

1 Supplementals

2 **Table S1:** Univariate analysis of predictive factors of early and late transfusions after CAR T-cell
 3 therapy. Statistically significant factors ($P < 0.05$) are represented by a cross (X).

	Transfusion in the early phase (< 1 month)		Transfusion in the late phase (≥ 1 month)	
	RBC	Platelets	RBC	Platelets
Age > 60 years at infusion	X			
ECOG PS ≥ 2 at infusion	X	X	X	X
aaIPI ≥ 2 at diagnostic	X	X		X
Refractory to first-line treatment	X			
Prior ASCT	X			
Chemotherapy within 6 months before CAR T-cell infusion	X	X		X
Chemotherapy as bridging therapy	X	X	X	X
Bulk disease (> 5 cm) at infusion	X			
CAR-HEMATOTOX score ≥ 2 at infusion	X	X	X	X
≥ 1 transfusion (RBC or platelets) within 6 months before CAR T-cell therapy	X	X	X	X
Axi-cel (vs tisa-cel)	X	X	X	X
CRS grade ≥ 3	X	X		
ICANS grade ≥ 3	X	X	X	X
Tocilizumab use	X	X	X	X
Corticosteroids use	X	X	X	X
ICU admission after CAR T-cell infusion	X	X		X
EPO use after CAR T-cell infusion	X	X	X	X
G-CSF use after CAR T-cell infusion	X	X	X	X

4 The abbreviation ECOG denotes eastern cooperative oncology group, PS performance status, aaIPI age-adjusted
 5 international prognostic index, ASCT autologous stem cell transplantation, RBC red blood cells, axi-cel axicabtagene
 6 ciloleucel, tisa-cel tisagenlecleucel, CRS cytokine release syndrome, ICANS immune effector cell-associated
 7 neurotoxicity syndrome, ICU intensive care unit, EPO erythropoietin and G-CSF granulocyte-colony stimulating factor.

8 Factors tested but not predictive were: hematopoietic cell transplant - comorbidity index (HCT-CI) at diagnostic,
 9 number of previous therapies, bridging therapy (yes vs no), bone marrow involvement at time of lymphodepletion
 10 and lactate dehydrogenase (LDH) at infusion.

11 **Table S2:** Causes of death

Causes of death	N = 345
Toxicity	56 (16.2%)
Concurrent illness	4 (1.2%)
Lymphoma relapse/progression	267 (77.4%)
Other reason	8 (2.3%)
Unknown	10 (2.9%)
If toxicity, specify	N = 56
Acute respiratory distress and neurological impairment in septic shock, CRS and ICANS	1 (1.8%)
Intracranial bleeding in the context of thrombopenia	1 (1.8%)
Cerebral hemorrhage	1 (1.8%)
Covid-19	20 (35.7%)
CRS	4 (7.1%)
CRS + acute respiratory distress syndrome (ARDS)	1 (1.8%)
Deterioration of clinical condition due to several post-infusion CAR T-cell complications	1 (1.8%)
Escherichia Coli and Pseudomonas Aeruginosa pneumopathy	1 (1.8%)
Febrile neutropenia	1 (1.8%)
Hemorrhagic stroke	1 (1.8%)
Pseudomonas Aeruginosa infection	1 (1.8%)
Klebsiella Pneumoniae infection (septic shock)	1 (1.8%)
Lung infection (aspergillosis)	1 (1.8%)
Multiple organ failure	1 (1.8%)
ICANS	2 (3.6%)
Pneumonia	1 (1.8%)
Hemophagocytic lymphohistiocytosis and ICANS	1 (1.8%)
Septic shock	7 (12.5%)
Bacterial infection after surgery	1 (1.8%)
Infection and kidney failure	1 (1.8%)
Infection, stercoral peritonitis	1 (1.8%)
Progressive multifocal leukoencephalopathy with JC virus	1 (1.8%)
Multiple organ failure after cytomegalovirus infection	1 (1.8%)
Acute respiratory distress syndrome	1 (1.8%)
Sepsis	1 (1.8%)
Sepsis with documented Stenotrophomonas bacteriemia	1 (1.8%)
Missing	1 (1.8%)

12 The abbreviation CRS denotes cytokine release syndrome, ICANS immune effector cell-associated neurotoxicity
 13 syndrome, and ARDS acute respiratory distress syndrome.

