

# Association of severity of organ involvement with mortality and recurrent malignancy in patients with chronic graft-versus-host disease

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**Supplementary Table S1. Comparison of risk categories in the validation set**

	New mortality model, no. of visits		
	Low	Intermediate	High
<b>NIH global score, no. of visits</b>			
Mild	106	10*	0
Moderate	123*	219	0
Severe	13*	73*	78

\*Visits with different risk categories according to the two models.

**Supplementary Table S2. Causes of differences in risk category**

<b>NIH global score</b>	<b>New mortality model</b>	<b>Cause of difference</b>	<b>No. of visits</b>	<b>% in total 622 visits</b>
Moderate	Low	Score 2 in skin ± other organs	61	9.8
		Score 2 in liver ± organs other than skin	22	3.5
		Score 1 in more than 2 organs	21	3.4
		Score 2 in eye	12	1.9
		Score 2 in joint/fascia or genital tract	7	1.1
Severe	Intermediate	Lung score 2	27	4.3
		Skin score 3	22	3.5
		Liver score 3	8	1.3
		Lung score 2 + joint/fascia score 3	1	0.2
		Score 3 in other organs	15	2.4
Severe	Low	Eye score 3	10	1.6
		Joint/fascia score 3	2	0.3
		Genital tract score 3	1	0.2
Mild	Intermediate	Gastrointestinal tract score 1	10	1.6

**Supplementary Table S3. Associations of organ scores with risk of overall mortality**

Organ score	No. of patients*	Univariate		Multivariate	
		HR <sup>†</sup> (95% CI)	P	HR <sup>†</sup> (95% CI)	P
<b>Skin</b>					
0	388	1.00 (reference)		1.00 (reference)	
1	246	1.57 (0.96-2.57)	0.07	1.44 (0.88-2.37)	0.15
2	252	1.93 (1.17-3.18)	0.01	2.11 (1.28-3.50)	0.004
3	148	3.64 (2.21-6.01)	<0.001	3.40 (2.07-5.61)	<0.001
<b>Mouth</b>					
0	407	1.00 (reference)			
1	398	1.32 (0.90-1.95)	0.16		
2	114	1.80 (0.94-3.45)	0.078		
3	17	0.51 (0.07-3.86)	0.51		
<b>Eye</b>					
0	370	1.00 (reference)			
1	344	1.06 (0.70-1.61)	0.77		
2	188	1.08 (0.63-1.83)	0.79		
3	49	1.02 (0.39-2.65)	0.97		
<b>GI tract</b>					
0	530	1.00 (reference)		1.00 (reference)	
1	238	1.89 (1.20-2.96)	0.006	1.78 (1.13-2.80)	0.013
2-3 <sup>‡</sup>	69	2.01 (0.98-4.12)	0.058	1.54 (0.75-3.17)	0.24
<b>Liver</b>					
0	441	1.00 (reference)		1.00 (reference)	
1	303	1.31 (0.85-2.00)	0.22	1.31 (0.85-2.02)	0.22
2	144	1.66 (0.94-2.93)	0.082	1.49 (0.84-2.65)	0.17
3	54	4.71 (2.30-9.66)	<0.001	4.45 (2.14-9.24)	<0.001
<b>Lung</b>					
0	418	1.00 (reference)		1.00 (reference)	
1	354	2.18 (1.37-3.48)	0.001	2.10 (1.31-3.37)	0.002
2	150	4.14 (2.54-6.77)	<0.001	4.41 (2.68-7.27)	<0.001
3	24	6.24 (2.85-13.7)	<0.001	6.24 (2.84-13.7)	<0.001
<b>Joint/fascia</b>					
0	486	1.00 (reference)			
1	252	0.98 (0.61-1.57)	0.93		
2	110	1.59 (0.81-3.11)	0.18		
3	14	1.63 (0.22-11.9)	0.63		
<b>Genital tract<sup>§</sup></b>					
0	213	1.00 (reference)			
1	83	0.76 (0.26-2.23)	0.61		
2-3 <sup>‡</sup>	53	1.55 (0.68-3.56)	0.30		

\*Total number of patients contributing to the score at least at one visit.

