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Development of a Prognostic Survival Algorithm for Patients with Metastatic Spine Disease http://dx.doi.org/10.2106/JBJS.15.00975

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Appendix

TABLE E-1 Conditions of the Modified Charlson Comorbidity Index, Number of Patients per Condition, and ICD-9 Codes Used for the Algorithm

Assignment Condition Patients* ICD-9 Codes Used for Algorithm Mild liver disease† 115 (18) 070.22,070.23,070.32,070.33,070.44,070.54,070.6,070.9,570.570.1,573.3,573.4,573.8,753.9, V42.7 Chronic pulmonary disease† 93 (14) 416.8,416.9,490-491.0,491.2-495.2,495.4-505,506.4,508.1,508.8 Congestive heart failure†‡ 64 (9.9) 398.91,402.01,402.11,402.91,404.01,404.03,404.11,404.13,404.91,404.93,425.4-425.9,428-428.43 Diabetes with chronic complications† 16 (2.5) 249.40-249.91,250.40-250.90 Rheumatologic disease† 10 (1.5) 466.5,710.0-710.4,714.0-714.2,714.8,725 Dementia† 0 (0) 290,290.0,290.3,290.8-290.43,294.1,294.11-294.21,331.2 Any malignancy, including leukemia and lymphoma 626 (96) 150.0-159.0,162-173.59,173.70-175.9,180.0-183.9,185-186.9,188.0-188.6,188.8-189.4, 189.9,191.0-192.3,192.9-194.4,200.2-202.38,202.70-202.81,203.0-204.22,204.90-208.22,208.90-209.36,209.70,209.72-209.79,230.2-230.6,230.8,231.2,231.9,232.5-232.7,233.0,2331,233.32,233.4,233.7,235.2-235.4,235.7,235.8,236.2,236.4,236.5,236.7-236.91,237.1-237.4,237.6,238.0-238.3,238.3,238.79,239.0-239.4,239.6,239.7,239.89,239.9 Hemiplegia or paraplegia† 71 (11) 342.00-342.92,344.00-344.5,344.89-344.9 Renal disease† 53 (8.2) 403.01,403.11,403.91,404.02,404.03,404.12,404.13,404.92,404.93,582-583.7,585-586,588.0,V42.0,V45.1,V56-V56.8	for the Algor			
Mild liver disease† 115 (18) 070.22, 070.23, 070.32, 070.33, 070.44, 070.54, 070.6, 070.9, 570, 570.1, 573.3, 573.4, 573.8, 753.9, V42.7 Chronic pulmonary disease† 93 (14) 416.8, 416.9, 490-491.0, 491.2-495.2, 495.4-505, 506.4, 508.1, 508.8 Congestive heart failure†‡ 64 (9.9) 398.91, 402.01, 402.11, 402.91, 404.01, 404.03, 404.11, 404.13, 404.91, 404.93, 425.4-425.9, 428-428.43 Diabetes with chronic complications† 16 (2.5) 249.40-249.91, 250.40-250.90 Rheumatologic disease† 10 (1.5) 466.5, 710.0-710.4, 714.0-714.2, 714.8, 725 Dementia† 0 (0) 290, 290.0, 290.3, 290.8-290.43, 294.1, 294.11-294.21, 331.2 2 Any malignancy, including leukemia and lymphoma 150.0-159.0, 162-173.59, 173.70-175.9, 180.0-183.9, 185-186.9, 188.0-188.6, 188.8-189.4, 189.9, 191.0-192.3, 192.9-194.4, 200.2-202.38, 202.70-202.81, 203.0-204.22, 204.90-208.22, 208.90-209.36, 209.70, 209.72-209.79, 230.2-230.6, 230.8, 231.2, 231.9, 232.5-232.7, 233.0, 233.1, 233.31, 233.32, 233.4, 233.7, 235.2-235.4, 235.7, 235.8, 236.2, 236.4, 236.5, 236.7-236.91, 237.1-237.4, 237.6, 239.9 Hemiplegia or paraplegia† 71 (11) 342.00-342.92, 344.00-344.5, 344.89-344.9 Renal disease† 53 (8.2) 403.01, 403.11, 403.91, 404.02, 404.03, 404.12, 404.13, 404.92, 404.93, 582-583.7, 585-586, 588.0, V42.0, V45.1, V56-V56.8	Weight		No. of	
Mild liver disease†	Assignment	Condition	Patients*	ICD-9 Codes Used for Algorithm
O70.9, 570, 570.1, 573.3, 573.4, 573.8, 753.9, V42.7	1			
O70.9, 570, 570.1, 573.3, 573.4, 573.8, 753.9, V42.7		Mild liver diseaset	115 (18)	070.22, 070.23, 070.32, 070.33, 070.44, 070.54, 070.6.
