



Evolving Frontline Immunochemotherapy for Mantle Cell Lymphoma and the Impact on Survival Outcomes

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Background

- The frontline treatment landscape for mantle cell lymphoma (MCL) has evolved over the past two decades.
- There has been increasing use of rituximab and high dose cytarabine (HiDAC)-containing induction regimens in young, fit, transplant-eligible patients and bendamustine-rituximab (R-Benda) in elderly, unfit, or transplant-ineligible patients in the recent decade.
- In this study, we sought to characterize the changes in frontline treatment and to explore the association of pattern of care with outcomes in MCL patients.

Methods

- Patients with newly diagnosed MCL between 9/2002 and 6/2015 were identified from the prospective Molecular Epidemiology Resource (MER) cohort study of the University of Iowa/Mayo Clinic Lymphoma SPORE.
- The R-Benda regimen was adopted in 2010 at our institutions; therefore, 9/2002-12/2009 was defined as Era 1 and 1/2010-6/2015 was defined as Era 2.
- Baseline clinical characteristics and treatment categories between the two eras were compared using Chi-square test and ANOVA.
- Event-free survival (EFS) and overall survival (OS) were analyzed using Kaplan-Meier method.
- Statistical analyses were performed using R (version 4.0.3). A *P* value < 0.05 was considered statistically significant.

Table 1. Baseline clinical characteristics of MCL

	Total (N=343)	Era 1 (N=175)	Era 2 (N=168)	P value
Sex				0.64
Female	78 (22.7%)	38 (21.7%)	40 (23.8%)	
Male	265 (77.3%)	137 (78.3%)	128 (76.2%)	
Age				
Median (range)	64 (32-96)	64 (41-95)	64 (32-96)	0.77
≤65	184 (53.6%)	93 (53.1%)	91 (54.2%)	0.85
>65	159 (46.4%)	82 (46.9%)	77 (45.8%)	
Simplified MIPI				0.44
Low (0-3)	79 (27.6%)	44 (30.6%)	35 (24.6%)	
Intermediate (4-5)	105 (36.7%)	53 (36.8%)	52 (36.6%)	
High (6-12)	102 (35.7%)	47 (32.6%)	55 (38.7%)	
Missing	57	31	26	

Table 2. Frontline treatment pattern of MCL

	Age ≤65 (n=184)			Age >65 (n=159)		
	Era 1 (n=93)	Era 2 (n=91)	P value	Era 1 (n=82)	Era 2 (n=77)	P value
Frontline treatment			<0.001			<0.001
R-HyperCVAD	15 (16.1%)	8 (8.8%)		2 (2.4%)	0 (0.0%)	
Nordic regimen or R-CHOP/R-DHAP	1 (1.1%)	24 (26.4%)		0 (0.0%)	2 (2.6%)	
R-CHOP or R-CHOP-like	60 (64.5%)	32 (35.2%)		32 (39.0%)	11 (14.3%)	
R-Benda	0 (0.0%)	11 (12.1%)		0 (0.0%)	38 (49.4%)	
Non-standard systemic therapy (R-2CdA, R-FCM, R only, or Chemo without R)	8 (8.6%)	3 (3.3%)		30 (36.6%)	10 (13.0%)	
Non-systemic treatment (Surgery, RT, or observation only)	9 (9.7%)	13 (14.3%)		18 (22.0%)	16 (20.8%)	
ASCT consolidation			0.987			1.000
Yes	42 (45.2%)	40 (44.0%)		6 (7.3%)	5 (6.5%)	
No	51 (54.8%)	51 (56.0%)		76 (92.7%)	7 (93.5%)	
Rituximab maintenance			0.736			0.533
Yes	5 (5.4%)	7 (7.7%)		9 (11.0%)	12 (15.6%)	
No	88 (94.6%)	84 (92.3%)		73 (89.0%)	65 (84.4%)	

