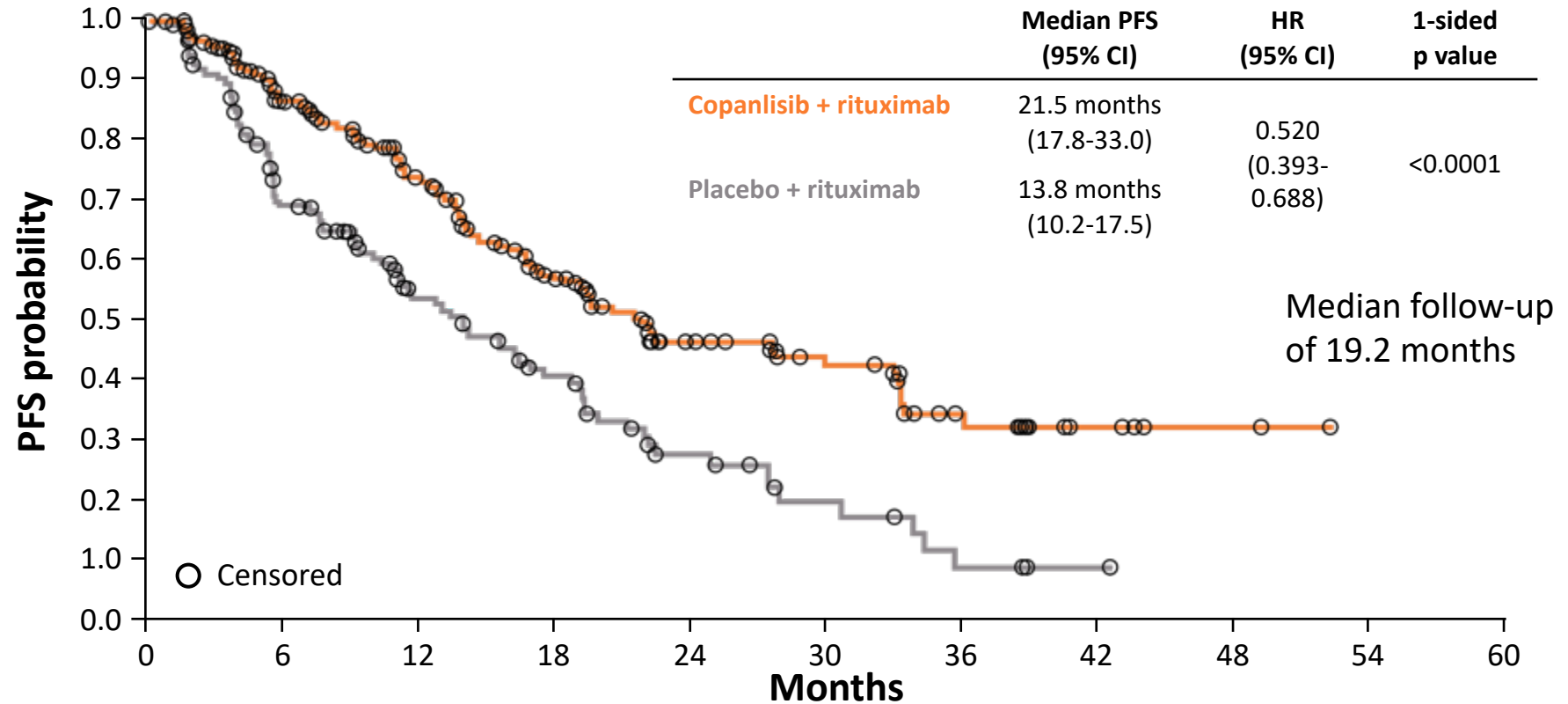
**Median no. of prior treatments:<sup>3</sup>**  
1: ~50% | 2: ~25% |  $\geq 3$ : ~25%

<sup>a</sup> Patients who discontinued treatment for any reason other than progressive disease entered active follow-up

CRR, complete response rate; DCR, disease control rate; DoR, duration of response; LPL/WM, lymphoplasmacytic lymphoma/Waldenström's macroglobulinemia; MZL, marginal zone lymphoma; ORR, objective response rate; OS, overall survival; PFS, progression-free survival; PRO, patient-reported outcome; SLL, small lymphoplasmacytic lymphoma; TTP, time to progression

1. Cheson BD, et al. J Clin Oncol. 2007;25:579-86; 2. Owen RG, et al. Br J Haematol; 2013;160:171-6; 3. Matasar MJ, et al. Lancet Oncol. 2021;S1470-2045(21)00145-5

