

Table S1 Acute injury severity codes for spinal cord injury used within the trauma Quality Improvement Program database

	Incomplete			Complete		
	With fracture/ dislocation	No fracture/ dislocation	No fracture specified	With fracture/ dislocation	No fracture/ dislocation	No fracture specified
Cervical	640214.4	640212.4	640210.4	640224.5	640222.5	640220.5
	640216.4	640244.5	640242.5	640226.5	640230.6	640221.5
	640218.4			640228.5	640262.5	640229.6
	640246.5			640232.6	640270.6	640260.5
	640248.5			640234.6		640261.5
	640250.5			640236.6		640269.6
				640264.5		
				640266.5		
				640268.5		
				640272.6		
				640274.6		
				640276.6		
Thoracic	640414.4	640412.4	640410.4	640424.5	640422.5	640420.5
	640416.4	640444.5	640442.5	640426.5	640462.5	640460.5
	640418.4			640428.5		
	640446.5			640464.5		
	640448.5			640466.5		
	640450.5			640468.5		
Lumbar	640614.4	640612.4	640610.4	640624.5	640622.5	640620.5
	640616.4	640644.5	640642.5	640626.5	640662.5	640660.5
	640618.4			640628.5		
	640646.5			640664.5		
	640648.5			640666.5		
	640650.5			640668.5		

Table S2 International Classification Disease 9th & 10th revision (ICD-9 & 10) procedure codes for spine surgery used within the Trauma Quality Improvement Program database

