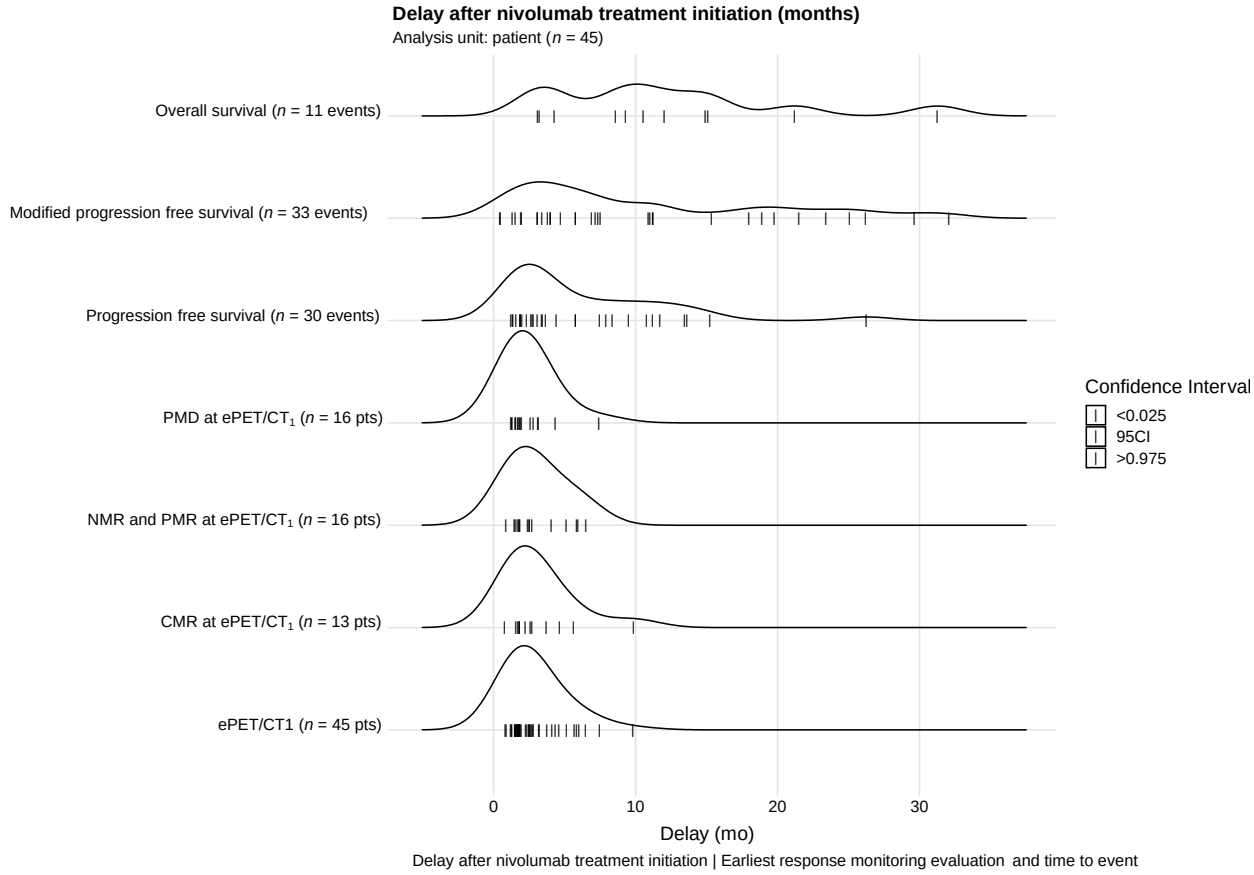
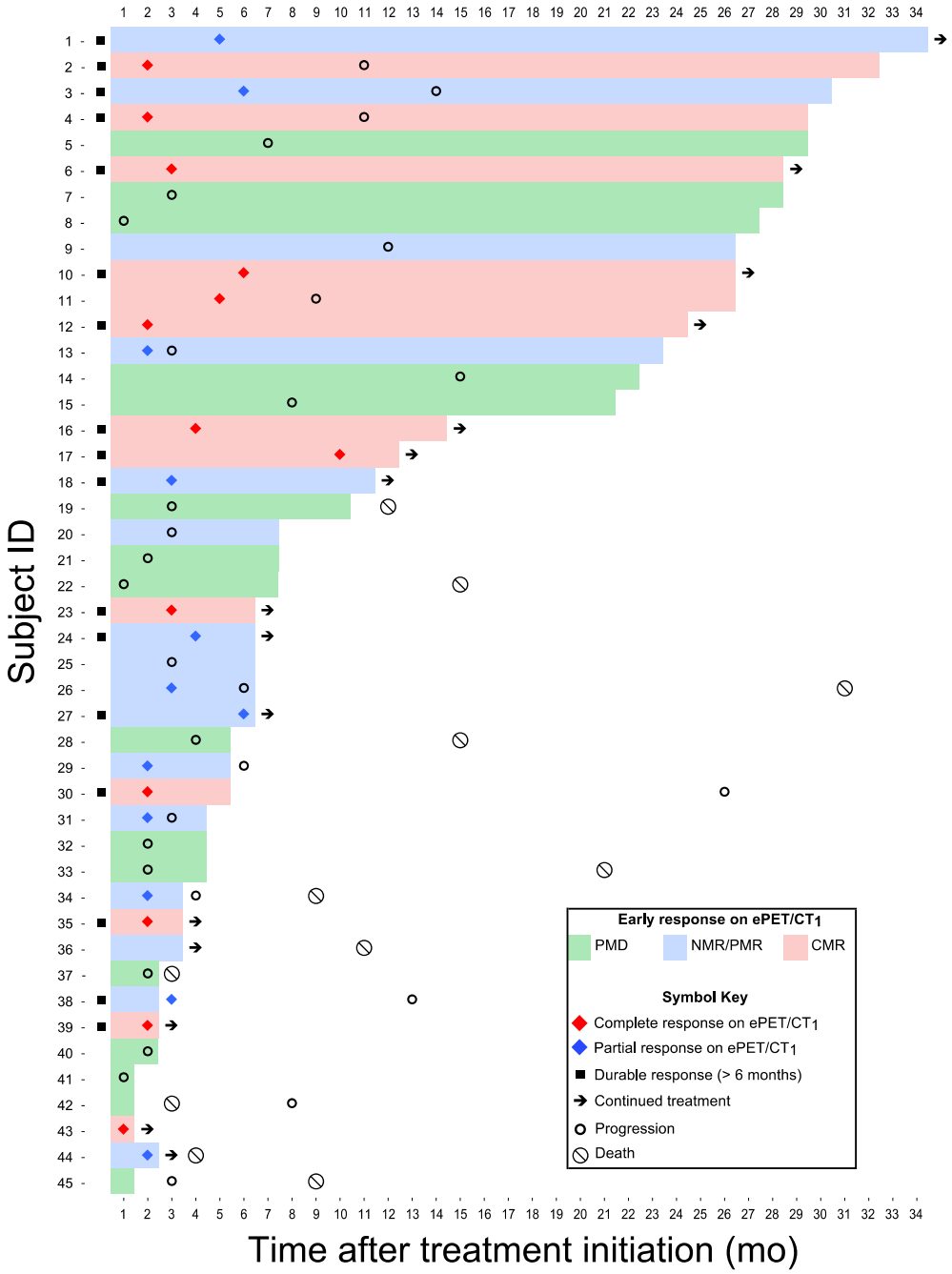
Supplemental Fig. 1. Distribution of ePET/CT$_1$ acquisition time, and events (PFS, mPFS, OS)

