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Appendix: Multivariable models for predicting death

	Odds Ratio	95% Confidence Interval		P value	Deviance	d.f.
Intercept(1)	0.012	0.006	0.023	<0.0001		
High Income Countries (HIC)	1	ref		0.0001	18	2
Middle Income Countries (MIC)	2.14	1.03	4.44	0.0405		
Low Income Countries (LIC)	3.59	1.30	9.89	0.0134		
Tranexamic Acid before 3 h (TXA)	0.81	0.72	0.90	0.0002	13	2
Tranexamic Acid after 3 h	1.02	0.87	1.20	0.8158		
More than 3 hours since injury (HSI)	0.75	0.65	0.87	0.0001	13	2
Age (linear component)	1.37	1.16	1.62	0.0002	223	3
Age ²	0.91	0.84	0.99	0.0228		
Age ³	1.02	1.01	1.03	0.0015		
SBP (linear component)	0.90	0.87	0.93	<0.0001	292	3
SBP ²	1.03	1.02	1.03	<0.0001		
SBP ³	1.00	1.00	1.00	0.0008		
RR (linear component)	0.74	0.59	0.92	0.0069	171	3
RR ²	1.48	1.24	1.77	<0.0001		
RR ³	0.93	0.90	0.97	0.0004		
HR (linear component)	0.97	0.92	1.02	0.1915	24	2
HR ²	1.02	1.01	1.02	<0.0001		
GCS (linear component)	0.84	0.80	0.88	<0.0001	1993	4
GCS ²	1.01	1.00	1.01	<0.0001		
Penetrating injury (PIN)	0.91	0.77	1.07	0.2414	41	3
PIN*GCS	0.92	0.84	1.01	0.0930	37	2
PIN*GCS ²	0.99	0.98	0.99	0.0012		
Total					3126	21

(1) We allow for a different intercept for each country within the economic regions (random effect). The intercept here is the expected odds of a patient in a high income country with TXA=0 (no tranexamic acid), HIS=0 (<3 hours since injury), Age=20, SBP=120, RR=11, HR=90, GCS=15, PIN=0 (Blunt injury)

Formula of the full model (showing numerical values for the fixed effects only)

$$\text{Log (Odds)} = -4.462 + U_j + 0.762 \cdot \text{MIC} + 1.278 \cdot \text{LIC} - 0.217 \cdot \text{TXA} - 0.283 \cdot \text{HSI} + 0.236 \cdot \text{TXA} \cdot \text{HSI} + 0.316 \cdot \text{AGE} - 0.092 \cdot \text{AGE}^2 + 0.016 \cdot \text{AGE}^3 - 0.107 \cdot \text{SBP} + 0.025 \cdot \text{SBP}^2 + 0.001 \cdot \text{SBP}^3 - 0.306 \cdot \text{RR} + 0.391 \cdot \text{RR}^2 - 0.070 \cdot \text{RR}^3 - 0.032 \cdot \text{HR} + 0.016 \cdot \text{HR}^2 - 0.180 \cdot \text{GCS} + 0.010 \cdot \text{GCS}^2 - 0.099 \cdot \text{PIN} - 0.081 \cdot \text{PIN} \cdot \text{GCS} - 0.014 \cdot \text{PIN} \cdot \text{GCS}^2$$

Formula of the simplified model (showing numerical values for the fixed effects only)

$$\text{Log (Odds)} = -4.333 + U_j + 0.742 \cdot \text{MIC} + 1.224 \cdot \text{LIC} - 0.140 \cdot \text{TXA} - 0.289 \cdot \text{AGE} - 0.085 \cdot \text{AGE}^2 + 0.015 \cdot \text{AGE}^3 - 0.128 \cdot \text{SBP} + 0.028 \cdot \text{SBP}^2 + 0.002 \cdot \text{SBP}^3 - 0.231 \cdot \text{GCS} + 0.005 \cdot \text{GCS}^2$$

Abbreviations:

$U_j \sim N(0, \text{SD})$ Random effect for each country, where estimated SD=0.75

MIC: Middle Income Countries (0=No, 1 =Yes)

LIC: Low Income Countries (0=No, 1 =Yes)

TXA: Tranexamic Acid (0=No, 1 =Yes)

HSI: Hours since injury (0=less than 3 hours, 1 =3 hours or more)

SBP: (Systolic blood pressure -120) / 10

GCS: Glasgow Coma Scale - 15

RR: (Respiratory rate - 12) / 10

HR: (Heart rate - 70) / 10

PIN: Penetrating injury (0=No, 1 =Yes)

²: Quadratic transformation
³: Cubic transformation
d.f.: Degrees of freedom