Spine surgery	Procedure codes
ICD 9 th	3.01, 3.02, 3.09, 3.53, 81.00, 81.01, 81.02, 81.03, 81.30, 81.31, 81.32, 81.33, 81.62, 81.63, 81.64, 81, 84.51, 3.99, 3.59, 81.04, 81.05, 81.06, 81.07, 81.08
ICD 10 th	
Cervical	0RG2071, 00NW0ZZ, 0PS304Z, 0RG4071, 0PB30ZZ, 0RG20A0, 0RG10A0, 01N10ZZ, 0RG2070, 0RG20K1, 0RG1071, 0RG10K0, 0RG20AJ, 0PS3XZZ, 0RG20J1, 0PS30ZZ, 0RG40K1, 0RG1070, 0RS104Z, 0PH304Z, 0RG20K0, 0RG40A0, 0RB10ZZ, 0RG40J1, 0RG207J, 0RG40AJ, 0RG10K1, 0RH104Z, 0PU307Z, 0RG20J0, 0RG10AJ, 0RS10ZZ, 0PC30ZZ, 0RG20Z1, 0RB50ZZ, 0PN30ZZ, 0RG10J0, 00CW0ZZ, 0PU30KZ, 0RT50ZZ, 0RG4070, 0RG10J1, 0RG0071, 0RU107Z, 0RBB0ZZ, 0RG40A1, 0RU10KZ, 0RG20KJ, 0RS404Z, 0PR307Z, 0PU30JZ, 0RG407J, 0PQ30ZZ, 0RC10ZZ, 0RC30ZZ, 0RG20Z0, 0RN10ZZ, 0RG40K0, 0RH10CZ, 00QW0ZZ, 0PD30ZZ, 0RG00K1, 0RG80K1, 0RN30ZZ, 0RU307Z, 0RB33ZZ, 0RG40Z1, 0RH404Z, 0PR30JZ, 0PS334Z, 0RG107J, 0RR30JZ, 00NW3ZZ, 0RG10A1, 0RH108Z, 0RU30KZ, 00BW0ZZ, 00SW0ZZ, 0RH10BZ, 0PB33ZZ, 0RU10JZ, 0RU40KZ, 0RG40KJ, 0RT40ZZ, 0RU407Z, 00NW4ZZ, 0PS33ZZ, 0PS344Z, 0RB40ZZ, 0RG00AJ, 0RG20ZJ, 0RR307Z, 0RS004Z, 0RU30JZ, 0PB34ZZ, 0RB30ZX, 0RB34ZZ, 0RG10JJ, 0RG20JJ, 0RG40J0, 0RG40JJ, XRG2092, 0RG00J1, 0RG40ZJ, 0RH10DZ, 0RH40CZ, 0RS40ZZ, 0RG10KJ, 0RG23A0, 0RN40ZZ, 0PH334Z, 0PR30KZ, 0RG1370, 0RG23J0, 0RG23K1, 0RG24A0, 0RJ10ZZ, 0RQ10ZZ, 0RQ30ZZ, 0RR30KZ, 008W0ZZ, 00JU3ZZ, 01Q10ZZ, 0PC33ZZ, 0PS34ZZ, 0PU347Z, 0RS530ZZ, 0RB10ZX, 0RG007J, 0RG00A0, 0RG13K0, 0RG23J1, 0RG2471, 0RG40Z0, 0RR107Z, 0RS14ZZ, 0RW104Z, 01B10ZZ, 01N14ZZ, 0PB30ZX, 0PU337Z, 0PU33JZ, 0RC50ZZ, 0RG1371, 0RG13A0, 0RG13Z1, 0RG4371, 0RG43K1, 0RR10JZ, 0RU34JZ, XRG1092, 0P830ZZ, 0PU33KZ, 0RS53ZZ, 0RB54ZZ, 0RC13ZZ, 0RC40ZZ, 0RG00Z1, 0RG10ZJ, 0RG13K1, 0RG13Z0, 0RG14A0, 0RG2370, 0RG2371, 0RG23AJ, 0RG2470, 0RG24K1, 0RG43J1, 0RG44K1, 0RH004Z, 0RH00CZ, 0RH134Z, 0RH14BZ, 0RN14ZZ, 0RP404Z, 0RR40JZ, 0RU50JZ, 0RU50KZ, XRG4092, 00CW3ZZ, 00QW4ZZ, 00SW3ZZ, 00SW4ZZ, 0PN33ZZ, 0PQ33ZZ, 0PR337Z, 0PR33JZ, 0PU34JZ, 0RS10ZZ, 0RB14ZZ, 0RG0070, 0RG00J0, 0RG00KJ, 0RG04KJ, 0RG13J0, 0RG13J1, 0RG1470, 0RG14K0, 0RG14Z0, 0RG23K0, 0RG24J0, 0RG24K0, 0RG24KJ, 0RG24Z1, 0RG43KJ, 0RG4471, 0RG44J0, 0RG44J1, 0RH03BZ, 0RH138Z, 0RH408Z, 0RH40BZ, 0RH40DZ, 0RH444Z, 0RN50ZZ, 0RQ13ZZ, 0RQ54ZZ, 0RR407Z, 0RR40KZ, 0RS13ZZ, 0RS144Z, 0RS434Z, 0RS43ZZ, 0RS44ZZ, 0RU00JZ, 0RU03JZ, 0RU40JZ, 0RU507Z, 0RW107Z, 0RG20A1, 0RG10Z0, 0RG10Z1
