

Supplemental Table S1. Abbreviated Injury Scale [AIS] codes

Structural brain injury	AIS code	AIS allocated group
Epidural haematoma	· 140629.3	3
	· 140630.3	3
	· 140632.4	4
	· 140634.5	5
	· 140636.5	5
	· 140414.3	3
	· 140418.4	4
	· 140422.5	5
Subdural haematoma	· 140438.3	3
	· 140442.4	4
	· 140650.3	3
	· 140446.5	5
	· 140651.3	3
	· 140652.4	4
	· 140654.4	4
	· 140656.5	5
	· 140655.5	5
Contusion	· 140499.3	3
	· 140402.3	3
	· 140403.3	3
	· 140404.4	4
	· 140405.5	5
	· 140204.5	5
	· 140602.3	3
	· 140604.3	3
	· 140606.3	3
	· 140608.4	4
	· 140610.5	5
	· 140611.3	3
	· 140612.3	3
	· 140614.3	3
	· 140616.4	4
	· 140618.5	5
	· 140620.3	3
	· 140622.3	3
· 140624.4	4	
· 140626.5	5	
Subarachnoid haemorrhage	· 140695.3	3
Diffuse axonal injury	· 161007.4	4
	· 161008.4	4
	· 161011.5	5
	· 161012.5	5
	· 161013.5	5
	· 140628.4	4
	· 140625.4	4
	· 140627.5	5
Intraperenchymal hematoma	· 140426.3	3
	· 140430.4	4
	· 140434.5	5
	· 140638.3	3
	· 140645.4	4
	· 140640.4	4

	· 140647.3	3
	· 140649.4	4
	· 140646.5	5
	· 140648.5	5
	· 140641.5	5
Laceration	· 140474.3	3
	· 140473.3	3
	· 140472.2	2
	· 140212.6	6
	· 140688.3	3
	· 140687.3	3
	· 140686.4	4
Intraventricular hemorrhage	· 140677.4	4
Post traumatic ischemic injury	· 140676.3	3
	· 140680.3	3
	· 140681.3	3
	· 140683.5	5
	· 140458.3	3
	· 140462.3	3
	· 140208.5	5
Brainstem injury	· 140299.5	5
	· 140202.5	5
	· 140210.5	5
	· 140204.5	5
	· 140208.5	5
Other injury	· 140450.3	3
	· 140699.3	3
	· 140660.3	3
	· 140662.3	3
	· 140664.4	4
	· 140666.5	5
	· 140668.3	3
	· 140670.3	3
	· 140672.4	4
	· 140674.5	5
	· 140682.3	3
	· 140698.3	3
	· 140799.3	3

Supplemental Table S2. Predictors of mortality at each level of TBI severity [Abbreviated Injury Scale (AIS)]

2a. Among AIS-head =3 TBI patients

	Isolated TBI patients		Multiple trauma patients	
	OR [95%CI]	<i>p</i>	OR [95%CI]	<i>p</i>
Age, years				
16-64	Reference		Reference	
≥65	2.9 [1.6;5.5]	<0.0001	2.8 [1.6;5.2]	0.004
Sex, male	1.2 [0.8;1.7]	0.8	1.4 [0.8;2.5]	0.2
Comorbidities				
None	Reference		Reference	
Neurologic disorders	1.9 [1.2;3.0]	0.2	2.4 [1.2;5.3]	0.1
Cardiovascular disorders	1.9 [1.2;3.1]	0.001	1.6 [0.7;3.8]	0.1
Dementia	2.0 [1.1;3.6]	0.04	5.0 [1.1;22.0]	<0.0001
Alcohol intoxication	0.4 [0.1;1.2]	0.05	1.2 [0.6;2.0]	0.1
Trauma Mechanism		0.1		0.07
Road Collision	Reference		Reference	
Fall from height	0.7 [0.4;1.3]	0.2	1.1 [0.4;2.7]	0.9
Fall from standing height	0.9 [0.5;1.6]	0.9	0.4 [0.2;0.8]	0.09
Penetrating trauma	0.9 [0.1;5.0]	0.9	2.5 [0.2;28.5]	0.5
Other blunt trauma	0.5 [0.3;1.1]	0.08	0.5 [0.3;1.1]	0.1
Pre-hospital intubation	4.1 [2.4;7.1]	<0.0001	1.5 [0.7;3.1]	0.5
Hypotension	3.1 [1.4;6.5]	0.0001	3.6 [2.0;6.5]	<0.0001
Inter-hospital transfer	0.4 [0.3;0.7]	<0.0001	1.2 [0.6;2.2]	0.3
Structural damages				
Epidural hematoma	Reference		Reference	
Subdural hematoma	0.7 [0.3;1.9]	0.5	1.5 [0.8;2.6]	0.1
Contusion	0.4 [0.1;1.2]	0.1	0.6 [0.1;3.0]	0.5
Intraparenchymal hematoma	1.7 [0.6;5.0]	0.2	3.1 [0.1;4.5]	0.7
Subarachnoid injury	4.7 [0.1;1.2]	0.1	2.4 [0.7;8.2]	0.3
Other injury	0.6 [0.1;1.9]	0.4	1.5 [0.3;7.6]	0.6
ICU admission	2.5 [1.7;3.7]	<0.0001	1.2 [0.6;2.2]	0.5
ISS	0.9 [0.8;1.0]	0.06	1.0 [1.01;1.1]	0.02