Chronic pulmonary disease† One of the art failure			110 (10)	
Solution		Chronic pulmonary dispased	02 (14)	
Congestive heart failure†‡ 64 (9.9) 398.91, 402.01, 402.11, 402.91, 404.01, 404.03, 404.11, 404.13, 404.93, 425.4-425.9, 428-428.43 Diabetes with chronic complications† Rheumatologic disease† 10 (1.5) 466.5, 710.0-710.4, 714.0-714.2, 714.8, 725 Dementia† 290, 290.0, 290.3, 290.8-290.43, 294.1, 294.11-294.21, 331.2 Any malignancy, including leukemia and lymphoma 626 (96) Any malignancy, including leukemia and lymphoma 626 (96) 150.0-159.0, 162-173.59, 173.70-175.9, 180.0-183.9, 185-186.9, 188.0-188.6, 188.8-189.4, 189.9, 191.0-192.3, 192.9-194.4, 200.2-202.38, 202.70-202.81, 203.0-204.22, 204.90-208.22, 208.90-209.36, 209.70, 209.72-209.79, 230.2-230.6, 230.8, 231.2, 231.9, 232.5-232.7, 233.0, 233.1, 233.31, 233.32, 233.4, 233.7, 235.2-235.4, 235.7, 235.8, 236.2, 236.4, 236.5, 236.7-236.91, 237.1-237.4, 237.6, 238.0-238.3, 238.79, 239.0-239.4, 239.6, 239.7, 239.89, 239.9 Hemiplegia or paraplegia† 71 (11) 342.00-342.92, 344.00-344.5, 344.89-344.9 403.01, 403.11, 403.91, 404.02, 404.03, 404.12, 404.13, 404.92, 404.93, 582-583.7, 585-586, 588.0, V42.0, V45.1, V56-V56.8		Cili offic pullionary disease	93 (14)	
Aut			(4 (0 0)	,
Diabetes with chronic complications† Rheumatologic disease† Dementia† O(0) 249.40-249.91, 250.40-250.90 290, 290.0, 290.3, 290.8-290.43, 294.1, 294.11-294.21, 331.2 Any malignancy, including leukemia and lymphoma Fig. 150.0-159.0, 162-173.59, 173.70-175.9, 180.0-183.9, 185-186.9, 188.0-188.6, 188.8-189.4, 189.9, 191.0-192.3, 192.9-194.4, 200.2-202.38, 202.70-202.81, 203.0-204.22, 204.90-208.22, 208.90-209.36, 209.70, 209.72-209.79, 230.2-230.6, 230.8, 231.2, 231.9, 232.5-232.7, 233.0, 233.1, 233.31, 233.32, 233.4, 233.7, 235.2-235.4, 235.7, 235.8, 236.2, 236.4, 236.5, 236.7-236.91, 237.1-237.4, 237.6, 238.0-238.3, 238.79, 239.0-239.4, 239.6, 239.7, 239.89, 239.9 Hemiplegia or paraplegia† 71 (11) Alexandra Advance A		Congestive heart failure†‡	64 (9.9)	
complications† Rheumatologic disease† 10 (1.5) 466.5, 710.0-710.4, 714.0-714.2, 714.8, 725 Dementia† 0 (0) 290, 290.0, 290.3, 290.8-290.43, 294.1, 294.11-294.21, 331.2 Any malignancy, including leukemia and lymphoma 626 (96) 150.0-159.0, 162-173.59, 173.70-175.9, 180.0-183.9, 185-186.9, 188.0-188.6, 188.8-189.4, 189.9, 191.0-192.3, 192.9-194.4, 200.2-202.38, 202.70-202.81, 203.0-204.22, 204.90-208.22, 208.90-209.36, 209.70, 209.72-209.79, 230.2-230.6, 230.8, 231.2, 231.9, 232.5-232.7, 233.0, 233.1, 233.31, 233.32, 233.4, 233.2, 233.4, 235.2-235.4, 235.7, 235.8, 236.2, 236.4, 236.5, 236.7-236.91, 237.1-237.4, 237.6, 238.0-238.3, 238.79, 239.0-239.4, 239.6, 239.7, 239.89, 239.9 Hemiplegia or paraplegia† 71 (11) 342.00-342.92, 344.00-344.5, 344.89-344.9 Renal disease† 53 (8.2) 403.01, 403.11, 403.91, 404.02, 404.03, 404.12, 404.13, 404.92, 404.93, 582-583.7, 585-586, 588.0, V42.0, V45.1, V56-V56.8 3				
