

3rd edition

Unmet challenges in high risk hematological malignancies: from benchside to clinical practice

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Disclosures of Georg Hess

- Consultancy:** Abbvie, ADC-Therapeutics, AstraZeneca, BMS, Genmab, Gilead/Kite, Incyte, Janssen, Lilly, Miltenyi, Novartis, Roche
- Honoraria:** Abbvie, AstraZeneca, Beigene, BMS, Genmab, Gilead/Kite, Incyte, Janssen, Lilly, Roche
- Research Funding:** Abbvie, Gilead/Kite, Incyte, Janssen, Morphosys, Roche
- 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:** Gilead/Kite, Janssen

Mantle cell lymphoma – First line treatment – focus on High Risk

Georg Heß | Department of Hematology and Medical Oncology |
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A Clinical Analysis of Two Indolent Lymphoma Entities: Mantle Cell Lymphoma and Marginal Zone Lymphoma (Including the Mucosa-Associated Lymphoid Tissue and Monocytoid B-Cell Subcategories): A Southwest Oncology Group Study

By Richard I. Fisher, Steve Dahlberg, Bharat N. Nathwani, Peter M. Banks, Thomas P. Miller, and Thomas M. Grogan

In summary, patients with advanced stage MZL have a clinical course similar to that of other patients in WF A through E, although patients with advanced stage MALT lymphomas may have a more aggressive course than previously recognized. However, patients with MCL do not have an indolent lymphoma and are candidates for innovative therapy.

Blood, Vol 85, No 4 (February 15), 1995: pp 1075-1082

Efficacy of Four Different Regimens in 64 Mantle-Cell Lymphoma Cases: Clinicopathologic Comparison With 498 Other Non-Hodgkin's Lymphoma Subtypes

By I. Teodorovic, S. Pittaluga, J.C. Kluin-Nelemans, J.H. Meerwaldt, A. Hagenbeek, M. van Glabbeke, R. Somers, L. Bijlens, E.M. Noordijk, and C. De Wolf Peeters for the European Organization for the Research and Treatment of Cancer Lymphoma Cooperative Group

Purpose: Before recognizing mantle-cell lymphoma (MCL) as a distinct entity, these patients were grouped into low-grade (LG) or intermediate-/high-grade categories (IGHG) according to the Working Formulation and received various therapies. This was a unique opportunity to evaluate characteristics, behavior, response to treatment, and outcome of patients with MCL from two phase III trials conducted by the European Organization for the Research and Treatment of Cancer (EORTC): EORTC 20855 IGHG and EORTC 20856 LG.

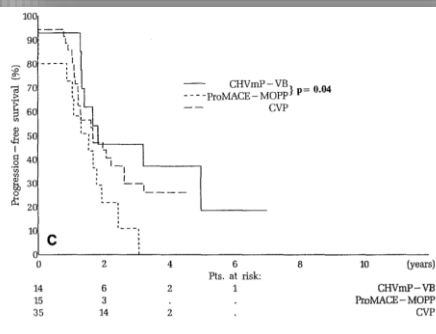
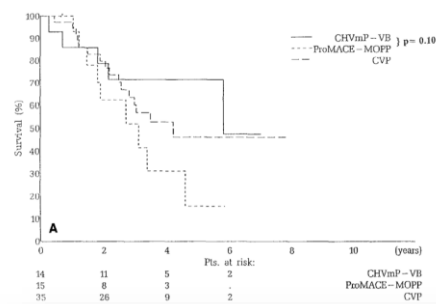
Patients and Methods: After histologic review, 64 diagnosed MCL patients (29 IGHG and 35 LG) were compared with other patients in their respective trials. In the IGHG group, patients received cyclophosphamide, doxorubicin, teniposide (VM₂₆), prednisone, vincristine, and bleomycin (CHVmP-VB) or modified doxorubicin, cyclophosphamide, etoposide (VP16), mechlorethamine, vincristine, procarbazine, and prednisone (ProMACE-MOPP). In the LG group, after receiving cyclophosphamide, vincristine, and prednisone (CVP) induction, patients were randomized between maintenance treat-

ment with interferon alfa-2a (IFN) or no further treatment.

Results: MCL patients compared with IGHG subtypes showed a similar overall survival and response rate, but shorter duration of response and progression-free survival. Comparing with LG patients, their response rate, duration of response, and progression-free survival showed no difference, while their overall survival was nearly twice shorter. MCL patients treated with CHVmP-VB had the longest survival. No treatment showed any significant improvement in terms of progression-free survival.

Conclusion: These data confirm that MCL represents a clinicopathologic entity. In terms of survival, it behaves like IGHG subtypes, while in terms of progression-free survival, it behaves like LG lymphoma. It is still not clear which first-line treatment offers patients with MCL the best chance to obtain both a complete response (CR) and a long-term survival.

J Clin Oncol 13:2819-2826. © 1995 by American Society of Clinical Oncology.



Mantle-Cell Lymphomas Have More Widespread Disease and a Slower Response to Chemotherapy Compared With Follicle-Center Lymphomas: Results of a Prospective Comparative Analysis of the German Low-Grade Lymphoma Study Group

By Wolfgang Hiddemann, Michael Unterhalt, Richard Herrmann, Hans-Heinrich Wölflin, Ernst-Dietrich Kreuzer, Lorenz Trümper, Monika Reuss-Borst, Elke Terhardt-Kasten, Mechthild Busch, Andreas Neubauer, Ulrich Kaiser, Rolf-Dieter Harroff, Helmut Middeke, Gisela Helm, Mathias Freund, Harold Stein, Markus Tiemann, and Reza Parwaresch

Purpose: To compare mantle-cell lymphomas (MCLs) and follicle-center lymphomas (FCLs) for their features of clinical presentation, response to chemotherapy, and prognosis on the basis of a prospective randomized clinical trial.

Patients and Methods: Patients with MCL and FCL who entered onto the prospective randomized comparison of cyclophosphamide, vincristine, and prednisone (CVP) versus prednimustine and mitoxantrone (PmM) followed by a second randomization for interferon (IFN) maintenance versus observation only.

Results: One hundred sixty-five of 234 patients had FCL and 45 of 234 patients had MCL. With FCL, both sexes were equally affected (men, 47%); patients with MCL were predominantly men (78%; $P < .0004$) and had a higher median age (64 v 53 years; $P < .0001$). Patients with MCL also had more widespread disease reflected by the proportion of patients with two greater extranodal manifestations (43% v 21%; $P .005$) and nine or greater involved nodal areas (64%

45%; nonsignificant [NS]). Response to chemotherapy was significantly lower in patients with MCL (complete remission [CR] + partial remission [PR], 69% v 88%; $P < .05$) and occurred at a slower pace. Patients with MCL also had a shorter event-free interval (median, 8 v 24 months; $P < .0001$) and overall survival (median, 28 v 77 months; $P < .0001$). In both subtypes, however, patients with less than two residual lymphoma manifestations in remission experienced a relatively good prognosis with an estimated 5-year survival of greater than 60% for MCL and greater than 75% for FCL.

Conclusion: MCL and FCL differ substantially in their features of presentation, response to chemotherapy, and long-term prognosis. The extent of residual disease after completion of chemotherapy discriminates patients with different prognosis and may be used for the

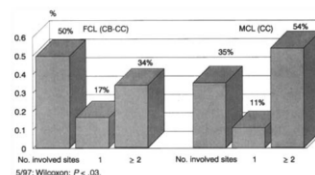


Fig 4. Frequency of residual nodal manifestations after maximum response in MCLs and FCLs.

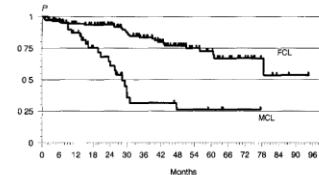


Fig 5. Overall survival in MCLs and FCLs.

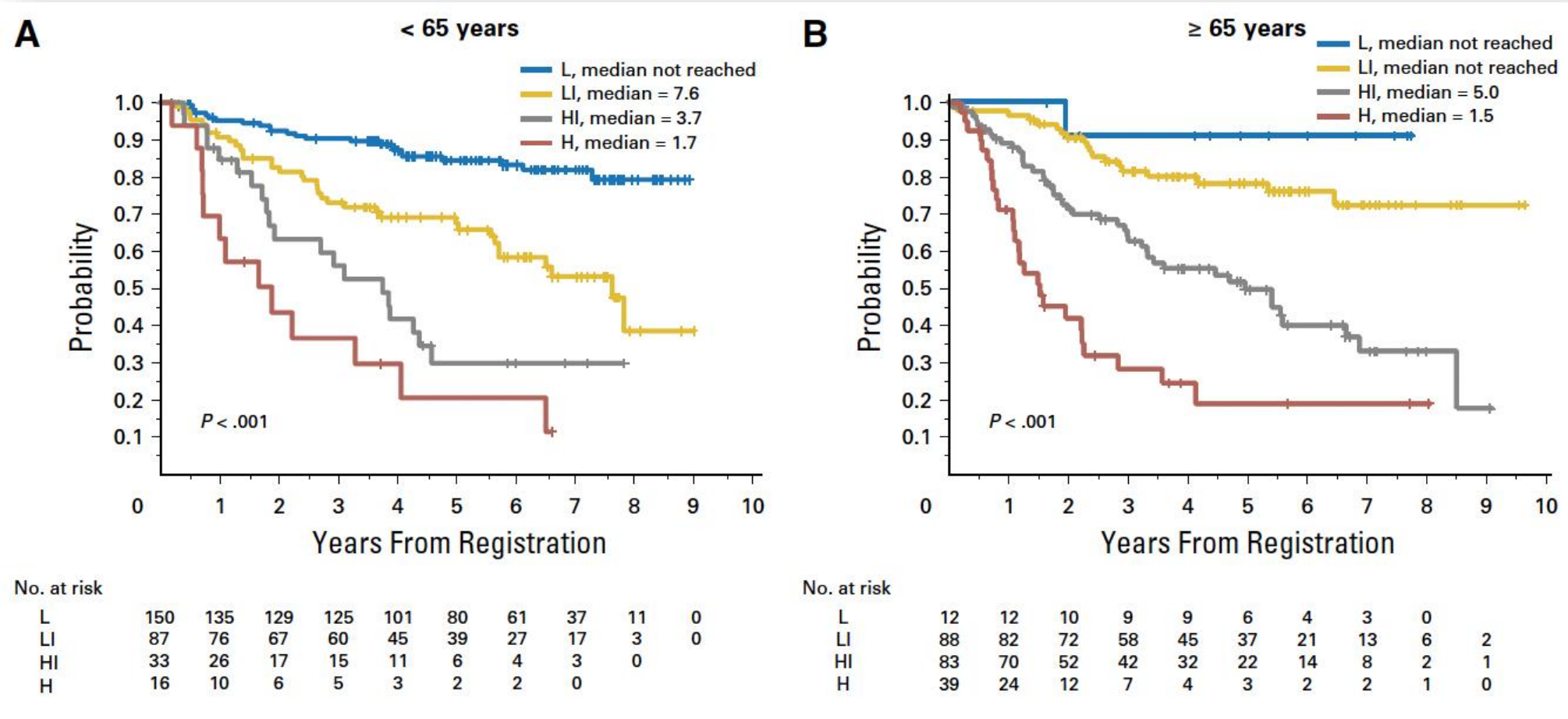
Development steps of treatment of MCL

- Establishment of
 - Dose intensification (HDT)
 - Introduction of especially active cytostatics (cytarabinosid, bendamustine)
 - Identification of effective targeted agents (Proteasome inhibitors, BTKi, BCL-2i, Celmods)
 - Introduction of T-cell engaging therapies

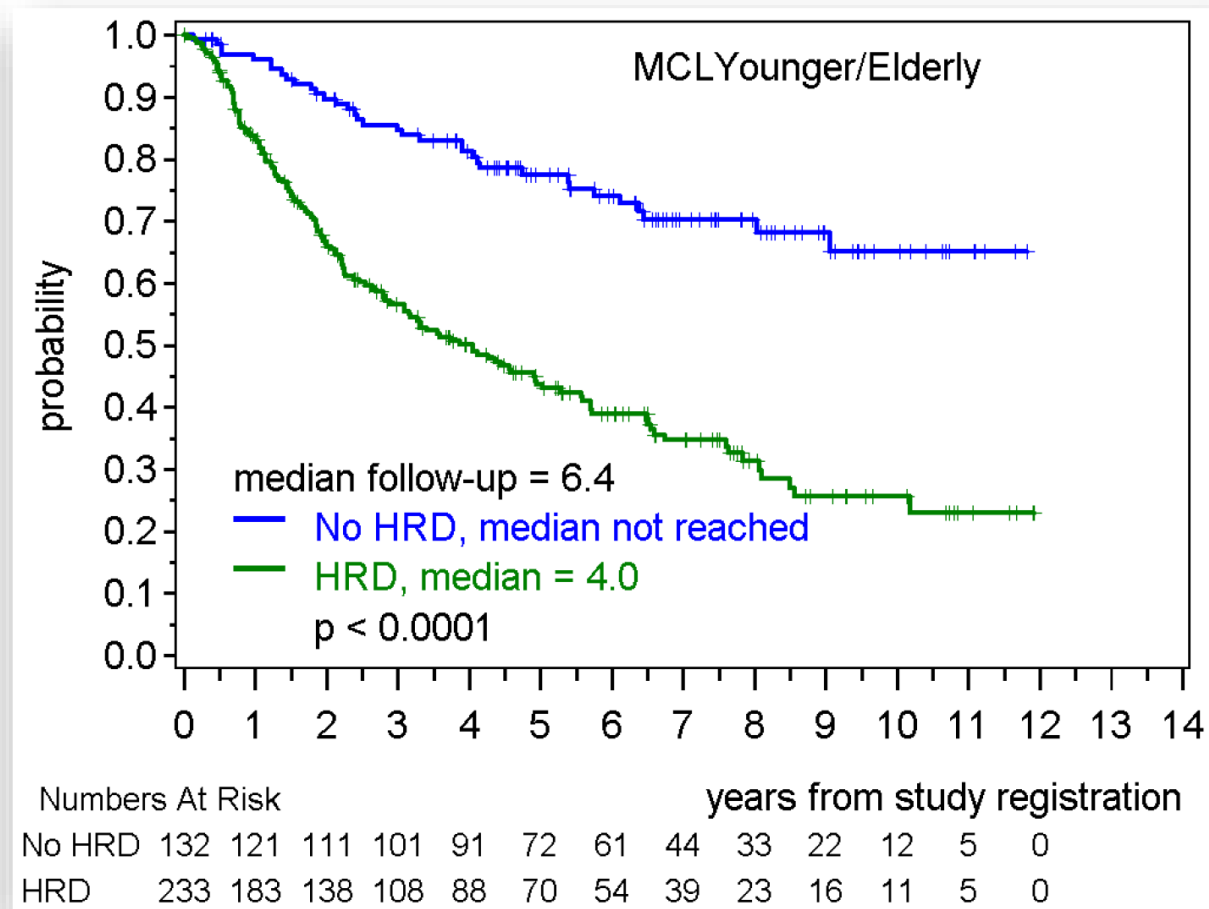
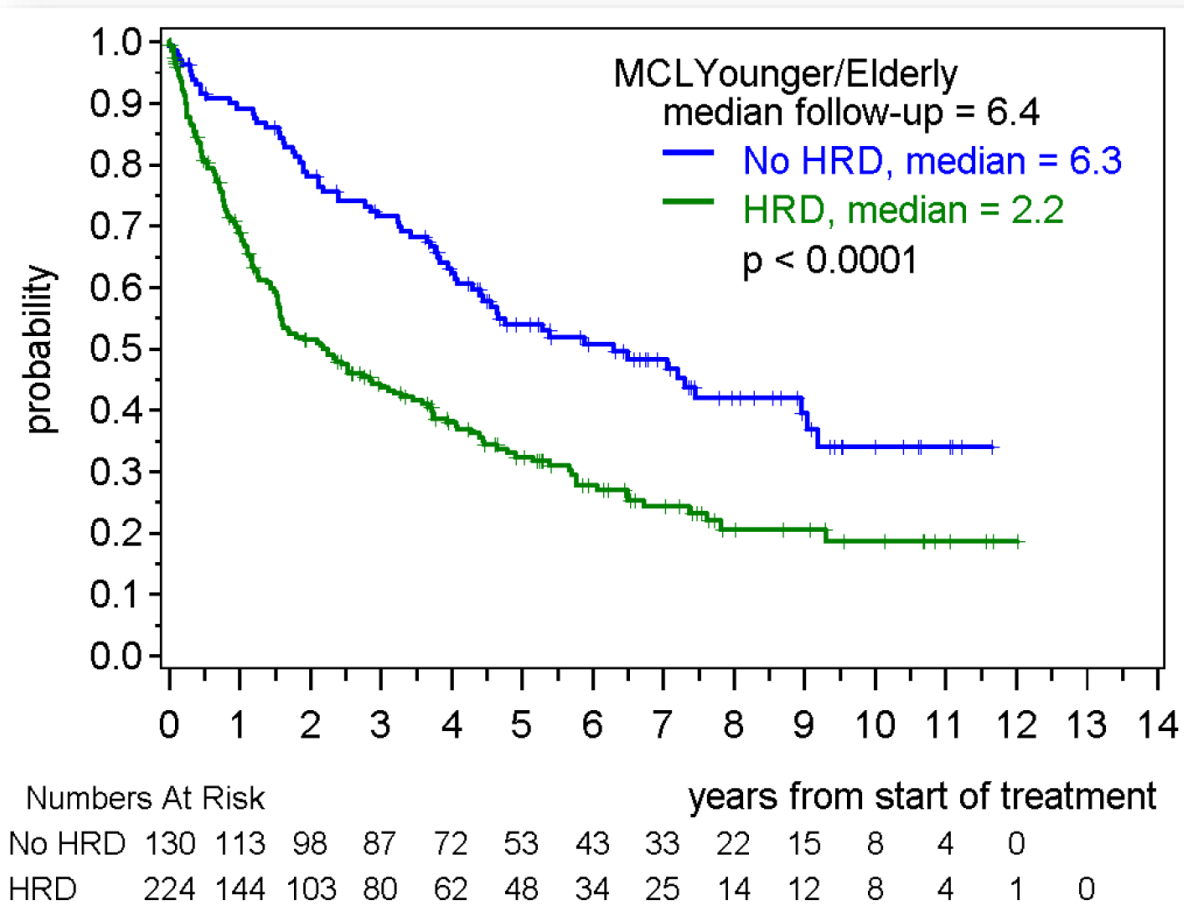
Development steps of treatment of MCL