14 **Table S3:** Comparison of baseline characteristics between transfused and non-transfused
 15 patients, for early RBC transfusions.

	No transfusion N = 354	At least one transfusion N = 317	P
Histology			
DLBCL, NOS	222 (62.7%)	232 (73.2%)	0.021
PMBL	16 (4.5%)	11 (3.5%)	
HGBL	16 (4.5%)	18 (5.7%)	
PCNSL	1 (0.3%)	0 (0.0%)	
Transformed FL	59 (16.7%)	31 (9.8%)	
Others*	40 (11.3%)	25 (7.9%)	
Age at CAR T-cell infusion			
Median (range), years	62 (18-82)	65 (18-80)	0.009
Age > 60 years	193 (54.5%)	204 (64.4%)	0.012
ECOG performance status at CAR T-cell infusion			
0 - 1	265 (88.9%)	175 (72.6%)	<0.001
≥ 2	33 (11.1%)	66 (27.4%)	
Missing	56	76	
Number of prior lines			
Median (range)	2 (2 - 10)	3 (2 - 9)	0.062
Refractory to first line	145 (41.8%)	157 (49.7%)	0.043
Previous HSCT			
Autologous	76 (21.5%)	42 (13.2%)	0.006
Allogeneic	4 (1.1%)	4 (1.3%)	1.000
Chemotherapy within 6 months before CAR T-cell infusion (excluding bridge)	249 (70.3%)	254 (80.1%)	0.004
Chemotherapy within 6 months before CAR T-cell infusion (including bridge)	319 (90.1%)	299 (94.3%)	0.046
HCT-CI score at CAR T-cell infusion			
1 - 2	122 (88.4%)	115 (89.1%)	0.947
≥ 3	16 (11.6%)	14 (10.9%)	
aaIPI at diagnostic			
0 - 1	142 (43.6%)	88 (31.7%)	0.003
≥ 2	184 (56.4%)	190 (68.3%)	
Missing	28	39	
Bulk disease (> 5 cm) at CAR T-cell infusion	83 (23.4%)	121 (38.2%)	<0.001
Bridging therapy	286 (80.8%)	269 (84.9%)	0.184
Type of bridging therapy			
Chemotherapy	232 (81.1%)	237 (88.1%)	0.026
Radiotherapy	26 (9.1%)	23 (8.6%)	0.882
Corticosteroids	27 (9.4%)	22 (8.2%)	0.655
Monoclonal antibody	203 (71.0%)	199 (74.0%)	0.448
Other immunotherapy	12 (4.2%)	15 (5.6%)	0.555
IMiD	23 (8.0%)	15 (5.6%)	0.313
Other bridge**	17 (5.9%)	18 (6.7%)	0.730
Type of CAR T-cell			
Tisa-cel	149 (42.1%)	93 (29.3%)	<0.001
Axi-cel	205 (57.9%)	224 (70.7%)	
CAR-HEMATOTOX score before lymphodepletion			
Low (0-1)	147 (46.7%)	81 (27.4%)	<0.001
High (≥ 2)	168 (53.3%)	215 (72.6%)	
Missing	39	21	
Cytopenia grade ≥ 3 before lymphodepletion			

Anemia	13 (3.8%)	28 (8.9%)	0.009
Thrombocytopenia	17 (4.9%)	24 (7.7%)	0.149
Neutropenia	32 (9.6%)	32 (11.2%)	0.597
Ferritin before lymphodepletion			
Median (range), µg/L	400 (11.3 - 15209)	864 (5- 27809)	<0.001
> UNL	187 (61.7%)	229 (84.8%)	
Missing	51	47	

16

17 The abbreviation DLBCL denotes diffuse large B-cell lymphoma, NOS not otherwise specified, PMBL primary
18 mediastinal B-cell lymphoma, HGBL high grade B-cell lymphoma, PCNSL primary central nervous system lymphoma,
19 FL follicular lymphoma, CAR chimeric antigen receptor, ECOG eastern cooperative oncology group, HSCT
20 hematopoietic stem cell transplantation, HCT-CI hematopoietic cell transplant – comorbidity index, aalPI age-adjusted
21 international prognostic index, IMiD immunomodulatory drug, tisa-cel tisagenlecleucel, axi-cel axicabtagene
22 ciloleucel and UNL upper normal limit.