Thoracic	0RG7071, 0PS404Z, 00NX0ZZ, 0RGA071, 0PB40ZZ, 0RG6071, 0RG70K1, 0RG70AJ, 0PS40ZZ, 0RB90ZZ, 01N80ZZ, 0RG70J1, 0RGA0K1, 0PH404Z, 0RG60K1, 0RS604Z, 00CX0ZZ, 0RGA0AJ, 0RG8071, 0RG60AJ, 0RG60J1, 0RG707J, 0RT90ZZ, 0RGA0J1, 0RG70Z1, 0PC40ZZ, 0RB60ZZ, 0PU407Z, 0RH60CZ, 0RG60Z1, 0RS60ZZ, 0RG607J, 0PN40ZZ, 0RH604Z, 0RGA0A0, 0RGA0A1, 0PS434Z, 0RG70A0, 0RSA04Z, 0PU40KZ, 0RG60A0, 0RG7070, 00QX0ZZ, 0PS43ZZ, 0RGA07J, 0PU40JZ, 0RGA0Z1, 0RG80J1, 0PH434Z, 0RTB0ZZ, 0PQ40ZZ, 0RG60A1, 0RHA0CZ, 0RG70JJ, 0RU607Z, 00BX0ZZ, 0PU43JZ, 0RG70KJ, 0RN60ZZ, 0RU60KZ, 0RC60ZZ, 0RHA04Z, 0PD40ZZ, 0RG6070, 0RG70J0, 0RG70K0, 0P840ZZ, 0PR407Z, 0RG80AJ, 0RBA0ZZ, 0RG7371, 0RG73AJ, 01Q80ZZ, 0RC90ZZ, 0RG73J1, 0RGA070, 00NX3ZZ, 00SX0ZZ, 0PB43ZZ, 0PS444Z, 0RP604Z, 0RS634Z, 0RU907Z, 0RG60KJ, 0RG70ZJ, 0RH634Z, 0RQ60ZZ, 0RU60JZ, XRG7092, 0PB40ZX, 0RG60K0, 0RG73Z1, 0RG80Z1, 0RGA0KJ, 0RGA371, 0RGA3Z1, 0RH60BZ, 0RU407Z, 0PR40KZ, 0RCA0ZZ, 0RG73K1, 0RG8070, 0RG807J, 0RGA0J0, 0RGA3J1, 0RH60DZ, 0RJ60ZZ, 0RN90ZZ, 0RSA0ZZ, 008X0ZZ, 00NX4ZZ, 01B80ZZ, 0PU43KZ, 0RG60ZJ, 0RG63J1, 0RG73A1, 0RG74K1, 0RGA0ZJ, 0RH608Z, 0RR907Z, 0RU90KZ, XRG4092, 00BX0ZX, 01580ZZ, 0PB43ZX, 0PB44ZZ, 0PC44ZZ, 0PR40JZ, 0PU437Z, 0RS60ZZ, 0RB90ZX, 0RG60JJ, 0RG6370, 0RG63A1, 0RG63AJ, 0RG63K1, 0RG63Z1, 0RG73JJ, 0RG7471, 0RG747J, 0RG74J1, 0RG80JJ, 0RGA0JJ, 0RGA0Z0, 0RGA3K1, 0RH63CZ, 0RHA0DZ, 0RHA34Z, 0RQA0ZZ, 0RR607Z, 0RR60JZ, 0RRA07Z, 0RS644Z, 0RU40JZ, XRG6092, 00BX4ZZ, 00CX3ZZ, 00QX3ZZ, 0P844ZZ, 0PN44ZZ, 0PR437Z, 0RG60J0, 0RG60Z0, 0RG6371, 0RG63Z0, 0RG64A0, 0RG737J, 0RG73J0, 0RG74A1, 0RG8371, 0RG83AJ, 0RGA3A1, 0RH64CZ, 0RHA3CZ, 0RHB33Z, 0RNA0ZZ, 0RNB0ZZ, 0RQ90ZZ, 0RQ93ZZ, 0RQB0ZZ, 0RR90JZ, 0RR90KZ, 0RRA0JZ, 0RRB0JZ, 0RRB0KZ, 0RS63ZZ, 0RSA34Z, 0RU93KZ, 0RU40KZ, 0RU47Z, 0RUB0KZ, XRG70F3, 0RG70A1, 0RG80A1
Lumbar	0SG1071, 0SG0071, 0QS004Z, 00NY0ZZ, 0QB00ZZ, 0SG10K1, 01NB0ZZ, 0SG10AJ, 0QS00ZZ, 0SG00K1, 0QH004Z, 0SG10J1, 0SB20ZZ, 0ST20ZZ, 0SG3071, 0SG00A0, 0SG00AJ, 0SG00J1, 0SG107J, 0SB00ZZ, 00CY0ZZ, 0QS034Z, 0SG00Z1, 0SS004Z, 0QS03ZZ, 0SG10A0, 0QU007Z, 0SH00CZ, 0QN00ZZ, 0QU03JZ, 0SG10Z1, 00QY0ZZ, 0QC00ZZ, 0QU00KZ, 0SG1070, 0SG30K1, 0QQ00ZZ, 0SS00ZZ, 0QB03ZZ, 0QU00JZ, 0SC00ZZ, 0SG00A1, 0SG10J0, 0SH004Z, 0SG30AJ, 0SG30J1, 0SG007J, 0SG00KJ, 0SG10JJ, 00SY0ZZ, 0SC20ZZ, 0SG0070, 0SG10K0, 0SG13AJ, 0SG13J1, 0SH034Z, 0SN00ZZ, 0SS304Z, 0SU007Z, 00BY0ZZ, 00NY4ZZ, 0QD00ZZ, 0QS044Z, 0SB40ZZ, 0SG00J0, 0SG03Z1, 0SG10KJ, 0SG10Z0, 0SG1371, 0SG13A1, 0SG13K1, 0SH00DZ, 0SH30CZ, 0SN20ZZ, 0SR00JZ, XRGB092, 005Y0ZZ, 00BY0ZX, 00CY3ZZ, 00NY3ZZ, 0Q500ZZ, 0Q800ZZ, 0QB03ZX, 0QB04ZZ, 0QH005Z, 0QN04ZZ, 0QR007Z, 0QR00KZ, 0RGA471, 0RGA4AJ, 0RGA4J0, 0S500ZZ, 0SB24ZZ, 0SB30ZZ, 0SG0371, 0SG00K0, 0SG03AJ, 0SG10ZJ, 0SG13Z1, 0SG14AJ, 0SG3070, 0SG30A1, 0SG30K0, 0SG30KJ, 0SH03CZ, 0SH304Z, 0SQ00ZZ, 0SR007Z, 0SS034Z, 0SS03ZZ, 0SU00JZ, 0SU00KZ, 0SU03KZ, XRG40F3, XRG092, 0SG10A1, 0SG00ZJ

