



9<sup>th</sup> POSTGRADUATE  
**Lymphoma  
Conference**

ENRICH, SHINE, ECHO and beyond –  
BTKi in the FL-treatment of elderly patients

Florence,  
March 20-21, 2025

Hotel Brunelleschi

**President:**  
P.L. Zinzani

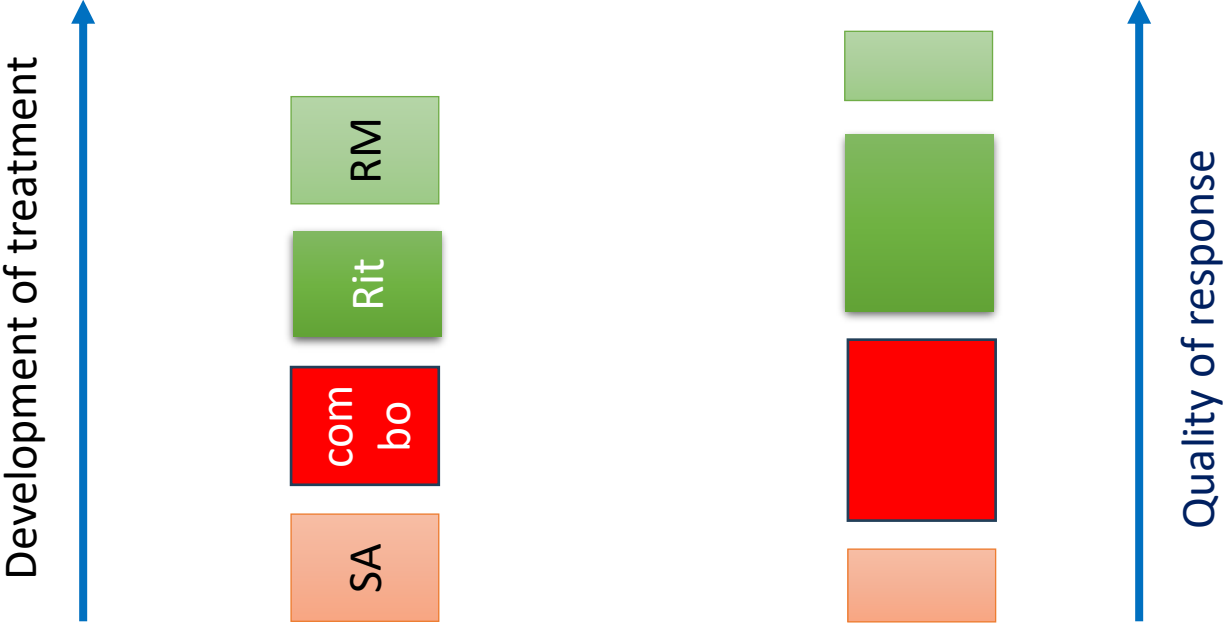
## Disclosures G. Hess

- Consultancy: Abbvie, ADC, AstraZeneca, Beigene, BMS, GileadKite, Incyte, Janssen, Lilly, Milenyie, MSD, Novartis, Pierre Fabre, Roche, Sobi
- Honoraria: Abbvie, ADC, AstraZeneca, Beigene, BMS, GileadKite, Incyte, Janssen, Lilly, Milenyie, MSD, Novartis, Roche, Sobi
- Research Funding (to institution): Abbvie, GileadKite, Janssen, Lilly
- Patents and Royalties: not applicable
- Membership on an entity's Board of Directors or advisory committees: not applicable
- Discussion of off-label drug use: not applicable
- Travel grants: Incyte, Janssen, Pierre-Fabre

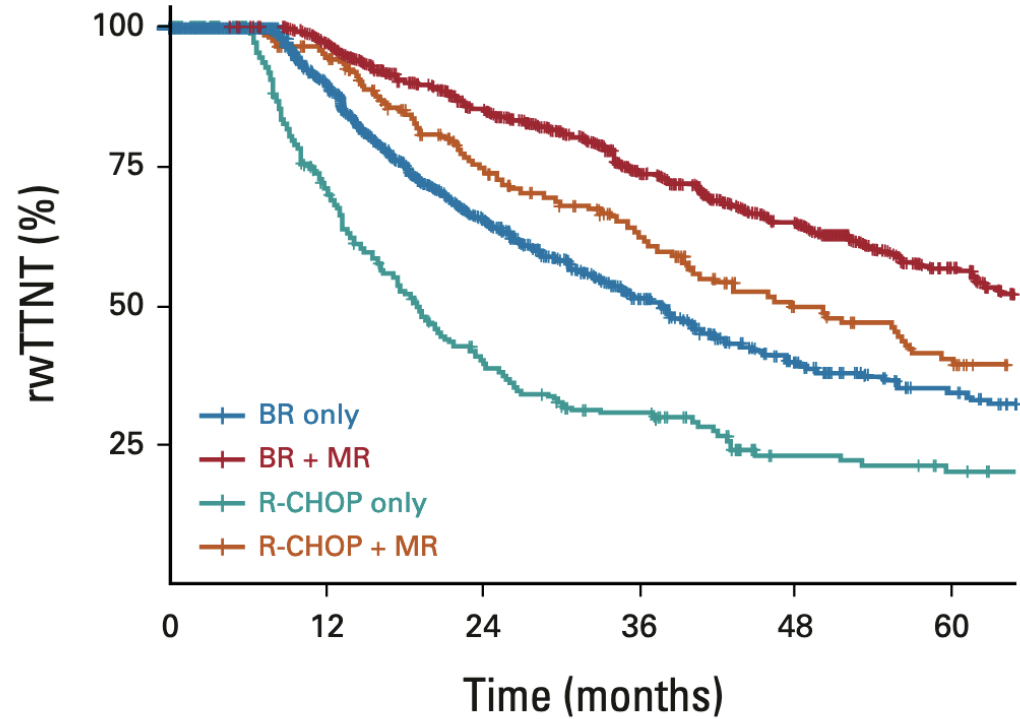
# General considerations

Development of first line strategies

# Development of novel options

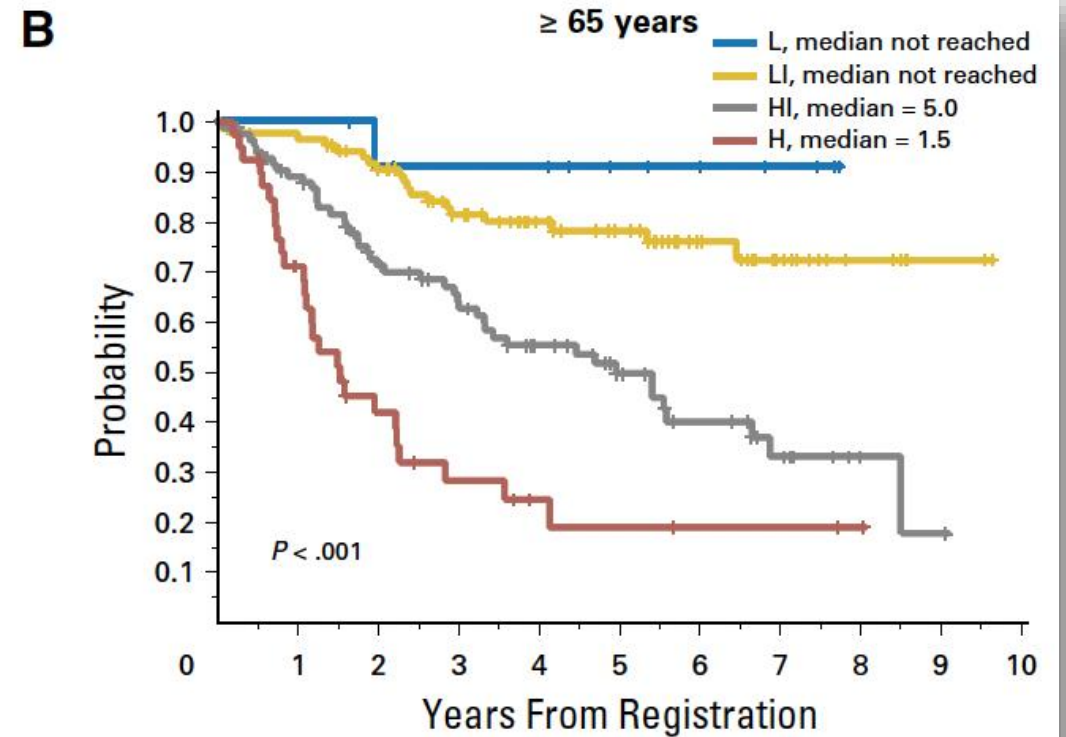


# Results of standard regimen



No. at risk:

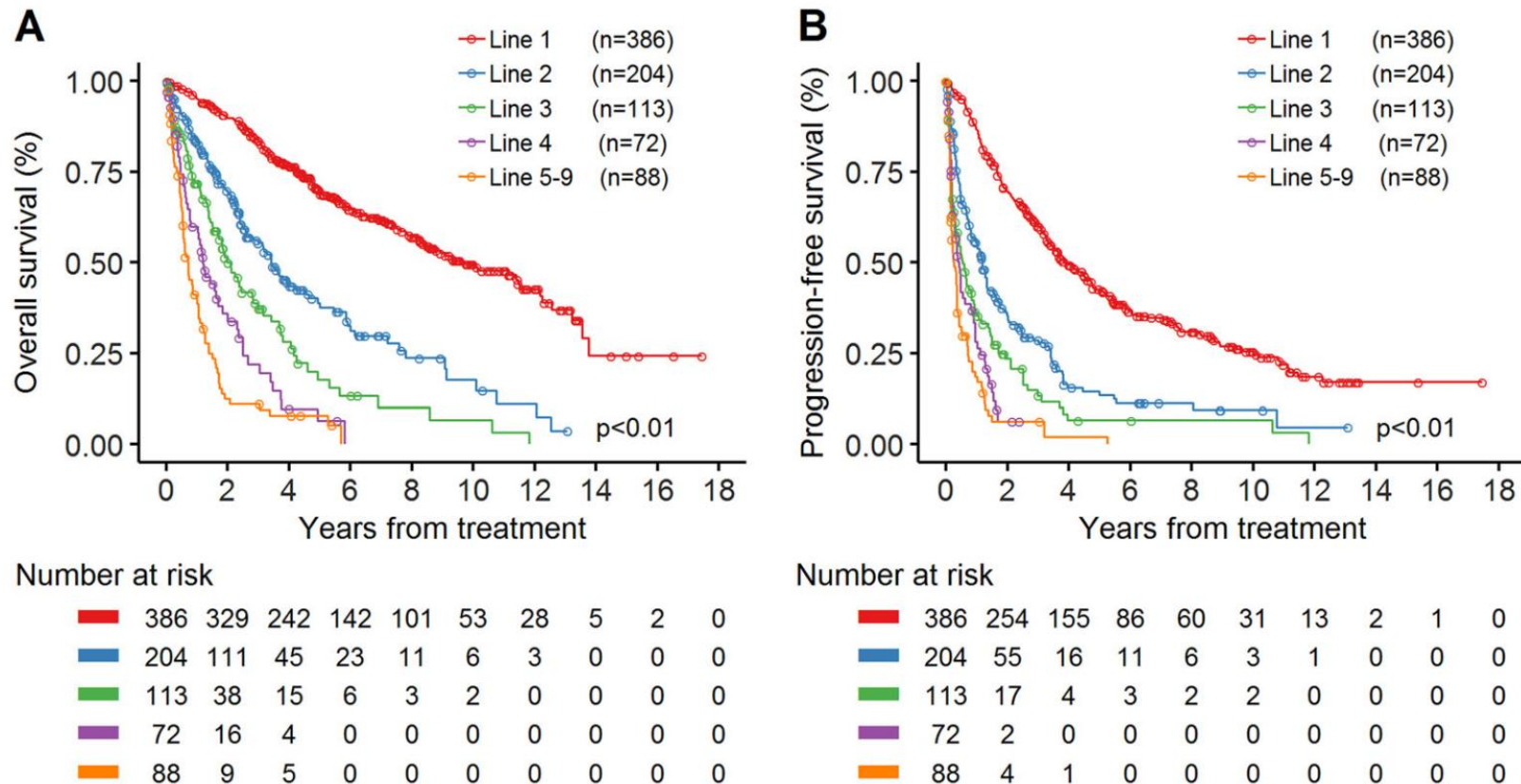
BR only	679	431	258	161	97	66
BR + MR	427	403	310	205	147	92
R-CHOP only	195	113	60	42	24	19
R-CHOP + MR	160	149	105	82	57	42



No. at risk

L	12	12	10	9	9	6	4	3	0	
LI	88	82	72	58	45	37	21	13	6	2
HI	83	70	52	42	32	22	14	8	2	1
H	39	24	12	7	4	3	2	2	1	0

# Progressive shortening in response duration and survival



**Fig. 5** Kaplan–Meier plots of overall survival (OS) and progression-free survival (PFS) in patients with mantle cell lymphoma after multiple lines of therapy. **a, b** OS and PFS after treatment with line 1, line 2, line 3, line 4, and line 5–9

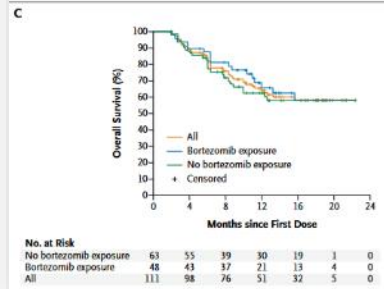
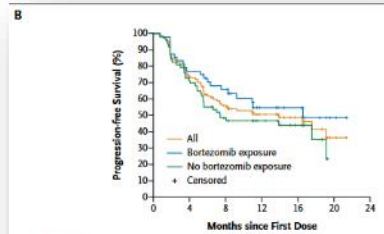
# BTKi have changed the fate of relapsed MCL