23 *Others are: T-cell/histiocyte-rich LBCL (n=10), 3A-follicular lymphoma (n=1), transformed marginal-zone lymphoma
24 (n=19), transformed chronic lymphocytic leukemia (n=12), transformed Hodgkin (n=8), DLBCL post PCNSL (n=3),
25 DLBCL leg type (n=2), post-transplant lymphoproliferative disorder (n=1), “grey zone” meaning with features
26 between DLBCL and classical Hodgkin lymphoma (n=6).

27 ** Others are: intrathecal chemotherapy (n=7), ibrutinib (n=20), lenalidomide (n=3), oral etoposide (n=1), missing
28 (n=4).

29 **Table S4:** Comparison of baseline characteristics between transfused and non-transfused
 30 patients, for early platelets transfusions.

	No transfusion N = 419	At least one transfusion N = 252	P
Histology			
DLBCL, NOS	263 (62.8%)	191 (75.8%)	<0.001
PMBL	22 (5.3%)	5 (2.0%)	
HGBL	17 (4.1%)	17 (6.7%)	
PCNSL	1 (0.2%)	0 (0.0%)	
Transformed FL	67 (16.0%)	23 (9.1%)	
Others*	49 (11.7%)	16 (6.3%)	
Age at CAR T-cell infusion			
Median (range), years	62 (18-82)	64 (18-79)	0.009
Age > 60 years	236 (56.3%)	161 (63.9%)	0.062
ECOG performance status at CAR T-cell infusion			
0 - 1	304 (87.1%)	136 (71.6%)	<0.001
≥ 2	45 (12.9%)	54 (28.4%)	
Missing	70	62	
Number of prior lines			
Median (range)	2 (2 - 9)	2.5 (2 - 10)	0.725
Refractory to first line	179 (43.3%)	123 (49.2%)	0.148
Previous HSCT			
Autologous	81 (19.3%)	37 (14.7%)	0.143
Allogeneic	4 (1.0%)	4 (1.6%)	0.482
Chemotherapy within 6 months before CAR T-cell infusion (excluding bridge)	298 (71.1%)	205 (81.3%)	0.003
Chemotherapy within 6 months before CAR T-cell infusion (including bridge)	378 (90.2%)	240 (95.2%)	0.026
HCT-CI score at CAR T-cell infusion			
1 - 2	149 (90.9%)	88 (85.4%)	0.257
≥ 3	15 (9.1%)	15 (14.6%)	
aaIPI at diagnostic			
0 - 1	158 (41.3%)	72 (32.6%)	0.037
≥ 2	225 (58.7%)	149 (67.4%)	
Missing	36	31	
Bulk disease (> 5 cm) at CAR T-cell infusion	118 (28.4%)	86 (34.7%)	0.099
Bridging therapy	338 (80.7%)	217 (86.1%)	0.074
Type of bridging therapy			
Chemotherapy	277 (66.1%)	192 (76.2%)	0.041
Radiotherapy	34 (8.1%)	15 (6.0%)	0.359
Corticosteroids	32 (9.5%)	17 (7.8%)	0.543
Monoclonal antibody	240 (71.0%)	162 (74.7%)	0.381
Other immunotherapy	16 (4.7%)	11 (5.1%)	0.843
IMiD	23 (6.8%)	15 (6.9%)	1.000
Other bridge**	18 (5.3%)	17 (7.8%)	0.283
Type of CAR T-cell			
Tisa-cel	173 (41.3%)	69 (27.4%)	<0.001
Axi-cel	246 (58.7%)	183 (72.6%)	
CAR-HEMATOTOX score before lymphodepletion			
Low (0-1)	171 (45.5%)	57 (24.3%)	<0.001
High (≥ 2)	205 (54.5%)	178 (75.7%)	
Missing	43	17	
Cytopenia grade ≥ 3 before lymphodepletion			
Anemia	20 (4.9%)	21 (8.5%)	0.069
Thrombocytopenia	17 (4.1%)	24 (9.7%)	0.007

Neutropenia	37 (9.5%)	27 (11.7%)	0.414
Ferritin before lymphodepletion			
Median (range), µg/L	440 (11-15209)	846 (5-27809)	<0.001
> UNL	242 (66.3%)	174 (83.7%)	
Missing	54	44	

31

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34 FL follicular lymphoma, CAR chimeric antigen receptor, ECOG eastern cooperative oncology group, HSCT
35 hematopoietic stem cell transplantation, HCT-CI hematopoietic cell transplant – comorbidity index, aaIPI age-adjusted
36 international prognostic index, IMiD immunomodulatory drug, tisa-cel tisagenlecleucel, axi-cel axicabtagene
37 ciloleucel and UNL upper normal limit.