- Establishment of
 - Dose intensification (HDT)
 - Introduction of especially active cytostatics (cytarabinosid, bendamustine)
 - Identification of effective targeted agents (Proteasome inhibitors, BTKi, BCL-2i, Celmods)
 - Introduction of T-cell engaging therapies
- Work in progress
 - Combination approaches
 - Tailoring of treatment based on individual risk profiles.

MIPI-C is valid in elderly and younger



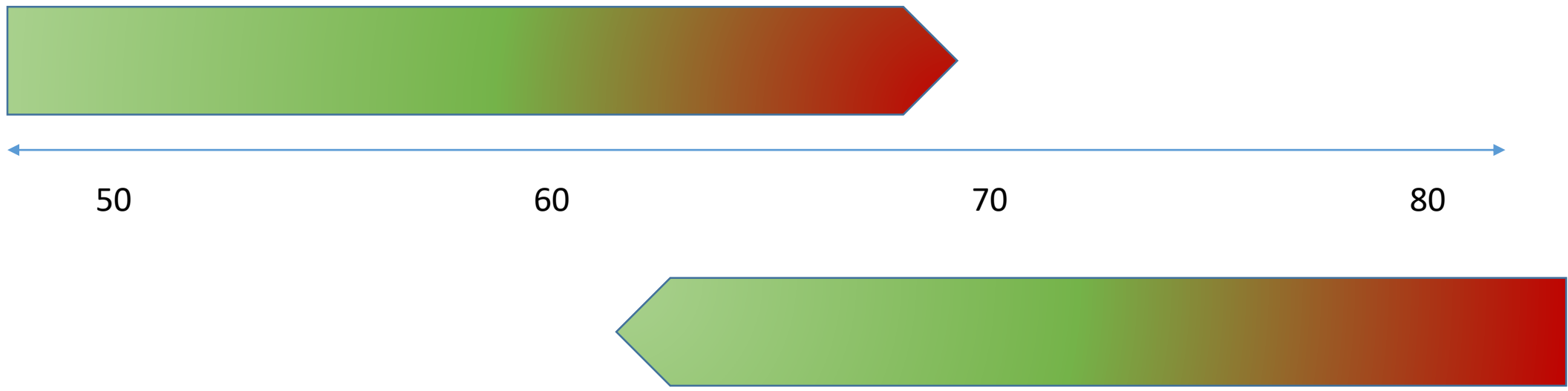
Ki67 high OR p53 ICH > 50% or Blastoid morphology



First line treatment

Transplant in | eligible !?!

Intensive treatment



Reduced intensity treatment

Chemoimmunotherapy as SOC

- R-CHOP superior to R-FC
- R maintenance superior to IFN
- RB equivalent to R-CHOP
- Role of Rm after RB not formally proven, but reasonable evidence
- VR-CAP superior to CHOP
- R-BAC intensive alternative with long term remissions

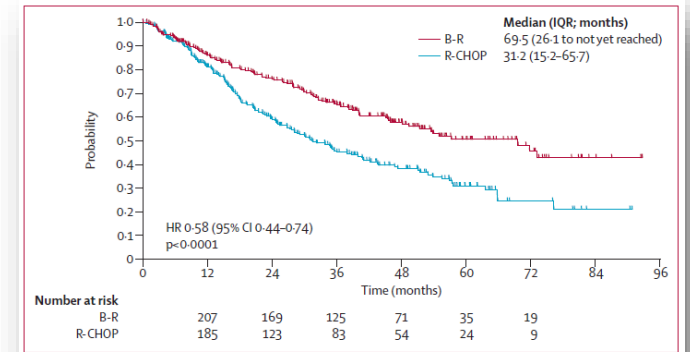


Figure 2: Progression-free survival
B-R=bendamustine plus rituximab. R-CHOP=CHOP plus rituximab.

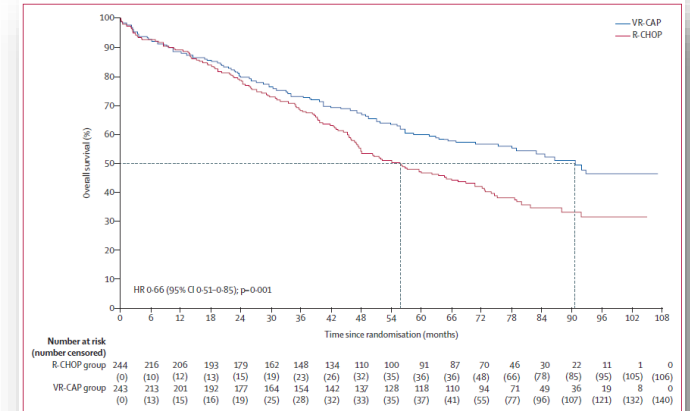
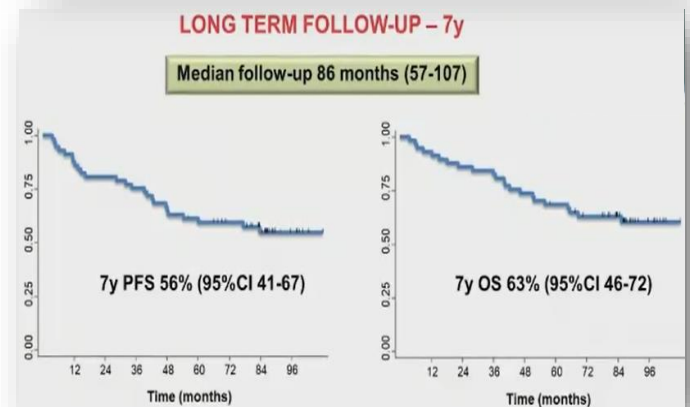
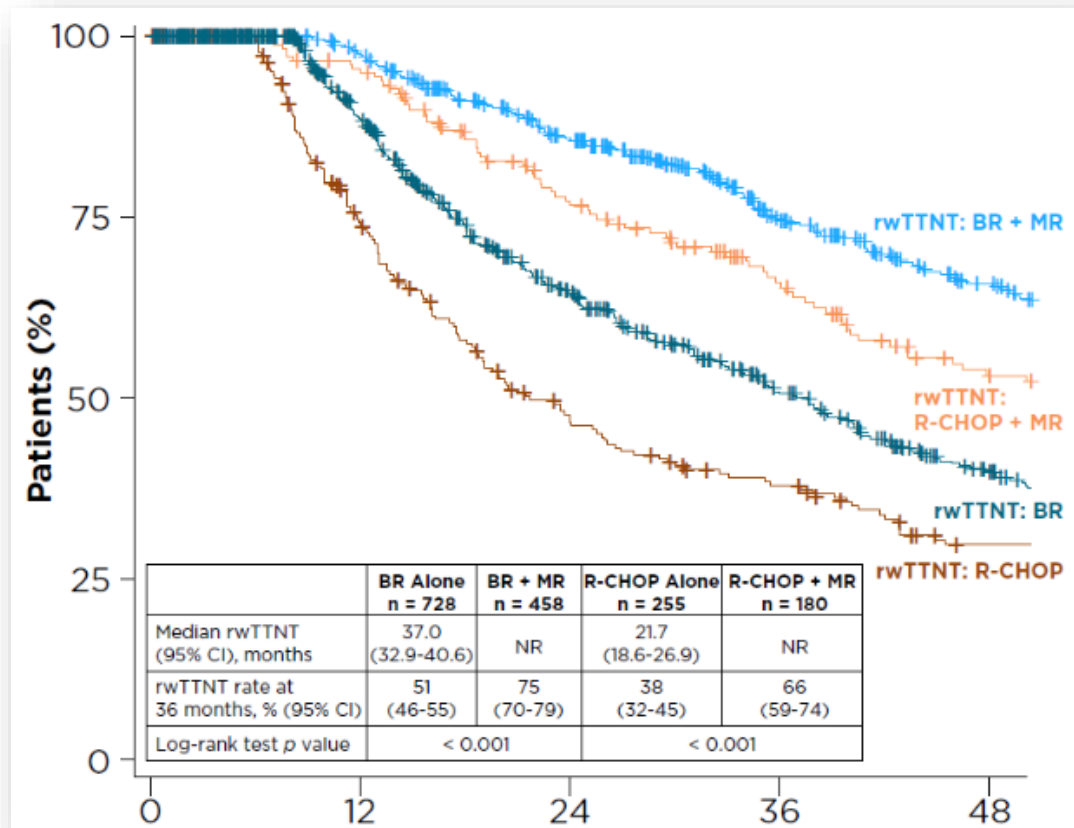


Figure 2: Final analysis of overall survival in the intention-to-treat population
R-CHOP=rituximab, cyclophosphamide, doxorubicin, vincristine, and prednisone. VR-CAP=bortezomib, rituximab, cyclophosphamide, doxorubicin, and prednisone. HR=hazard ratio.

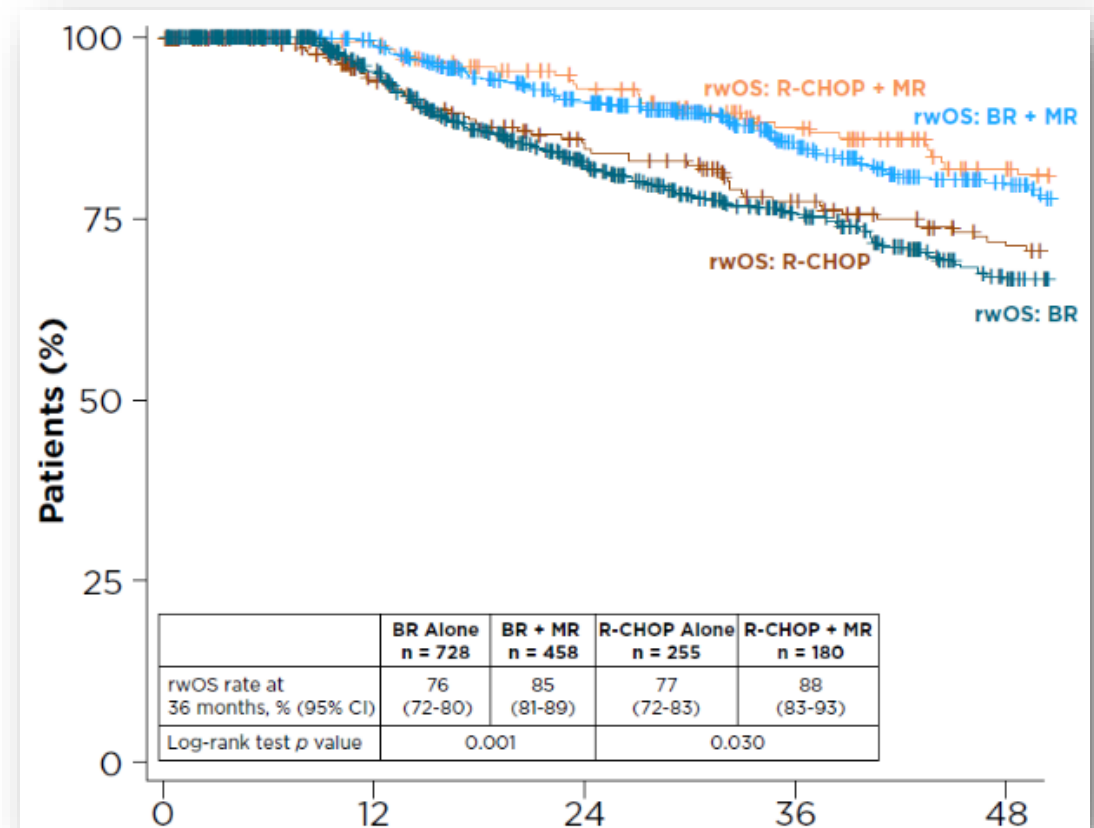


Maintenance rituximab (MR) after first-line BR or R-CHOP in patients with MCL from a large US real-world cohort

Real world TTNT



Real world OS



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)