## The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 AUGUST 8, 2013 VOL. 369 NO. 6

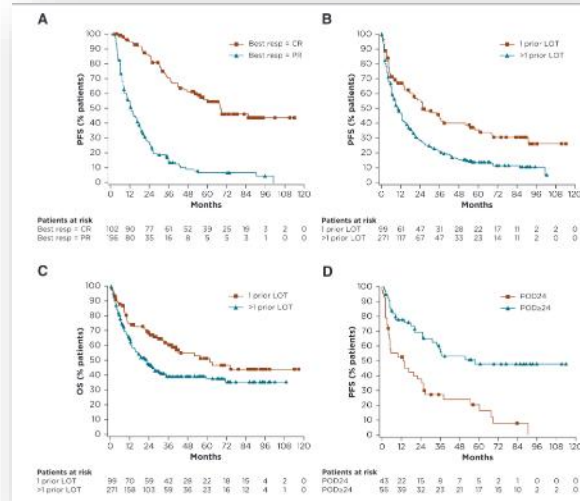
### Targeting BTK with Ibrutinib in Relapsed or Refractory Mantle-Cell Lymphoma

Michael L. Wang, M.D., Simon Rule, M.D., Peter Martin, M.D., Andre Goy, M.D., Rebecca Auer, M.D., Ph.D., Brad S. Kahl, M.D., Wojciech Jurczak, M.D., Ph.D., Ranjana H. Advani, M.D., Jorge E. Romaguera, M.D., Michael E. Williams, M.D., Jacqueline C. Barrientos, M.D., Ewa Chmielewska, M.D., John Radford, M.D.,



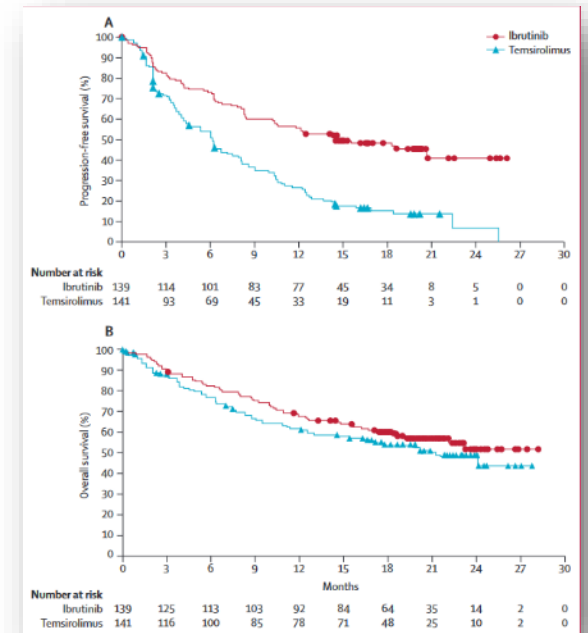
### Long-term Outcomes With Ibrutinib Treatment for Patients With Relapsed/Refractory Mantle Cell Lymphoma: A Pooled Analysis of 3 Clinical Trials With Nearly 10 Years of Follow-up

Martin Dreyling<sup>1</sup>, Andre Goy<sup>2</sup>, Georg Hess<sup>3</sup>, Brad S. Kahl<sup>4</sup>, José-Ángel Hernández-Rivas<sup>5</sup>, Natasha Schuier<sup>6</sup>, Keqin Qi<sup>7</sup>, Sanjay Deshpande<sup>8</sup>, Angeline Zhu<sup>9</sup>, Lori Parisi<sup>9</sup>, Michael L. Wang<sup>9</sup>



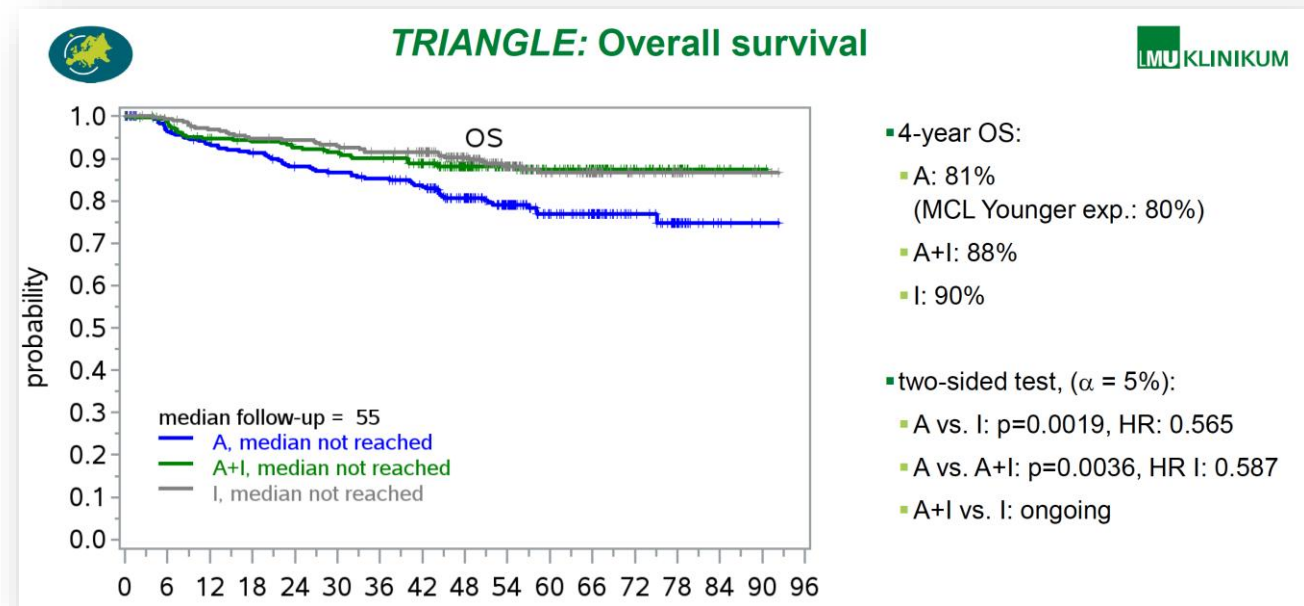
### Ibrutinib versus temsirolimus in patients with relapsed or refractory mantle-cell lymphoma: an international, randomised, open-label, phase 3 study

Martin Dreyling<sup>1</sup>, Wojciech Jurczak<sup>2</sup>, Mats Jerkeman<sup>3</sup>, Rodrigo Santucci Silva, Chiara Rusconi<sup>4</sup>, Marek Trnery<sup>5</sup>, Fritz Offner<sup>6</sup>, Dolores Caballero<sup>7</sup>, Cristina Joao<sup>8</sup>, Mathias Witzens-Harig<sup>9</sup>, Georg Hess<sup>10</sup>, Isabelle Bence-Bruckler, Seak-Goo Cho, John Bothas, Jenna D Goldberg, Christopher Enny, Shana Traina, Sriram Balasubramanian, Nibedita Bandyopadhyay, Steven Sun, Jessica Vermeulen, Aleksandra Rizo, Simon Rule<sup>11</sup>





# Add on strategies are of great benefit



Similar impact on treatment of elderly patients?



# Development of novel options



→ SHINE & ECHO

# SHINE: Trial Design

## Patients

- Previously untreated MCL
- ≥ 65 years of age
- Stage II-IV disease
- No stem cell transplant

## Stratification factor

- Simplified MIPI score (low vs intermediate vs high)

Enrolled between May 2013 and November 2014 in 29 countries and 183 sites

N = 523

R  
1:1

BR induction for 6 cycles

if CR or PR\*

Rituximab maintenance every 8 weeks for up to 2 years

Ibrutinib 560mg (4 capsules daily) until PD or unacceptable toxicity

BR induction for 6 cycles

if CR or PR\*

Rituximab maintenance every 8 weeks for up to 2 years

Placebo (4 capsules daily) until PD or unacceptable toxicity

## Primary endpoint:

- PFS (investigator-assessed)

## Key Secondary endpoints:

- Complete response rate and overall response rate
- Time to next treatment
- Overall survival
- Safety

Data cutoff for the primary analysis: June 30, 2021

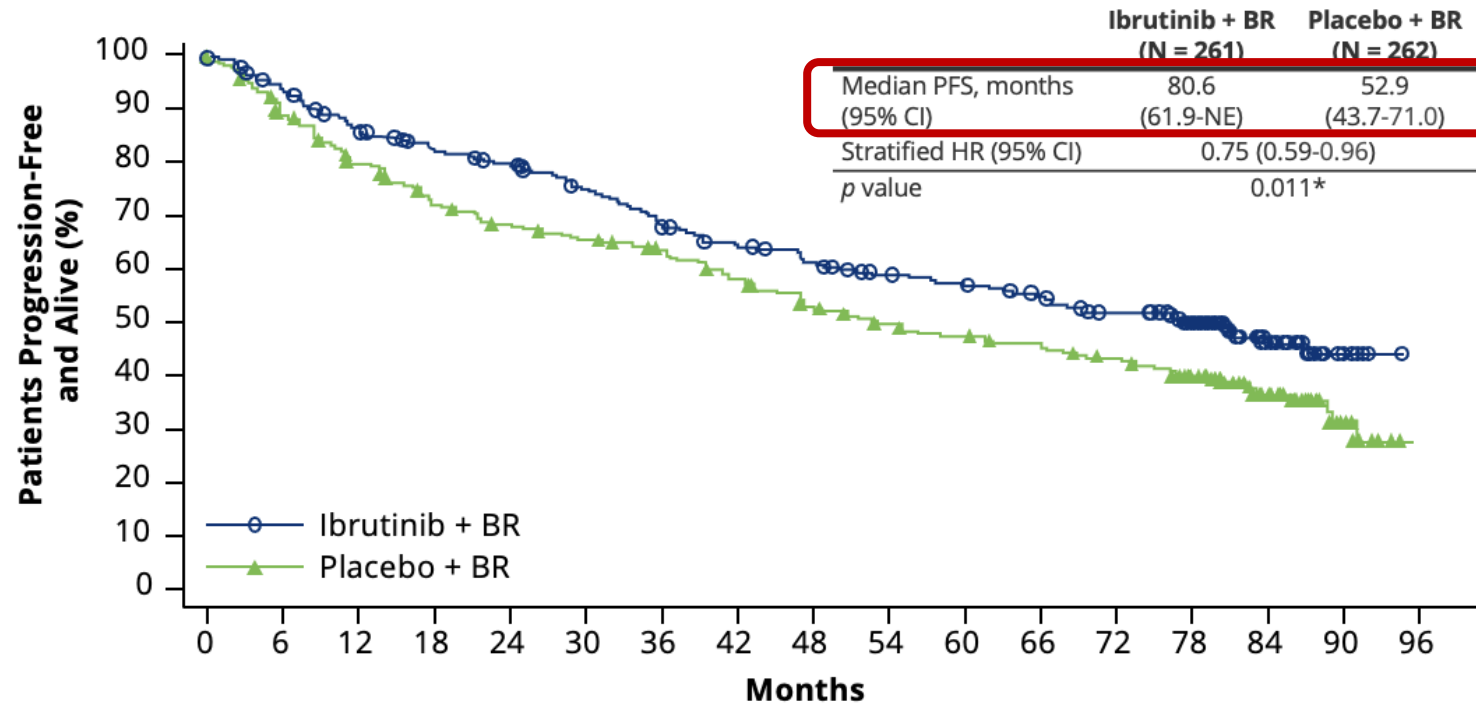
Median follow-up: 84.7 months

# Response to treatment

**Table S2. Antitumor Activity in the Intention-to-Treat Population.\***

	<b>Ibrutinib plus BR (N=261)</b>	<b>Placebo plus BR (N=262)</b>	<b>Relative Risk (95% CI)</b>
Objective response — no. (%)	234 (89.7)	232 (88.5)	1.01 (0.95–1.07)
Best overall response — no. (%)			
Complete response	171 (65.5)	151 (57.6)	1.14 (1.00–1.30)**
Partial response	63 (24.1)	81 (30.9)	
Stable disease	1 (0.4)	6 (2.3)	
Progressive disease	3 (1.1)	10 (3.8)	
Could not be evaluated	23 (8.8)	14 (5.3)	
Duration of overall response — mo			
Median (95% CI)†	81.0 (64.2–NR)	63.5 (47.0–76.9)	
Undetectable MRD assessed among complete responders — no. (%)			
Yes	162 (62.1)	148 (56.5)	
Bone marrow	59 (22.6)	49 (18.7)	
Blood only	103 (39.5)	99 (37.8)	

