

Supplemental Table 3 Coordinates of the ROC curve

Baseline			Stimulated		
BIS*	Sensitivity	Specificity	BIS†	Sensitivity	Specificity
26	0.000	1.000	43	0.000	1.000
28	0.000	0.993	45	0.018	1.000
29	0.009	0.993	46	0.035	1.000
30	0.018	0.993	47	0.053	1.000
32	0.027	0.980	48	0.062	1.000
33	0.027	0.973	50	0.088	1.000
34	0.053	0.960	51	0.097	1.000
35	0.124	0.940	52	0.115	1.000
36	0.186	0.933	53	0.133	1.000
37	0.230	0.933	54	0.150	1.000
38	0.265	0.919	55	0.159	1.000
39	0.301	0.866	56	0.168	1.000
40	0.319	0.859	57	0.177	1.000
41	0.389	0.812	58	0.204	1.000
42	0.469	0.805	59	0.212	1.000
43	0.558	0.785	61	0.239	1.000
44	0.699	0.752	62	0.257	0.993
45	0.743	0.705	63	0.283	0.993
46	0.752	0.678	64	0.310	0.980
47	0.832	0.624	65	0.310	0.966
48	0.876	0.570	66	0.327	0.960
49	0.912	0.517	67	0.345	0.953
50	0.947	0.490	68	0.407	0.940
51	0.956	0.463	69	0.434	0.919
52	0.965	0.423	70	0.469	0.899
53	0.965	0.369	71	0.487	0.893
54	0.973	0.329	72	0.540	0.879
55	0.982	0.295	73	0.628	0.839
56	0.982	0.282	74	0.664	0.752
57	0.982	0.275	75	0.743	0.651
58	0.982	0.248	76	0.761	0.604
59	0.982	0.235	77	0.770	0.597
61	0.982	0.201	78	0.823	0.577
62	0.982	0.195	79	0.841	0.570
63	0.982	0.188	80	0.850	0.570
64	0.982	0.181	81	0.850	0.557
65	0.982	0.174	82	0.920	0.510
67	0.982	0.161	83	0.920	0.490
69	0.982	0.148	84	0.938	0.470
71	0.982	0.141	85	0.947	0.403
72	1.000	0.128	86	0.947	0.376

73	1.000	0.074	87	0.947	0.369
74	1.000	0.060	88	0.947	0.349
75	1.000	0.027	89	0.947	0.342
83	1.000	0.007	90	0.956	0.322
91	1.000	0.000	91	0.965	0.275
			92	0.965	0.221
			93	0.965	0.201
			94	0.982	0.181
			95	0.982	0.134
			96	0.982	0.101
			97	0.991	0.081
			98	1.000	0.040
			99	1.000	0.000

BIS = bispectral index.

*Baseline BIS was defined as the minimum BIS value during a 15-min period before the Richmond Agitation Sedation Scale evaluation.

[†]Stimulated BIS was defined as the maximum BIS value during a 15-min period after the Richmond Agitation Sedation Scale evaluation.

From data of training set, threshold bispectral index (BIS) values to detect deep sedation were selected as the one that minimized false negative classification (*i.e.*, patients who were not found with deep sedation by the BIS but were assessed as deeply sedated by the RASS), with a specificity not lower than 50%. This decision was based on the assumption that the BIS monitoring could be used as a screening tool for deep sedation, and the sensitivity of BIS should be the most important feature to avoid missing the detection of deep sedation.

According to the statistical results shown in the **Supplemental Table 1**, the best threshold baseline BIS was 49 (sensitivity of 91.2 % and specificity of 51.7 %), and stimulated BIS of 82 (sensitivity of 92.0 % and specificity of 51.0 %). For clinical convenience, 50 and 80 were selected for respective baseline and stimulated BIS.