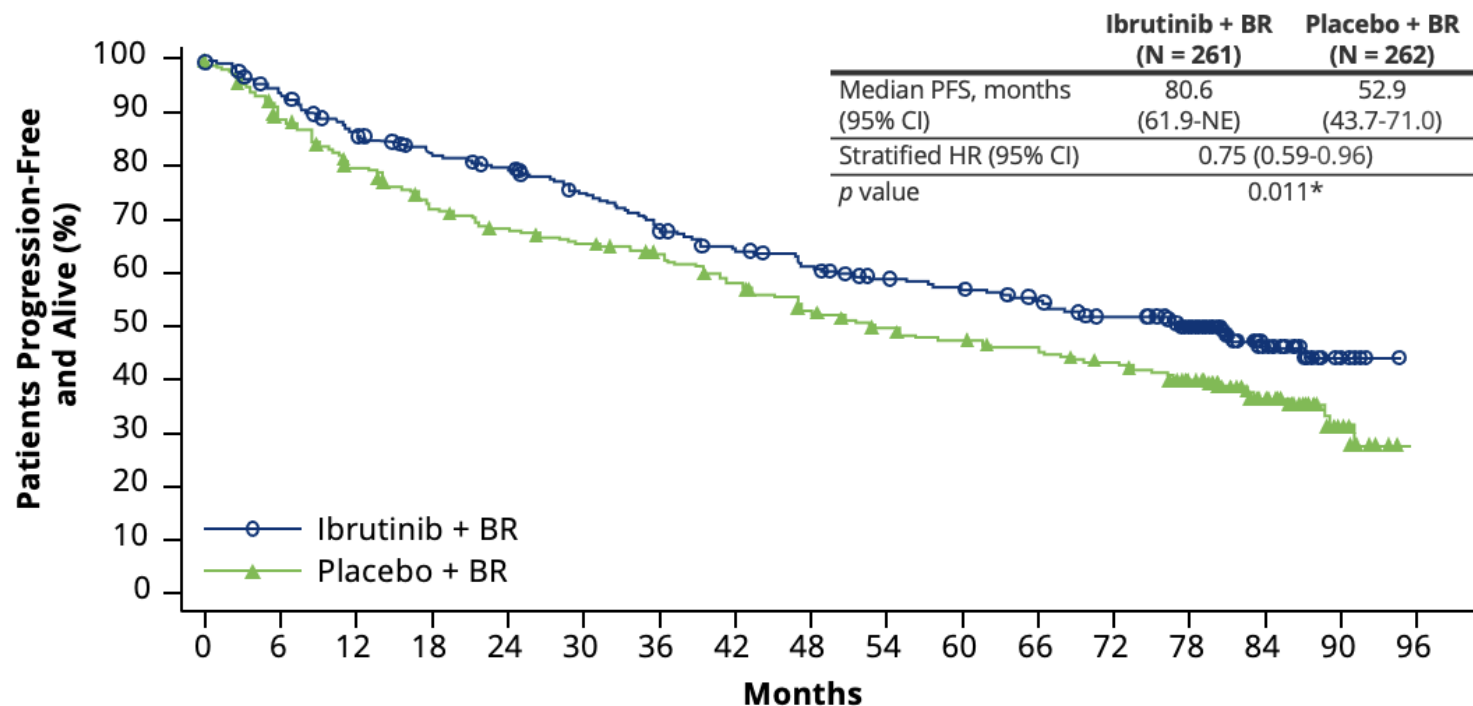
Key Secondary endpoints:

- 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

PFS



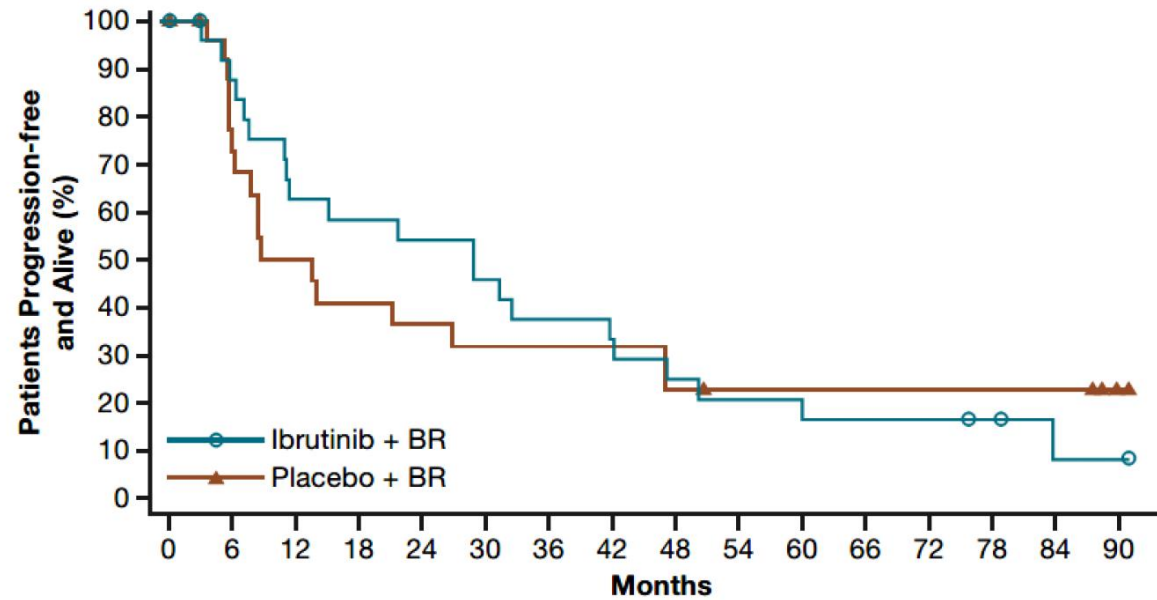
- Ibrutinib combined with BR and R maintenance demonstrated a **25% reduction in the relative risk of disease progression or death** versus BR and R maintenance
- **Significant improvement in median PFS: 80.6 month (6.7 years) versus 52.9 months (4.4 years) ($\Delta=2.3$ years)**

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

PFS in high risk patients

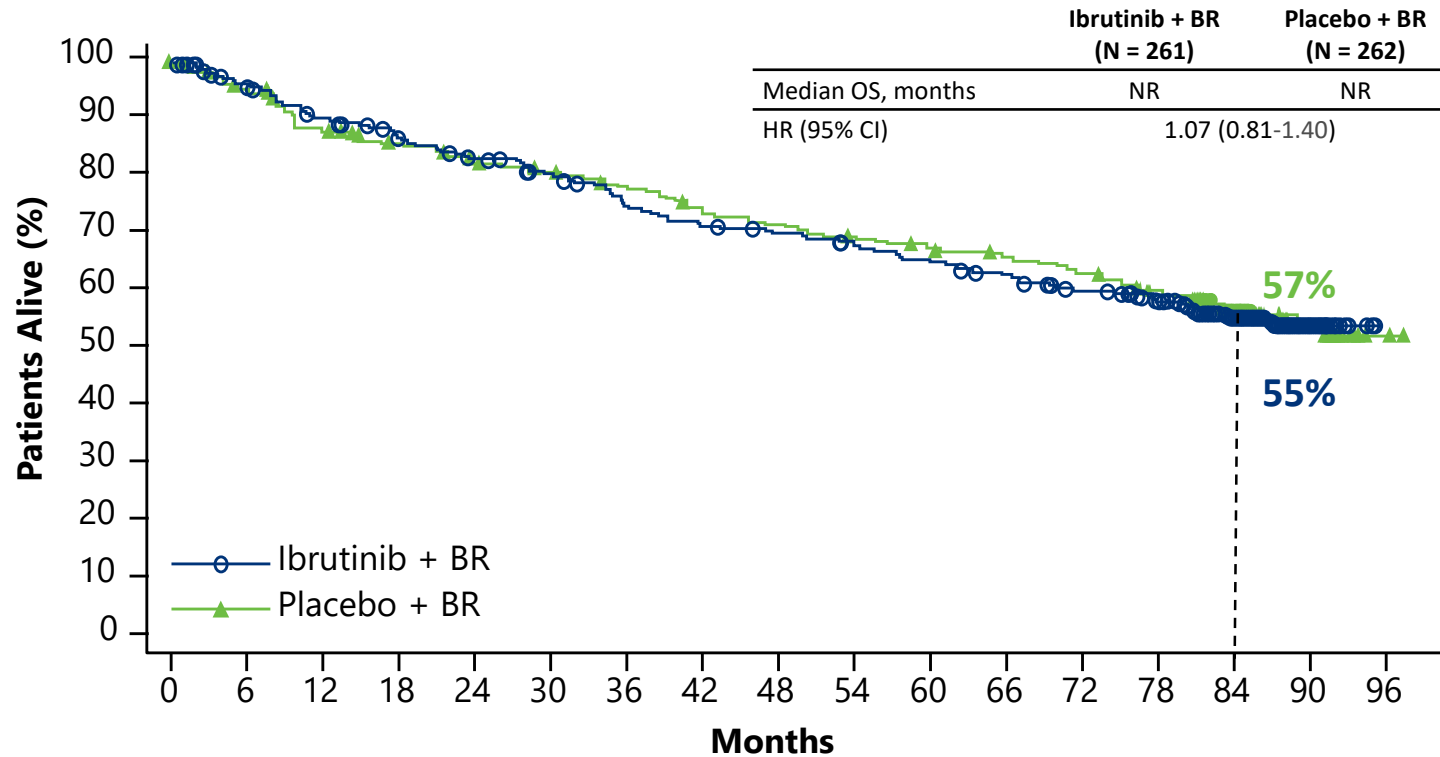
(B)



No. at Risk

Ibrutinib + BR	26	21	15	14	13	11	9	7	6	5	4	4	4	3	1	1
Placebo + BR	24	16	11	9	8	7	7	7	5	4	4	4	4	4	4	1

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%)
Total deaths	104 (39.8%)	107 (40.8%)

*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

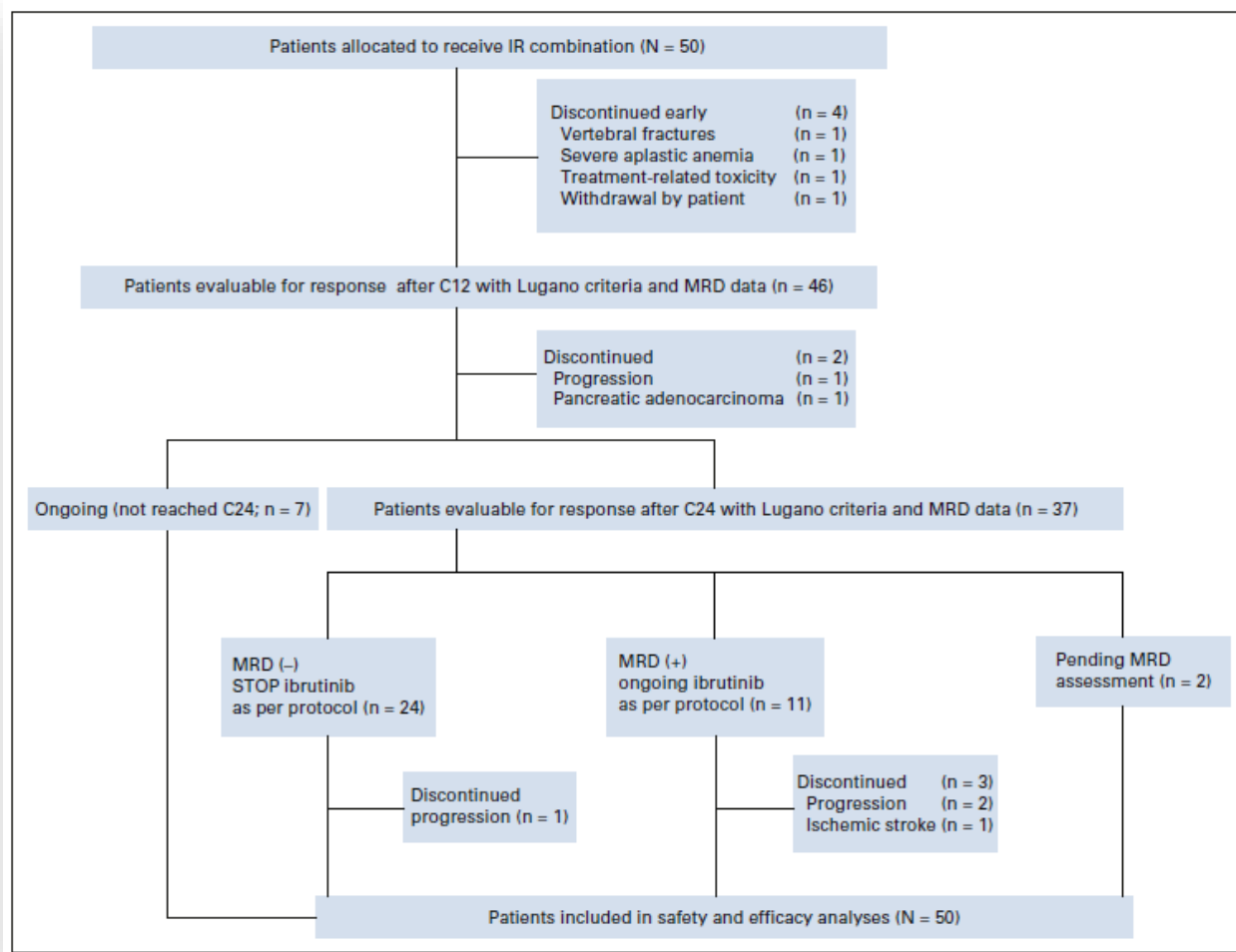
Ibrutinib + BR	261	239	221	208	197	187	171	163	158	152	145	138	128	118	70	25	0
Placebo + BR	262	244	223	212	203	197	188	177	171	165	159	154	147	137	90	31	2

Chemofree: Ibrutinib | Rituximab

TABLE 1. Baseline Characteristics of 50 Patients at IMCL-2015

Inclusion

Characteristic	Patients (N = 50)
Median age, years (range)	65 (40-85)
Sex, No. (%)	
Male	33 (66)
Female	17 (44)
ECOG 0-1, No. (%)	50 (100)
Spleen size, cm, median (range) ^a	13 (9-29)
Lymph node size, mm ^a	
No enlarged and no FDG uptake, No. (%)	11 (22)
Longest diameter, median (range)	21 (13-43)
BM involvement	44 (88)
Ann Arbor stage, No. (%)	
I-II	3 (6)
III-IV	47 (94)
WBC count ($\times 10^9/L$), median (range)	12.2 (3.7-126)
PB involvement by flow cytometry, No. (%)	44 of 49 (90)
Hemoglobin (< 110 g/L), No. (%)	3 (6)
Platelet count ($< 100 \times 10^9/L$), No. (%)	4 (8)
Serum LDH ($> ULN$), No. (%)	4 (8)
Serum B2-microglobulin ($> ULN$), No. (%)	22 of 45 (49)
MIPI, No. (%)	
Low risk	12 (24)
Intermediate risk	19 (38)
High risk	19 (38)