# PFS

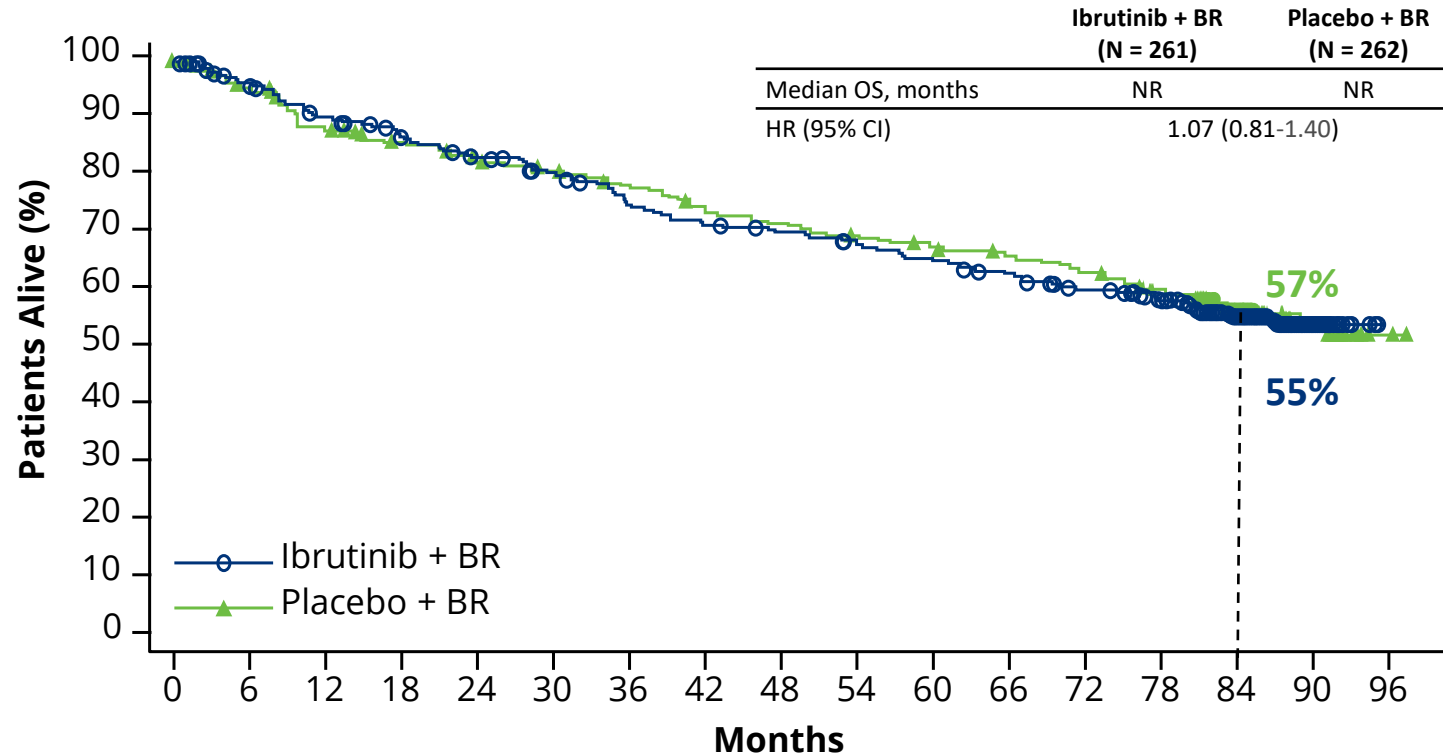


- Ibrutinib combined with BR and R maintenance demonstrated a **25% reduction in the relative risk of disease progression or death** versus BR and R maintenance
- **Significant improvement in median PFS: 80.6 month (6.7 years) versus 52.9 months (4.4 years) ( $\Delta=2.3$  years)**

## Patients at Risk

Ibrutinib + BR	261	228	207	191	182	167	152	139	130	120	115	106	95	78	39	11	0
Placebo + BR	262	226	199	177	166	158	148	135	119	109	103	98	90	78	41	11	0

# Overall Survival Similar in Both Arms



Cause of death	Ibrutinib+BR (N=261)	Placebo+BR (N=262)
Death due to PD	30 (11.5%)	54 (20.6%)
Death due to TEAEs*	28 (10.7%)	16 (6.1%)
Death during post-treatment follow-up period excluding PD	46 (17.6%)	37 (14.1%)
<b>Total deaths</b>	<b>104 (39.8%)</b>	<b>107 (40.8%)</b>

\*The most common Grade 5 TEAE was infections in the ibrutinib and placebo arms: 9 vs 5 patients. Grade 5 TEAE of cardiac disorders in 3 vs 5 patients, respectively.

## Patients at Risk

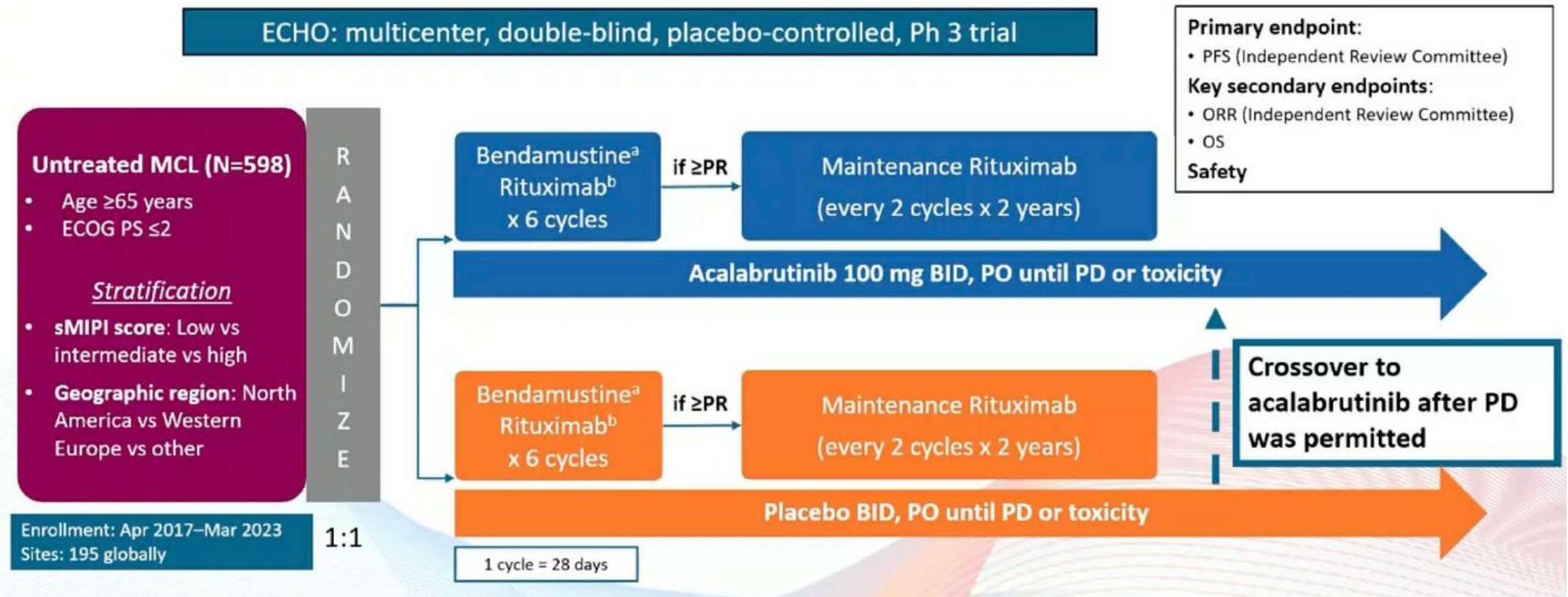
Ibrutinib + BR	261	239	221	208	197	187	171	163	158	152	145	138	128	118	70	25	0
Placebo + BR	262	244	223	212	203	197	188	177	171	165	159	154	147	137	90	31	2

# Safety (AESI)

	Ibrutinib + BR (N = 259)		Placebo + BR (N = 260)	
	Any Grade	Grade 3 or 4	Any Grade	Grade 3 or 4
Any bleeding*	42.9%	--	21.5%	--
Major hemorrhage	5.8%	3.5%	4.2%	1.5%
Atrial fibrillation	13.9%	3.9%	6.5%	0.8%
Hypertension	13.5%	8.5%	11.2%	5.8%
Arthralgia	17.4%	1.2%	16.9%	0



# ECHO-Trial: ACALABRUTINIB PLUS BENDAMUSTINE AND RITUXIMAB IN UNTREATED MANTLE CELL LYMPHOMA: RESULTS FROM THE PHASE 3, DOUBLE-BLIND, PLACEBO CONTROLLED



**Primary endpoint:**

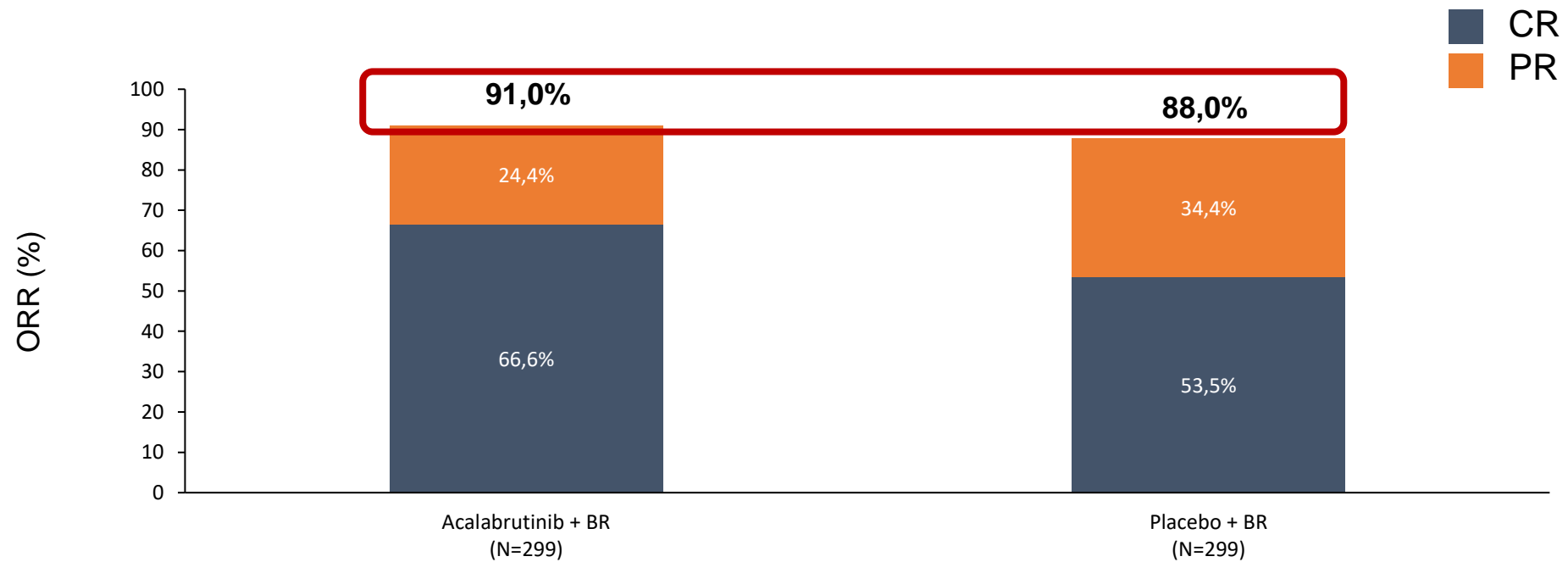
- PFS (Independent Review Committee)

**Key secondary endpoints:**

- ORR (Independent Review Committee)
- OS

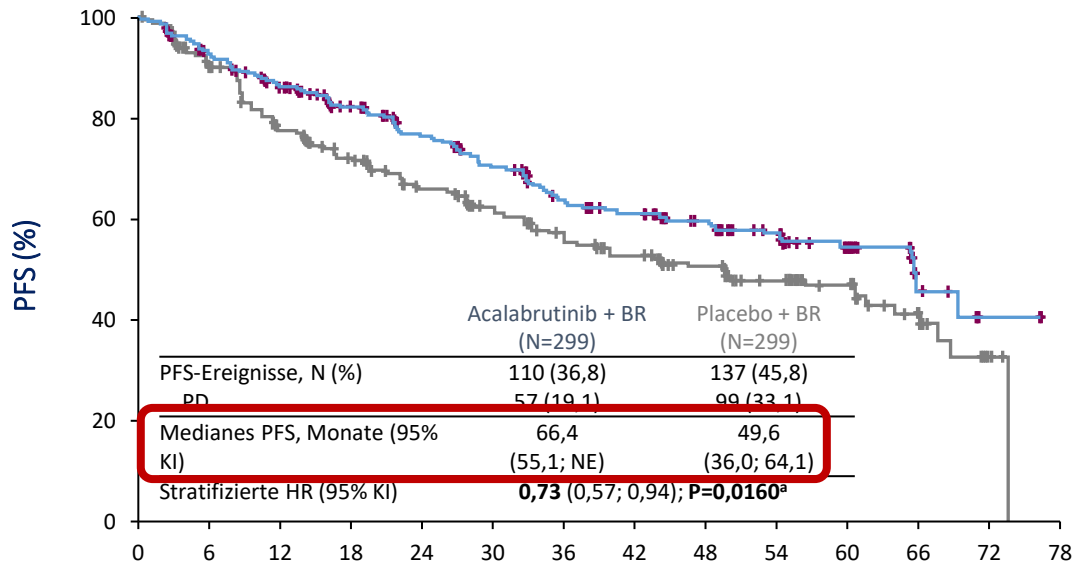
**Safety**

# Remission rates



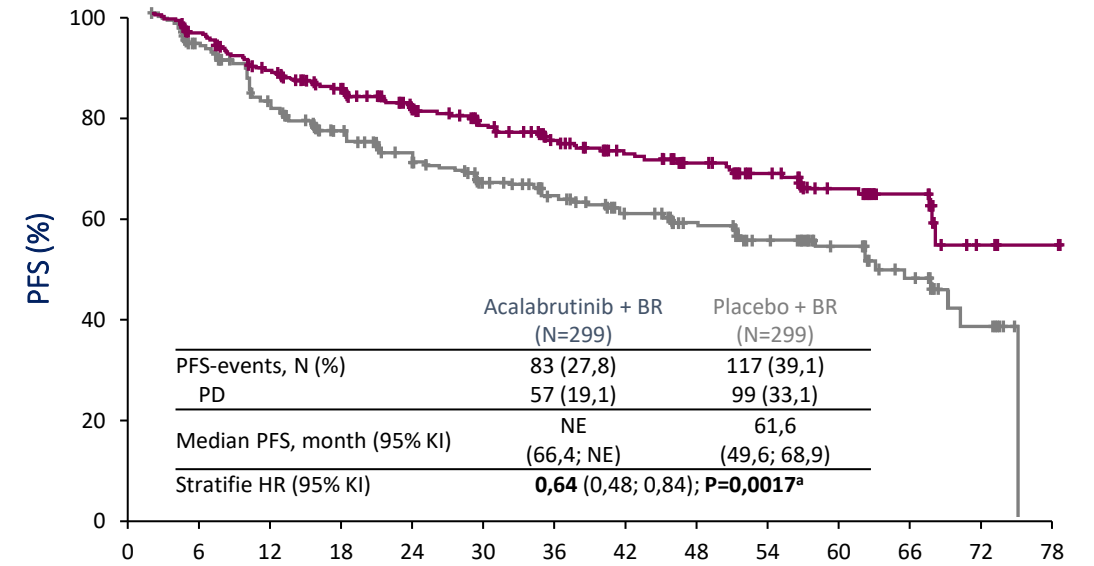
# PFS

PFS: total trial population



	Patient number														months													
<b>ABR</b>	299	258	232	205	182	156	136	122	98	73	53	34	2	0	299	258	232	205	182	156	136	122	98	73	53	34	2	0
<b>PBR</b>	299	243	204	181	159	142	118	102	84	63	44	25	4	0	299	243	204	181	159	142	118	102	84	63	44	25	4	0