38 *Others are: T-cell/histiocyte-rich LBCL (n=10), 3A-follicular lymphoma (n=1), transformed marginal-zone lymphoma
39 (n=19), transformed chronic lymphocytic leukemia (n=12), transformed Hodgkin (n=8), DLBCL post PCNSL (n=3),
40 DLBCL leg type (n=2), post-transplant lymphoproliferative disorder (n=1), “grey zone” meaning with features
41 between DLBCL and classical Hodgkin lymphoma (n=6).

42 ** Others are: intrathecal chemotherapy (n=7), ibrutinib (n=20), lenalidomide (n=3), oral etoposide (n=1), missing
43 (n=4).

44 **Table S5:** Comparison of baseline characteristics between transfused and non-transfused
 45 patients, for late RBC transfusions.

	No transfusion N = 378	At least one transfusion N = 172	P
Histology			
DLBCL, NOS	243 (64.3%)	130 (75.6%)	0.049
PMBL	17 (4.5%)	4 (2.3%)	
HGBL	17 (4.5%)	10 (5.8%)	
PCNSL	1 (0.3%)	0 (0.0%)	
Transformed FL	58 (15.3%)	19 (11.0%)	
Others*	42 (11.1%)	9 (5.2%)	
Age at CAR T-cell infusion			
Median (range), years	63 (18-82)	64 (25-80)	0.486
Age > 60 years	219 (57.9%)	104 (60.5%)	0.641
ECOG performance status at CAR T-cell infusion			
0 - 1	281 (87.5%)	98 (75.4%)	<0.001
≥ 2	40 (12.5%)	32 (24.6%)	
Missing	57	42	
Number of prior lines			
Median (range)	2 (2 - 9)	3 (2 - 10)	0.399
Refractory to first line	159 (42.7%)	82 (48.0%)	0.266
Previous HSCT			
Autologous	73 (19.3%)	34 (19.8%)	0.908
Allogeneic	4 (1.1%)	3 (1.7%)	0.683
Chemotherapy within 6 months before CAR T-cell infusion (excluding bridge)	266 (70.4%)	134 (77.9%)	0.079
Chemotherapy within 6 months before CAR T-cell infusion (including bridge)	338 (89.4%)	161 (93.6%)	0.153
HCT-CI score at CAR T-cell infusion			
1 - 2	137 (90.1%)	58 (90.6%)	0.946
≥ 3	15 (9.9%)	6 (9.4%)	
aaIPI at diagnostic			
0 - 1	146 (42.7%)	54 (35.1%)	0.115
≥ 2	196 (57.3%)	100 (64.9%)	
Missing	36	18	
Bulk disease (> 5 cm) at CAR T-cell infusion	102 (27.2%)	48 (28.2%)	0.836
Bridging therapy	305 (80.7%)	147 (85.5%)	0.188
Type of bridging therapy			
Chemotherapy	246 (80.7%)	129 (87.8%)	0.063
Radiotherapy	32 (10.5%)	12 (8.2%)	0.501
Corticosteroids	31 (10.2%)	11 (7.5%)	0.393
Monoclonal antibody	216 (70.8%)	108 (73.5%)	0.579
Other immunotherapy	13 (4.3%)	9 (6.1%)	0.484
IMiD	21 (6.9%)	6 (4.1%)	0.293
Other bridge**	19 (6.2%)	8 (5.4%)	0.834
Type of CAR T-cell			
Tisa-cel	139 (36.8%)	38 (22.1%)	<0.001
Axi-cel	239 (63.2%)	134 (77.9%)	
CAR-HEMATOTOX score before lymphodepletion			
Low (0-1)	152 (44.7%)	41 (25.6%)	<0.001
High (≥ 2)	188 (55.3%)	119 (74.4%)	
Missing	38	12	
Cytopenia grade ≥ 3 before lymphodepletion			
Anemia	15 (4.0%)	16 (9.5%)	0.015
Thrombocytopenia	18 (4.8%)	10 (6.0%)	0.537

Neutropenia	34 (9.6%)	23 (14.5%)	0.128
Ferritin before lymphodepletion			
Median (range), µg/L	414 (11-27809)	771 (5-14188)	<0.001
> UNL	212 (64.4%)	120 (83.9%)	
Missing	49	29	

46

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52 ciloleucel and UNL upper normal limit.