Ibrutinib Rituximab - results

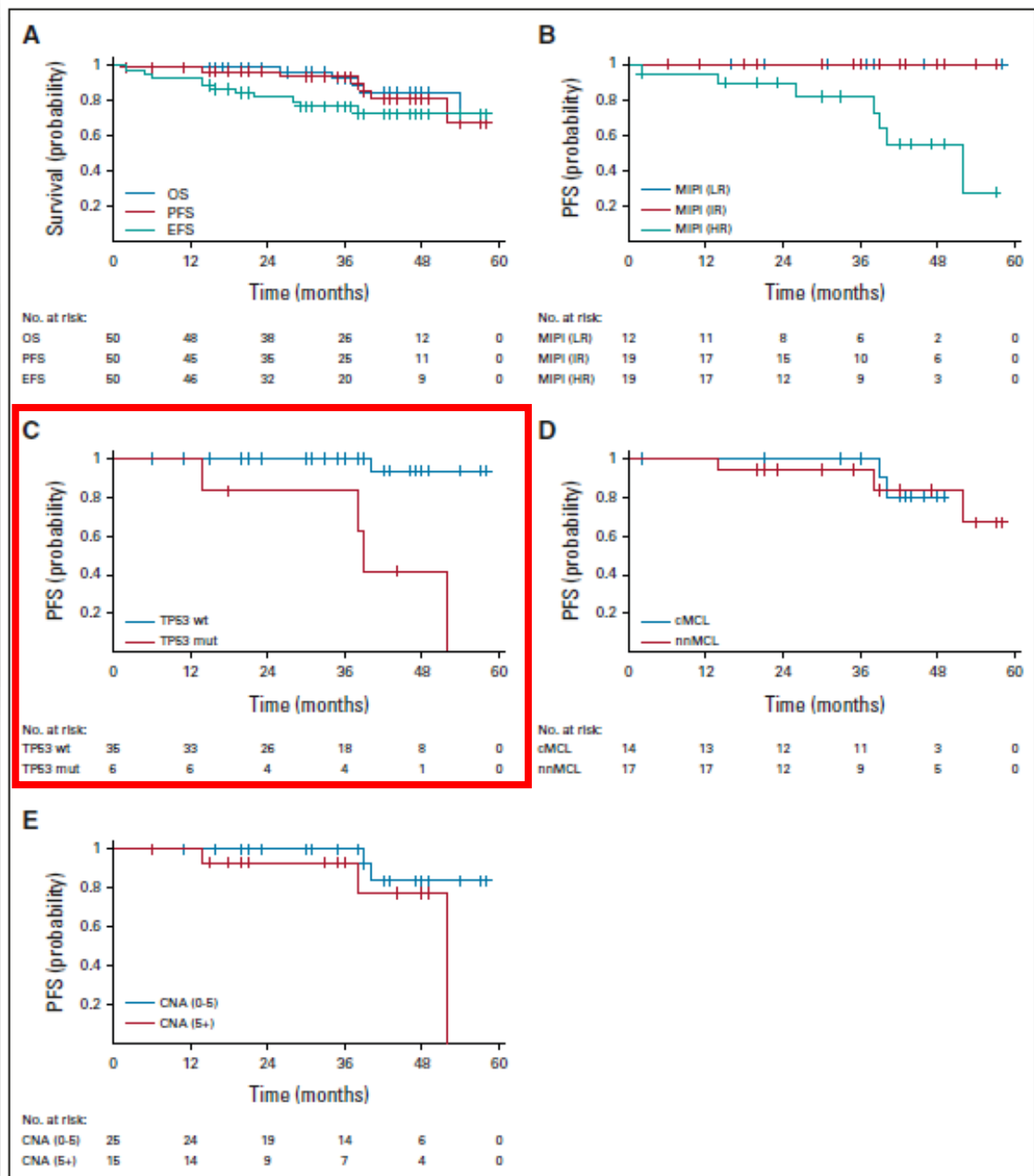
TABLE 3. Responses After 12 Cycles of IR Combination and According to Molecular Subtypes (nnMCL or cMCL) and *TP53* Mutational Status

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 ^a	4 (8, 0 to 15)	—	1 (7)	1 (3)	—

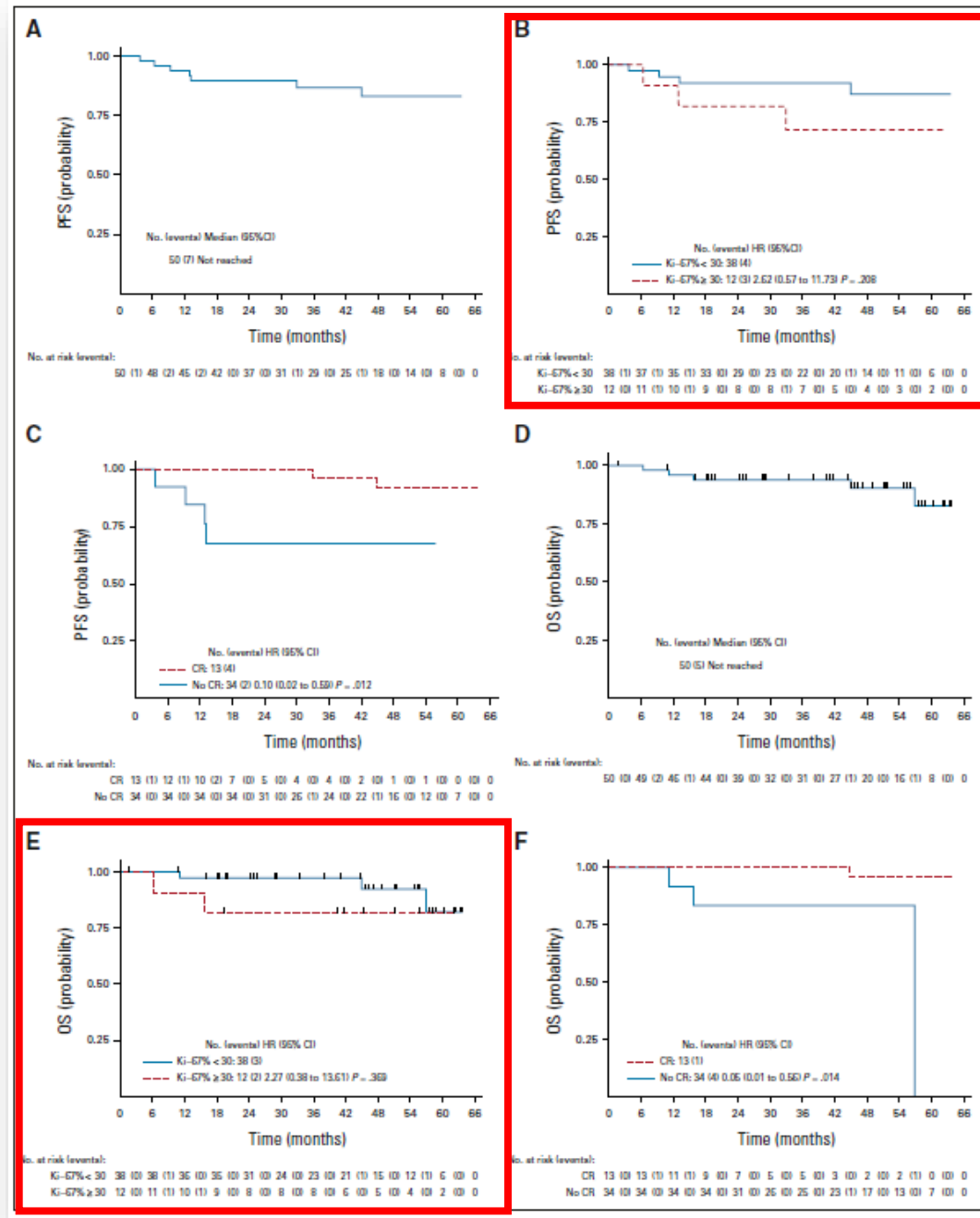
NOTE. Data are No. (%; 95% CI).

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.

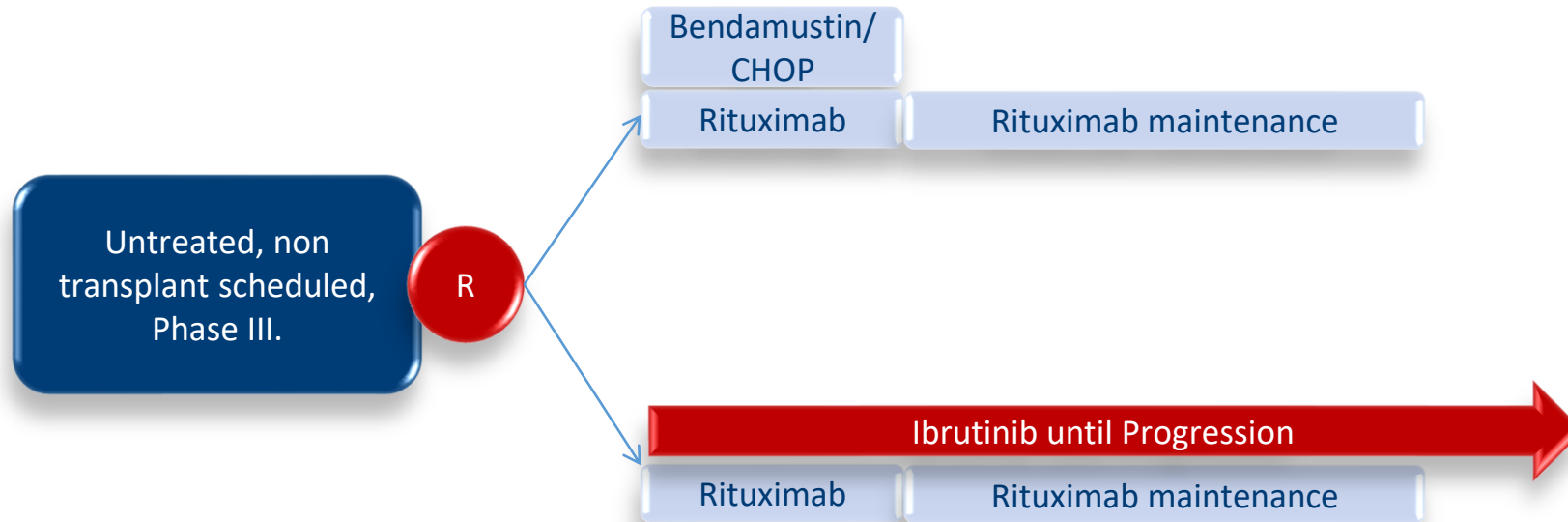
^aFour patients were nonevaluable at 12 months of treatment because of treatment discontinuation: severe aplastic anemia, skin rash, and withdrawal consent because of treatment intolerance and unrelated event with vertebral fractures.



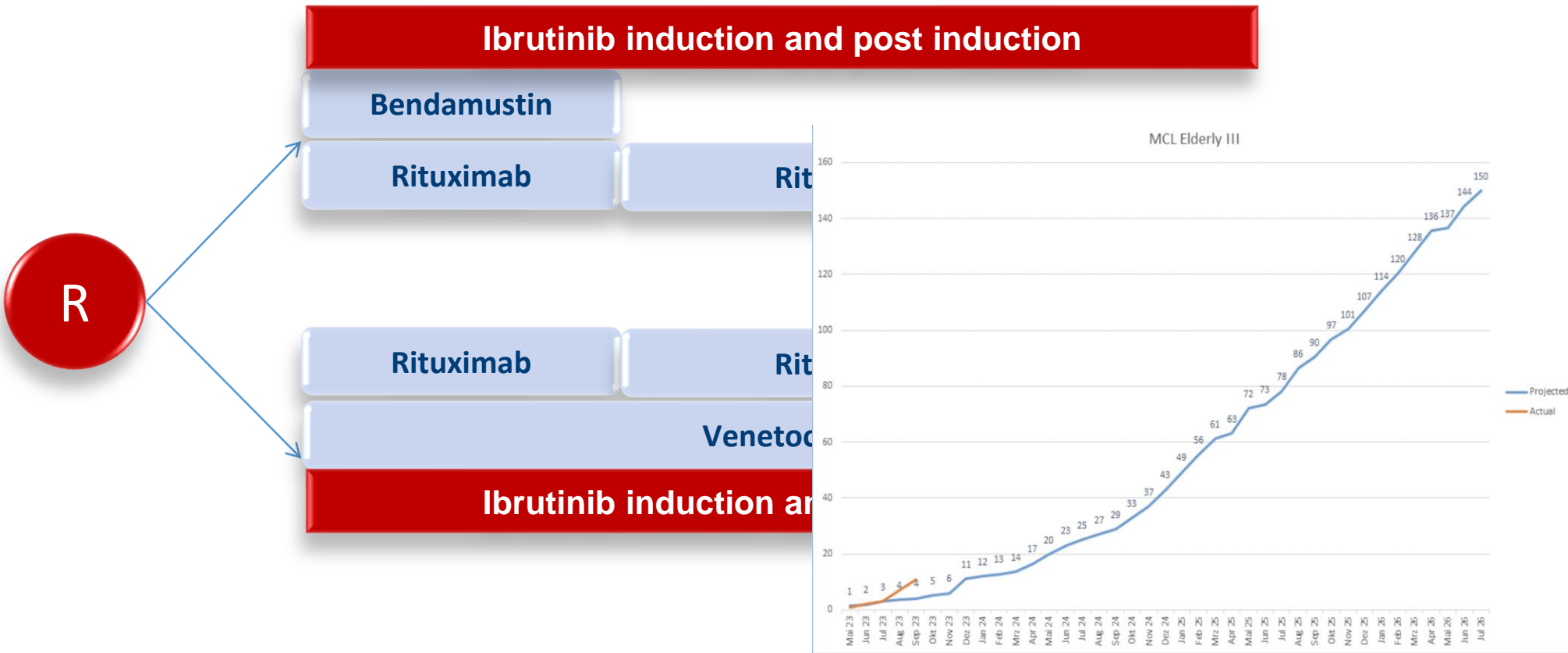
MDA-experience



Key Trials: ENRICH

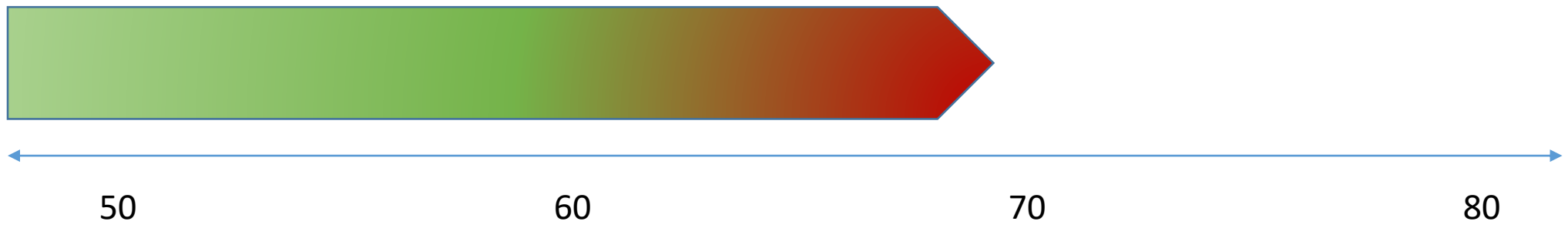


EMCL-elderly 2023: VIRAL – Phase II



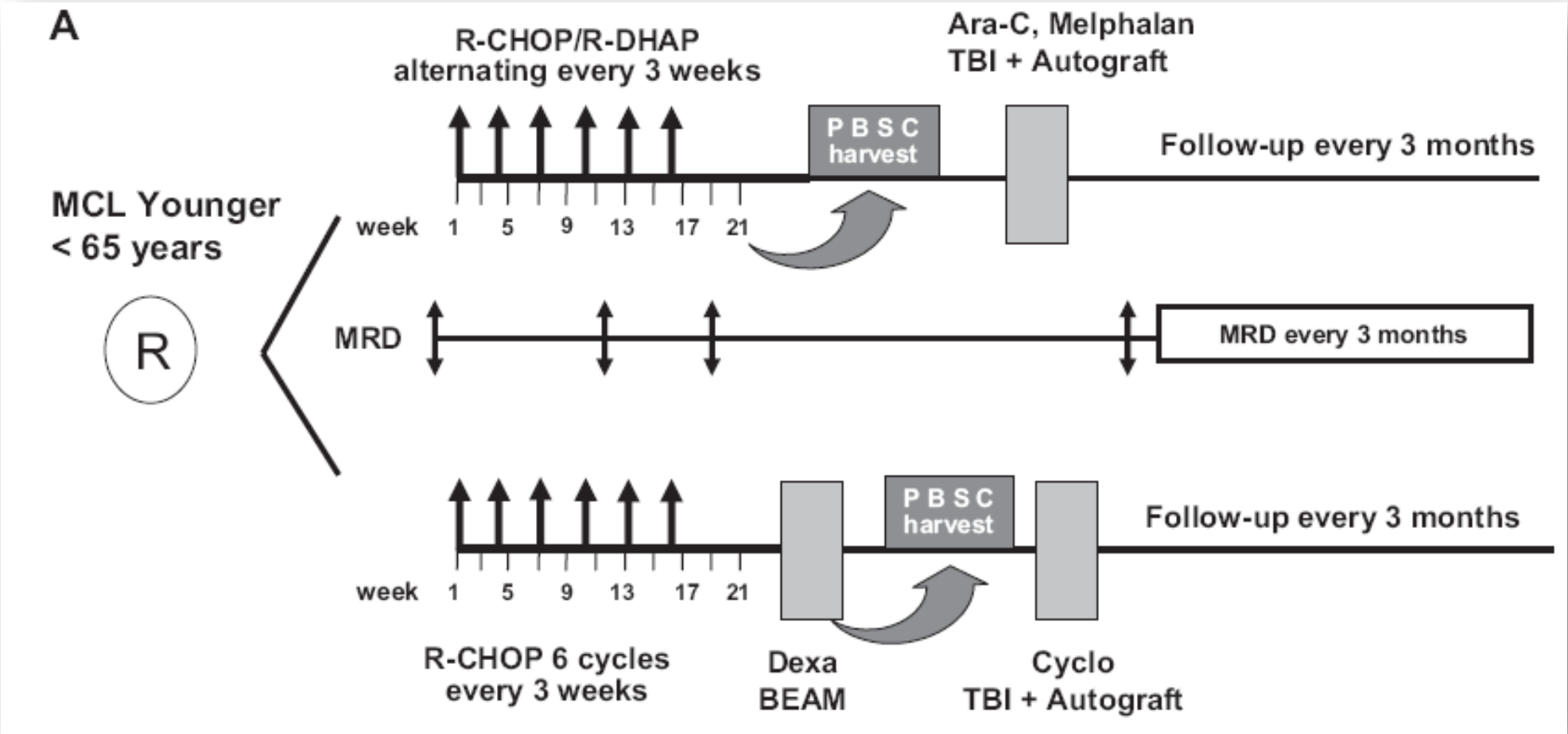
Transplant in | eligible !?!