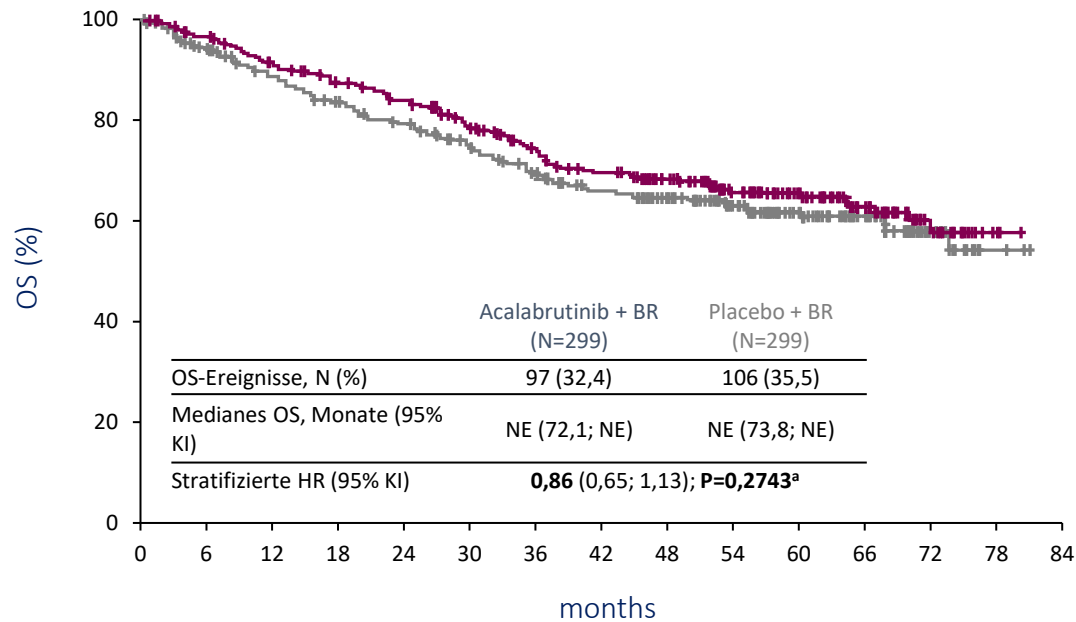
PFS: COVID-19-deaths censored



	Patient number														months													
<b>ABR</b>	299	258	232	205	182	156	136	122	98	73	53	34	2	0	299	258	232	205	182	156	136	122	98	73	53	34	2	0
<b>PBR</b>	299	243	204	181	159	142	118	102	84	63	44	25	4	0	299	243	204	181	159	142	118	102	84	63	44	25	4	0

# Overall survival

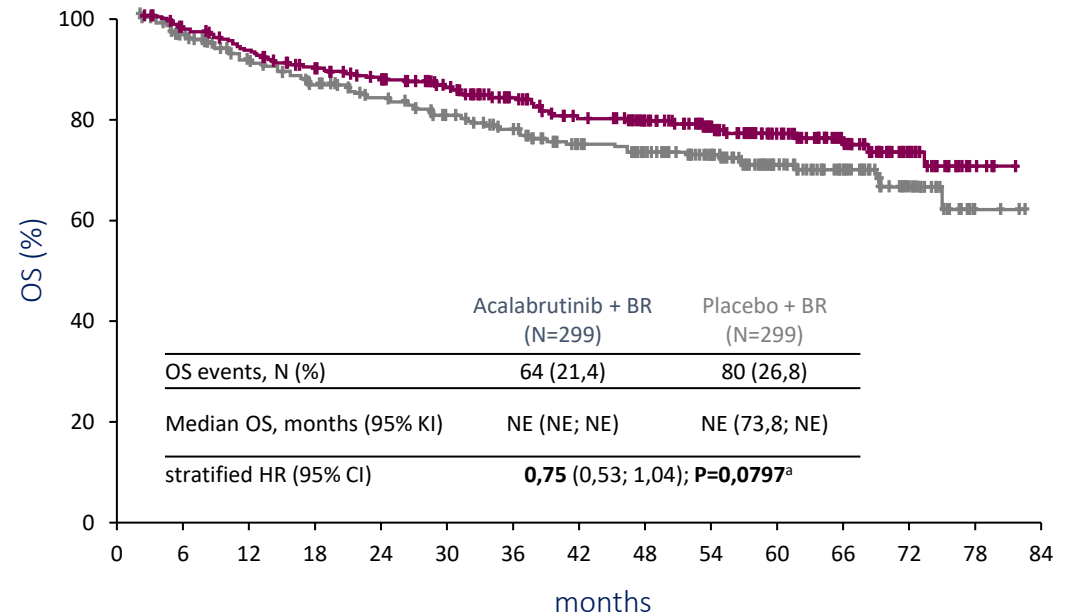
OS: total (inkl. Cross-Over)



Patients at risk

	299	280	259	243	230	207	181	163	146	110	86	58	25	3	0
<b>ABR</b>	299	280	259	243	230	207	181	163	146	110	86	58	25	3	0
<b>PBR</b>	299	268	247	229	215	193	175	157	141	108	78	51	21	3	0

OS: COVID-19-deaths censored



Patients at risk

	299	280	259	243	230	207	181	163	146	110	86	58	25	3	0
<b>ABR</b>	299	280	259	243	230	207	181	163	146	110	86	58	25	3	0
<b>PBR</b>	299	268	247	229	215	193	175	157	141	108	78	51	21	3	0

n (%)	Acalabrutinib + BR (n=297)	Placebo + BR (n=297)
<b>Any TEAE</b>	296 (99.7)	294 (99.0)
Grade ≥3	264 (88.9)	262 (88.2)
Grade 5	36 (12.1)	30 (10.1)
<b>SAEs</b>	205 (69.0)	184 (62.0)
Grade ≥3	191 (64.3)	166 (55.9)
<b>TEAE related to acalabrutinib/ placebo</b>	202 (68.0)	165 (55.6)
<b>TEAE leading to acalabrutinib/ placebo discontinuation</b>	127 (42.8)	92 (31.0)

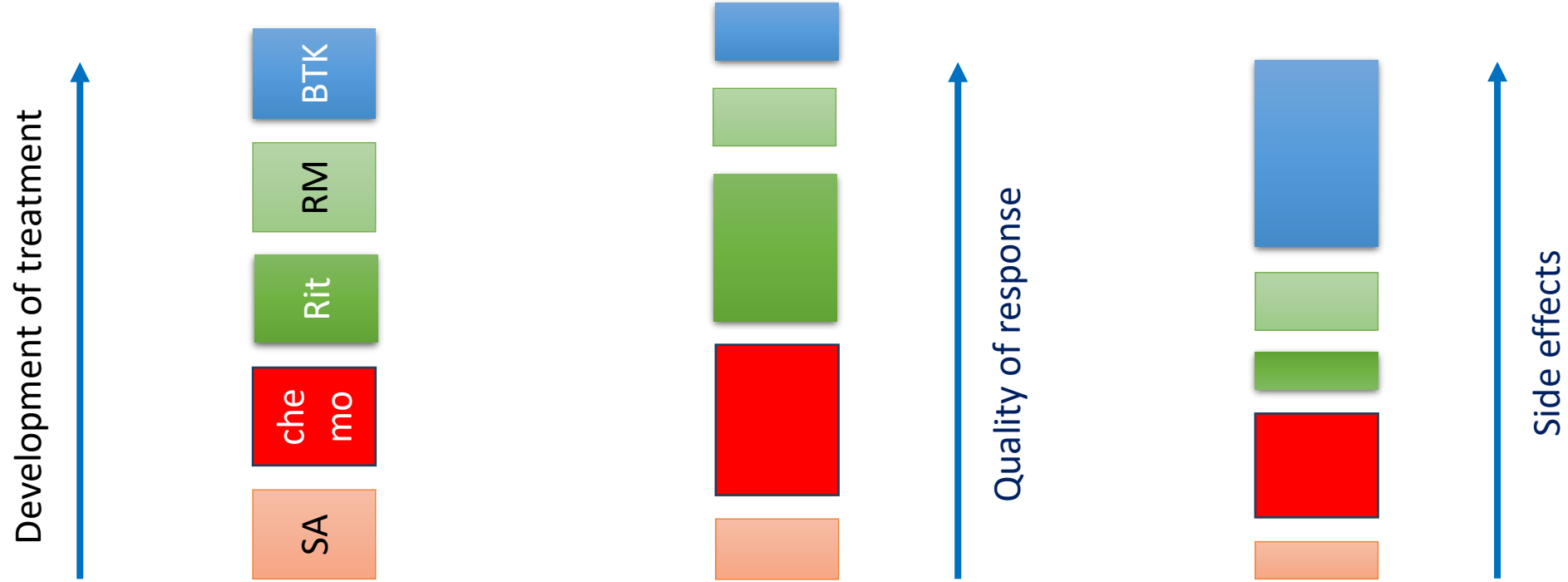
Event, n (%)	Acalabrutinib + BR (n=297)		Placebo + BR (n=297)	
	Any grade	Grade ≥3	Any grade	Grade ≥3
Atrial fibrillation	18 (6.1)	11 (3.7)	13 (4.4)	5 (1.7)
Hypertension	36 (12.1)	16 (5.4)	47 (15.8)	25 (8.4)
Major bleeding <sup>a</sup>	7 (2.4)	6 (2.0)	16 (5.4)	10 (3.4)
Infections <sup>b</sup>	232 (78.1)	122 (41.1)	211 (71.0)	101 (34.0)
Second primary malignancies (excluding non-melanoma skin) <sup>b</sup>	29 (9.8)	16 (5.4)	32 (10.8)	20 (6.7)
<b>Median treatment exposure (range), months</b>	29 (0.1, 80.1)		25 (0.03, 76.4)	

n (%)	COVID-19–related AEs	
	Acalabrutinib + BR (n=297)	Placebo + BR (n=297)
<b>Any AE</b>	121 (40.7)	88 (29.6)
Grade ≥3	60 (20.2)	50 (16.8)
Grade 5	28 (9.4)	20 (6.7)
<b>SAEs</b>	60 (20.2)	52 (17.5)
Grade ≥3	58 (19.5)	48 (16.2)
<b>AE leading to acalabrutinib/ placebo discontinuation</b>	31 (10.4)	19 (6.4)

# Summary

- The addition of a BTK-inhibitor to BR improves ORR, CR and PFS
- There is not overall survival benefit
- However, many patients may not need any subsequent therapy
  
- There is added toxicity using this approach
- The design of the trials does not any longer reflect the urge for time limited treatments (especially with no risk stratification)