Figure 1. EFS and OS by era in all patients

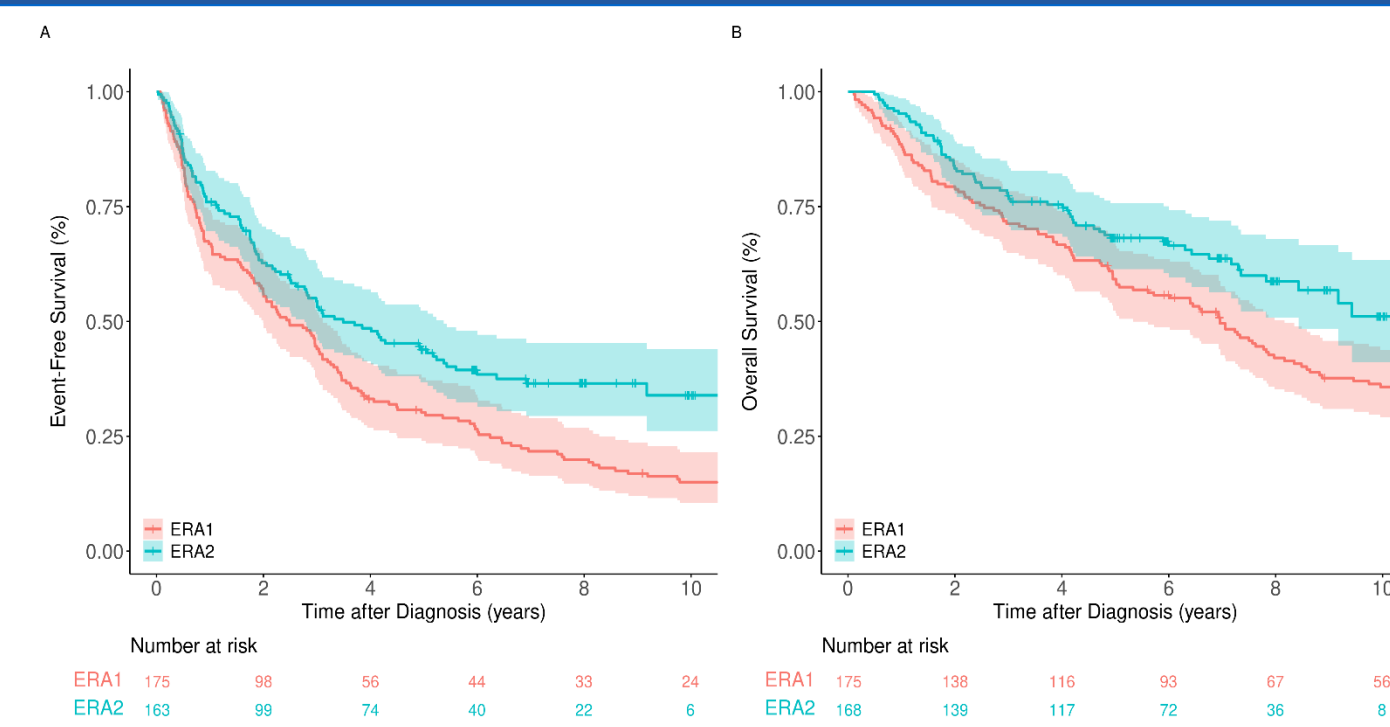


Figure 2. EFS and OS by era in patients age ≤65

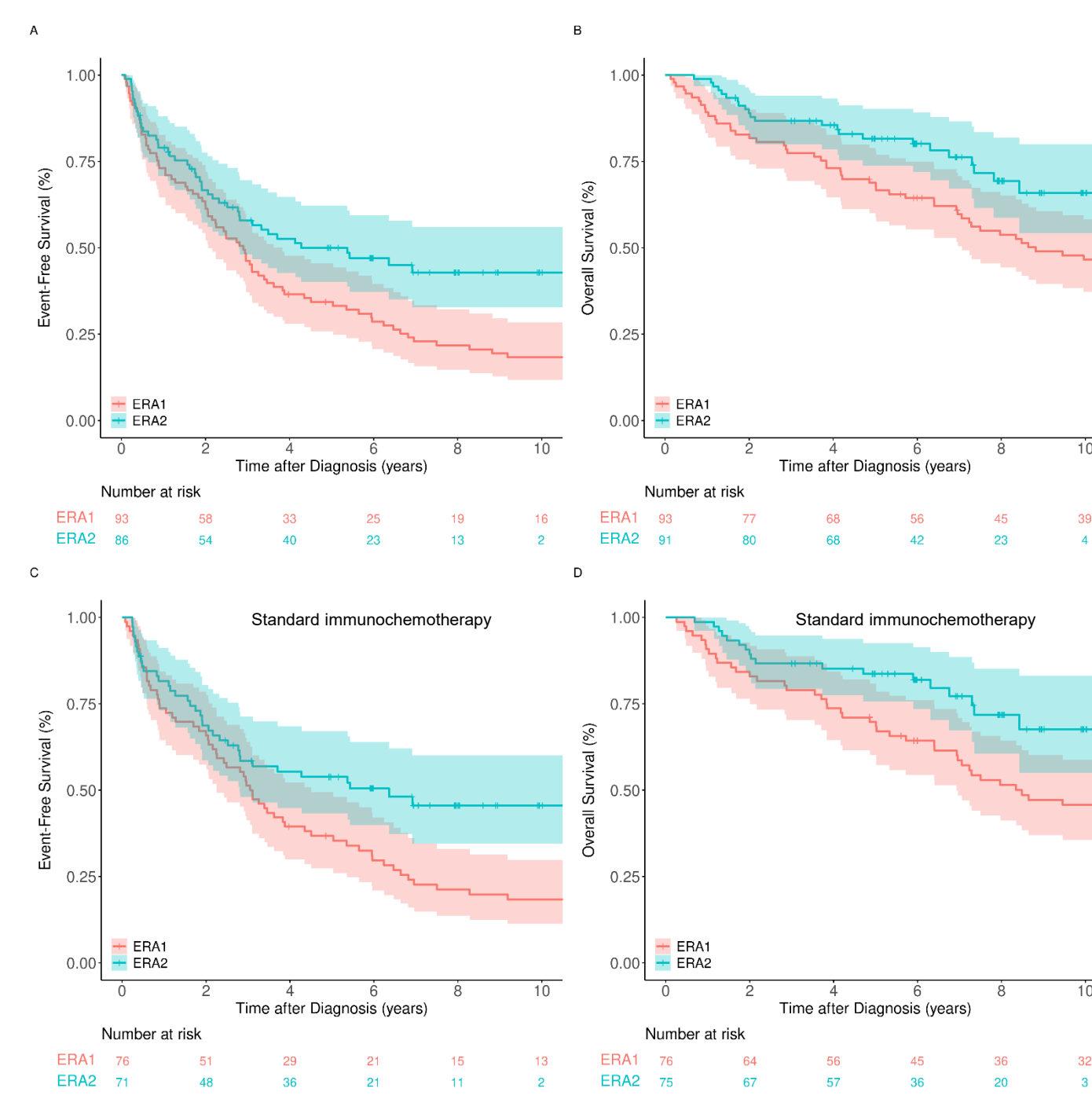
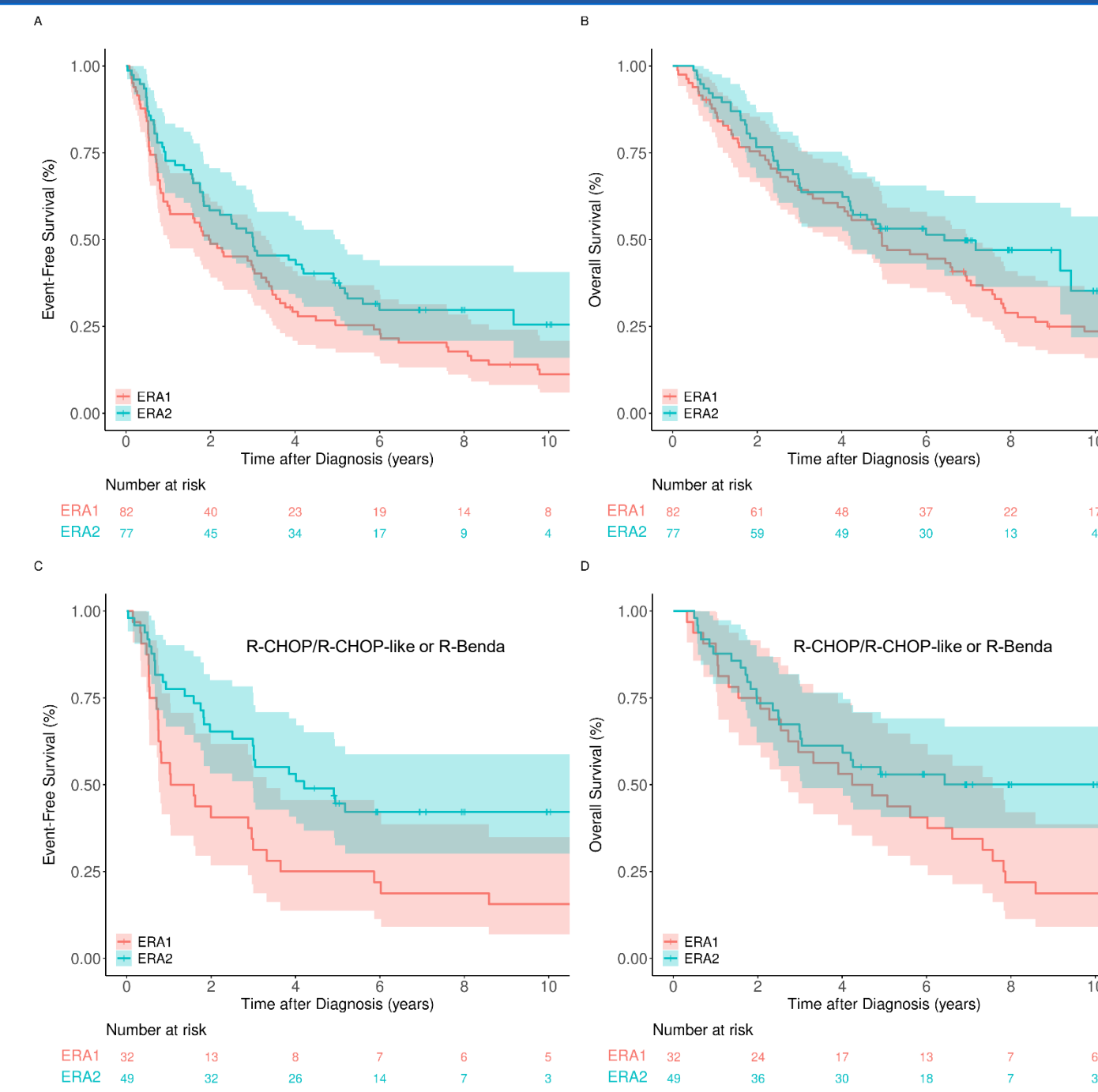


Figure 3. EFS and OS by era in patients age >65



Conclusions

- Evolving changes in frontline treatment for MCL were seen in both younger (less R-HyperCVAD and R-CHOP/R-CHOP-like induction, more Nordic regimen and R-CHOP/R-DHAP) and older patients (less R-CHOP/R-CHOP-like and more R-Benda).
- EFS and OS were improved over time (i.e., better in Era 2 vs Era 1).
- Change in induction regimens was associated with improved EFS and OS in younger patients.
- A shift from R-CHOP/R-CHOP-like regimen to R-Benda improved EFS in older patients.