<sup>†</sup>Models were adjusted for time after transplantation, transplant center, patient age, stem cell source, disease risk, cytomegalovirus status, HLA and donor type, gender mismatch, conditioning intensity, prior acute GVHD and thrombocytopenia at the visit.

<sup>‡</sup>Scores 2 and 3 were combined since score 3 was documented in small numbers of patients.

<sup>§</sup>Female patients.

**Supplementary Table S4. Associations of organ scores with risk of recurrent malignancy**

Organ score	No. of patients*	Univariate	
		HR <sup>†</sup> (95% CI)	P
<b>Skin</b>			
0	383	1.00 (reference)	
1	244	1.42 (0.83-2.43)	0.21
2	247	1.19 (0.67-2.11)	0.56
3	146	1.20 (0.56-2.59)	0.64
<b>Mouth</b>			
0	401	1.00 (reference)	
1	391	1.53 (0.97-2.40)	0.065
2	111	0.59 (0.18-1.92)	0.38
3	17	1.41 (0.19-10.5)	0.74
<b>Eye</b>			
0	362	1.00 (reference)	
1	340	0.71 (0.44-1.16)	0.17
2-3 <sup>‡</sup>	200	0.38 (0.18-0.77)	0.007
<b>GI tract</b>			
0	522	1.00 (reference)	
1	234	1.25 (0.72-2.17)	0.43
2-3 <sup>‡</sup>	68	1.05 (0.33-3.40)	0.93
<b>Liver</b>			
0	434	1.00 (reference)	
1	297	1.49 (0.93-2.41)	0.10
2	142	1.30 (0.63-2.68)	0.48
3	53	0.64 (0.09-4.72)	0.66
<b>Lung</b>			
0	411	1.00 (reference)	
1	348	1.05 (0.63-1.75)	0.85
2	147	1.45 (0.77-2.71)	0.25
3	23	2.58 (0.79-8.45)	0.12
<b>Joint/fascia</b>			
0	477	1.00 (reference)	
1	250	1.34 (0.82-2.20)	0.24
2-3 <sup>‡</sup>	110	0.68 (0.24-1.91)	0.46
<b>Genital tract<sup>§</sup></b>			
0	208	1.00 (reference)	
1	82	0.44 (0.10-1.89)	0.27
2-3 <sup>‡</sup>	52	1.85 (0.68-4.99)	0.23

\*Total number of patients contributing to the score at one or more visits.

<sup>†</sup>Models were adjusted for time after transplantation, transplant center and disease risk.

<sup>‡</sup>Scores 2 and 3 were combined since score 3 was documented in small numbers of patients.

<sup>§</sup>Female patients.

**Supplementary Table S5. Associations of organ involvement with risk of recurrent malignancy**

<b>Involved organ site</b>	<b>No. of patients*</b>	<b>HR<sup>†</sup> (95% CI)</b>	<b>P</b>
<b>Skin</b>	424	1.28 (0.83-1.98)	0.26
<b>Mouth</b>	420	1.39 (0.89-2.18)	0.14
<b>Eye</b>	405	0.58 (0.37-0.90)	0.015
<b>Gastrointestinal tract</b>	269	1.21 (0.72-2.04)	0.47
<b>Liver</b>	363	1.40 (0.90-2.18)	0.13
<b>Lung</b>	402	1.22 (0.77-1.91)	0.39
<b>Joint/fascia</b>	291	1.19 (0.74-1.90)	0.48
<b>Genital tract<sup>‡</sup></b>	104	0.97 (0.41-2.29)	0.94
<b>Mucosa<sup>§</sup></b>	508	1.12 (0.69-1.84)	0.64

\*A total number of patients contributing to involvement at least at one visit.

<sup>†</sup>Models were adjusted for time after transplantation, transplant center and disease risk.

<sup>‡</sup>Female patients.

<sup>§</sup>Involvement of either mouth, eyes or genital tract.