Rheumatologic disease† 10 (1.5) 466.5, 710.0-710.4, 714.0-714.2, 714.8, 725 Dementia† 0 (0) 290, 290.0, 290.3, 290.8-290.43, 294.1, 294.11-294.21, 331.2 Any malignancy, including leukemia and lymphoma 626 (96) 150.0-159.0, 162-173.59, 173.70-175.9, 180.0-183.9, 185-186.9, 188.0-188.6, 188.8-189.4, 189.9, 191.0-192.3, 192.9-194.4, 200.2-202.38, 202.70-202.81, 203.0-204.22, 204.90-208.22, 208.90-209.36, 209.70, 209.72-209.79, 230.2-230.6, 230.8, 231.2, 231.9, 232.5-232.7, 233.0, 233.1, 233.31, 233.32, 233.4, 233.7, 235.2-235.4, 235.7, 235.8, 236.2, 236.4, 236.5, 236.7-236.91, 237.1-237.4, 237.6, 238.0-238.3, 238.79, 239.0-239.4, 239.6, 239.7, 239.89, 239.9 Hemiplegia or paraplegia† 71 (11) 342.00-342.92, 344.00-344.5, 344.89-344.9 Renal disease† 53 (8.2) 403.01, 403.11, 403.91, 404.02, 404.03, 404.12, 404.13, 404.92, 404.93, 582-583.7, 585-586, 588.0, V42.0, V45.1, V56-V56.8		Diabetes with chronic	16 (2.5)	249.40-249.91, 250.40-250.90
Dementia† 0 (0) 290, 290.0, 290.3, 290.8-290.43, 294.1, 294.11-294.21, 331.2 Any malignancy, including leukemia and lymphoma 626 (96) 150.0-159.0, 162-173.59, 173.70-175.9, 180.0-183.9, 185-186.9, 188.0-188.6, 188.8-189.4, 189.9, 191.0-192.3, 192.9-194.4, 200.2-202.38, 202.70-202.81, 203.0-204.22, 204.90-208.22, 208.90-209.36, 209.70, 209.72-209.79, 230.2-230.6, 230.8, 231.2, 231.9, 232.5-232.7, 233.0, 233.1, 233.31, 233.32, 233.4, 233.7, 235.2-235.4, 235.7, 235.8, 236.2, 236.4, 236.5, 236.7-236.91, 237.1-237.4, 237.6, 238.0-238.3, 238.79, 239.0-239.4, 239.6, 239.7, 239.89, 239.9 Hemiplegia or paraplegia† 71 (11) 342.00-342.92, 344.00-344.5, 344.89-344.9 Renal disease† 53 (8.2) 403.01, 403.11, 403.91, 404.02, 404.03, 404.12, 404.13, 404.92, 404.93, 582-583.7, 585-586, 588.0, V42.0, V45.1, V56-V56.8		complications†		
Dementia† 0 (0) 290, 290.0, 290.3, 290.8-290.43, 294.1, 294.11-294.21, 331.2 Any malignancy, including leukemia and lymphoma 626 (96) 150.0-159.0, 162-173.59, 173.70-175.9, 180.0-183.9, 185-186.9, 188.0-188.6, 188.8-189.4, 189.9, 191.0-192.3, 192.9-194.4, 200.2-202.38, 202.70-202.81, 203.0-204.22, 204.90-208.22, 208.90-209.36, 209.70, 209.72-209.79, 230.2-230.6, 230.8, 231.2, 231.9, 232.5-232.7, 233.0, 233.1, 233.31, 233.32, 233.4, 233.7, 235.2-235.4, 235.7, 235.8, 236.2, 236.4, 236.5, 236.7-236.91, 237.1-237.4, 237.6, 238.0-238.3, 238.79, 239.0-239.4, 239.6, 239.7, 239.89, 239.9 Hemiplegia or paraplegia† 71 (11) 342.00-342.92, 344.00-344.5, 344.89-344.9 Renal disease† 53 (8.2) 403.01, 403.11, 403.91, 404.02, 404.03, 404.12, 404.13, 404.92, 404.93, 582-583.7, 585-586, 588.0, V42.0, V45.1, V56-V56.8		Rheumatologic disease†	10 (1.5)	466.5, 710.0-710.4, 714.0-714.2, 714.8, 725