# CHRONOS-3 PRIMARY ENDPOINT: PFS IN ALL PATIENTS WITH INDOLENT NHL



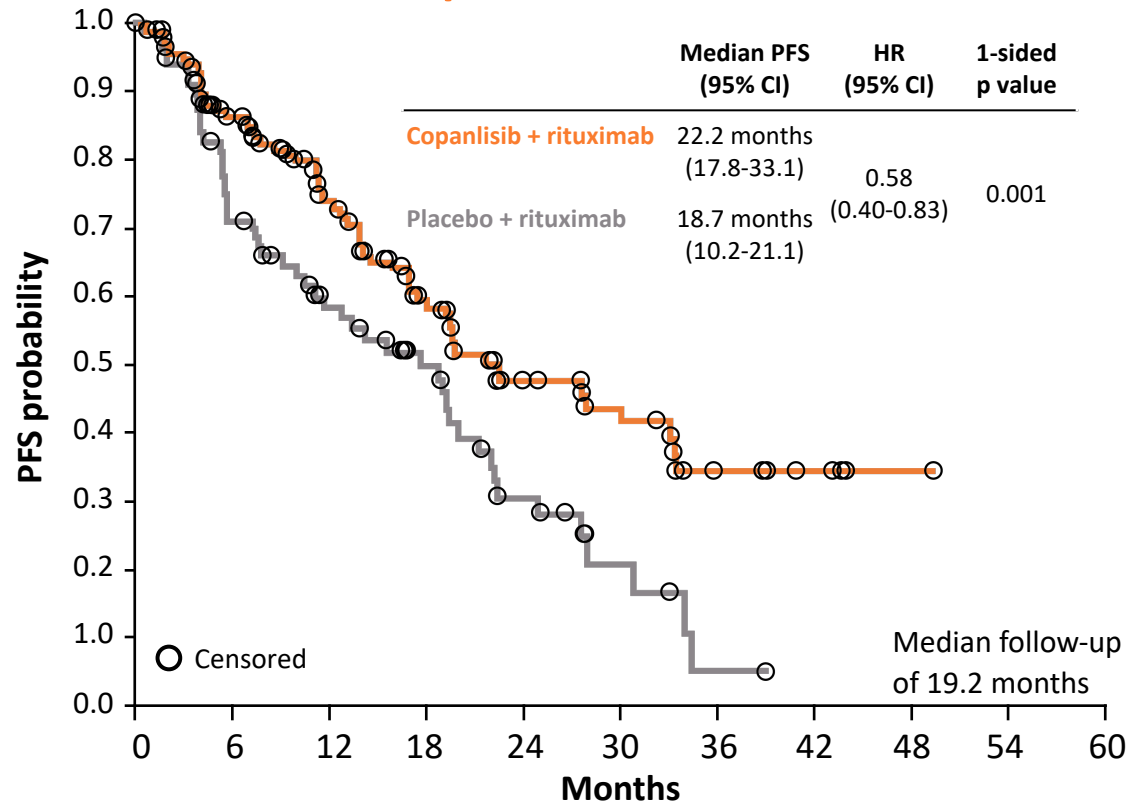
### No. of patients at risk (no. censored)

<b>Copanlisib + rituximab</b>	307 (0)	204 (67)	146 (97)	88 (125)	49 (149)	31 (164)	15 (175)	6 (183)	2 (187)	0 (189)	0 (189)
<b>Placebo + rituximab</b>	151 (0)	85 (25)	53 (41)	33 (49)	16 (56)	8 (60)	3 (61)	1 (63)	0 (64)	0 (64)	0 (64)