Partially overlapping line plots visualizing distributions over time in months of ePET/CT$_1$ evaluation, time to progression and time to death. Density curves represent the distribution for each category: PMD, NMR/PMR, CMR, and overall. The tails of the distributions are highlighted to represent the 95% confidence interval. Each time points are shown below each density curve using vertical lines.

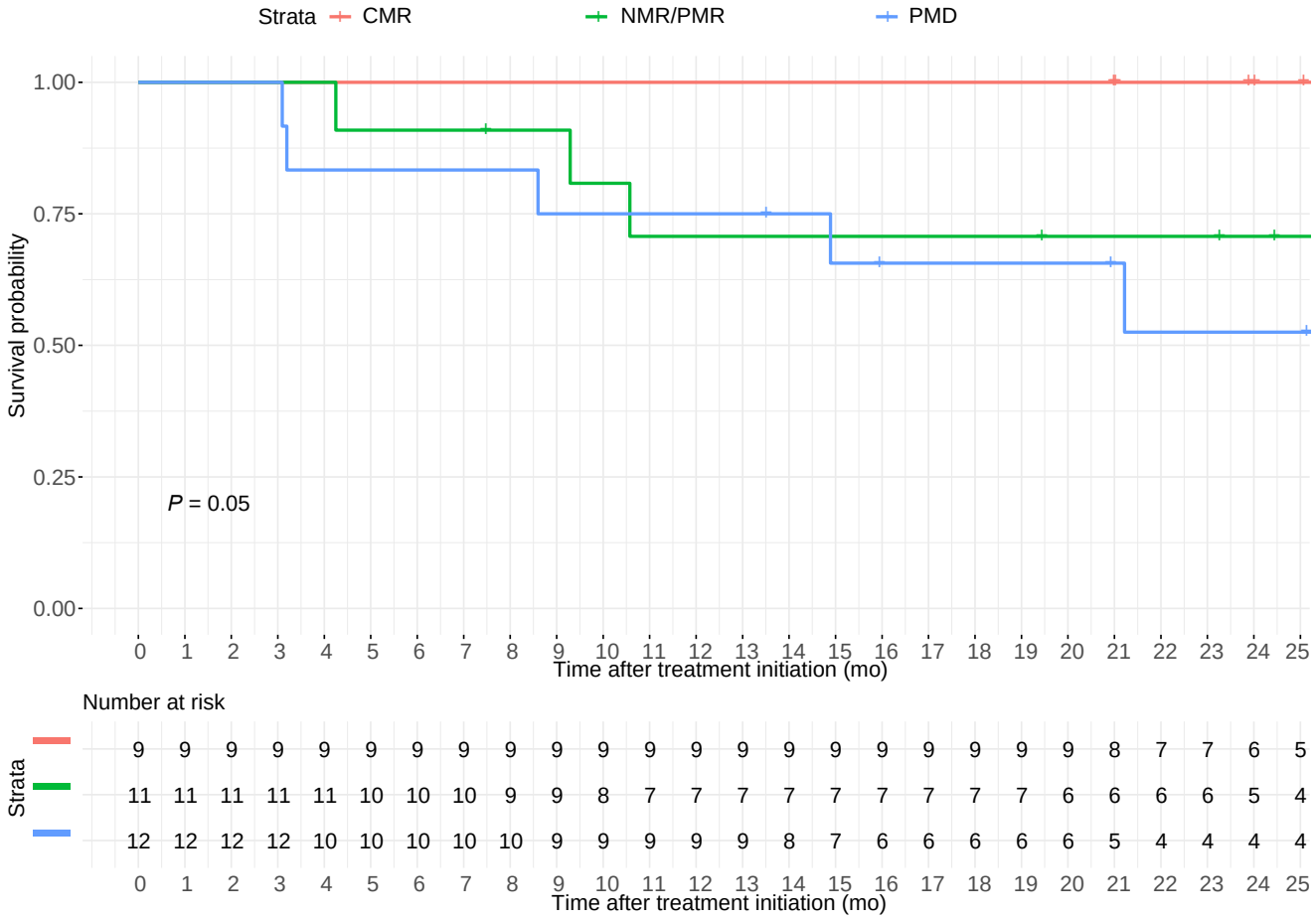


Supplemental Fig. 2. Efficacy and duration of response per ePET/CT$_1$ response categories
The panel shows a swimmer plot of outcomes in all 45 patients. The type of response (Lugano 2014) at ePET/CT$_1$ is displayed. Patients with a partial metabolic response on ePET$_1$ may experience prolonged clinical benefit on nivolumab (i.e., Patients 1 and 18). Patients with a partial metabolic response on ePET$_1$ may experience durable response after nivolumab discontinuation (i.e., patient 38 discontinued therapy at month-3). A durable response was observed after nivolumab treatment discontinuation in patients with a complete metabolic response at ePET$_1$ (i.e., patient 30). The evident clinical benefit led several centers to continue treatment beyond progression (i.e., patients 2-5). The decision to continue/discontinue treatment was decided onsite by clinicians during nivolumab therapies based upon their expert assessment. Nivolumab could be discontinued due to disease progression, unacceptable toxicity, physician decision, or other reason.