331.2 Any malignancy, including leukemia and lymphoma Any malignancy, including leukemia and lymphoma Beauty and lymphoma Any malignancy, including leukemia and lymphoma Beauty and lymphoma Be				
Any malignancy, including leukemia and lymphoma 626 (96) 150.0-159.0, 162-173.59, 173.70-175.9, 180.0-183.9, 185-186.9, 188.0-188.6, 188.8-189.4, 189.9, 191.0-192.3, 192.9-194.4, 200.2-202.38, 202.70-202.81, 203.0-204.22, 204.90-208.22, 208.90-209.36, 209.70, 209.72-209.79, 230.2-230.6, 230.8, 231.2, 231.9, 232.5-232.7, 233.0, 233.1, 233.31, 233.32, 233.4, 233.7, 235.2-235.4, 235.7, 235.8, 236.2, 236.4, 236.5, 236.7-236.91, 237.1-237.4, 237.6, 238.0-238.3, 238.79, 239.0-239.4, 239.6, 239.7, 239.89, 239.9 Hemiplegia or paraplegia† 71 (11) 342.00-342.92, 344.00-344.5, 344.89-344.9 Renal disease† 53 (8.2) 403.01, 403.11, 403.91, 404.02, 404.03, 404.12, 404.13, 404.92, 404.93, 582-583.7, 585-586, 588.0, V42.0, V45.1, V56-V56.8		,		
Any malignancy, including leukemia and lymphoma 626 (96) 150.0-159.0, 162-173.59, 173.70-175.9, 180.0-183.9, 185-186.9, 188.0-188.6, 188.8-189.4, 189.9, 191.0-192.3, 192.9-194.4, 200.2-202.38, 202.70-202.81, 203.0-204.22, 204.90-208.22, 208.90-209.36, 209.70, 209.72-209.79, 230.2-230.6, 230.8, 231.2, 231.9, 232.5-232.7, 233.0, 233.1, 233.31, 233.32, 233.4, 233.7, 235.2-235.4, 235.7, 235.8, 236.2, 236.4, 236.5, 236.7-236.91, 237.1-237.4, 237.6, 238.0-238.3, 238.79, 239.0-239.4, 239.6, 239.7, 239.89, 239.9 Hemiplegia or paraplegia† 71 (11) Renal disease† 53 (8.2) 403.01, 403.11, 403.91, 404.02, 404.03, 404.12, 404.13, 404.92, 404.93, 582-583.7, 585-586, 588.0, V42.0, V45.1, V56-V56.8	2			00111
leukemia and lymphoma 186.9, 188.0-188.6, 188.8-189.4, 189.9, 191.0-192.3, 192.9- 194.4, 200.2-202.38, 202.70-202.81, 203.0-204.22, 204.90- 208.22, 208.90-209.36, 209.70, 209.72-209.79, 230.2- 230.6, 230.8, 231.2, 231.9, 232.5-232.7, 233.0, 233.1, 233.31, 233.32, 233.4, 233.7, 235.2-235.4, 235.7, 235.8, 236.2, 236.4, 236.5, 236.7-236.91, 237.1-237.4, 237.6, 238.0-238.3, 238.79, 239.0-239.4, 239.6, 239.7, 239.89, 239.9 Hemiplegia or paraplegia† 71 (11) 342.00-342.92, 344.00-344.5, 344.89-344.9 Renal disease† 53 (8.2) 403.01, 403.11, 403.91, 404.02, 404.03, 404.12, 404.13, 404.92, 404.93, 582-583.7, 585-586, 588.0, V42.0, V45.1, V56-V56.8		Any malignancy including	626 (96)	150 0-150 0 162-173 50 173 70-175 0 180 0-183 0 185-