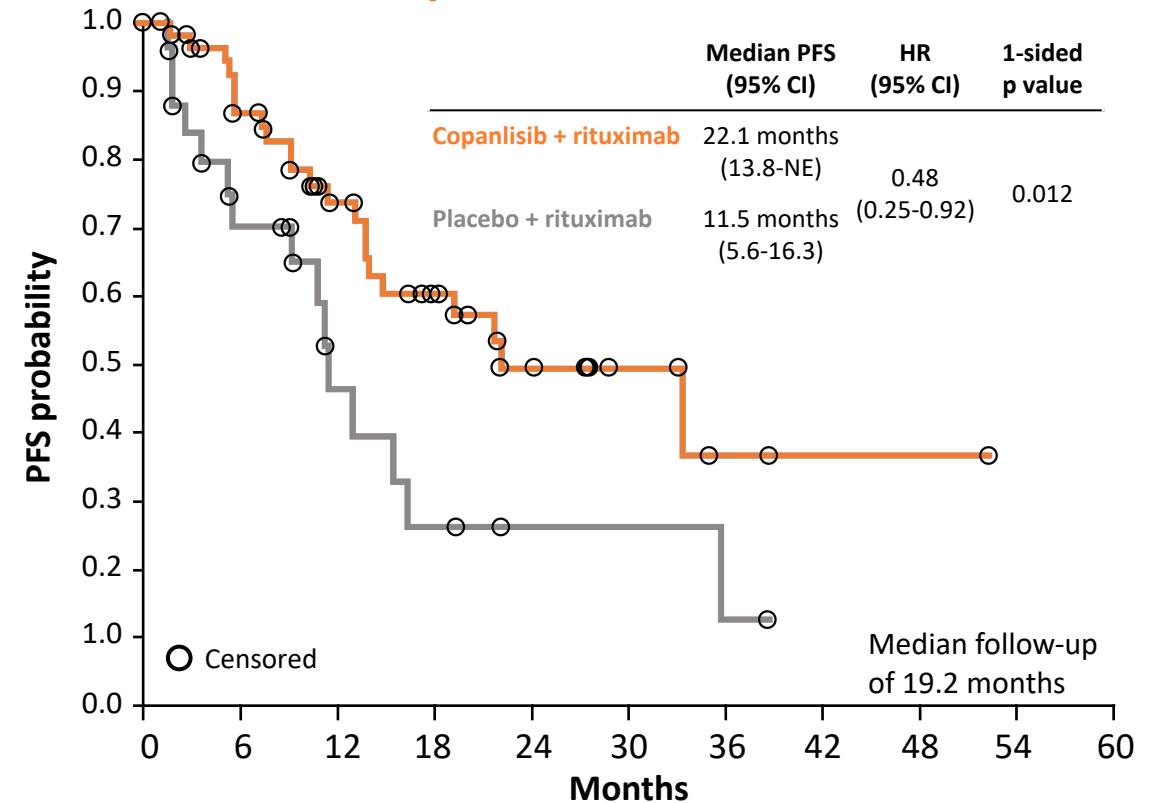
# CHRONOS-3

## PFS IN SUBGROUPS

### PFS in patients with FL



### PFS in patients with MZL



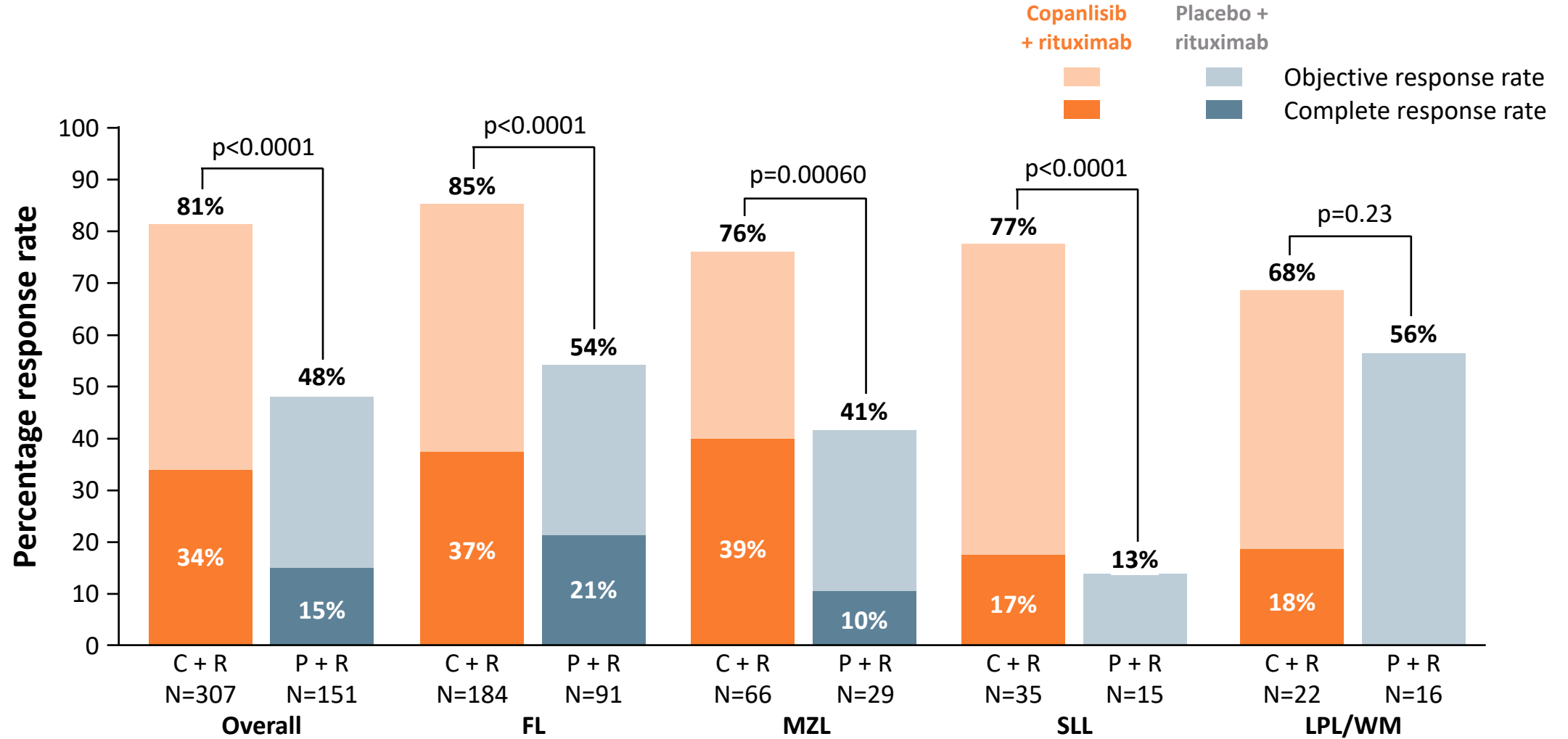
#### No. of patients at risk (no. censored)

	0	6	12	18	24	30	36	42	48	54	60
Copanlisib + rituximab	184 (0)	121 (40)	87 (59)	53 (77)	30 (91)	20 (98)	9 (106)	4 (111)	1 (114)	0 (115)	0 (115)
Placebo + rituximab	91 (0)	56 (12)	37 (22)	25 (29)	12 (33)	5 (37)	1 (38)	0 (39)	0 (39)	0 (39)	0 (39)

	0	6	12	18	24	30	36	42	48	54	60
Copanlisib + rituximab	66 (0)	44 (15)	29 (24)	20 (28)	10 (35)	5 (40)	2 (42)	1 (43)	1 (43)	0 (44)	0 (44)
Placebo + rituximab	29 (0)	15 (7)	7 (11)	4 (11)	2 (13)	2 (13)	1 (13)	0 (14)	0 (14)	0 (14)	0 (14)