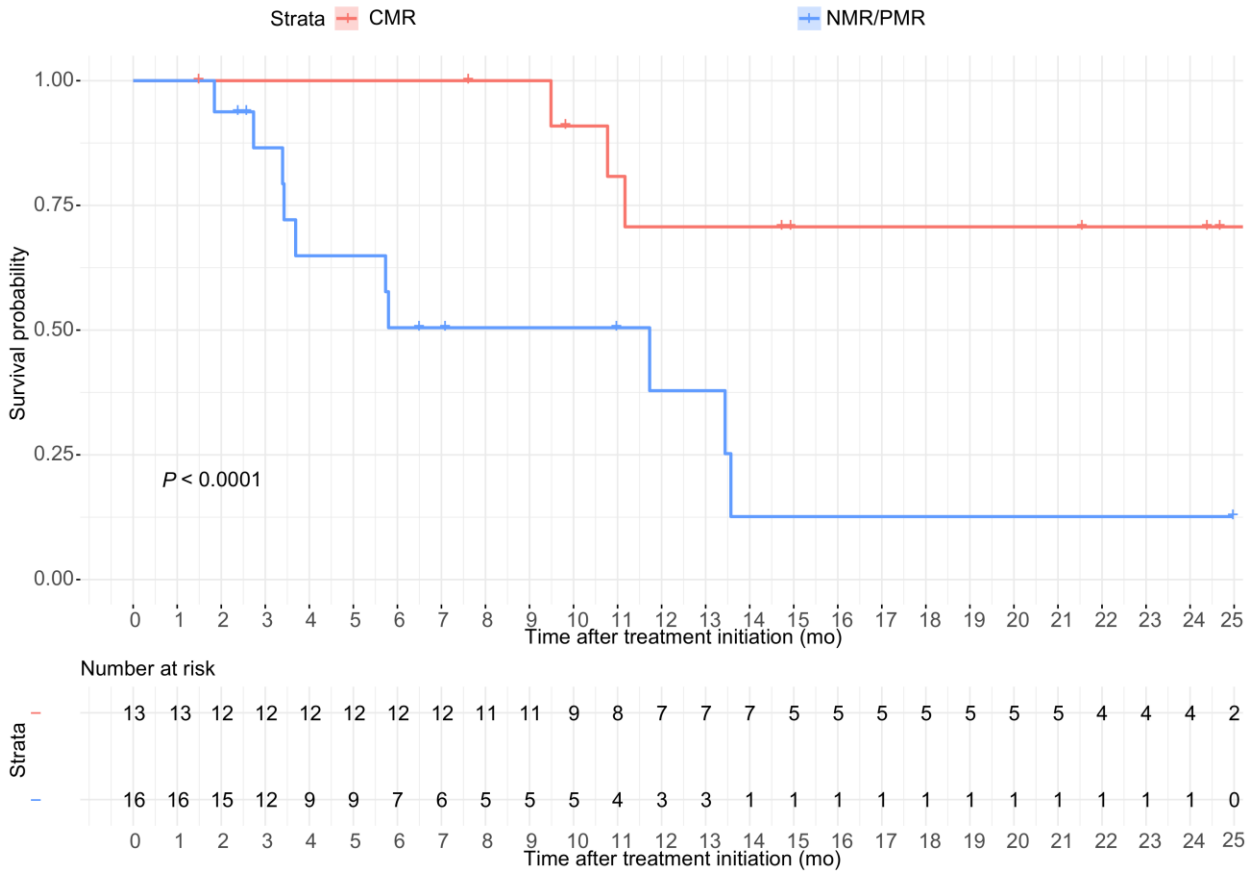


Supplemental Fig. 3. Kaplan-Meier estimate of OS according to ePET1 response

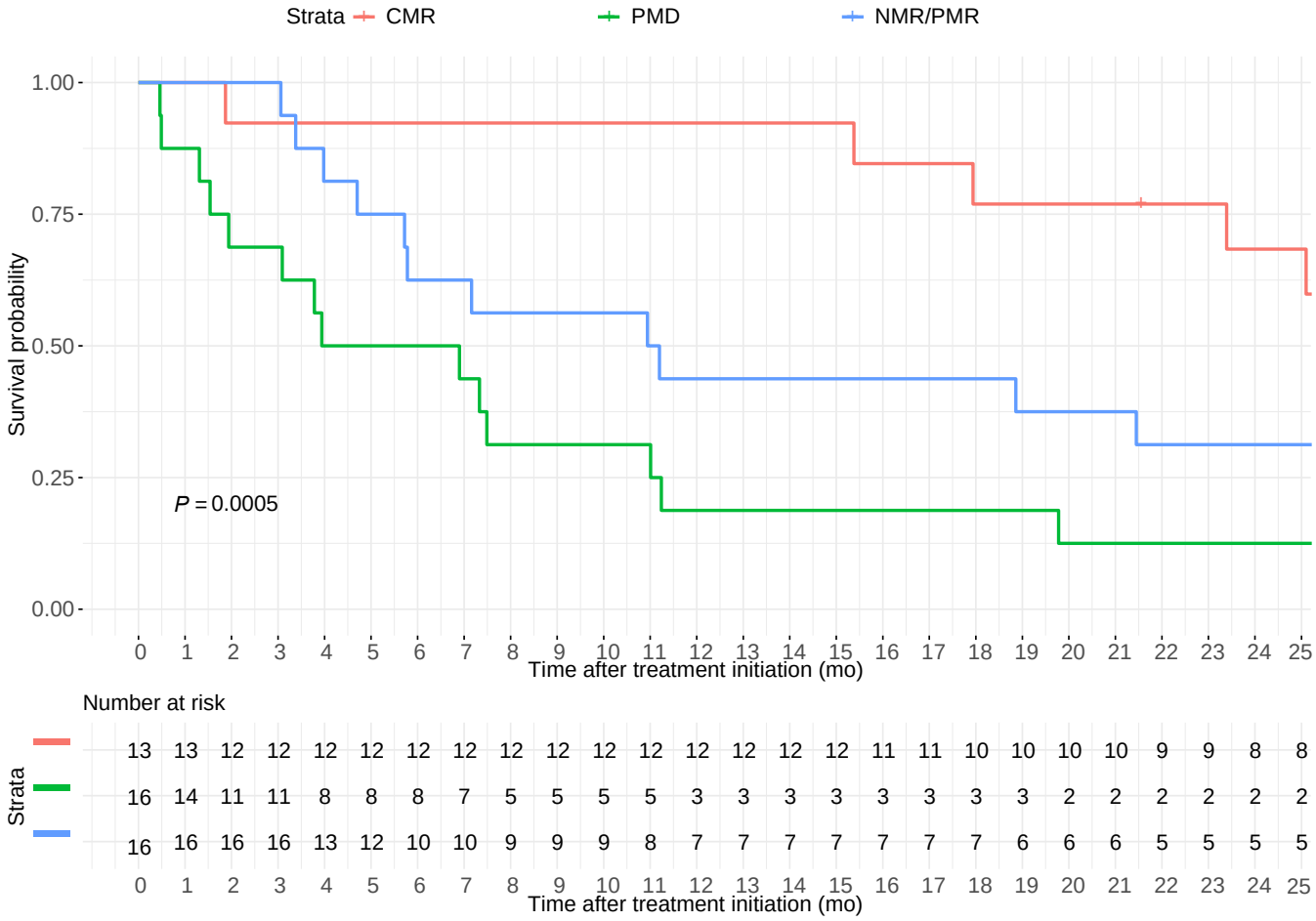
Using the landmark analysis at 3 months (n=32 pts), Kaplan-Meier estimate of OS from anti PD-1 mAb initiation based on ePET/CT_1 response classification, stratifying patients in three OS risk groups: high (PMD), low (CMR) and intermediate (NMR and PMR). Patients with CMR at ePET1 have a prolonged OS.



Supplemental Fig. 4. Kaplan-Meier estimate of PFS according to the response classification using ePET1
Kaplan-Meier estimate of Progression Free Survival from anti PD-1 mAb initiation based on ePET/CT_1 response classification, stratifying patients in three PFS risk groups: high (PMD), low (CMR) and intermediate (NMR and PMR). Patients classified as PMD at $ePET_1$ are not displayed in this Fig. since by definition all patients progressed at first evaluation (PET is the reference standard for response evaluation).



Supplemental Fig. 5. Kaplan-Meier estimate of mPFS according to ePET1 response
Kaplan-Meier estimate of mPFS from anti PD-1 mAb initiation based on ePET/CT_1 response classification, stratifying patients in three mPFS risk groups: high (PMD), low (CMR) and intermediate (NMR and PMR).