53 *Others are: T-cell/histiocyte-rich LBCL, 3A-follicular lymphoma, transformed marginal-zone lymphoma, transformed
54 chronic lymphocytic leukemia, transformed Hodgkin, DLBCL post PCNSL, DLBCL leg type, post-transplant
55 lymphoproliferative disorder, “grey zone” meaning with features between DLBCL and classical Hodgkin lymphoma.

56 ** Others are: intrathecal chemotherapy, ibrutinib, lenalidomide, oral etoposide, missing.

57 **Table S6:** Comparison of baseline characteristics between transfused and non-transfused
 58 patients, for late platelets transfusions.

	No transfusion N = 369	At least one transfusion N = 181	P
Histology			
DLBCL, NOS	236 (64.0%)	137 (75.7%)	0.082
PMBL	17 (4.6%)	4 (2.2%)	
HGBL	18 (4.9%)	9 (5.0%)	
PCNSL	1 (0.3%)	0 (0.0%)	
Transformed FL	57 (15.4%)	20 (11.0%)	
Others*	40 (10.8%)	11 (6.1%)	
Age at CAR T-cell infusion			
Median (range), years	63 (18-82)	64 (20-80)	0.224
Age > 60 years	212 (57.5%)	111 (61.3%)	0.408
ECOG performance status at CAR T-cell infusion			
0 - 1	272 (76.0%)	107 (61.5%)	0.002
≥ 2	38 (10.6%)	34 (19.5%)	
Missing	59	40	
Number of prior lines			
Median (range)	2 (2 – 9)	3 (2 – 10)	0.353
Refractory to first line	155 (42.7%)	86 (47.8%)	0.272
Previous HSCT			
Autologous	73 (19.8%)	34 (18.8%)	0.819
Allogeneic	3 (0.8%)	4 (2.2%)	0.225
Chemotherapy within 6 months before CAR T-cell infusion (excluding bridge)	255 (69.1%)	145 (80.1%)	0.008
Chemotherapy within 6 months before CAR T-cell infusion (including bridge)	326 (88.3%)	173 (95.6%)	0.005
HCT-CI score at CAR T-cell infusion			
1 - 2	129 (89.6%)	66 (91.7%)	0.598
≥ 3	15 (10.4%)	6 (8.3%)	
Missing			
aaIPI at diagnostic			
0 - 1	147 (43.9%)	53 (32.9%)	0.024
≥ 2	188 (56.1%)	108 (67.1%)	
Missing	34	20	
Bulk disease (> 5 cm) at CAR T-cell infusion	95 (26.0%)	55 (30.7%)	0.262
Bridging therapy	295 (79.9%)	157 (86.7%)	0.058
Type of bridging therapy			
Chemotherapy	232 (62.9%)	143 (79.0%)	<0.001
Radiotherapy	33 (8.9%)	11 (6.1%)	0.183
Corticosteroids	32 (10.8%)	10 (6.4%)	0.129
Monoclonal antibody	204 (69.2%)	120 (76.4%)	0.125
Other immunotherapy	15 (5.1%)	7 (4.5%)	0.823
IMiD	20 (6.8%)	7 (4.5%)	0.407
Other bridge**	19 (6.4%)	8 (5.1%)	0.679
Type of CAR T-cell			
Tisa-cel	130 (35.2%)	47 (26.0%)	0.033
Axi-cel	239 (64.8%)	134 (74.0%)	
CAR-HEMATOTOX score before lymphodepletion			
Low (0-1)	152 (45.4%)	41 (24.8%)	<0.001
High (≥ 2)	183 (54.6%)	124 (75.2%)	
Missing	34	16	
Cytopenia grade ≥ 3 before lymphodepletion			
Anemia	15 (4.1%)	16 (8.9%)	0.030