# CHRONOS-3

## OBJECTIVE RESPONSE RATE (INDEPENDENT REVIEW)



# CHRONOS-3 - TREATMENT-EMERGENT AEs LEADING TO DISCONTINUATION

Treatment-emergent adverse event (TEAEs) leading to discontinuation, n (%) <sup>a</sup>	Copanlisib + rituximab (N=307)			Placebo + rituximab (N=146)		
	All grades	Grades 1 or 2	Grades 3 or 4	All grades	Grades 1 or 2	Grades 3 or 4
<b>Any TEAE leading to discontinuation</b>	<b>96 (31.3)</b>	<b>37 (12.1)</b>	<b>56 (18.2)</b>	12 (8.2)	3 (2.1)	8 (5.5)
<b>MedDRA preferred term</b>						
<b>Pneumonitis</b>	<b>19 (6.2)</b>	<b>11 (3.6)</b>	<b>8 (2.6)</b>	0	0	0
Hyperglycaemia	8 (2.6)	1 (0.3)	7 (2.3)	0	0	0
Interstitial lung disease	4 (1.3)	1 (0.3)	3 (1.0)	0	0	0
<i>Pneumocystis jirovecii</i> pneumonia	4 (1.3)	2 (0.7)	2 (0.7)	0	0	0
Pneumonia	4 (1.3)	0	3 (1.0)	1 (0.7)	0	1 (0.7)
Bronchitis	3 (1.0)	3 (1.0)	0	0	0	0
Cough	2 (0.7)	2 (0.7)	0	0	0	0
Hypertension	2 (0.7)	0	2 (0.7)	1 (0.7)	0	1 (0.7)
Mucosal inflammation	2 (0.7)	0	2 (0.7)	0	0	0
Pruritus	2 (0.7)	2 (0.7)	0	0	0	0
Respiratory failure	2 (0.7)	0	2 (0.7)	0	0	0
Dyspnoea	0	0	0	2 (1.4)	1 (0.7)	1 (0.7)
<b>Investigations</b>	<b>13 (4.2)</b>	<b>8 (2.6)</b>	<b>5 (1.6)</b>	<b>2 (1.4)</b>	<b>0</b>	<b>2 (1.4)</b>
Hyponatraemia	3 (1.0)	1 (0.3)	2 (0.7)	0	0	0
Increased amylase	3 (1.0)	1 (0.3)	2 (0.7)	0	0	0
Increased lipase	3 (1.0)	0	3 (1.0)	0	0	0
Increased hepatitis B DNA	2 (0.7)	2 (0.7)	0	0	0	0
Increased ALT	2 (0.7)	0	2 (0.7)	0	0	0
Increased AST	2 (0.7)	0	2 (0.7)	0	0	0
Decreased weight	2 (0.7)	2 (0.7)	0	0	0	0
Increased blood creatinine phosphokinase	0	0	0	2 (1.4)	0	2 (1.4)

<sup>a</sup> Includes events occurring in ≥2 patients in either treatment arm



# ZUMA-5 STUDY DESIGN

## Multicentre, single-arm phase 2 trial

Patients with R/R FL (Grade 1-3a) or MZL (nodal or extranodal),  $\geq 2$  prior lines of therapy including anti-CD20 monoclonal antibody (mAb) + alkylating agent (N=146)

### Conditioning chemotherapy

Fludarabine 30 mg/m<sup>2</sup> +  
Cyclophosphamide 500 mg/m<sup>2</sup>  
Days -5, -4, -3

### CAR-T Cells

Axi-Cel  
 $2 \times 10^6$  cells/kg  
Day 0

***Followed  
for safety  
up to 15  
years***

*Patients with SD but no relapse >1 year from completion of last therapy ineligible. Single-agent anti-CD20 mAb not counted as line of therapy for eligibility. Median time to delivery of axi-cel: 17 days following leukapheresis.*

- **Primary endpoint:** Objective response rate (IRRC-assessed per Lugano classification)
- **Key secondary endpoints:** CR rate (IRRC-assessed), DoR, PFS, OS, AEs, CAR T cell, and cytokine levels

# ZUMA-5

## BASELINE PATIENT CHARACTERISTICS

Characteristic	Axi-Cel			Characteristic	Axi-Cel		
	FL (n=124)	MZL (n=22)	Overall (N=146)		FL (n=124)	MZL (n=22)	Overall (N=146)
<b>Median age, years (range)</b>	60 (34-79)	66 (48-77)	61 (34-79)	<b>Median prior tx, n (range)</b>	3 (1-10) <sup>a</sup>	3 (2-8)	3 (1-10)
• ≥ 65 years, n (%)	38 (31)	13 (59)	51 (35)	• ≥3	78 (63)	15 (68)	93 (64)
<b>Male, n (%)</b>	73 (59)	10 (45)	83 (57)	• PI3K inhibitor	34 (27)	9 (41)	43 (29)
<b>ECOG PS 1, n (%)</b>	46 (37)	9 (41)	55 (38)	<b>Refractory disease, n (%)<sup>b</sup></b>	84 (68)	16 (73)	100 (68)
<b>Stage III/IV disease, n (%)</b>	106 (85)	20 (91)	126 (86)	<b>POD24 from first anti-CD20 mAb tx, n (%)<sup>c</sup></b>	68 (55)	11 (52)	79 (55)
<b>≥3 FLIPI, n (%)</b>	54 (44)	14 (64)	68 (47)	<b>Prior ASCT, n (%)</b>	30 (24)	3 (14)	33 (23)
<b>High tumour bulk by GELF, n (%)<sup>a</sup></b>	64 (52)	8 (36)	72 (49)				