Intensive treatment



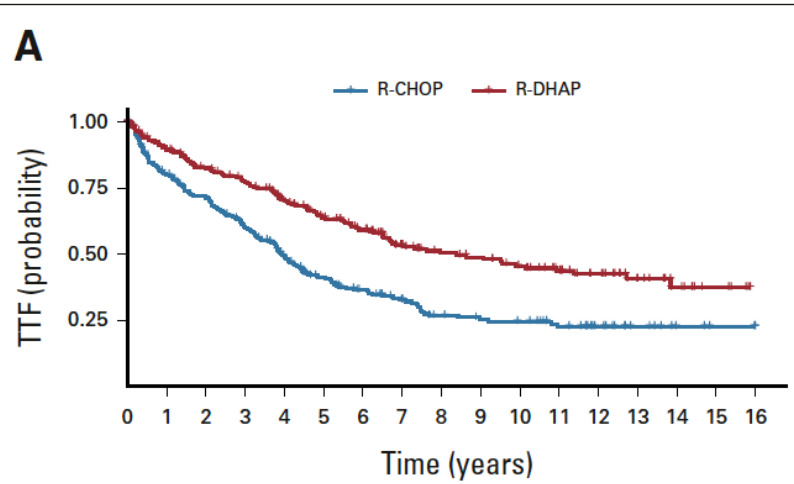
Reduced intensity treatment

Randomized trial of the EMCL-network



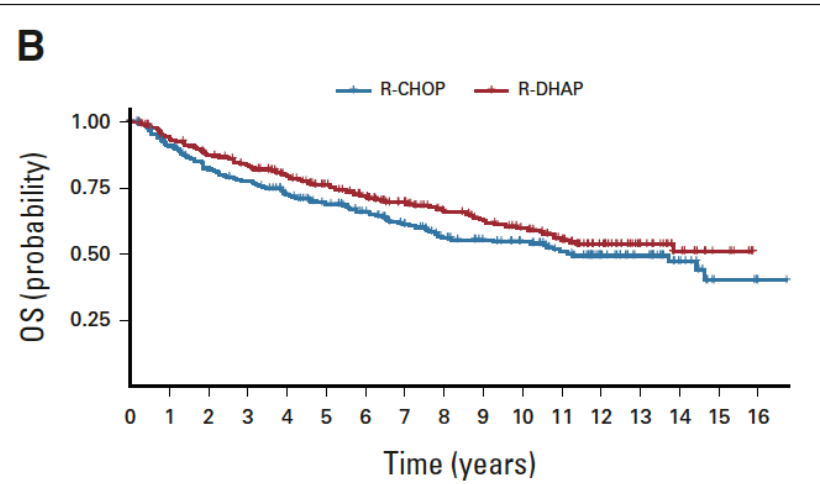
High-Dose Cytarabine and Autologous Stem-Cell Transplantation in Mantle Cell Lymphoma: Long-Term Results of the European Mantle Cell Lymphoma Network Trial

Olivier Hermine, MD, PhD^{1,2}; Linmiao Jiang, MSc³; Jan Walewski, MD, PhD⁴; Michal Szymczyk, MD⁴; Christiane Pott, MD, PhD⁷; Gilles Salles, MD, PhD¹²; René Olivier Casasnovas, MD¹³; Christian Lothar Kanz, MD, PhD¹⁷; Jan Dürig, MD, PhD¹⁸; Bernd Metzner, MD, PhD¹⁹



No. at risk:

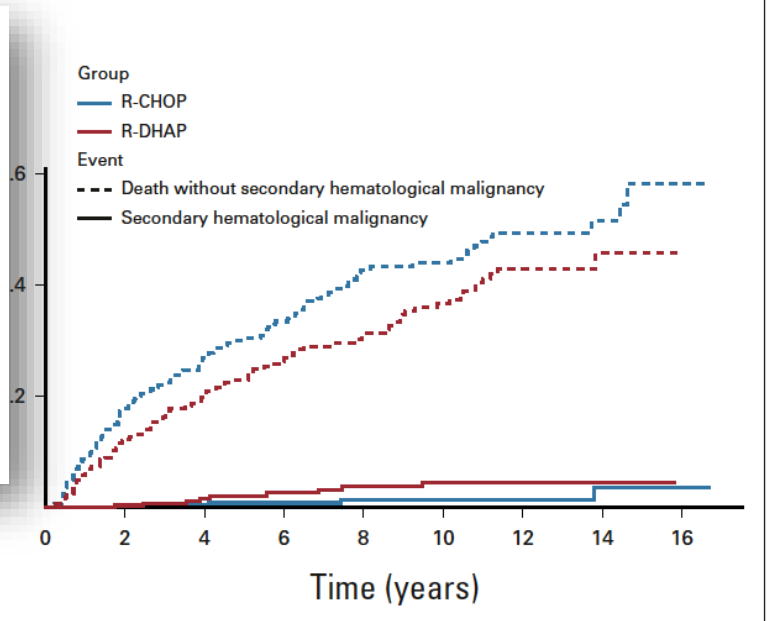
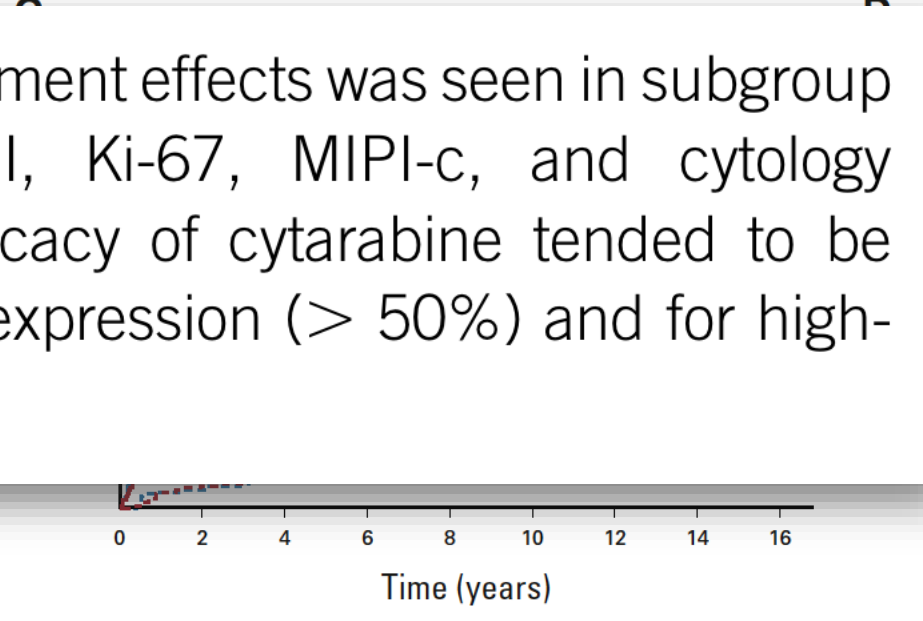
Time (years)	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
R-CHOP	234	178	156	129	100	77	62	50	38	34	32	24	16	9	4	2	1
R-DHAP	232	194	175	160	135	115	100	77	65	61	53	42	32	19	11	5	0



No. at risk:

Time (years)	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
R-CHOP	249	219	194	182	163	145	130	111	94	85	78	64	46	35	19	5	2
R-DHAP	248	227	209	196	174	155	141	121	103	94	85	70	51	31	16	7	0

No heterogeneity of treatment effects was seen in subgroup analyses for sex, MIPI, Ki-67, MIPI-c, and cytology (Data Supplement). Efficacy of cytarabine tended to be stronger with high p53 expression (> 50%) and for high-risk MCL.

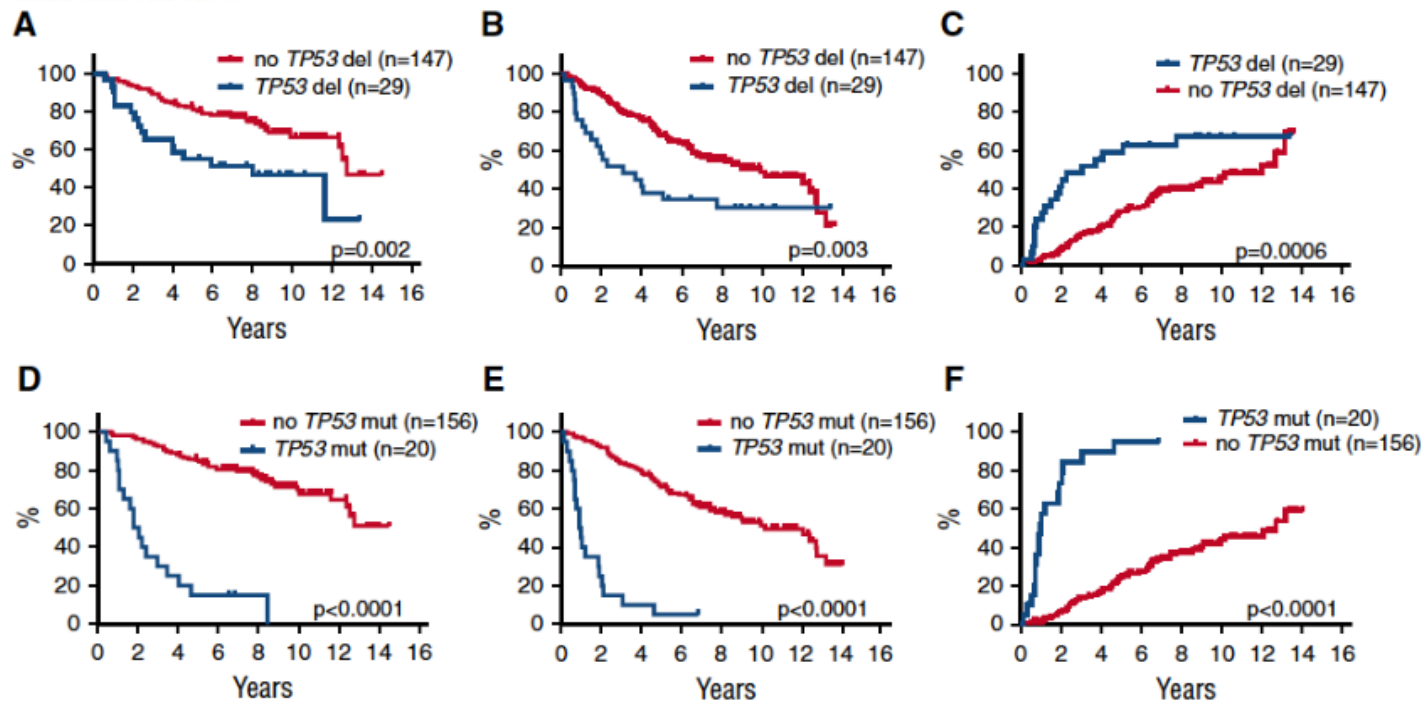


TP53 mutation in HDT-treated patients

LYMPHOID NEOPLASIA

***TP53* mutations identify younger mantle cell lymphoma patients who do not benefit from intensive chemoimmunotherapy**

Christian W. Eskelund,^{1,2} Christina Dahl,³ Jakob W. Hansen,^{1,2} Maj Westman,⁴ Arne Kolstad,⁵ Lone B. Pedersen,¹ Carmen P. Montano-Almendras,^{1,2} Simon Husby,^{1,2} Catja Freiburghaus,⁶ Sara Ek,⁶ Anja Pedersen,^{1,2} Carsten Niemann,¹ Riikka Rätty,⁷ Peter Brown,¹ Christian H. Geisler,¹ Mette K. Andersen,⁴ Per Guldberg,³ Mats Jerkeman,⁸ and Kirsten Grønbaek^{1,2}



Alternative induction treatment

REGULAR ARTICLE

blood advances

Rituximab/bendamustine and rituximab/cytarabine induction therapy for transplant-eligible mantle cell lymphoma

Reid W. Merryman,¹ Natasha Edwin,² Robert Redd,³ Jad Bsai,¹ Matthew Chase,⁴ Ann LaCasce,¹ Arnold Freedman,¹ Caron Jacobson,¹ David Fisher,¹ Samuel Ng,¹ Jennifer Crombie,¹ Austin Kim,¹ Oreofe Odejide,¹ Matthew S. Davids,¹ Jennifer R. Brown,¹ Heather Jacene,⁵ Amanda Cashen,² Nancy L. Bartlett,² Neha Mehta-Shah,² Armin Ghobadi,² Brad Kahl,² Robin Joyce,⁶ Philippe Armand,^{1,*} and Eric Jacobsen^{1,*}