Supplemental Table 1. Patients' characteristics

Characteristics	Overall	Response at ePET/CT$_1$			
		PMD	NMR/PMR	CMR	p
n	45	16	16	13	
Clinical characteristics					
Male (n (%))	25 (55.6)	8 (50.0)	11 (68.8)	6 (46.2)	0.408
Female (n (%))	20 (44.4)	8 (50.0)	5 (31.2)	7 (53.8)	
Age (mean (SD))	45 (19)	51 (19)	47 (18)	33 (14)	0.025
B symptoms (n (%))	12 (26.7)	6 (37.5)	3 (18.8)	3 (23.1)	0.442
Ann Arbor stage at diagnosis					0.247
Localized	12 (26.7)	4 (25.0)	3 (18.8)	5 (38.4)	
I (n (%))	2 (4.4)	0 (0.0)	1 (6.2)	1 (7.7)	
II (n (%))	10 (22.2)	4 (25.0)	2 (12.5)	4 (30.8)	
Advanced	33 (73.3)	12 (75.0)	13 (28.3)	8 (61.5)	
III (n (%))	10 (22.2)	4 (25.0)	5 (31.2)	1 (7.7)	
IV (n (%))	23 (51.1)	8 (50.0)	8 (50.0)	7 (53.8)	
Prior treatments					
Number of prior lines (mean (SD))	6.4 (2.9)	6.69 (2.80)	5.94 (2.24)	6.46 (3.57)	0.753
ABVD (n (%))	39 (86.7)	16 (100.0)	14 (87.5)	9 (69.2)	0.053
BEACOPP (n (%))	8 (17.8)	1 (6.2)	2 (12.5)	5 (38.5)	0.062
DHAP DHAC DHAO1 (n (%))	24 (53.3)	7 (43.8)	7 (43.8)	10 (76.9)	0.130
IGEV (n (%))	5 (18.8)	3 (18.8)	1 (6.2)	1 (7.7)	0.477
GPD (n (%))	1 (2.2)	0 (0.0)	0 (0.0)	1 (7.7)	0.284
GVD (n (%))	11 (24.4)	2 (12.5)	6 (37.5)	3 (23.1)	0.256
ICE IVO1 (n (%))	15 (33.3)	7 (43.8)	5 (31.2)	3 (23.1)	0.490
IVA (n (%))	3 (6.7)	1 (6.2)	1 (6.2)	1 (7.7)	0.985
MINE (n (%))	8 (17.8)	2 (12.5)	3 (18.8)	3 (23.1)	0.754
Brentuximab Vedotin (n (%))	42 (93.3)	15 (93.8)	14 (87.5)	13 (100.0)	0.405
Radiotherapy (n (%))	24 (53.3)	10 (62.5)	5 (31.2)	9 (69.2)	0.082
Autograft (n (%))	26 (57.8)	8 (50.0)	11 (68.8)	7 (53.8)	0.530
Allograft (n (%))	9 (20.0)	2 (12.5)	4 (25.0)	3 (23.1)	0.641
Nivolumab treatment					
IRAEs (mean (SD))	1.6 (3.7)	0.44 (0.63)	1.38 (1.54)	3.23 (6.64)	0.135
Cycles (mean (SD))	5.7 (5.0)	4.73 (3.69)	7.29 (6.39)	5.00 (4.26)	0.332

Supplemental Table 2. Patients' OS per early response on ePET/CT$_1$ (Lugano 2014) (landmark analysis at 3 months)

	No. Total (%)	12-month OS estimate (95CI)	24-month OS estimate (95CI)
Overall	32 (100%)	0.81 (95CI: 0.68-0.96, n=6)	0.73 (95CI: 0.59-0.91, n=2)
ePET/CT$_1$			
PMD	12 (38%)	0.75 (95CI: 0.54-1.00, n=3)	0.53 (95CI: 0.29-0.96, n=2)
NMR/PMR	11 (34%)	0.71 (95CI: 0.48-1.00, n=3)	0.71 (95CI: 0.48-1.00, n=0)
CMR	9 (28%)	1.00 (95CI: 1.00-1.00, n=0)	1.00 (95CI: 1.00-1.00, n=0)
P-value		p=0.05	

OS: overall survival, *CMR*: complete metabolic response, *PMR*: partial metabolic response, *NMR*: no metabolic response, *PMD*: progressive metabolic disease. *CT*: computed tomography, *PET*: 18F-FDG PET/CT.