\* Involvement of ≥3 nodal sites (≥3 cm each); any nodal or extranodal tumour mass ≥7 cm; B symptoms; splenomegaly; pleural effusions or peritoneal ascites; cytopenias; or leukaemia

<sup>a</sup> n=3 with 1 prior line of therapy before protocol amendment requiring ≥2. <sup>b</sup> PD within 6 months of most recent prior tx. <sup>c</sup> 24 months from start of first anti-CD20-containing immunochemotherapy to progression; % based on patients ever receiving this therapy.

# ZUMA-5

## IRRC-ASSESSED OBJECTIVE RESPONSE RATE

IRRC-assessed response, n (%) <sup>a,b</sup>	Axi-Cel		
	FL (n=84)	MZL (n=20)	Overall (N=104)
<b>ORR</b>	79 (94)	17 (85)	96 (92)
<b>CR</b>	67 (80)	12 (60)	79 (76)
<b>PR</b>	12 (14)	5 (25)	17 (16)
<b>SD</b>	3 (4)	0	3 (3)
<b>ND</b>	2 (2)	3 (15)	5 (5)

<sup>a</sup> For investigator-assessed response (N=104): ORR, 95%; CR rate, 77%.

<sup>b</sup> n=4 (1 FL, 3 MZL) had no disease at or post baseline per IRRC but were considered to have disease by investigator; n=1 FL patient died before initial disease assessment

- Median **time to first response**: 1.0 months (range: 0.8-3.1)
- 13/25 (52%) FL patients with **initial PR converted to CR** after median 2.2 months (range: 1.9-11.2)
- **ORR was consistent across all subgroups** analysed including by FLIPI score, high tumour burden, and previous treatment

# ZUMA-5

## DURATION OF RESPONSE

DoR	FL (n=84)	MZL (n=20)	Overall (N=104)
<b>Median follow-up, months (range)</b>	18.5 (12.2-31.6)	12.1 (1.4-26.8)	17.5 (1.4-31.6)
<b>Median DoR, months (95% CI)</b>	NE (20.8-NE)	10.6 (8.1-NE)	NE (20.8-NE)
<b>12-month DoR rate, % (95% CI)</b>	77.0 (65.6-85.1)	NE (NE-NE)	71.7 (60.7-80.1)
<b>Ongoing response at cut-off, %</b>	64 <sup>a</sup>	50	NR

<sup>a</sup> 78% in subset with CR; 17% in subset with PR

DoR by best response (95% CI)	FL		MZL	
	CR (n=67)	PR (n=12)	CR (n=12)	PR (n=5)
Median DoR, months	NE (20.8-NE)	2.8 (2.1-8.2)	10.6 (3.1-NE)	8.1 (NE-NE)
12-month DoR rate, %	87.0 (75.6-93.3)	13.6 (1.0-42.6)	NE (NE-NE)	0 (NE-NE)

# ZUMA-5 SURVIVAL

Outcome (95% CI)	FL (n=84)	MZL (n=20)	Overall (N=104)
<b>Median PFS, months</b>	NE (23.5-NE)	11.8 (9.1-NE)	NE (23.5-NE)
<b>12-month PFS rate, %</b>	77.5 (66.6-85.2)	45.1 (15.2-71.4)	73.7 (63.3-81.6)
<b>Median OS, months</b>	NE (NE-NE)	NE (NE-NE)	NE (NE-NE)
<b>12-month OS rate, %</b>	92.8 (84.7-96.7)	92.9 (59.1-99.0)	92.9 (85.6-96.5)

# ZUMA-5

## CYTOKINE-RELEASE SYNDROME

Parameter	FL (n=124)	MZL (n=22)	Overall (N=146)
<b>Cytokine-release syndrome (CRS), n (%)</b>			
• Any grade	97 (78)	22 (100)	119 (82)
• Grade $\geq 3$	8 (6)	2 (9)	10 (7) <sup>a</sup>
<b>Most common any-grade symptoms, n/N (%)</b>			
• Pyrexia	94/97 (97)	20/22 (91)	114/119 (96)
• Hypotension	39/97 (40)	10/22 (45)	49/119 (41)
<b>AE management, n (%)</b>			
• Tocilizumab	56 (45)	15 (68)	71 (49)
• Corticosteroids	19 (15)	6 (27)	25 (17)
<b>Median time to onset, days (range)</b>	4 (1-15)	4 (1-9)	4 (1-15)
<b>Median duration of events, days (range)</b>	6 (1-27)	6 (2-14)	6 (1-27)
<b>Patients with resolved events, n/N (%)</b>	96/97 (99) <sup>b</sup>	22/22 (100)	118/119 (99)

No ongoing events at data cut-off.