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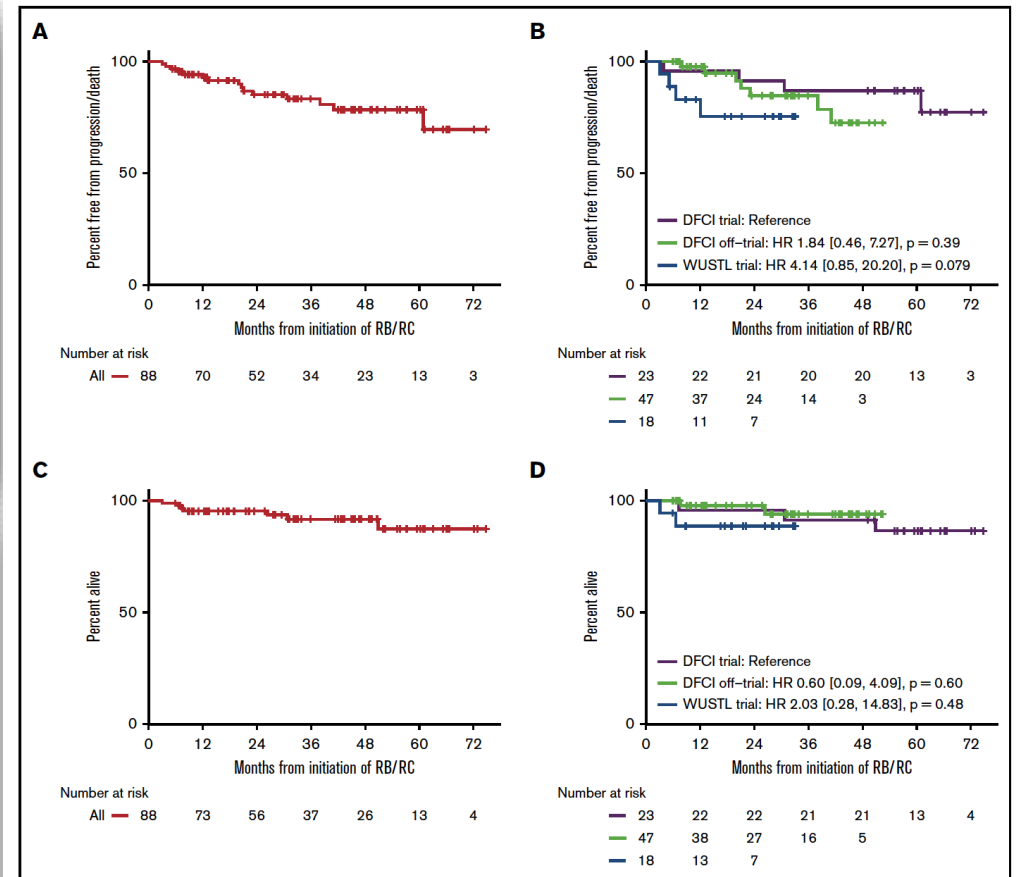
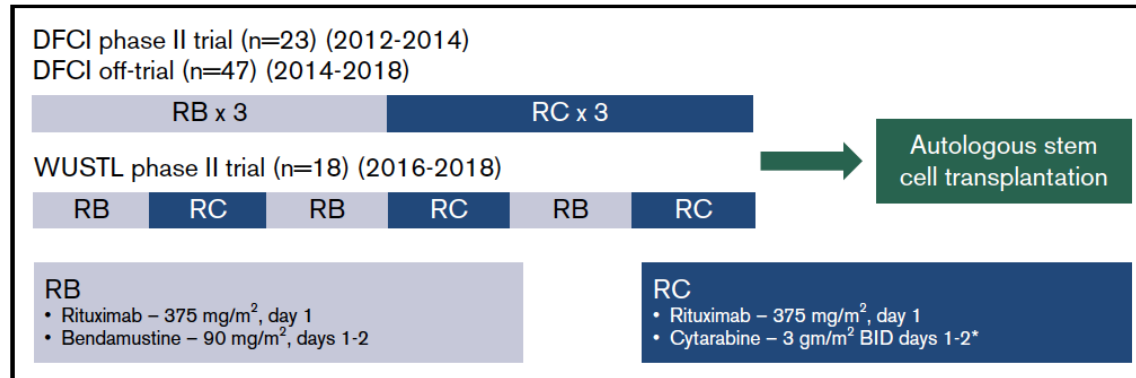
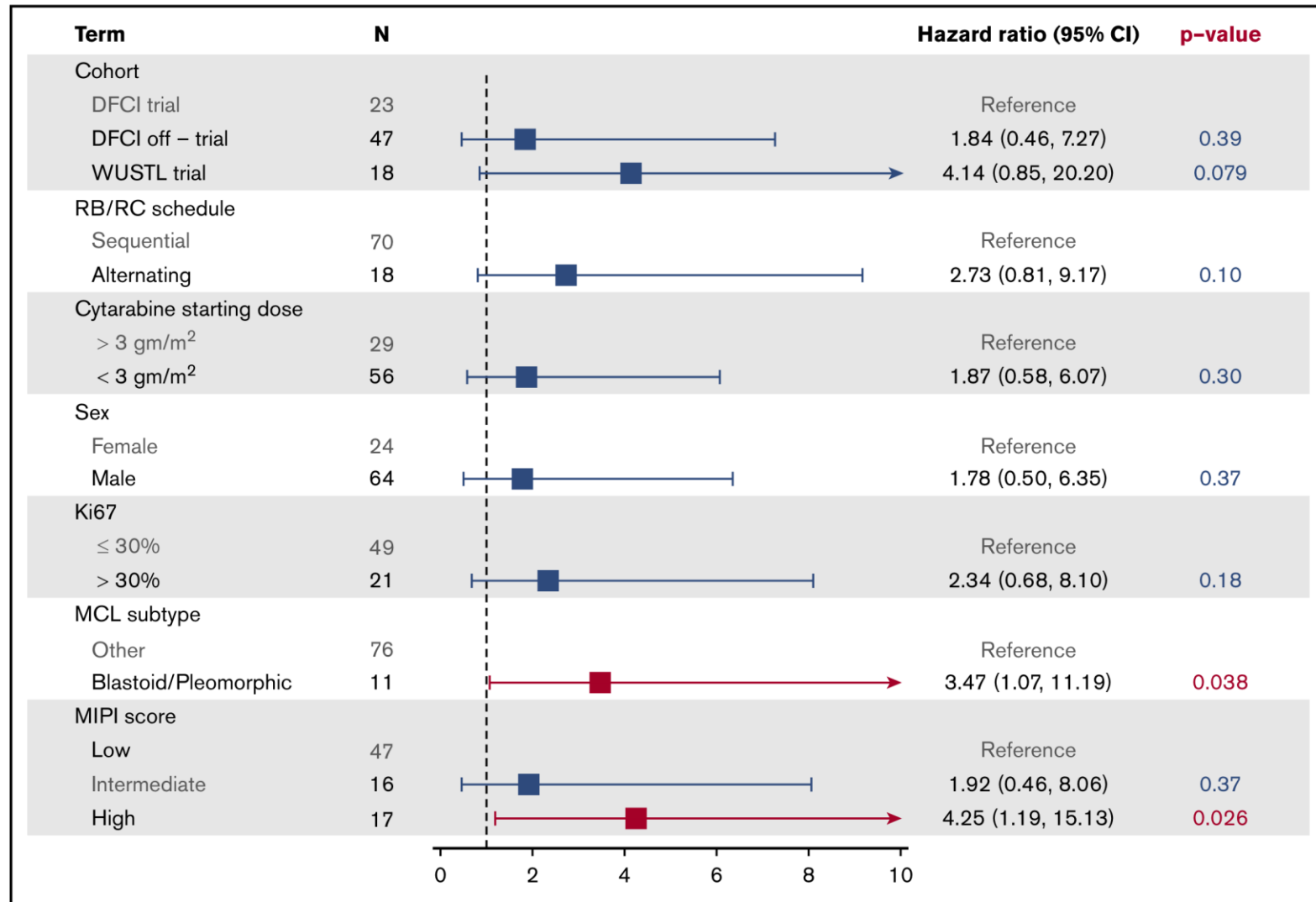


Figure 2. PFS and OS. PFS (A), PFS by cohort (B), OS (C), and OS by cohort (D).

*P.A. and E.J. contributed equally to this study.

The full-text version of this article contains a data supplement.
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Alternative induction treatment



De-escalation for induction treatment

REGULAR ARTICLE

blood advances

Bendamustine or high-dose cytarabine-based induction with rituximab in transplant-eligible mantle cell lymphoma

Diego Villa,^{1,*} Eva Hoster,^{2,*} Olivier Hermine,³ Wolfram Klapper,⁴ Michal Szymczyk,⁵ André Bosly,⁶ Michael Unterhalt,⁷ Lisa M. Rimsza,⁸ Colleen A. Ramsower,⁹ Ciara L. Freeman,⁹ David W. Scott,¹ Alina S. Gerrie,¹ Kerry J. Savage,¹ Laurie H. Sehn,¹ and Martin Dreyling⁷

¹BC Cancer Centre for Lymphoid Cancer and University of British Columbia, Vancouver, BC, Canada; ²Institute for Medical Information Processing, Biometry, and Epidemiology,

Adjusted analyses

R-B vs R-CHOP/R-DHAP	97	232	0.83 (0.51-1.34)	.44	0.84 (0.54-1.31)	.44	0.76 (0.44-1.32)	.33
MIPi continuous			2.02 (1.54-2.64)	<.001	2.08 (1.63-2.66)	<.001	2.54 (1.93-3.34)	<.001
R-B vs R-CHOP/R-DHAP	97	169	0.84 (0.51-1.39)	.50	0.87 (0.55-1.38)	.54	0.83 (0.47-1.48)	.54
Blastoid/pleomorphic vs not			2.06 (1.11-3.81)	.021	2.02 (1.14-3.56)	.015	2.06 (1.06-4.02)	.034
R-B vs R-CHOP/R-DHAP	89	129	0.83 (0.48-1.45)	.51	0.78 (0.47-1.31)	.34	0.63 (0.33-1.19)	.15
Ki67 ≥ 30% vs < 30%			1.93 (1.17-3.17)	.010	2.33 (1.49-3.66)	<.001	2.72 (1.59-4.67)	<.001
R-B vs R-CHOP/R-DHAP	89	169	0.82 (0.47-1.42)	.47	0.81 (0.51-1.28)	.36	0.69 (0.36-1.31)	.26
MIPi continuous			2.33 (1.67-3.25)	<.001	2.08 (1.58-2.74)	<.001	2.88 (2.05-4.05)	<.001
Blastoid/pleomorphic vs not			2.01 (1.04-3.90)	.038	1.88 (1.06-3.32)	.030	2.13 (1.05-4.30)	.036
R-B vs R-CHOP/R-DHAP	89	129	0.76 (0.44-1.32)	.33	0.78 (0.47-1.30)	.33	0.63 (0.33-1.19)	.15
MIPi continuous			2.18 (1.55-3.08)	<.001	2.15 (1.59-2.90)	<.001	2.53 (1.78-3.60)	<.001
Ki67 ≥ 30% vs < 30%			1.46 (0.86-2.48)	.16	1.91 (1.20-3.04)	.006	1.95 (1.08-3.51)	.026
R-B vs R-CHOP/R-DHAP	89	114	0.81 (0.47-1.42)	.47	0.76 (0.45-1.28)	.30	0.63 (0.33-1.21)	.16
Ki67 ≥ 30% vs < 30%			1.73 (1.04-2.89)	.035	2.09 (1.32-3.32)	.002	2.51 (1.43-4.42)	.001
Blastoid/pleomorphic vs not			2.01 (1.04-3.89)	.039	1.92 (1.05-3.52)	.035	2.05 (1.02-4.13)	.045
R-B vs R-CHOP/R-DHAP	89	114	0.79 (0.45-1.37)	.40	0.75 (0.45-1.25)	.27	0.65 (0.34-1.24)	.19
MIPi continuous			2.17 (1.53-3.07)	<.001	2.14 (1.57-2.93)	<.001	2.52 (1.76-3.60)	<.001
Ki67 ≥ 30% vs < 30%			1.38 (0.81-2.36)	.24	1.67 (1.03-2.71)	.037	1.82 (1.0-3.31)	.050
Blastoid/pleomorphic vs not			1.90 (0.98-3.71)	.058	1.81 (0.98-3.34)	.057	1.89 (0.93-3.84)	.080

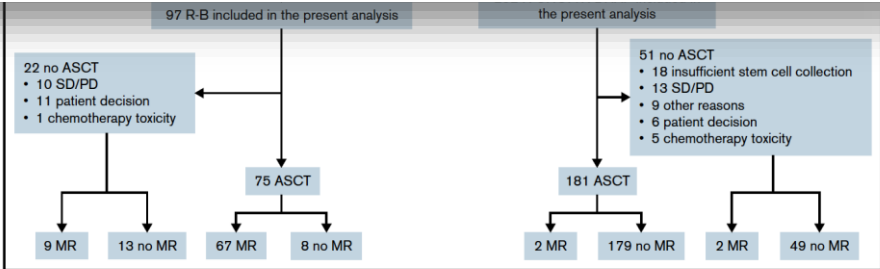


Figure 1. Patient identification.

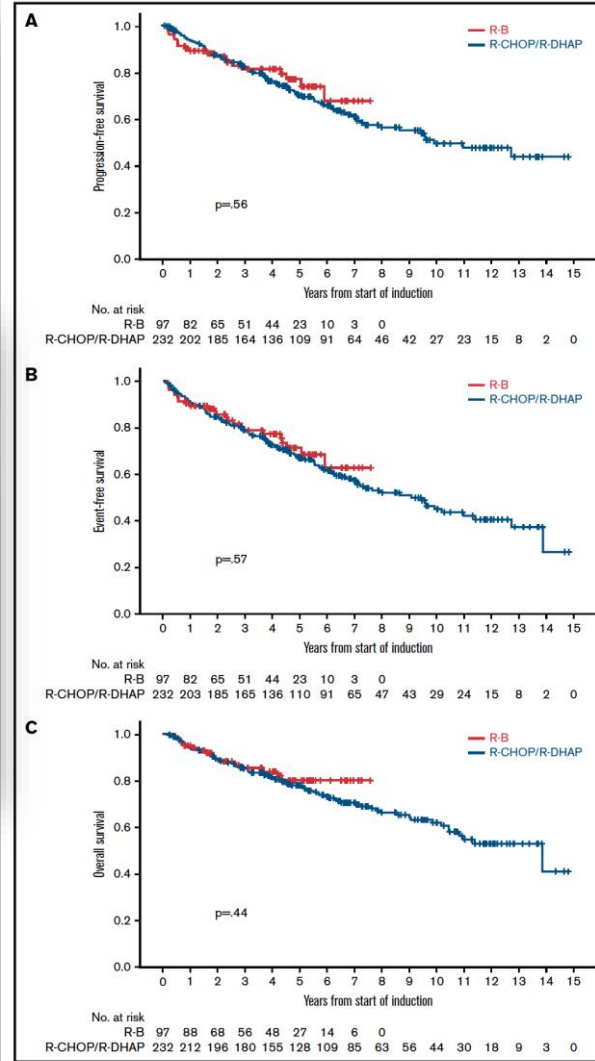


Figure 2. Crude outcome comparisons between R-B and R-CHOP/R-DHAP. (A) PFS. (B) EFS. (C) OS.

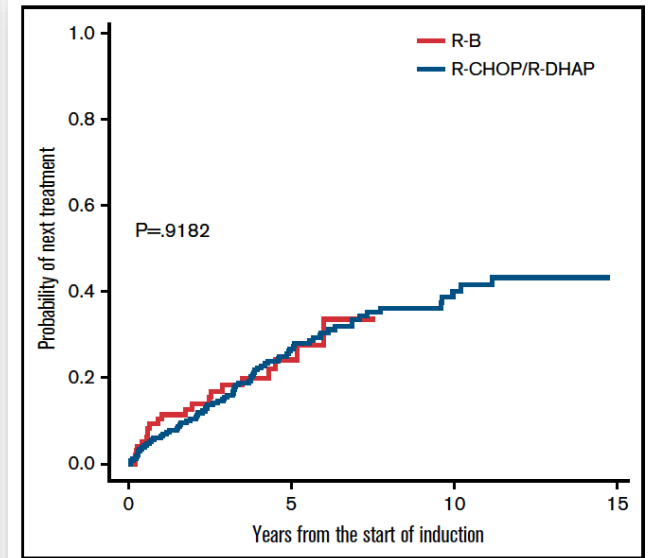


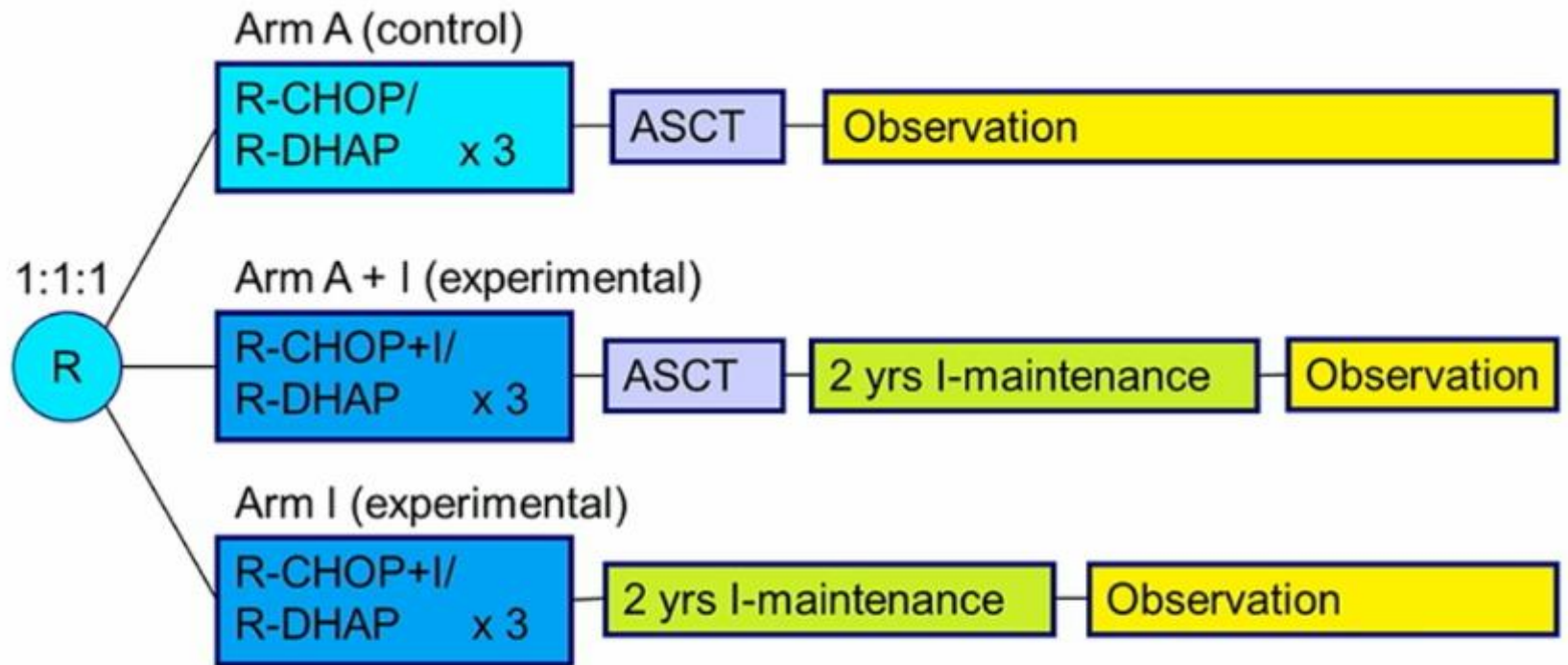
Figure 3. Time to next treatment comparisons between R-B and R-CHOP/R-DHAP.