# Development of novel options





BTkI based treatments w/o  
chemotherapy

# Ibrutinib Rituximab - results

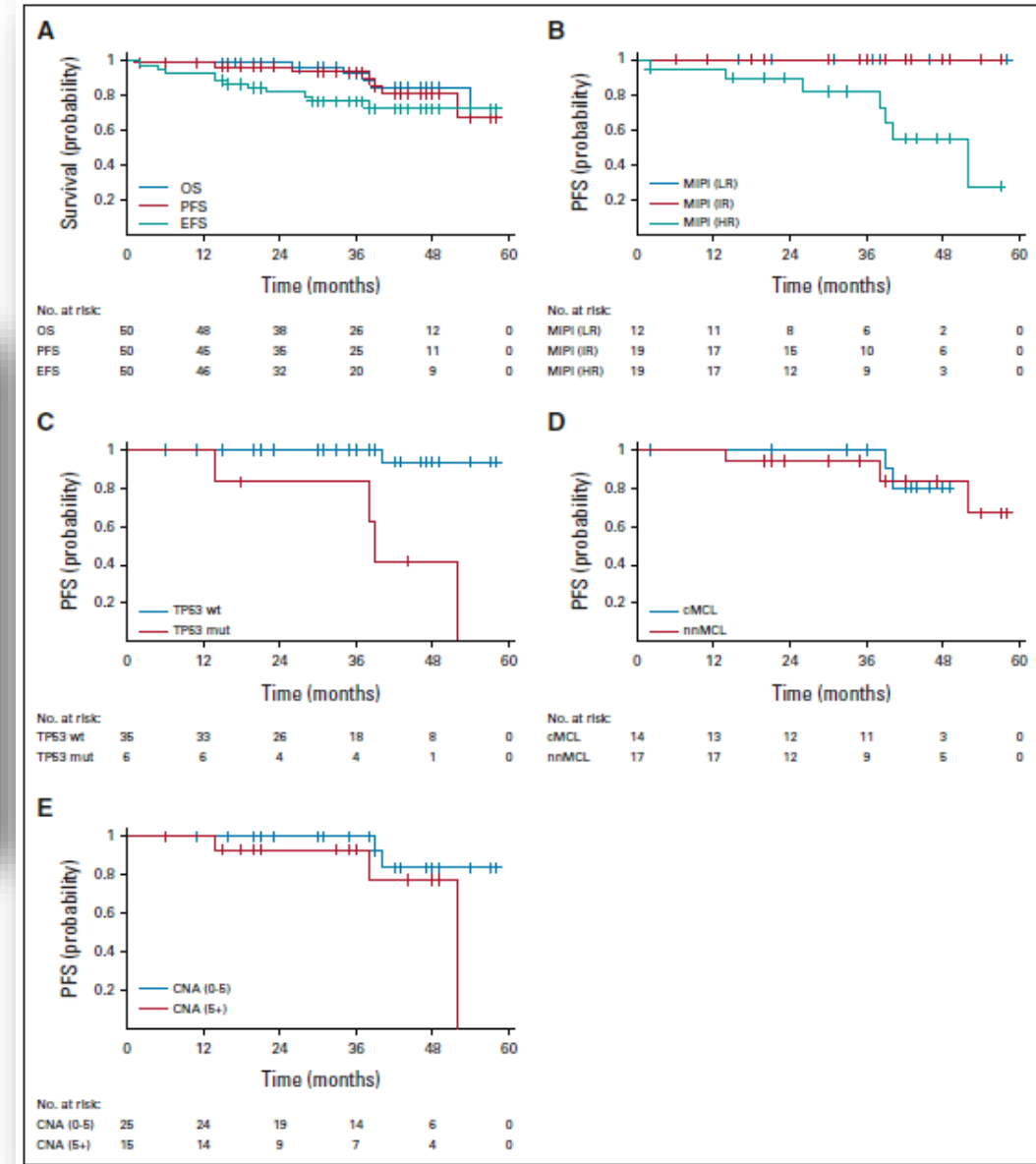
**TABLE 3.** Responses After 12 Cycles of IR Combination and According to Molecular Subtypes (nnMCL or cMCL) and *TP53* Mutational Status

Response	All Patients (N = 50)	Gene Expression Profile L-MCL16		<i>TP53</i>	
		nnMCL (n = 17)	cMCL (n = 14)	Wild-Type (n = 35)	Mutated (n = 6)
Overall response	42 (84, 74 to 94)	15 (88)	12 (86)	31 (89)	5 (83)
CR	40 (80, 69 to 91)	14 (82)	11 (79)	29 (83)	5 (83)
PR	2 (4, 0 to 9)	1 (6)	1 (7)	2 (6)	—
SD	3 (6, 0 to 10)	1 (6)	1 (7)	3 (8)	—
PD	1 (2, 0 to 6)	1 (6)	—	—	1 (17)
Nonevaluable <sup>a</sup>	4 (8, 0 to 15)	—	1 (7)	1 (3)	—

NOTE. Data are No. (%; 95% CI).

Abbreviations: cMCL, conventional MCL molecular subtype; CR, complete response; IR, ibrutinib, rituximab combination; MCL, mantle cell lymphoma; nnMCL, non-nodal MCL molecular subtype; PD, progressive disease; PR, partial response; SD, stable disease.

<sup>a</sup>Four patients were nonevaluable at 12 months of treatment because of treatment discontinuation: severe aplastic anemia, skin rash, and withdrawal consent because of treatment intolerance and unrelated event with vertebral fractures.



# Ibrutinib-rituximab is superior to rituximab-chemotherapy in previously untreated older mantle cell lymphoma patients: Results from the international randomized controlled trial, Enrich



## Aim

To investigate if chemotherapy-free treatment can replace chemotherapy in patients with MCL

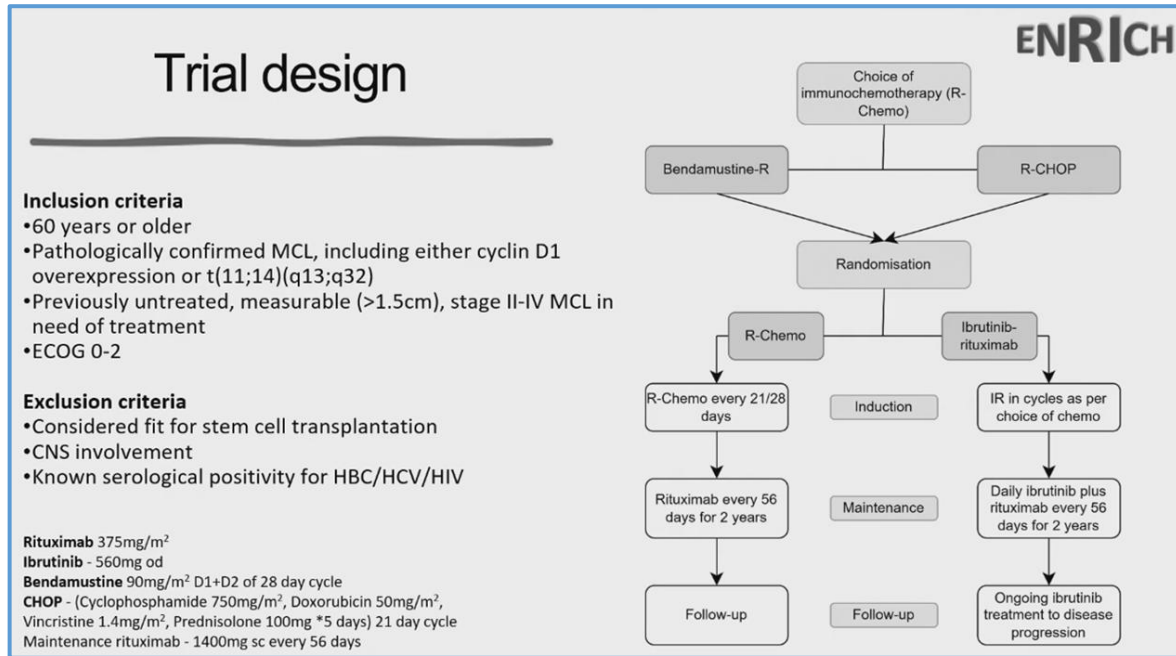
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## Design

Phase 3: BR plus maintenance or R-CHOP plus maintenance vs IR (until progression)

# ENRICH: Results from the international randomized controlled trial

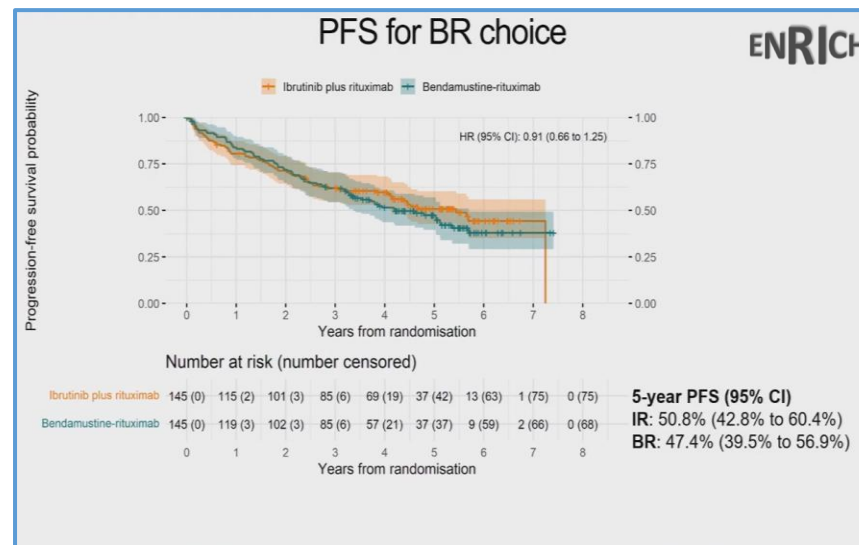
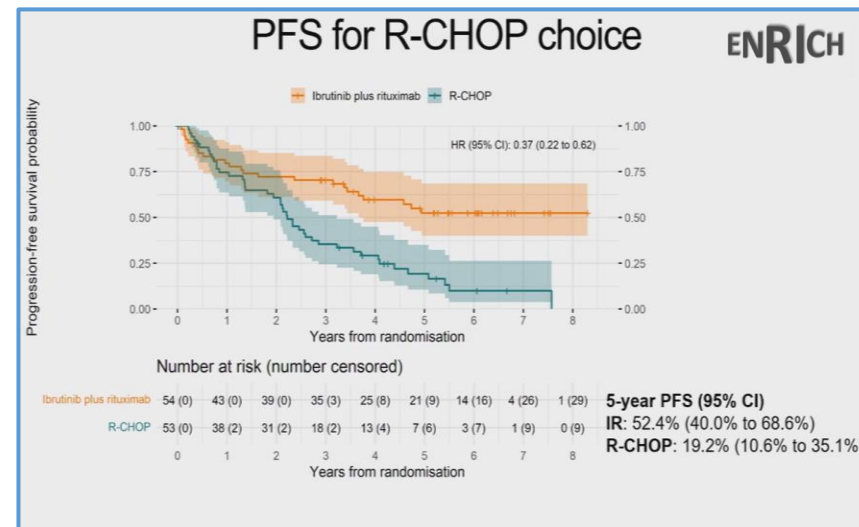
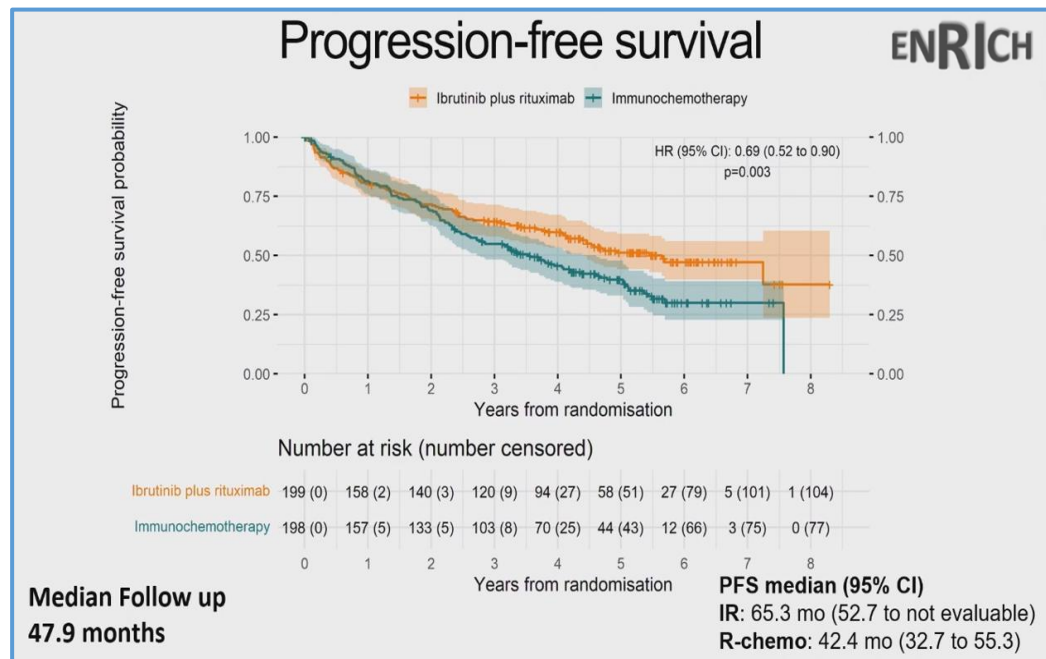