2b. Among AIS-head =4 TBI patients

	Isolated TBI patients		Multiple trauma patients	
	OR [95%CI]	<i>p</i>	OR [95%CI]	<i>p</i>
Age, years				
16-64	Reference		Reference	
≥65	2.7 [1.6;4.7]	<0.001	2.2 [1.3;3.7]	0.0003
Sex, male	1.0 [0.7;1.3]	0.7	1.01 [0.6;1.7]	0.9
Comorbidities				
None	Reference		Reference	
Neurologic disorders	1.3 [0.7;2.4]	0.1	2.6 [0.7;9.3]	0.6
Cardiovascular disorders	1.8 [1.2;2.7]	0.005	2.1 [1.04;4.2]	0.1
Dementia	1.3 [0.7;2.4]	0.09	2.5 [0.7;9.3]	0.08
Trauma Mechanism		0.1		0.9
Road Collision	Reference		Reference	
Fall from height	0.8 [0.4;1.3]	0.3	1.2 [0.4;3.1]	0.6
Fall from standing height	1.0 [0.6;1.6]	0.6	1.1 [0.6;1.9]	0.7
Other blunt trauma	0.6 [0.3;1.1]	0.09	0.9 [0.4;2.3]	0.9
Pre-hospital intubation	4.3 [2.4;7.4]	<0.0001	2.8 [1.4;5.6]	0.01
Hypotension	3.5 [1.8;6.8]	0.0001	1.9 [0.9;3.9]	0.05
Alcohol intoxication	0.3 [0.1;0.7]	0.01	0.6 [0.2;2.4]	0.6
Inter-hospital transfer	0.4 [0.3;0.6]	<0.0001	0.8 [0.4;1.1]	0.4
Structural damages				
Epidural hematoma	Reference		Reference	
Subdural hematoma	-	-	0.6 [0.1;3.4]	0.4
Contusion	-	-	0.6 [0.3;1.1]	0.1
Intraparenchymal hematoma	-	-	1.8 [0.9;3.5]	0.07
Subarachnoid injury	-	-	7.2 [0.4;148.2]	0.2
Intraventricular injury	-	-	2.7 [0.2;39.2]	0.4
Diffuse axonal injury	1.2 [0.1;9.9]		0.7 [0.1;7.0]	0.6
Other blunt injury	2.2 [1.5;3.1]	<0.0001	0.7 [0.01;5.8]	0.9
ICU admission	2.5 [1.8;3.6]	<0.0001	1.1 [0.6;2.1]	0.9
ISS	0.9 [0.8;0.9]	0.02	1.1 [1.01;1.1]	0.0007

2c. Among AIS-head =5 TBI patients

	Isolated TBI patients		Multiple trauma patients	
	OR [95%CI]	<i>p</i>	OR [95%CI]	<i>p</i>
Age, years				
16-64	Reference		Reference	
≥65	2.6 [1.9;3.6]	<0.001	2.2 [1.6;3.0]	<0.001
Sex, male	0.9 [0.8;1.1]	0.7	0.8 [0.6;1.2]	0.4
Comorbidities				
None	Reference		Reference	
Neurologic disorders	0.8 [0.6;1.0]	0.2	0.6 [0.3;0.9]	0.04
Cardiovascular disorders	1.2 [1.02;1.6]	0.03	1.1 [0.7;1.8]	0.5
Dementia	1.3 [0.9;1.7]	0.2	0.9 [0.3;2.8]	0.8
Trauma Mechanism		<0.0001		0.1
Road Collision	Reference		Reference	
Fall from height	0.9 [0.7;1.2]	0.5	0.9 [0.5;1.6]	0.2
Fall from standing height	1.1 [0.8;1.4]	0.3	0.7 [0.5;1.0]	0.1
Penetrating trauma	6.6 [3.6;12.1]	<0.0001	0.4 [0.1;1.6]	0.2
Other blunt trauma	0.6 [0.4;0.8]	0.005	0.6 [0.4;1.05]	0.2
Pre-hospital intubation	3.0 [2.4;3.8]	<0.0001	1.5 [1.1;2.1]	0.01
Hypotension	2.3 [1.6;3.4]	<0.0001	1.8 [1.3;2.6]	0.0002
Alcohol intoxication	0.7 [0.4;1.1]	0.1	0.5 [0.2;1.1]	0.1
Inter-hospital transfer	0.4 [0.4;0.6]	<0.0001	0.6 [0.4;0.7]	0.0003
Structural damages				
Epidural hematoma	Reference		Reference	
Subdural hematoma	3.0 [1.6;5.4]	0.0002	1.2 [0.9;1.6]	0.003
Contusion	1.9 [0.8;4.4]	0.1	5.3 [1.4;19.1]	0.01
Intraparenchymal hematoma	3.8 [2.0;7.4]	<0.0001	4.7 [1.3;16.9]	0.06
Subarachnoid injury	-	-	25.8 [4.0;165.0]	0.0006
Intraventricular injury	-	-	18.2 [0.8;383.2]	0.06
Diffuse axonal injury	1.1 [0.3;4.1]	0.8	3.7 [0.8;15.8]	0.05
Other blunt injury	19.0 [6.1;58.9]	<0.0001	16.8 [3.7;74.8]	0.0002
ICU admission	1.5 [1.2;1.8]	0.0005	1.2 [0.8;1.6]	0.3
ISS	1.1 [1.04;1.1]	0.02	1.02 [1.002;1.03]	0.02

AIS:Abbreviated injury scale, ICU: Intensive care unit, ISS: Injury severity score

The calibration statistic for the multivariable logistic regression was assessed using the Spiegelhalter's z-test statistic. P-values were 0.89, 0.80, and 0.94 for AIS-head = 3, 4 and 5 polytrauma patients and 0.78, 0.81, and 0.98 for isolated TBI patients respectively.