<sup>a</sup> Grade 4/5, n=1 each. <sup>b</sup> n=1 death on Day 7 due to multisystem organ failure with CRS before CRS resolution

# ZUMA-5

## NEUROLOGIC EVENTS

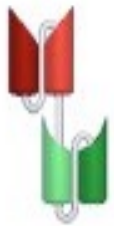
Parameter	FL (n=124)	MZL (n=22)	Overall (N=146)
<b>Neurologic events, n (%)</b>			
• Any grade	70 (56)	17 (77)	87 (60)
• Grade $\geq 3$	19 (15)	9 (41)	28 (19) <sup>a</sup>
<b>Most common any-grade symptoms, n/N (%)</b>			
• Tremor	36/70 (51)	9/17 (53)	45/87 (52)
• Confusional state	28/70 (40)	7/17 (41)	35/87 (40)
<b>AE management, n (%)</b>			
• Corticosteroids	38 (31)	14 (64)	52 (36)
• Tocilizumab	7 (6)	2 (9)	9 (6)
<b>Median time to onset, days (range)</b>	7 (1-177)	7 (3-19)	7 (1-177)
<b>Median duration of events, days (range)</b>	14 (1-452)	10 (2-81)	14 (1-452)
<b>Patients with resolved events, n/N (%)</b>	67/70 (96)	14/17 (82)	81/87 (93)

Ongoing events at data cut-off: Grade 1 memory impairment (n=2) and attention disturbance, intermittent paresthesia, and tremor (n=1 each); Grade 2 facial paresthesia (n=1).