Thrombocytopenia	17 (4.7%)	11 (6.2%)	0.536
Neutropenia	34 (9.9%)	23 (13.7%)	0.231
Ferritin before lymphodepletion			
Median (range), µg/L	402 (11-27809)	804 (5-14188)	<0.001
> UNL	205 (63.1%)	127 (86.4%)	
Missing	44	34	

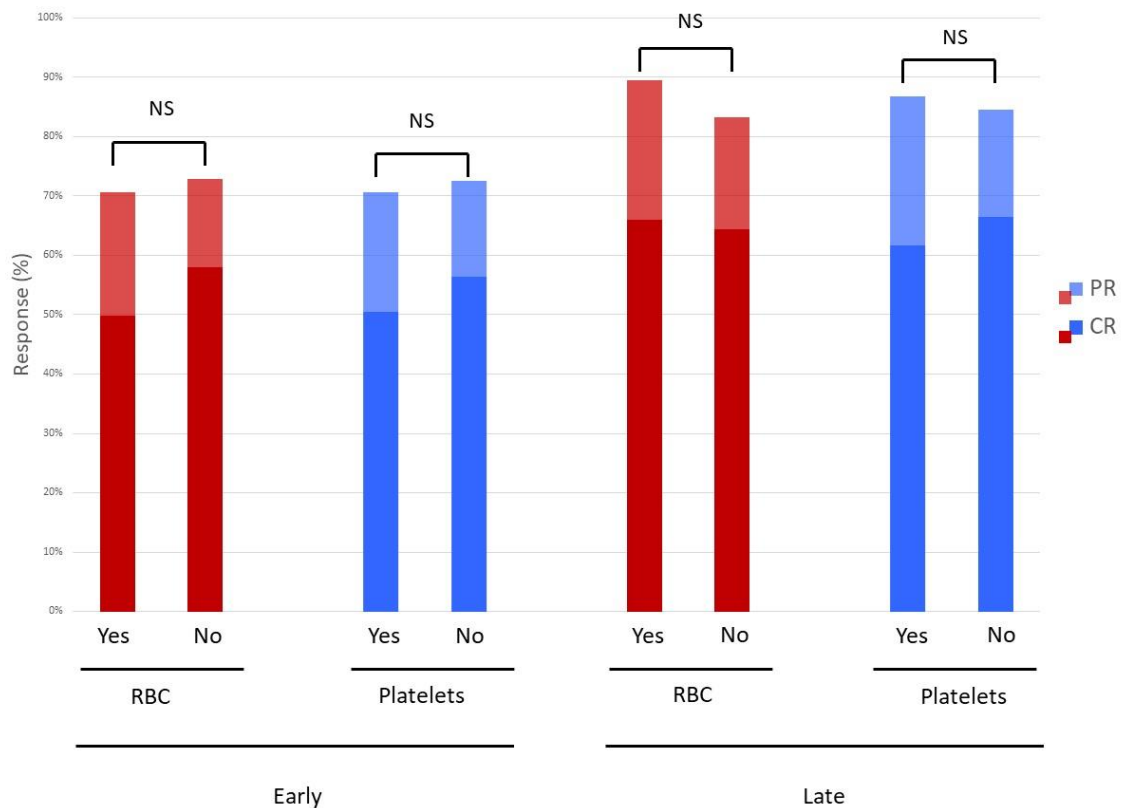
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67 chronic lymphocytic leukemia, transformed Hodgkin, DLBCL post PCNSL, DLBCL leg type, post-transplant
68 lymphoproliferative disorder, “grey zone” meaning with features between DLBCL and classical Hodgkin lymphoma.

69 ** Others are: intrathecal chemotherapy, ibrutinib, lenalidomide, oral etoposide, missing.

70 **Figure S1:** Best overall response rates in transfused and non-transfused populations, at early and
71 late phase.



72
73 The abbreviation NS denotes non-significant, PR partial response, CR complete response, RBC red blood cells.

74 **Figure S2:** Progression-free survival (PFS) after CAR T-cells infusion for transfused and non-
 75 transfused patients. (A) RBC transfusion at the early phase, (B) RBC transfusion at the late phase,
 76 (C) platelets transfusion at the early phase, (D) platelets transfusion at the late phase.