## Patient characteristics

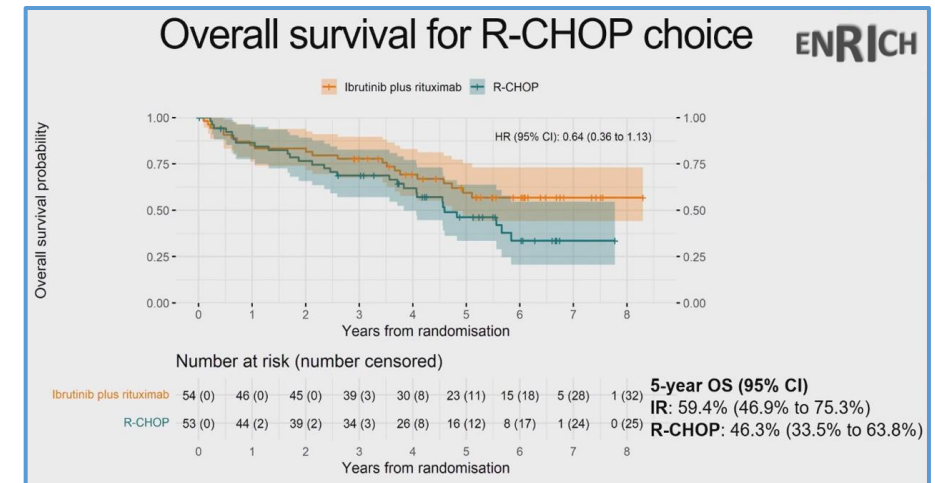
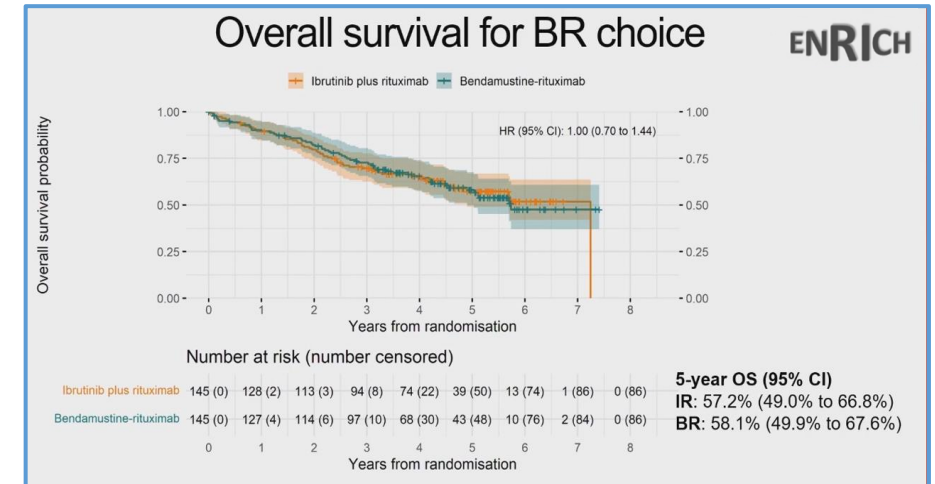
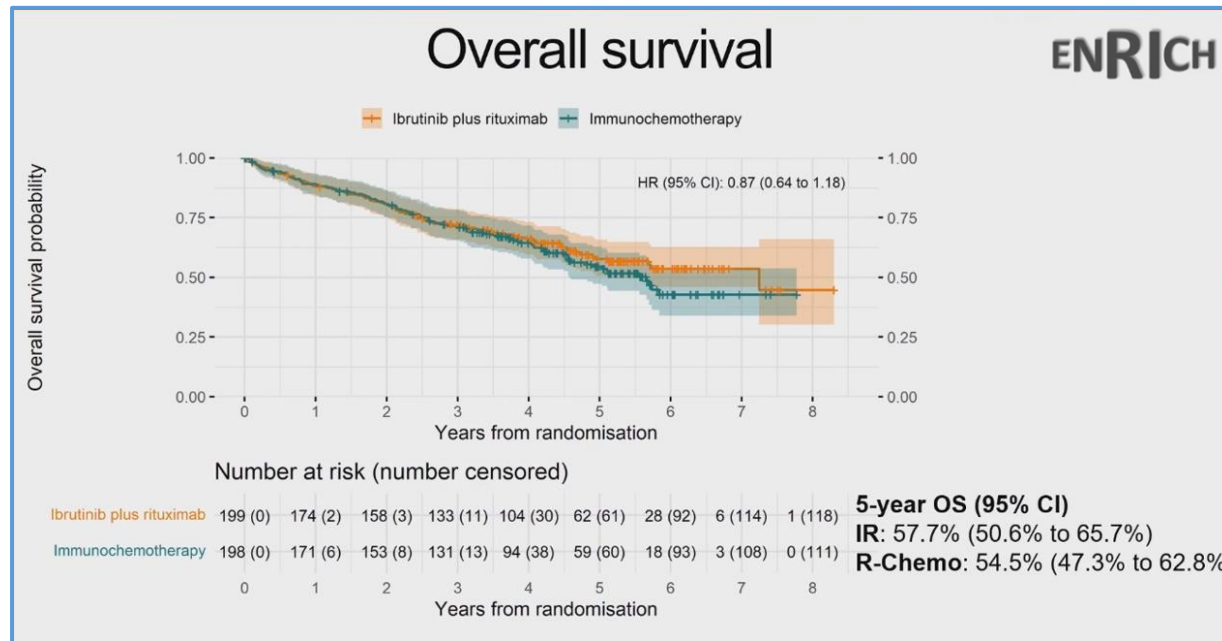
	Immunochemotherapy, N = 198	Ibrutinib plus rituximab, N = 199
<b>Age (median, IQR)</b>	74 (70, 78)	74 (70, 77)
<b>Male</b>	146 / 198 (73.7%)	150 / 199 (75.4%)
<b>ECOG</b>		
0	107 / 198 (54.0%)	124 / 199 (62.3%)
1	80 / 198 (40.4%)	64 / 199 (32.2%)
2	11 / 198 (5.6%)	11 / 199 (5.5%)
<b>Stage IV</b>	183 / 198 (92.4%)	175 / 199 (87.9%)
<b>Blastoid</b>	15 / 192 (7.8%)	10 / 178 (5.6%)
<b>Ki67 ≥ 30%</b>	71 / 157 (45.2%)	55 / 142 (38.7%)
<b>MIPI</b>		
Low	23 / 195 (11.8%)	23 / 198 (11.6%)
Intermediate	61 / 195 (31.3%)	64 / 198 (32.3%)
High	111 / 195 (56.9%)	111 / 198 (56.1%)
<b>TP53 mutation</b>	18 / 75 (24.0%)	22 / 80 (27.5%)

Chemo, chemotherapy; CHOP, cyclophosphamide, doxorubicin, vincristine, and prednisolone; CI, confidence interval; CNS, central nervous system; D, Day; ECOG, Eastern Cooperative Oncology Group; HBC, Hepatitis B virus core protein; HCV, Hepatitis C virus; HIV, human immunodeficiency virus; I, ibrutinib; IQR, interquartile range; MCL, mantle cell lymphoma; MIPI, Mantle Cell Lymphoma International Prognostic Index; od, once daily; R, rituximab; sc, subcutaneous.  
 Lewis DR, et al. ASH 2024. Oral presentation 235.

# Results from the international randomized controlled trial, Enrich (cont'd)



# Results from the international randomized controlled trial, Enrich (cont'd)



# Results from the international randomized controlled trial, Enrich (cont'd)

## Grade 3-4 Adverse events

ENRICH

<i>N participants (% of safety population)</i>	Ibrutinib plus rituximab, N=198	Bendamustine-rituximab, N=143	R-CHOP, N=52
Total	125 (63.1%)	97 (67.8%)	36 (69.2%)
All Cardiac AEs	44 (22.2%)	7 (4.9%)	7 (13.5%)
All bleeding AEs	10 (5.1%)	3 (2.1%)	3 (5.8%)
Atrial Fibrillation	12 (6.1%)	1 (0.7%)	0
Neutropenia	18 (9.1%)	27 (18.9%)	11 (21.2%)
Neutropenic sepsis	6 (3.0%)	2 (1.4%)	8 (15.4%)
Corona virus infection	10 (5.1%)	10 (7.0%)	0

**Grade 3 and 4 adverse events during induction treatment and maintenance  
Safety population - patients who had at least one cycle of treatment**

## Conclusions

ENRICH

- This is the first randomised study to demonstrate an improved PFS for IR versus immunochemotherapy in previously untreated MCL
  - Primarily driven by improved PFS for IR versus RCHOP
  - PFS for IR versus BR broadly similar, despite more COVID-19 PFS events in IR arm
- Adverse event profile in keeping with known AE profile of ibrutinib
  - Less haematological toxicity versus chemoimmunotherapy
  - Earlier improvement in QOL scores in those treated with IR
- Subgroup analysis suggests IR has particular benefit in those with Ki67 <30%
- Ibrutinib-rituximab can be considered a standard of care in previously untreated MCL



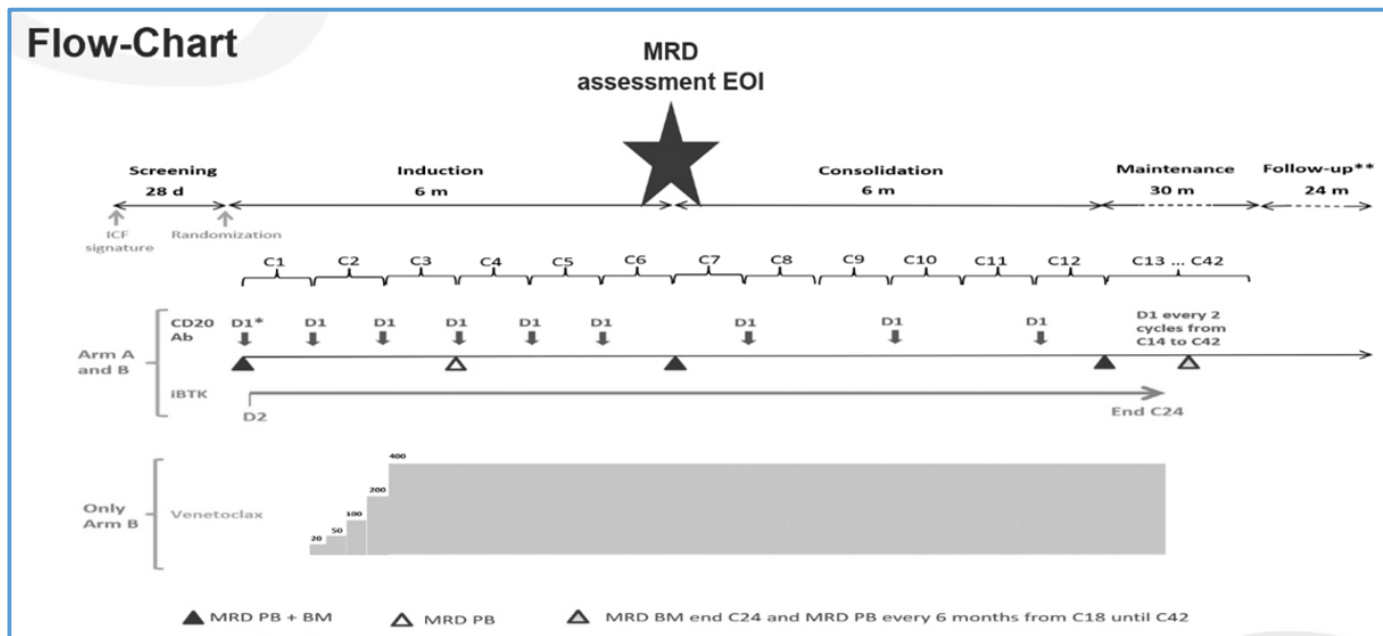
# Summary

- Enrich is the first trial to demonstrate equivalence of IR to chemotherapy based treatment.
- However, again the design of the trials does not any longer reflect the urge for time limited treatments
- → Multidrug-combinations

The future: multidrug  
combinations

# Initial results of OASIS II, a randomized Phase 2 trial

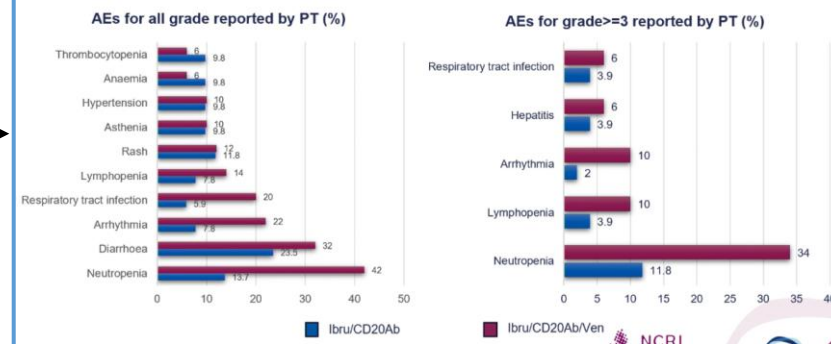
## Flow-Chart



## Patient's and disease characteristics at baseline (1)

MRD status	Safety set		informative MRD set	
	lbru/CD20 N=51	lbru/CD20/Ven N=50	lbru/CD20 N=39	lbru/CD20/Ven N=39
Treatment arm				
Median age (years)	65	66	67	63
Sex: Male	41 (80.4%)	37 (74.0%)	31 (79.5%)	28 (71.8%)
Ann Arbor stage				
III	4 (7.8%)	5 (10.0%)	2 (5.1%)	4 (10.3%)
IV	45 (88.2%)	44 (88.0%)	37 (94.9%)	35 (89.7%)
MIPI risk group				
Low	14 (27.5%)	13 (26.0%)	9 (23.1%)	10 (25.6%)
Intermediate	22 (43.1%)	23 (46.0%)	15 (38.5%)	17 (43.6%)
High	15 (29.4%)	14 (28.0%)	15 (38.5%)	12 (30.8%)
Blastoid Variant	1 (2.0%)	3 (6.1%)	1 (2.6%)	3 (7.9%)
>30% of Ki67 positivity cells	12/35 (34.3%)	20/42 (47.6%)	9/26 (34.6%)	16/32 (50%)
≤10% of P53 group at diagnosis	32/42 (76.2%)	33/38 (86.8%)	25/32 (78.1%)	24/28 (85.7%)

## Safety evaluation – Most frequent AE (n=101)



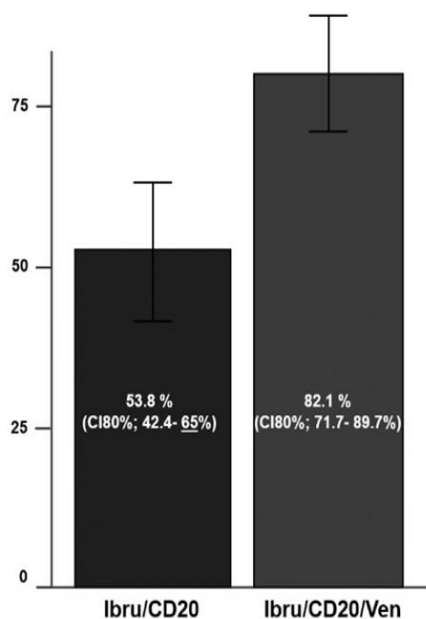
Ab, antibody; AE, adverse event; BM, bone marrow; C, Cycle; CD, cluster of differentiation; d/D, Day; lbru, ibrutinib; IBTK, Bruton tyrosine kinase inhibitor; ICF, informed consent form; m, months; MCL, mantle cell lymphoma; MIPI, Mantle Cell Lymphoma International Prognostic Index; MRD, minimal residual disease; PB, peripheral blood; PT, patient; Ven, venetoclax.