<sup>a</sup> Grade 4, n=3; no Grade 5 events

# BISPECIFIC ANTIBODIES IN B-NHL UNDER DEVELOPMENT

CD19



**BITE<sup>®</sup> (1:1)**

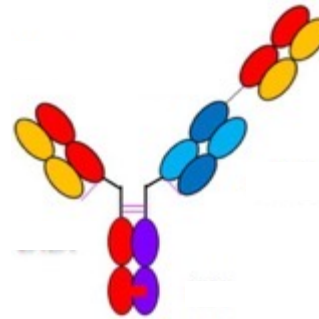
Blinatumomab

CD20



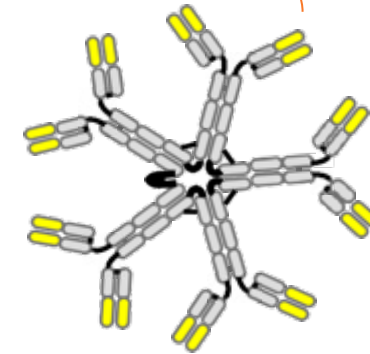
**Full-length IgG (1:1)**

Mosunetuzumab  
Odronextamab  
Epcoritamab



**Full-length IgG (2:1)**

Glofitamab



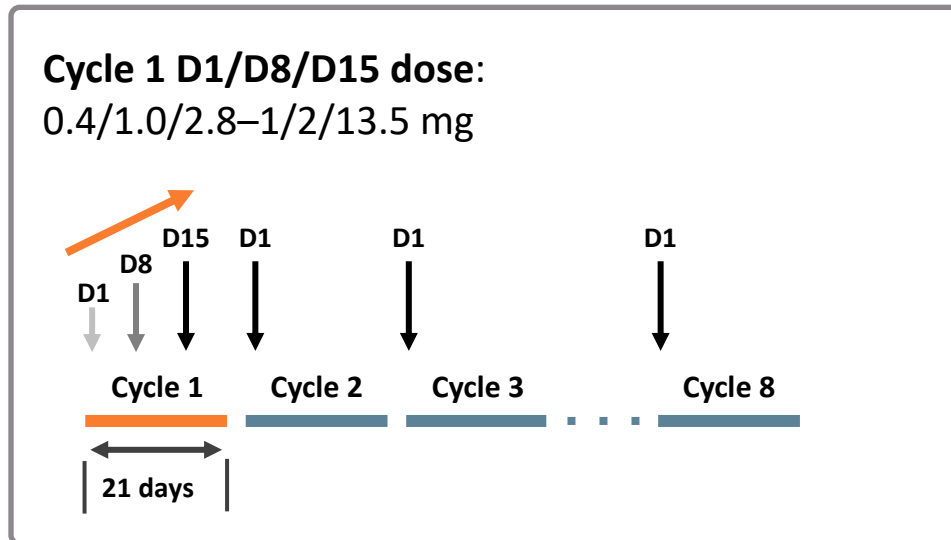
**IgM (10:1)**

IgM2323



# MOSUNETUZUMAB SHOWS PROMISING EFFICACY IN PATIENTS WITH MULTIPLY RELAPSED FL

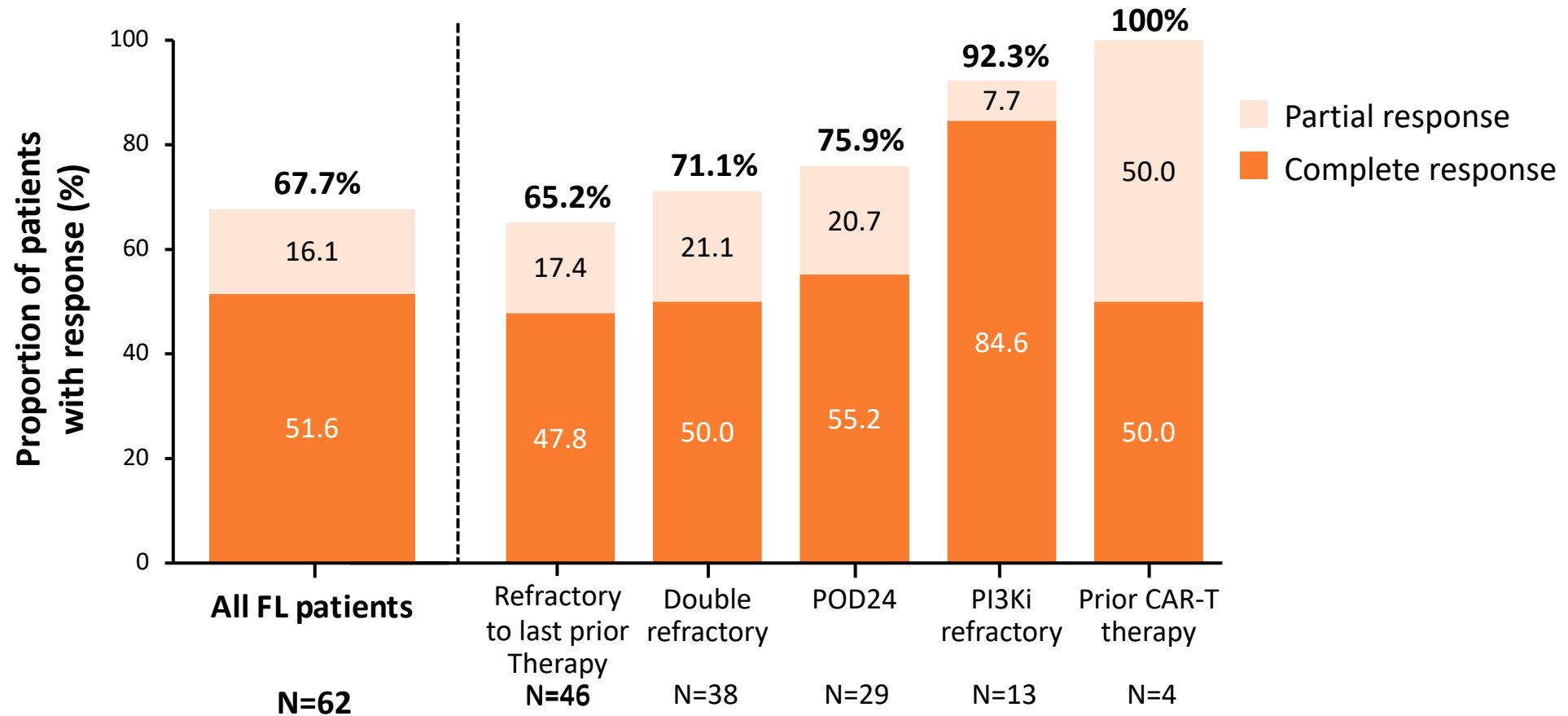
## UPDATED CLINICAL EXPERIENCE FROM A PHASE 1 DOSE-ESCALATION TRIAL



### Key inclusion criteria (FL cohort)

- R/R FL (Grades 1-3a; expected to express CD20)
- $\geq 2$  prior systemic therapies
- Age  $\geq 18$  years
- ECOG PS  $\leq 1$

# MOSUNETUZUMAB RESPONSE RATES (INVESTIGATOR-ASSESSED) IN PATIENTS WITH R/R FL



**High and consistent complete response rates were observed in high-risk populations, including those with double-refractory disease, POD24, PI3Ki refractory, and those who received prior CAR-T therapy**

# ANTI-CD20 BISPECIFIC ANTIBODIES SHOW ENCOURAGING RESULTS IN R/R FL

Study					Toxicities
	Route	ORR	CR	Follow-up & DoR	
Mosunetuzumab 0.4/1/2.8 -1/2/13.5 mg <i>Assouline et al</i> <sup>1</sup>	IV; Q21 days (C1: D1,8,15) If CR: up to 8 cycles If SD/PR: 17 cycles (N=62)	67.7%	51.6%	Follow-up 18.4 months, DoR 20.4 months (9.4-22.7)	CRS: 17.7 % (0 grade ≥3) ICANS: 0
Odronextamab 80-320mg <i>Bannerji et al</i> <sup>2</sup>	IV; Q7 days x 12 → Q14 days (N=38)	90% <sup>a</sup>	70%	Follow-up 21 months, 81% of CR ongoing	CRS: 65.8 % (2.6% grade ≥3) ICANS: 0
Glofitamab 2.5/10/16-30 mg <i>Hutchings et al</i> <sup>3</sup>	Obinutuzumab x1 on day -7 IV; Q21 days x 12 (C1: D1,8) (N=24)	66.7%	54.2%	PFS: 11.8 months	CRS: 63.5% (3.8% grade ≥3) ICANS: 3.5% (1.2% grade ≥3)
Epcoritamab 0.76-48 mg <i>Hutchings et al</i> <sup>4</sup>	SC; C1-2: Q1W → C3-6: Q2W → Q4W (N=12)	80-90%	50-60%	CR (5): 1 PD PR (4): 3 PD at 28 weeks	CRS: 58% (0 grade ≥3) ICANS: 0