TRIANGLE: study design

- MCL patients
- previously untreated
- stage II-IV
- younger than 66 years
- suitable for HA and ASCT
- ECOG 0-2

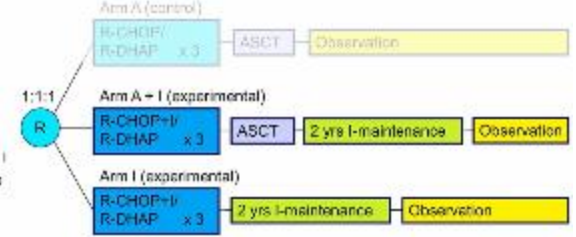
- Primary outcome:
 - FFS

- Secondary outcomes:
 - Response rates
 - PFS, RD
 - OS
 - Safety

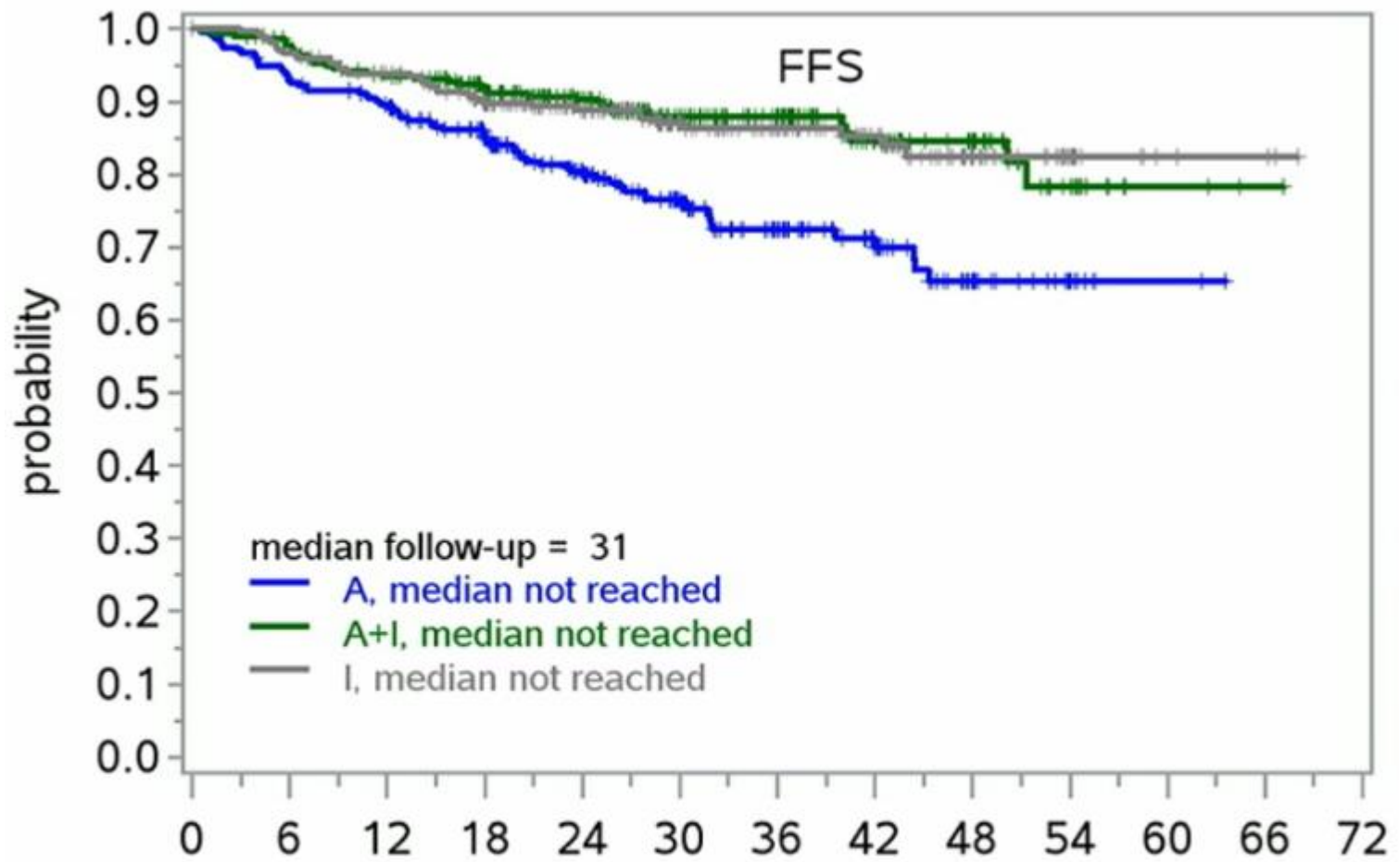


- R maintenance was added following national guidelines in all 3 trial arms
- Rituximab maintenance (without or with Ibrutinib) was started in 168 (58 %)/165 (57 %)/158 (54 %) of A/A+I/I randomized patients.

Triangle: A+I vs I



- Test 3: FFS Superiority of A+I vs I
- 90% power to detect HR of 0.60
- one-sided alpha 0.016665



median follow-up = 31

- A, median not reached
- A+I, median not reached
- I, median not reached

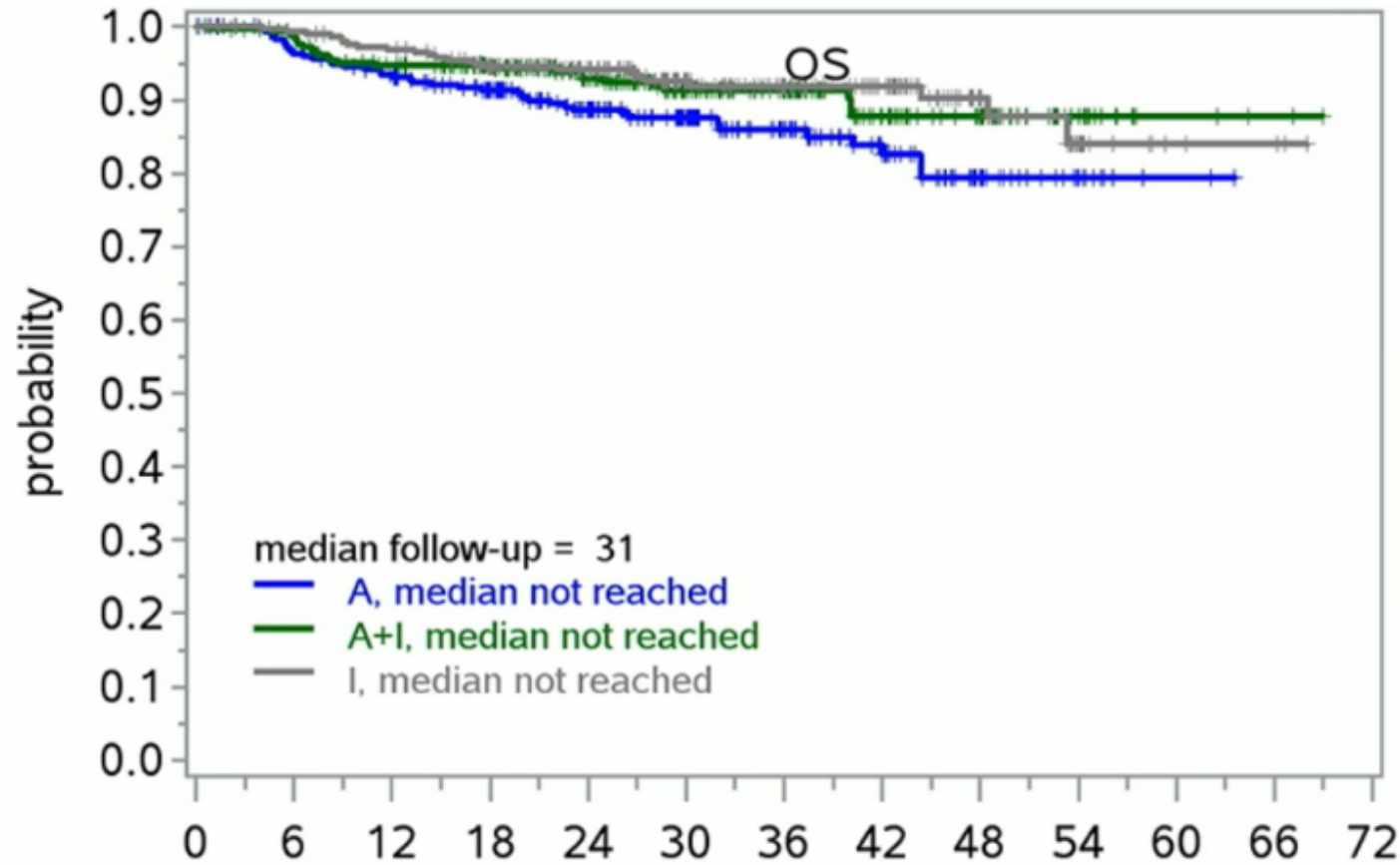
■ Test A+I vs. I ongoing, no decision yet

Next lymphoma treatment (among patients with first treatment failure)	A (n=68)		A+I (n=35)		I (n=37)	
Treatment with Ibrutinib	34	79%	4	24%	3	11%
Treatment without Ibrutinib	9	21%	13	76%	24	89%
No treatment	25		18		10	

Numbers At Risk	months from randomisation												
	0	6	12	18	24	30	36	42	48	54	60	66	72
A	288	252	237	206	162	126	85	54	27	12	2	0	
A+I	292	270	253	226	184	137	109	65	40	17	3	1	
I	290	269	257	229	180	133	100	68	34	16	4	3	

A arm: R-CHOP/R-DHAP+ASCT; A+I arm: IR-CHOP/R-DHAP+ASCT+I; I arm: IR-CHOP/R-DHAP+I. I: ibrutinib

Triangle: overall survival



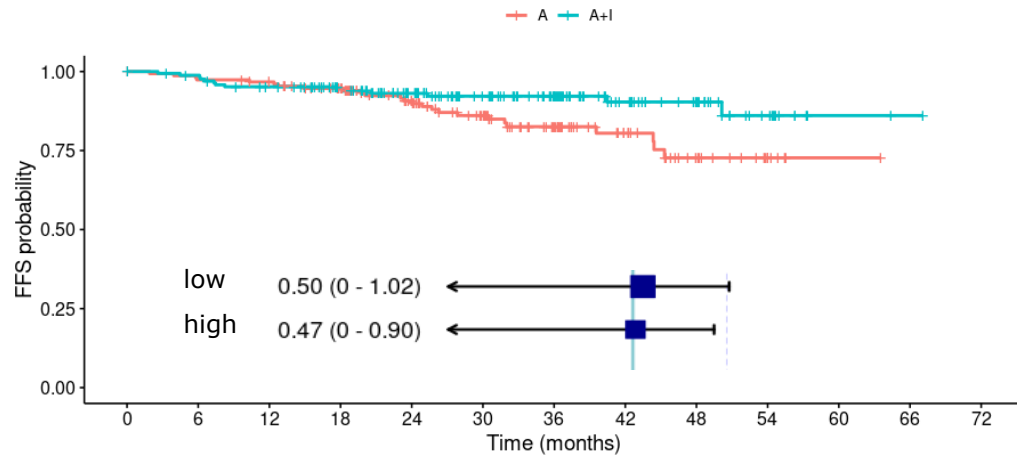
- 3-year OS:
 - A: 86% (MCL Younger exp.: 84%)
 - A+I: 91%
 - I: 92%
- Too early to evaluate statistical significance

	Numbers At Risk												
	months from randomisation												
	0	6	12	18	24	30	36	42	48	54	60	66	72
A	288	270	256	230	181	145	97	63	32	15	2	0	
A+I	292	280	262	238	195	142	113	67	42	19	4	2	
I	290	281	272	248	197	145	109	77	38	16	4	3	

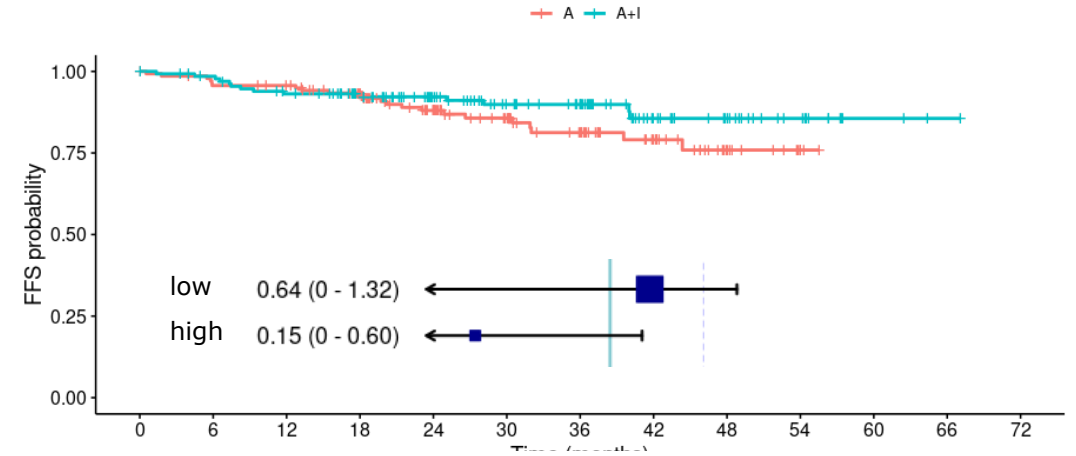


TRIANGLE: FFS Superiority of A+I vs. A

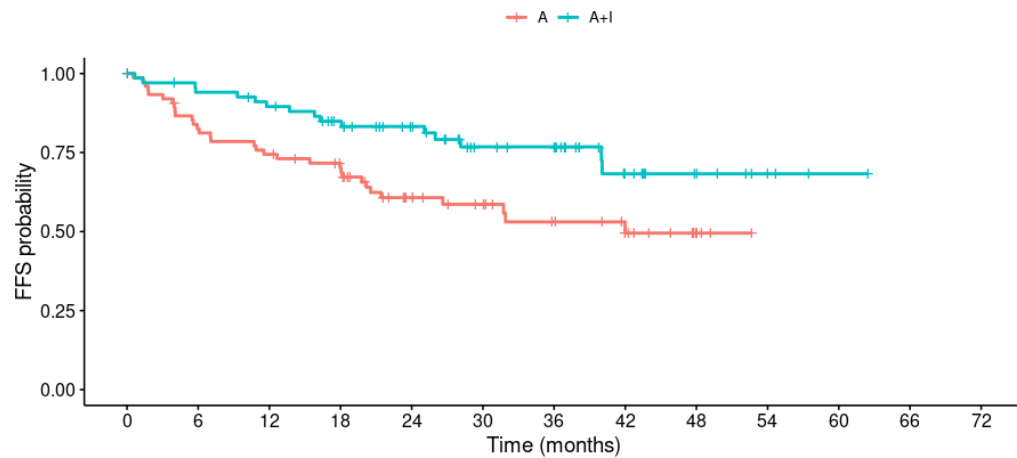
Ki-67: Low (<30%)