Table S3 Missing data within baseline characteristics of spinal cord injury population

Variable	N (%)
Male	197 (0.3)
Presenting GCS	2347 (3.0)
Mechanism	365 (0.5)
Trauma type	456 (0.6)
Hospital type	55 (0.07)
Time to surgery	267 (0.6)

Table S4 Multivariable logistic regression analysis of factors associated with major adverse events (MAE)

Variable	OR	95% CI	P value
Sex (Female): [Male]	0.78	0.74–0.82	<0.001
Year	1.02	1.01–1.03	<0.001
Age (per 10 years)	1.05	1.02–1.08	<0.001
Race (Asian): [White]	1.03	0.90–1.16	0.70
Race (Black): [White]	1.10	1.04–1.16	<0.001
Race (Other): [White]	1.08	1.01–1.16	0.02
CCI (1): [0]	1.08	0.99–1.17	0.07
CCI (2): [0]	1.39	1.26–1.53	<0.001
CCI (≥ 3): [0]	1.66	1.48–1.87	<0.001
Level (Thoracic): [Cervical]	0.78	0.74–0.82	<0.001
Level (Lumbar): [Cervical]	0.63	0.58–0.69	<0.001
Completeness (Incomplete): [Not specified]	1.17	1.11–1.23	<0.001
Completeness (Complete): [Not specified]	2.71	2.55–2.87	<0.001
Fracture: [No fracture]	1.38	1.31–1.45	<0.001
Surgery: [No surgery]	1.51	1.44–1.59	<0.001
Mechanism of injury (MVT): [Fall]	1.34	1.27–1.42	<0.001
Mechanism of injury (Other): [Fall]	1.28	1.21–1.36	<0.001
Trauma type (Blunt): [Penetrating]	1.56	1.42–1.70	<0.001
Trauma type (Other): [Penetrating]	0.89	0.69–1.14	0.38
Presenting GCS (13–14): [15]	1.80	1.70–1.91	<0.001
Presenting GCS (9–12): [15]	2.34	2.14–2.56	<0.001
Presenting GCS (3–8): [15]	3.33	3.15–3.52	<0.001
Hospital type (Non-profit): [For profit]	1.00	0.93–1.07	1.00
Hospital type (Government): [For profit]	1.18	0.93–1.50	0.17
Teaching status (Academic): [Non-teaching]	1.29	1.20–1.38	<0.001
Teaching status (Community): [Non-teaching]	1.18	1.10–1.27	<0.001

Reference groups are indicated in brackets. CCI, Charlson Comorbidity Index; GCS, Glasgow Coma Scale; MVT, motor vehicle trauma; OR, odds ratio; CI, confidence interval.

Table S5 Multivariable logistic regression analysis of factors associated with immobility related adverse events

Variable	OR	95% CI	P value
Sex (Female): [Male]	0.77	0.72–0.82	<0.001
Year	1.03	1.01–1.04	<0.001
Age (per 10 years)	1.02	0.99–1.05	0.21
Race (Asian): [White]	0.89	0.75–1.05	0.19
Race (Black): [White]	1.16	1.09–1.24	<0.001
Race (Other): [White]	1.14	1.05–1.24	<0.001
CCI (1): [0]	1.18	1.07–1.31	<0.001
CCI (2): [0]	1.19	1.05–1.34	0.01
CCI (≥ 3): [0]	1.10	0.95–1.28	0.21
Level (Thoracic): [Cervical]	0.96	0.90–1.02	0.20
Level (Lumbar): [Cervical]	0.75	0.68–0.84	<0.001
Completeness (Incomplete): [Not specified]	1.45	1.35–1.55	<0.001
Completeness (Complete): [Not specified]	3.44	3.20–3.70	<0.001
Fracture: [No fracture]	1.35	1.27–1.45	<0.001
Surgery: [No surgery]	2.00	1.87–2.13	<0.001
Mechanism of injury (MVT): [Fall]	1.22	1.14–1.31	<0.001
Mechanism of injury (Other): [Fall]	1.27	1.19–1.37	<0.001
Trauma type (Blunt): [Penetrating]	1.67	1.50–1.85	<0.001
Trauma type (Other): [Penetrating]	0.76	0.54–1.05	0.11
Presenting GCS (13–14): [15]	1.71	1.59–1.84	<0.001
Presenting GCS (9–12): [15]	2.30	2.07–2.54	<0.001
Presenting GCS (3–8): [15]	2.53	2.36–2.71	<0.001
Hospital type (Non-profit): [For profit]	0.97	0.89–1.06	0.49
Hospital type (Government): [For profit]	1.09	0.80–1.46	0.57
Teaching status (Academic): [Non-teaching]	1.07	0.99–1.17	0.11
Teaching status (Community): [Non-teaching]	1.04	0.95–1.13	0.41

Reference groups are indicated in brackets. CCI, Charlson Comorbidity Index; GCS, Glasgow Coma Scale; MVT, motor vehicle trauma; OR, odds ratio; CI, confidence interval.