Le Gouill S, et al. ASH 2024. Oral presentation 745.

# Initial results of OASIS II, a randomized Phase 2 trial (cont'd)

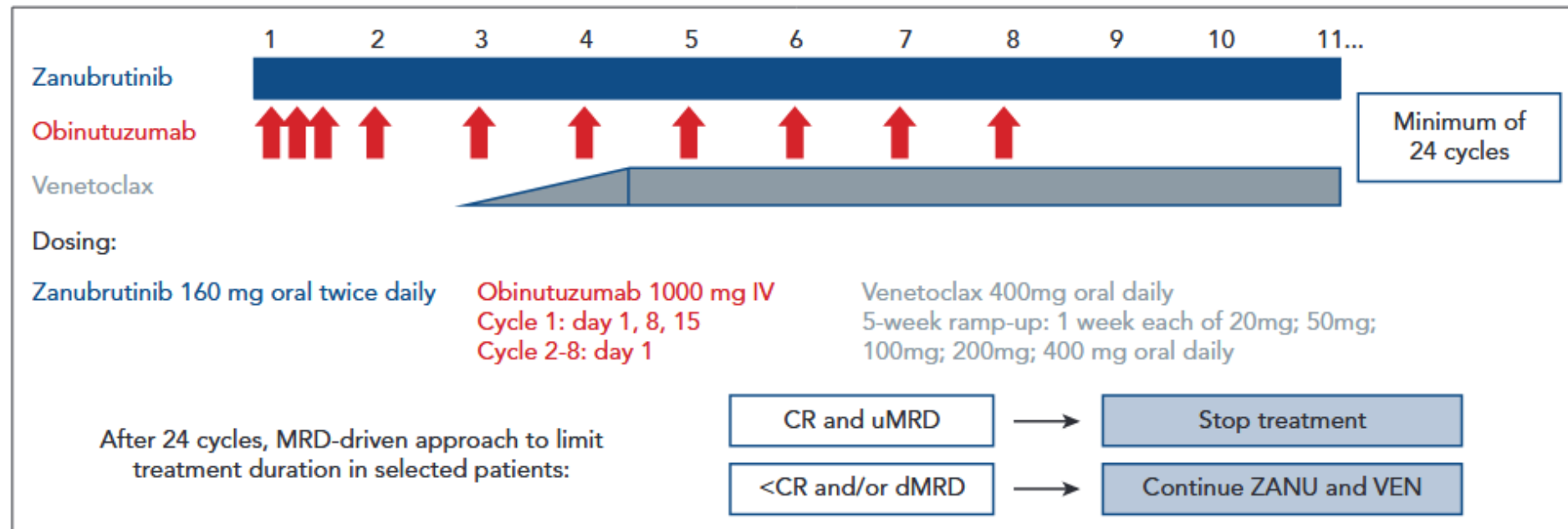
**MRD Negativity at End of Induction (Primary Efficacy Endpoint) (n=39)**

- MRD negativity rate assessed by ddPCR at the end of induction (after C6)
- N=39 in each arms



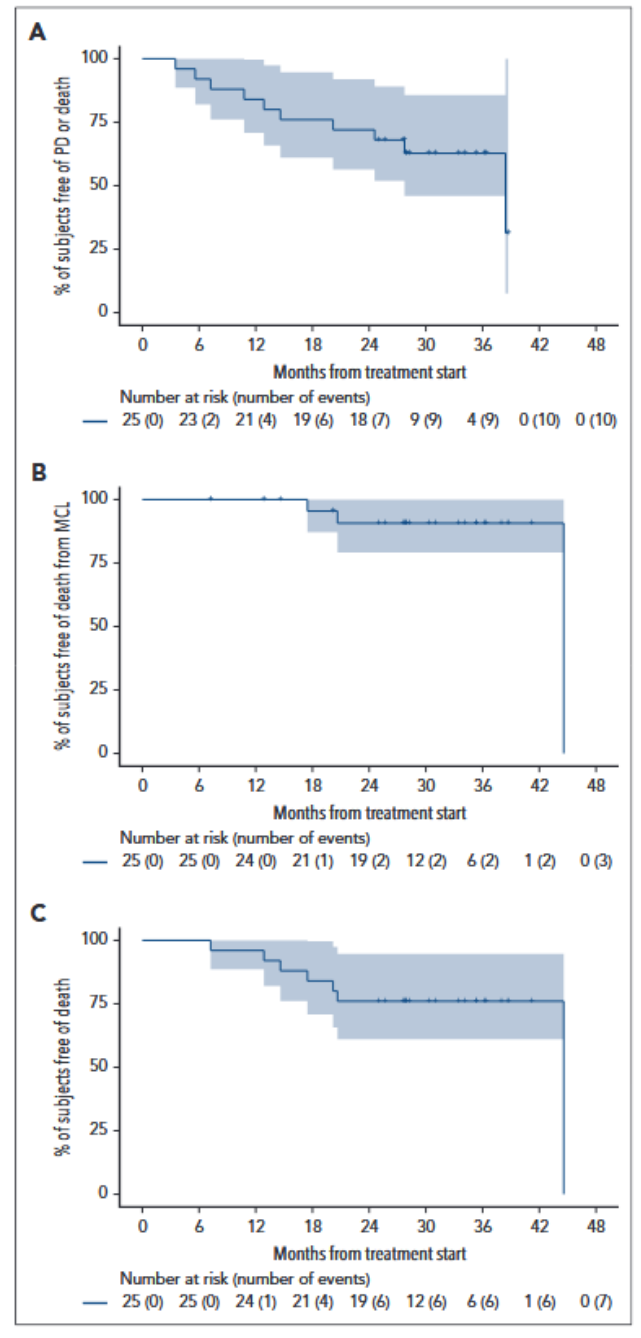
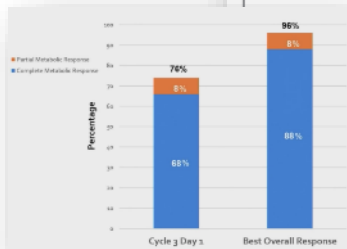
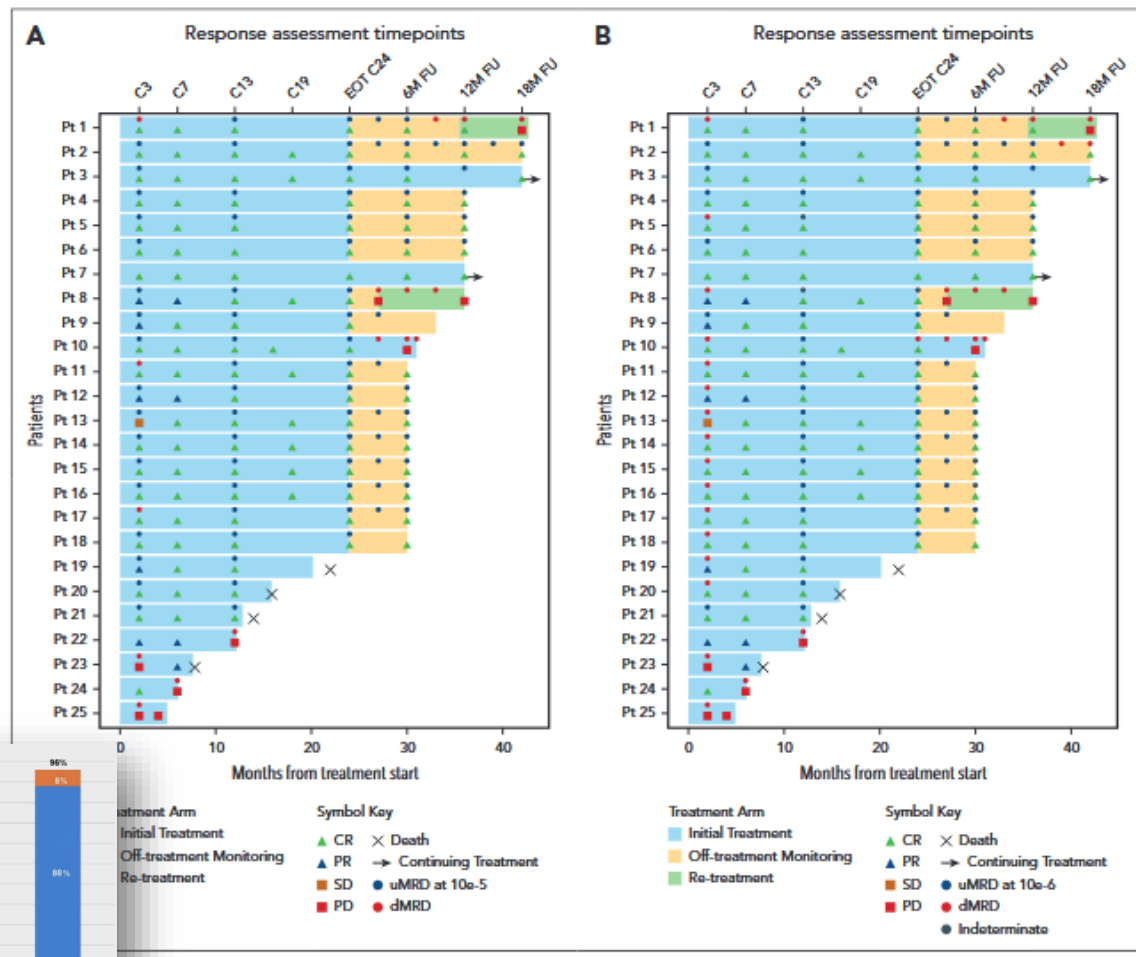
Treatment arm	Ibru/CD20Ab (n=51)	Ibru/CD20Ab/Ven (n=50)	Total (n=101)
<b>CR</b>	29 (56.9%)	32 (64 %)	61 (60.4%)
<b>PR</b>	11 (21.6%)	8 (16 %)	19 (18.8%)
<b>ORR</b>	40 (78.5%)	40 (80%)	80 (79,2%)
<b>SD</b>	2 (3.9%)	0	2 (2%)
<b>PD</b>	1 (2%)	0	1 (1%)
<b>NE</b>	8 (15.7%)	10 (20%)	18 (17.8%)

# BOVEN: Zanubrutinib/Obinutuzumab/Venetoclax in TP53 mutated MCL



**Figure 1. Study schema.** Patients received obinutuzumab on C1 day 1, 8, and 15 and monthly on day 1 of C2 to C8. Patients received zanubrutinib (ZANU) at a dose of 160 mg by mouth twice daily for 2 28-day cycles before the weekly dose escalation of venetoclax (VEN) to a target dose of 400 mg/d began. ZANU and VEN were continued until disease progression or intolerance. After 24 cycles, if patients were in complete response (CR) and had uMRD status, ZANU and VEN were discontinued. dMRD, detectable MRD; uMRD, undetectable MRD; IV, intravenous.