194.4, 200.2-202.38, 202.70-202.81, 203.0-204.22, 204.90- 208.22, 208.90-209.36, 209.70, 209.72-209.79, 230.2- 230.6, 230.8, 231.2, 231.9, 232.5-232.7, 233.0, 233.1, 233.31, 233.32, 233.4, 233.7, 235.2-235.4, 235.7, 235.8, 236.2, 236.4, 236.5, 236.7-236.91, 237.1-237.4, 237.6, 238.0-238.3, 238.79, 239.0-239.4, 239.6, 239.7, 239.89, 239.9 Hemiplegia or paraplegia† 71 (11)			020 (90)	
208.22, 208.90-209.36, 209.70, 209.72-209.79, 230.2-230.6, 230.8, 231.2, 231.9, 232.5-232.7, 233.0, 233.1, 233.31, 233.32, 233.4, 233.7, 235.2-235.4, 235.7, 235.8, 236.2, 236.4, 236.5, 236.7-236.91, 237.1-237.4, 237.6, 238.0-238.3, 238.79, 239.0-239.4, 239.6, 239.7, 239.89, 239.9 Hemiplegia or paraplegia† 71 (11) Renal disease† 53 (8.2) 403.01, 403.11, 403.91, 404.02, 404.03, 404.12, 404.13, 404.92, 404.93, 582-583.7, 585-586, 588.0, V42.0, V45.1, V56-V56.8		ieukemia and iymphoma		
230.6, 230.8, 231.2, 231.9, 232.5-232.7, 233.0, 233.1, 233.31, 233.32, 233.4, 233.7, 235.2-235.4, 235.7, 235.8, 236.2, 236.4, 236.5, 236.7-236.91, 237.1-237.4, 237.6, 238.0-238.3, 238.79, 239.0-239.4, 239.6, 239.7, 239.89, 239.9 Hemiplegia or paraplegia† 71 (11) 342.00-342.92, 344.00-344.5, 344.89-344.9 Renal disease† 53 (8.2) 403.01, 403.11, 403.91, 404.02, 404.03, 404.12, 404.13, 404.92, 404.93, 582-583.7, 585-586, 588.0, V42.0, V45.1, V56-V56.8				
233.31, 233.32, 233.4, 233.7, 235.2-235.4, 235.7, 235.8, 236.2, 236.4, 236.5, 236.7-236.91, 237.1-237.4, 237.6, 238.0-238.3, 238.79, 239.0-239.4, 239.6, 239.7, 239.89, 239.9 Hemiplegia or paraplegia† 71 (11) 342.00-342.92, 344.00-344.5, 344.89-344.9 Renal disease† 53 (8.2) 403.01, 403.11, 403.91, 404.02, 404.03, 404.12, 404.13, 404.92, 404.93, 582-583.7, 585-586, 588.0, V42.0, V45.1, V56-V56.8				
236.2, 236.4, 236.5, 236.7-236.91, 237.1-237.4, 237.6, 238.0-238.3, 238.79, 239.0-239.4, 239.6, 239.7, 239.89, 239.9 Hemiplegia or paraplegia† 71 (11) 342.00-342.92, 344.00-344.5, 344.89-344.9 Renal disease† 53 (8.2) 403.01, 403.11, 403.91, 404.02, 404.03, 404.12, 404.13, 404.92, 404.93, 582-583.7, 585-586, 588.0, V42.0, V45.1, V56-V56.8				
238.0-238.3, 238.79, 239.0-239.4, 239.6, 239.7, 239.89, 239.9 Hemiplegia or paraplegia† 71 (11) 342.00-342.92, 344.00-344.5, 344.89-344.9 Renal disease† 53 (8.2) 403.01, 403.11, 403.91, 404.02, 404.03, 404.12, 404.13, 404.92, 404.93, 582-583.7, 585-586, 588.0, V42.0, V45.1, V56-V56.8 3				233.31, 233.32, 233.4, 233.7, 235.2-235.4, 235.7, 235.8,
239.9 Hemiplegia or paraplegia† 71 (11) 342.00-342.92, 344.00-344.5, 344.89-344.9 Renal disease† 53 (8.2) 403.01, 403.11, 403.91, 404.02, 404.03, 404.12, 404.13, 404.92, 404.93, 582-583.7, 585-586, 588.0, V42.0, V45.1, V56-V56.8 3				236.2, 236.4, 236.5, 236.7-236.91, 237.1-237.4, 237.6,