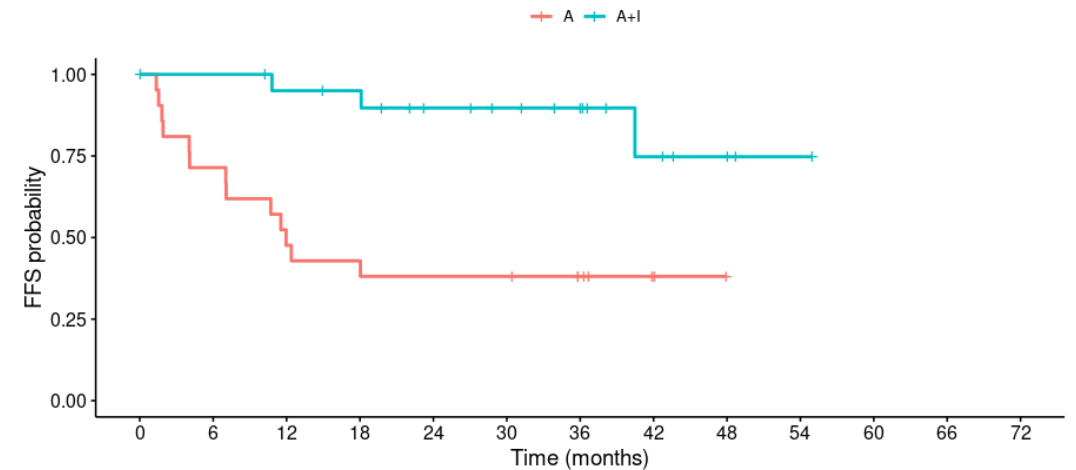
p53: Low (<=50%)



Ki-67: High (>=30%)



p53: High (>50%)



Number at risk

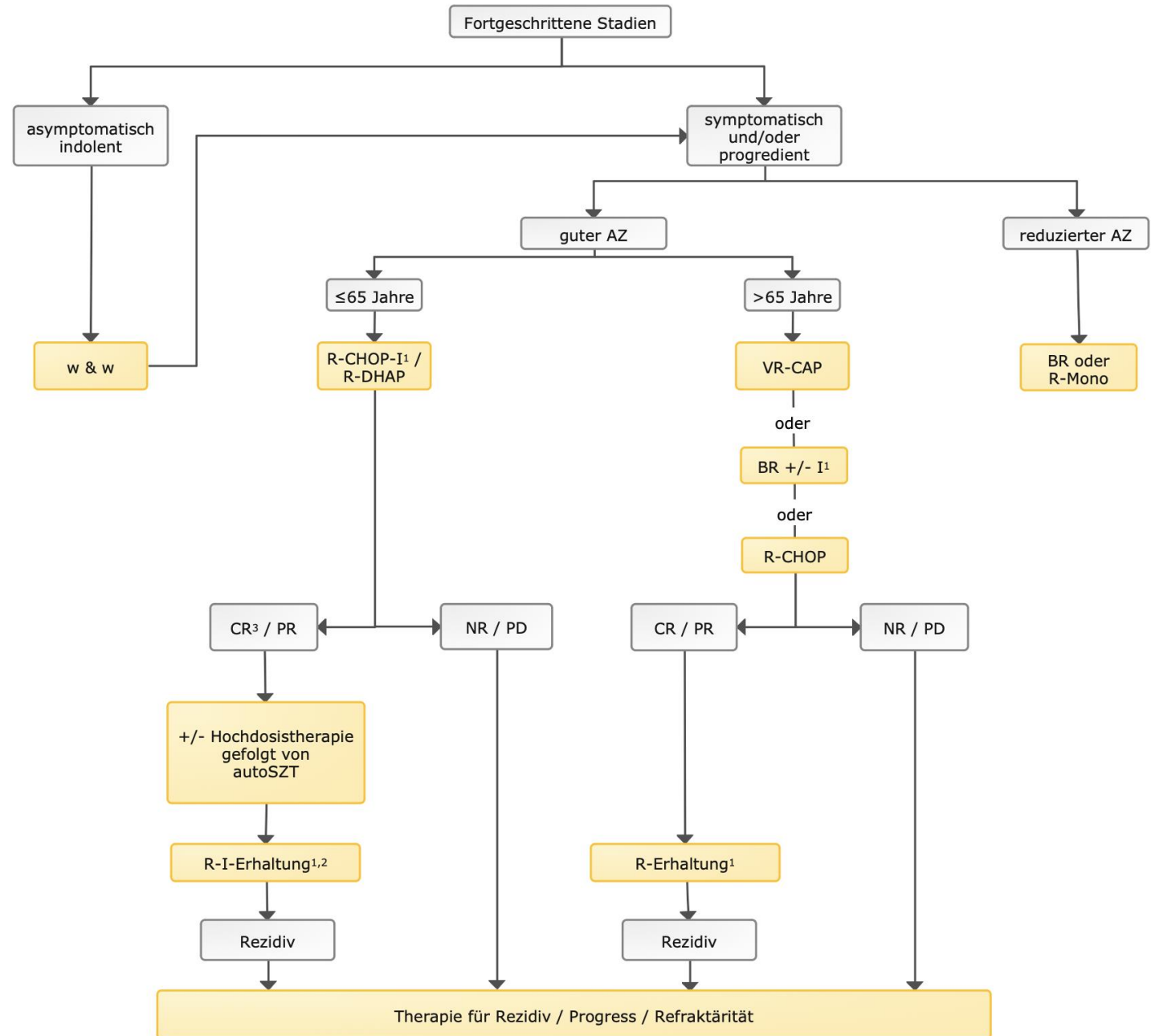
A	77	61	55	48	32	26	18	12	4	0	0	0	0
A+I	73	63	59	51	42	30	27	14	8	4	1	0	0
	0	6	12	18	24	30	36	42	48	54	60	66	72

Number at risk

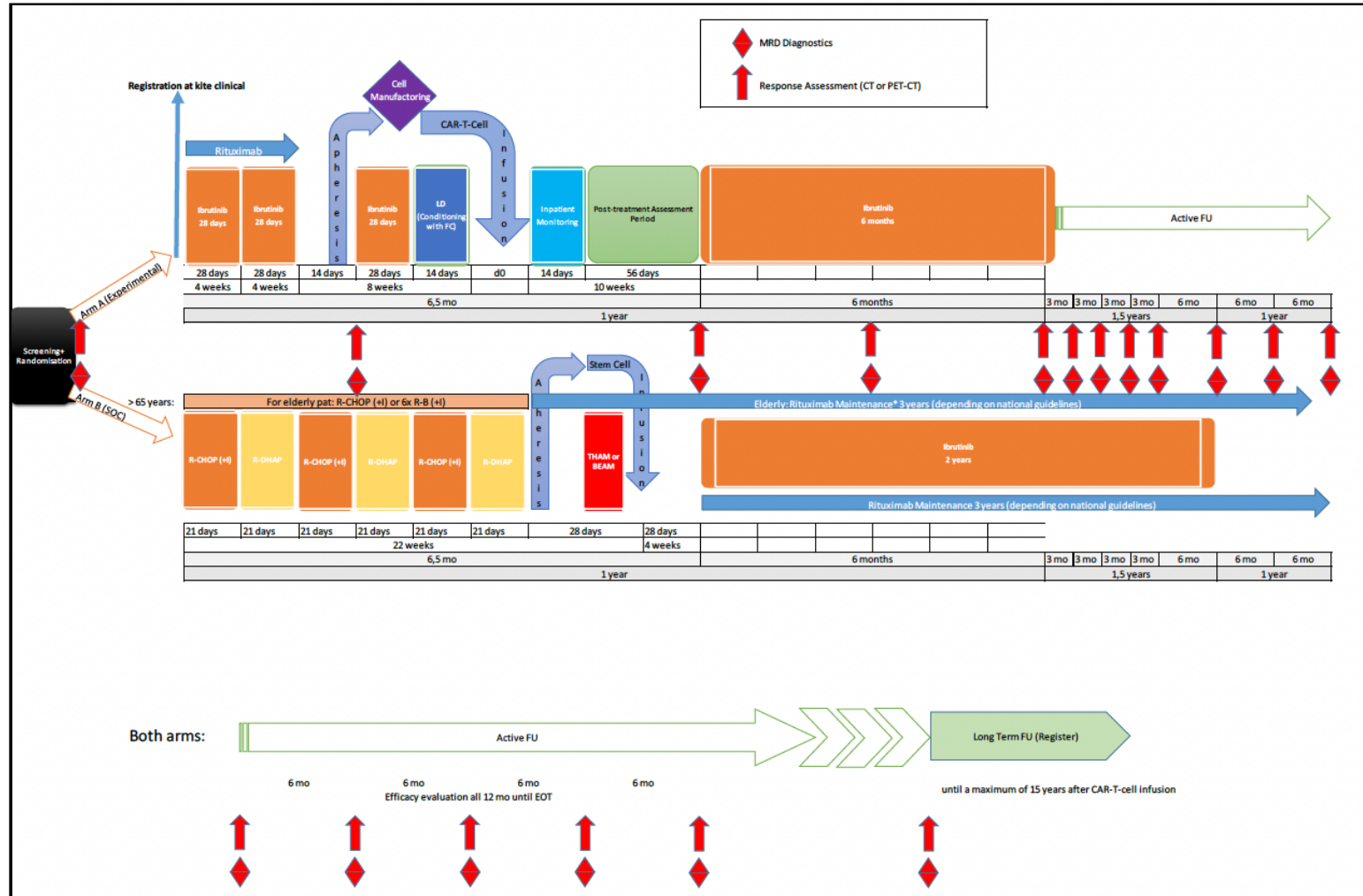
A	21	15	10	9	8	8	5	2	0	0	0	0	0
A+I	23	21	19	18	14	12	9	5	3	1	0	0	0
	0	6	12	18	24	30	36	42	48	54	60	66	72

A arm: R-CHOP/R-DHAP+ASCT; A+I arm: IR-CHOP/R-DHAP+ASCT+I

Today age still dominates treatment recommendation



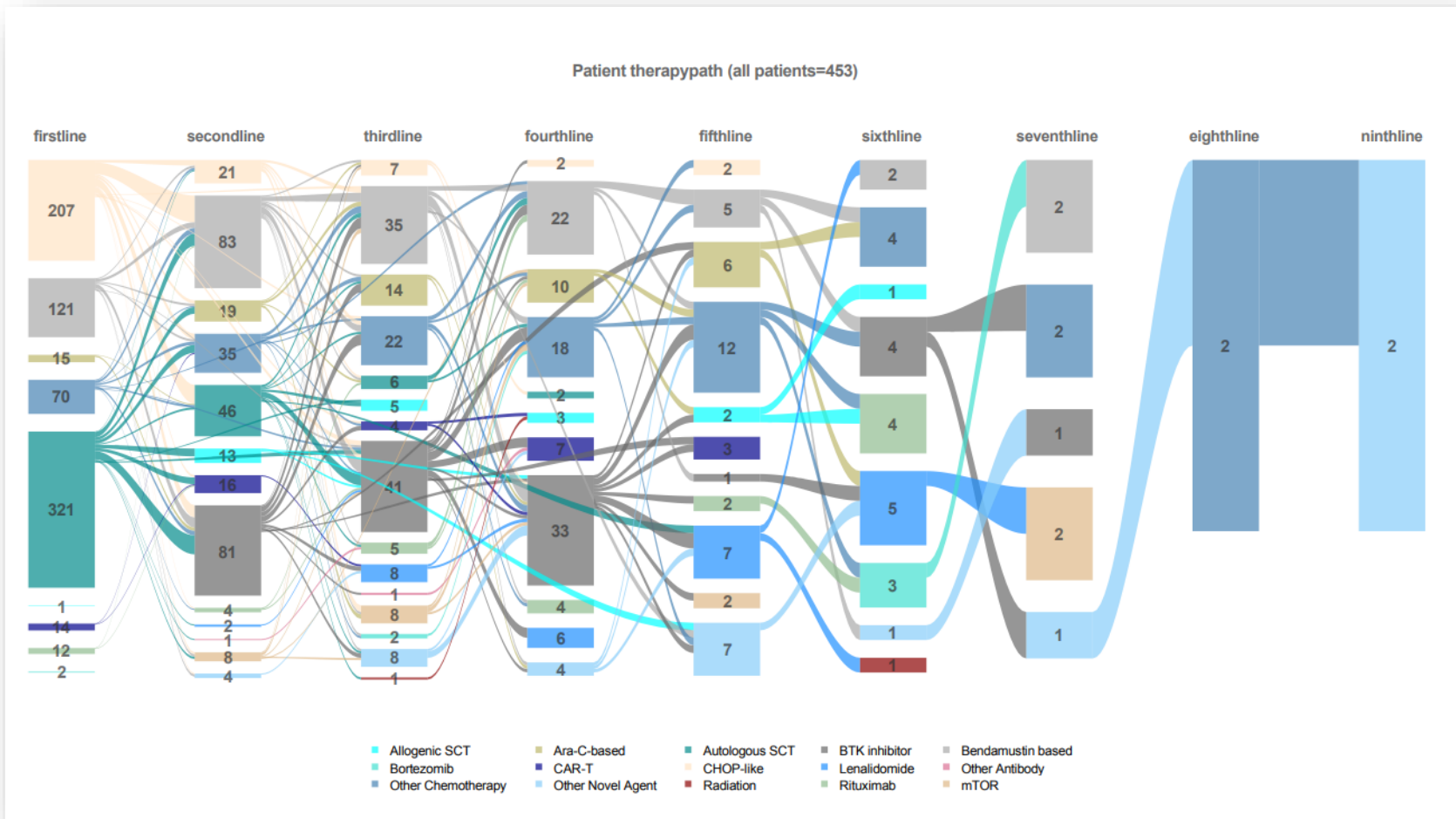
EMCL-Trial strategy for HighRisk CAR-T in firstline



Summary

- Mantle Cell Lymphoma prognosis has improved over the recent years
 - Introduction of ARA-C, Rm and in the past HDT
 - Introduction of BTK in relapse and now firstline, at least for younger patients
- High risk definition
 - Still can not be used for treatment recommendation in every patient
 - In younger: TRIANGLE like treatment would be the primary choice
 - In elderly patients optimal treatment yet to be defined
 - Waiting especially for results of ENRICH, OASIS, VIRAL
 - Incorporation of new approaches (CAR's, Bispecs etc) highly attractive.

Understand treatment pathways



> 1500 patients included
 10 countries open
 Open for cooperation / collaboration
 → www.emcl-register.net

Thank you | Discussion