<sup>a</sup> Objective response rate

Ab, antibody; C, cycle; CD20, cluster of differentiation 20; CR, complete response; D, day; DoR, duration of response; CRS, cytokine release syndrome; FL, follicular lymphoma; ICANS, immune effector cell-associated neurotoxicity syndrome; ORR, overall response rate; PD, progressive disease; PFS, progression-free survival; Q, every; R/R, relapsed/refractory; SC, subcutaneous; W, week

Assouline S, et al. ASH 2020. Abstract #702; Bannerji R, et al. ASH 2020. Abstract #400; Hutchings M, et al. ASH 2020. Abstract #403; Hutchings M, et al. ASH 2020. Abstract #402

# TAKE-HOME MESSAGES FOR FL

## Non-chemotherapy options increasing!

- Lenalidomide-obinutuzumab promising in 1<sup>st</sup> line; needs broader study
- Multiple novel therapies coming in R/R FL

Non-chemotherapy options should be considered for early progressing (POD24) patients with FL early on

Newly approved therapies include EZH2 (tazemetostat) and dual PI3K/CK inhibitors (umbralisib)

Copanlisib + rituximab leads to improved PFS vs rituximab alone

CAR-T cells are a highly active modality that recently received approval in the US

Bispecific antibodies show promising activity in FL



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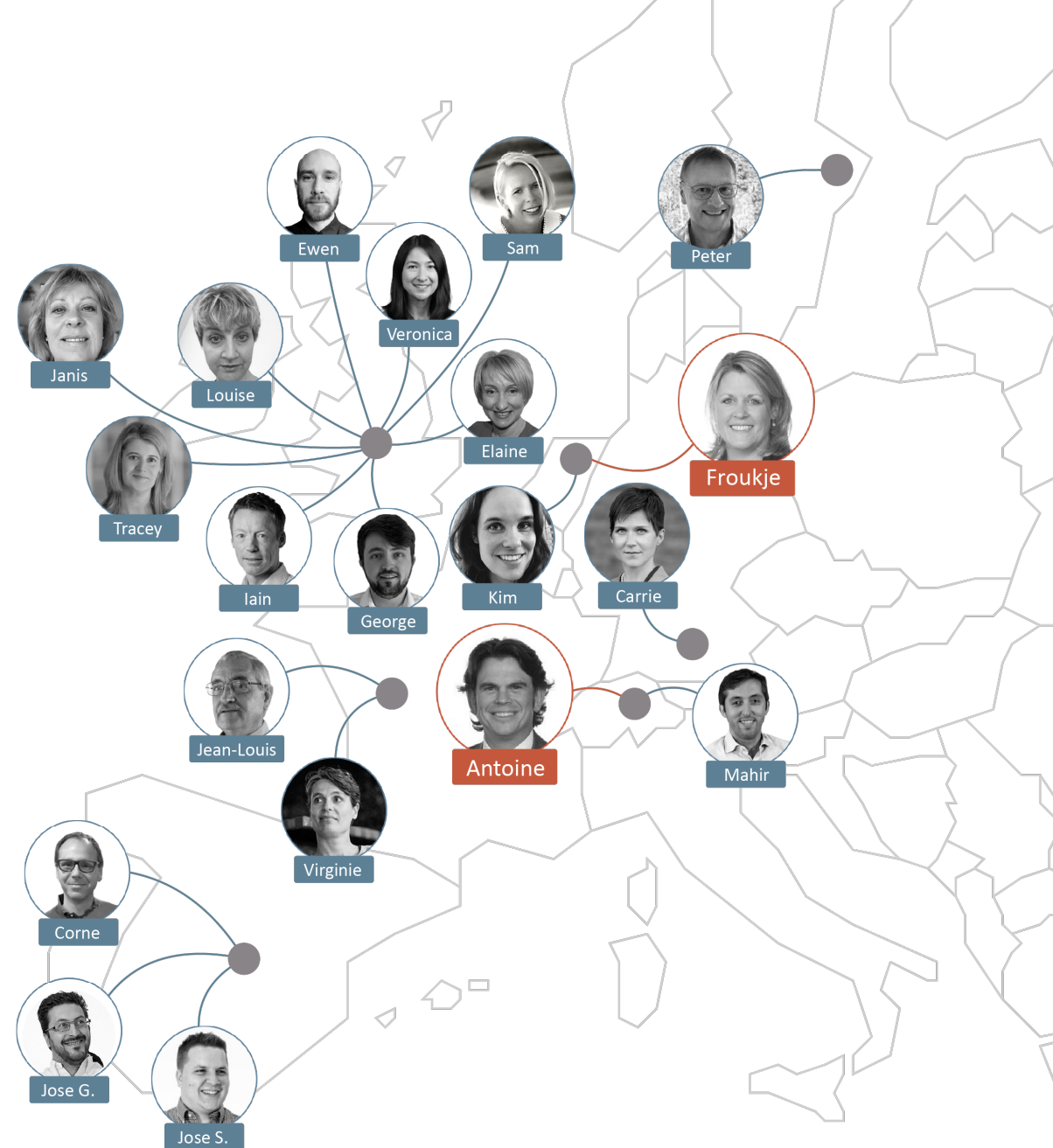
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