239.9 Hemiplegia or paraplegia† 71 (11) 342.00-342.92, 344.00-344.5, 344.89-344.9 Renal disease† 53 (8.2) 403.01, 403.11, 403.91, 404.02, 404.03, 404.12, 404.13, 404.92, 404.93, 582-583.7, 585-586, 588.0, V42.0, V45.1, V56-V56.8 3				238.0-238.3, 238.79, 239.0-239.4, 239.6, 239.7, 239.89.
Hemiplegia or paraplegia† 71 (11) 342.00-342.92, 344.00-344.5, 344.89-344.9 Renal disease† 53 (8.2) 403.01, 403.11, 403.91, 404.02, 404.03, 404.12, 404.13, 404.92, 404.93, 582-583.7, 585-586, 588.0, V42.0, V45.1, V56-V56.8 3				
Renal disease† 53 (8.2) 403.01, 403.11, 403.91, 404.02, 404.03, 404.12, 404.13, 404.92, 404.93, 582-583.7, 585-586, 588.0, V42.0, V45.1, V56-V56.8		Hemiplegia or paraplegia†	71 (11)	
404.92, 404.93, 582-583.7, 585-586, 588.0, V42.0, V45.1, V56-V56.8			. ,	·
V56-V56.8 3		Remai discase	33 (0.2)	
3				
	2			\20-\20.0
	3	36 1	F (0.0)	45(0,45(0,550,0,550,0)
		Moderate or severe liver	5 (0.8)	456.0-456.2, 572.2-572.8
disease†		disease†	1	
6	6			
Metastatic solid tumor 633 (98) 197.0-198.7, 198.81-190.9, 192.0-196.9, 199.0		Metastatic solid tumor	633 (98)	197.0-198.7, 198.81-190.9, 192.0-196.9, 199.0
AIDS or HIV†§ 2 (0.3) 042		AIDS or HIV†§	2 (0.3)	042

^{*}The values are given as the number of patients, with the percentage in parentheses. †These conditions are based on the ICD-9 codes that were assigned to these patients. If one or more of the conditions were present in a patient, this patient was considered to have additional comorbidities. The mean modified Charlson Comorbidity Index score (and standard deviation) was 6.9 ± 1.7 , and 300 patients had at least one additional comorbidity. ‡This includes myocardial infarction in the history, congestive heart failure, peripheral vascular disease, and cerebrovascular disease. The following comorbidities were mutually exclusive: mild liver disease and moderate or severe liver disease, and any malignancy and metastatic solid tumor. AIDS = AIDS

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DEVELOPMENT OF A PROGNOSTIC SURVIVAL ALGORITHM FOR PATIENTS WITH METASTATI

Development of a Prognostic Survival Algorithm for Patients with Metastatic Spine Disease http://dx.doi.org/10.2106/JBJS.15.00975

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TABLE E-2 Computational Parameters for Boosted Regression, Explanation, Recommended Settings, and Settings Chosen for Our Study*

Parameter	Explanation	Recommended ¹⁹	Our Setting
Interaction	Specifies the maximum number of interactions allowed.	Between 3 and 7	3
Maximal iterations	Specifies the maximum number of trees to be fitted.	Set higher if the "best" iteration is almost as large as the set value	10,000
