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| --- | --- | --- |
| Variable | Univariable Odds ratio of admission to hospital (95%CI) | Adjusted Odds ratio of admission to hospital (95%CI) |
| Age (per year)  | 1$∙$01 (1$∙$01-1$∙$01) | 1$∙$01 (1$∙$01-1$∙$01) |
| Sex. Male (Reference = Female) | 1∙28 (1∙21-1∙36) | 1∙16 (1∙08-1∙25) |
| Pre existing disease: Reference = None  |
|  Mild systemic disease Severe systemic disease Severe that is a constant threat to life Not recorded | 1∙14 (1∙06-1$∙22$)1$∙77$ (1$∙64$-1$∙91$)2∙34 (1$∙91$-2$∙86$)1$∙$39 (1$∙$17-1$∙$66) | 0∙96 (0∙87-1$∙$05)1$∙$47 (1$∙$32-1$∙$65)2∙04 (1$∙$60-2$∙$60)0$∙$62 (0$∙$49-0$∙$78) |
| Presence of CT brain scan Abnormality (Reference= No injury on CT brain scan)  | 16$∙$56 (14$∙79$-18$∙54$) | 9$∙$70 (8$∙$63-10$∙$95) |
| GCS 15 in ED\*\* (Reference = GCS <15 in ED) | 0$∙20$ (0$∙18 $-0$∙21$) | 0$∙$35 (0$∙$32-0$∙$38) |
| Significant Extracranial Injury (AIS 3+)(Reference = No significant Extracranial Injury (AIS <3)) | 2$∙93$ (2$∙76$-3$∙12$) | 2$∙$40 (2$∙$24-2$∙$58) |
| Arriving at ED intubated(Reference = Arriving at ED not intubated)  | $226∙01$(93$∙83$-544$∙35$) | 41$∙$11 (1$8∙$84-11$5∙$65) |
| Low Energy Transfer (Reference = High Energy Transfer) | 0$∙95 $(0$∙89$-1$∙00$) | 0$∙$82 (0$∙$34-0$∙$53) |
| Age: Energy Transfer (Low Energy) Interaction | 1$∙$01 (1$∙$01-1$∙$01) | 1$∙$01 (1$∙$01-1$∙$01) |

TABLE SHOWING : MULTIVARIABLE ANALYSIS OF FACTORS (age, sex, pre-existing disease status, presence of CT brain abnormality, ED GCS < 15, presence of significant extracranial injury, being intubated on ED arrival, causal energy transfer mechanism and its interaction with age) PREDICTING HOSPITAL ADMISSION IN 18035\* PATIENTS FROM THE CENTER TBI REGISTRY \*excluding patients who died in ER n=69, arrived as secondary transfers n= 2706, or with missing Age / CT Abnormality / GCS sum score / extracranial injury n=873. GCS Considered as binary category in accordance with guidance for hospital admission (8). Area Under Receiver Operator Characteristic Curve (AUC) = 0.81 . GCS=Glasgow Coma Score, ED= Emergency Department, CT= CT brain scan, CI=Confidence Interval, IQR=Interquartile range, AIS=Abbreviated Injury Scale,