# Boven - results



# Phase 1b/2 study of venetoclax, ibrutinib, prednisone, obinutuzumab, and lenalidomide (ViPOR) in relapsed/refractory and treatment-naïve mantle cell lymphoma: Preliminary analysis of safety, efficacy, and MRD



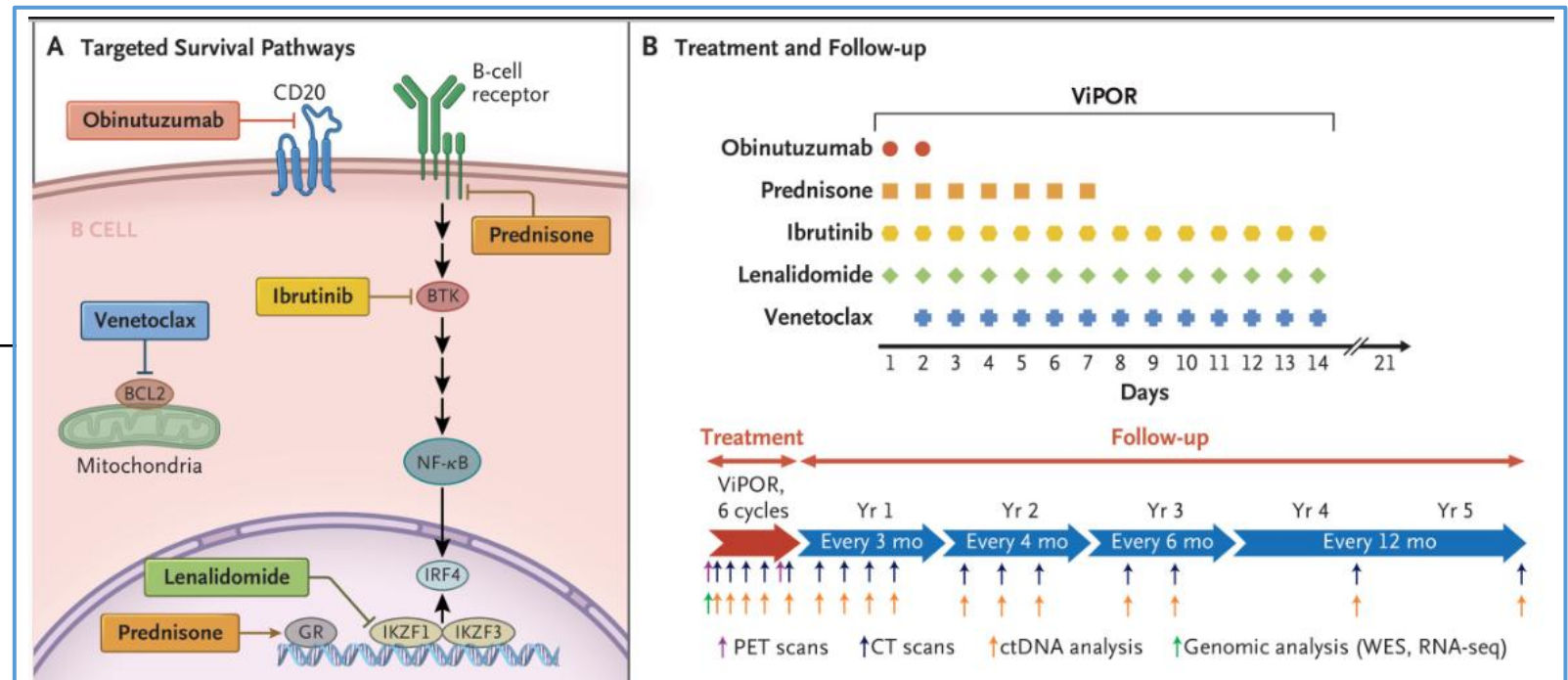
## Aim

To investigate the potential for an all in chemotherapy-free combination

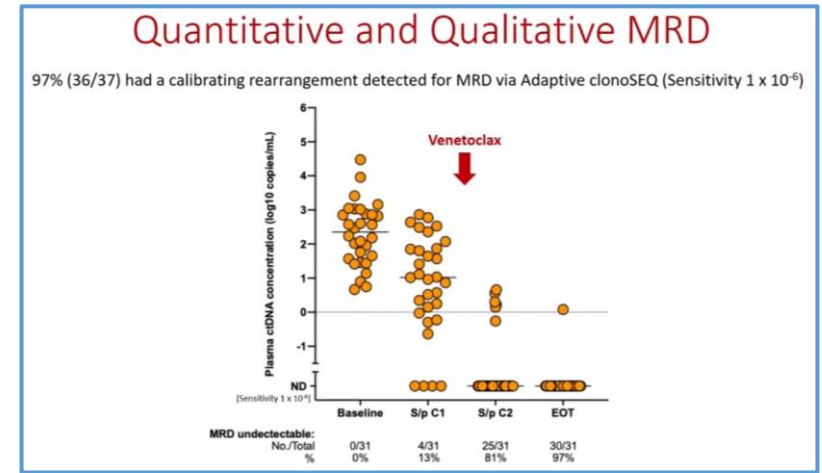
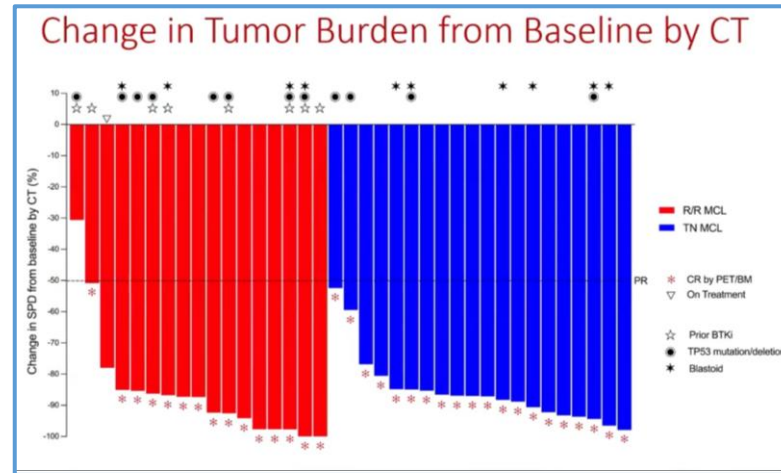
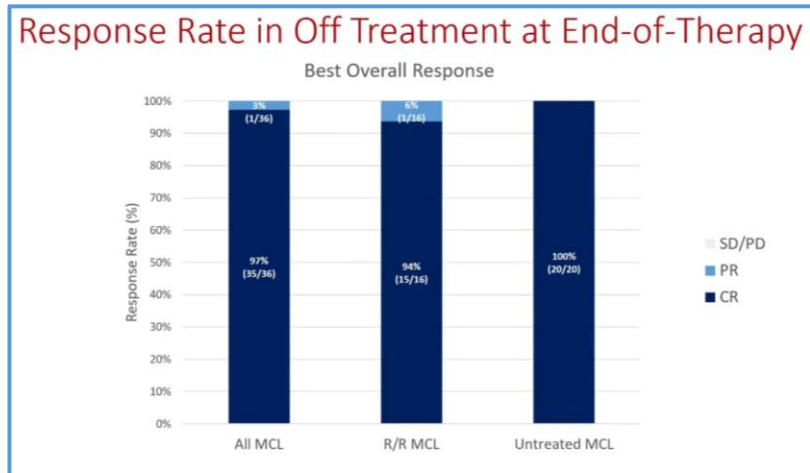


## Design

Single center, Phase 1/2



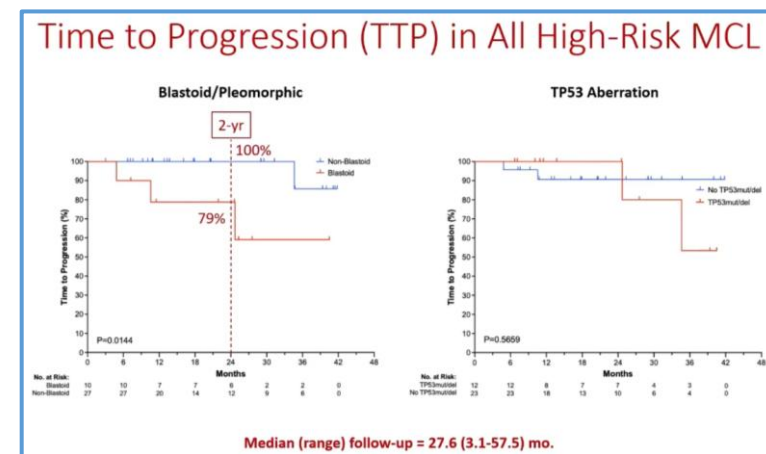
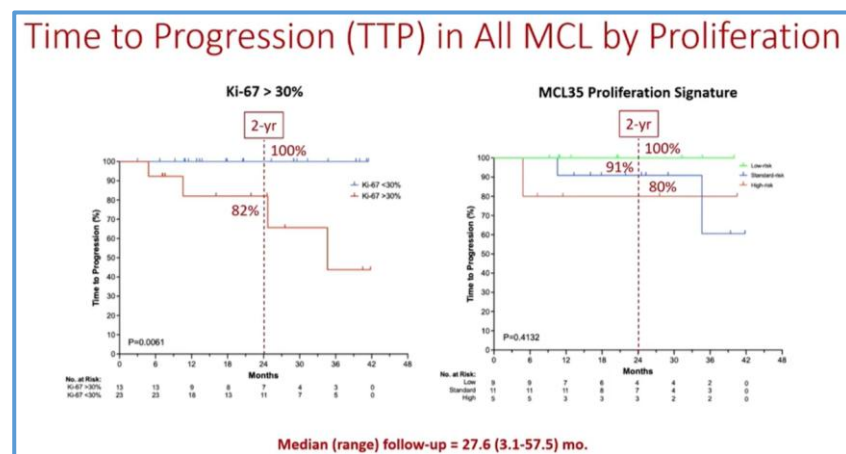
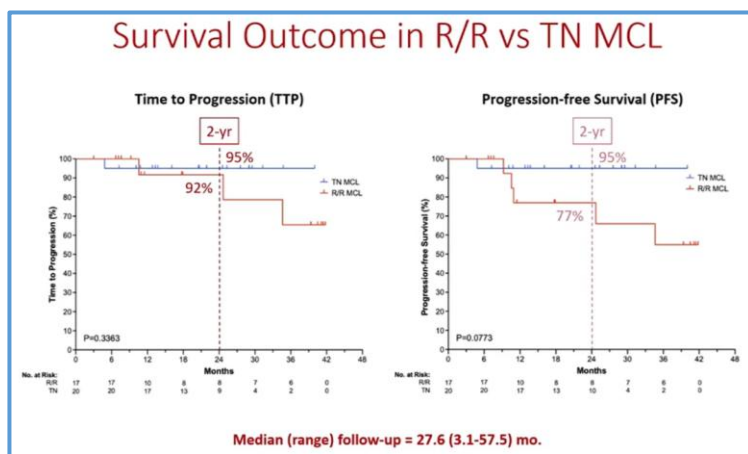
# ViPOR: Preliminary analysis of safety, efficacy, and MRD (cont'd)



BM, bone marrow; BTKi, Bruton tyrosine kinase inhibitor; C, Cycle; CR, complete response; ctDNA, circulating tumor deoxyribonucleic acid; CT, computed tomography; EOT, end of treatment; MCL, mantle cell lymphoma; MRD, minimal residual disease; ND, not detected; PD, progressive disease; PET, positron emission tomography; PR, partial response; R/R, relapsed/refractory; S/p, status post; SPD, sum of the product of diameters; SD, stable disease; TN, treatment-naïve.  
Melani C, et al. ASH 2024. Oral presentation 750.



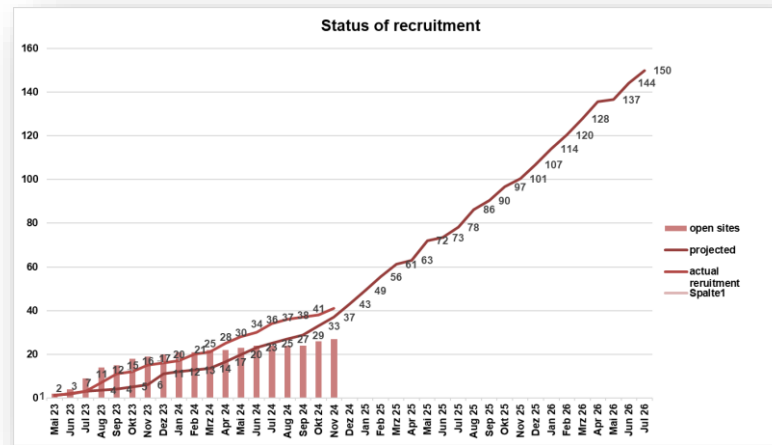
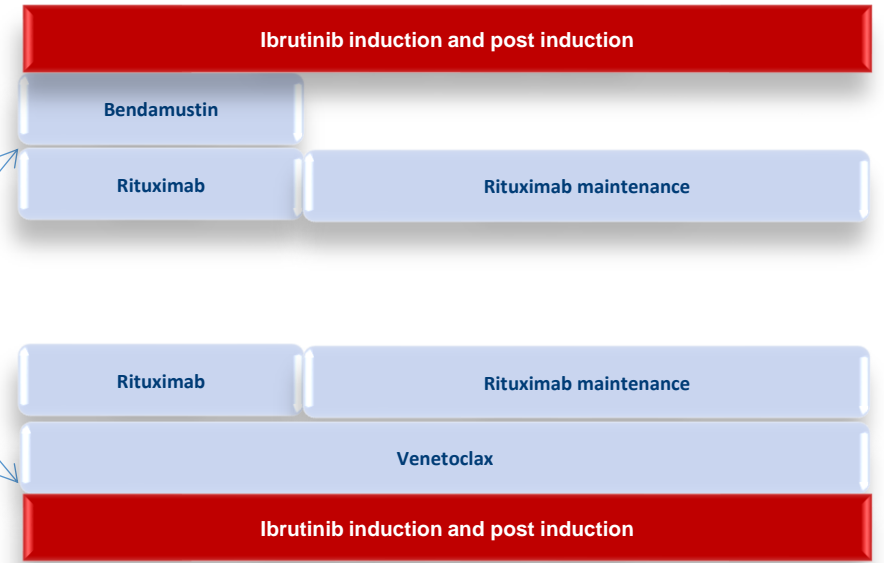
# ViPOR: Preliminary analysis of safety, efficacy, and MRD (cont'd)



# Summary

- Multi-drug combinations demonstrate high efficacy and acceptable tolerability
- Even/especially in high risk populations they might be of great potential to overcome intrinsic chemoresistance
- Time limited / risk & response tailored treatments can be of special merit for patients → to be tested prospectively in upcoming trials

# EMCL-elderly 2023: VIRAL – Phase II



EUROPEAN  
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NETWORK

In competitive matches, the teams have faced each other 12 times:  
Germany has won 2, Italy 4, and 6 matches ended in a draw.  
([weltfussball.de](http://weltfussball.de))

# Thank you



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**JGU** UNIVERSITÄTS**medizin.**  
MAINZ

Department of Haematology  
and Medical Oncology