Shrinkage factor	Specifies the shrinkage factor, ranging between 0 and 1. Shrinkage means reducing or shrinking the impact of each additional tree in an effort to avoid overfitting.	0.01 to 0.001	0.01
Bagging	Specifies the fraction of training observations that is used to fit an individual tree. A value of 0.6 means that 60% of the observations are used for building each tree.	0.4 to 0.8	0.5
Distribution	Specifies the distribution of the inefficiency term. Possible distributions are normal, logistic, and Poisson.	NA†	Logistic
Train fraction	Specifies the percentage of data to be used as training data.	0.8 is default	0.8

^{*}For our model, various parameters were used within suggested ranges and were tested for their in-sample and out-of-sample predictability to assess overfitting. The parameters that we chose provided the best possible model. †NA = not applicable.

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TABLE E-3 The Most Commonly Used Prognostication Models to Estimate Survival in Patients with Spine Metastases, Factors Included in Their Models, and Comparison with Our Prognostication Model*

	Bauer Score (N	Sioutos Score	Tokuhashi	Tomita Score	van der Linden	Current Study (N
Predictive Parameters	= 153)	(N = 109)	Score ($N = 64$)	(N = 67)	Score ($N = 342$)	= 649)
Age	Not included	Not included	Not included	Not included	Not included	Included
Performance status	Not included	Not included	Included	Not included	Included	Included
Pathologic fracture	Included	Not included	Not included	Not included	Not included	Not significant
Neurological compromise	Not included	Included	Included	Not included	Not included	Not significant
Primary tumor type	Included	Included	Included	Included	Included	Included
Multiple spine disease	Included	Included	Included	Included	Not included	Included
Extraspinal bone metastases	Included	Not included	Included	Included	Not included	Not significant
Visceral metastases	Included	Not included	Included	Included	Included	Included
Prior systemic therapy	Not included	Not included	Not included	Not included	Not included	Included
White blood-cell count	Not included	Not included	Not included	Not included	Not included	Included
Hemoglobin level	Not included	Not included	Not included	Not included	Not included	Included

^{*}Included indicates that the parameter was included in the prognostic assessment system to estimate survival; not included indicates that the parameter was not included. The exact parameters that were taken into account in every multivariate regression model of each prognostication model were not always reported. All factors tested in previous assessment systems were carried along for our multivariate regression model.