

**Supplementary table S1.** Demographic and clinico-laboratory characteristics of neonates with very low birth weight

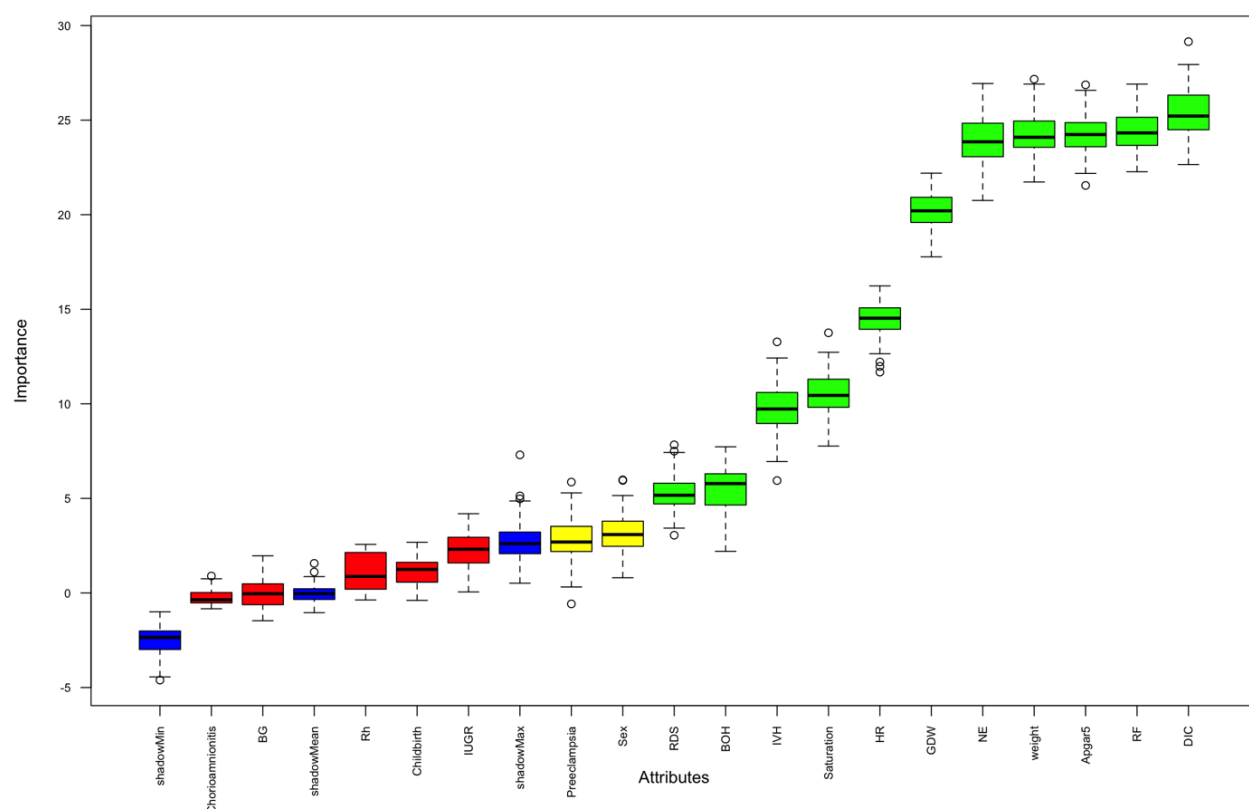
Category of variables	Variables	Description / Units of measurement
<b>Maternal and perinatal factors</b>	Mother's age	Years
	The presence of burdened obstetric history (BOH) in the medical history	Yes/No
	The presence of preeclampsia in the medical history	Yes/No
	The presence of chorioamnionitis in the medical history	Yes/No
	The presence of intrauterine growth retardation (IUGR) in the medical history	Yes/No
	Childbirth	Natural birth/Cesarean section
<b>Neonatal characteristics</b>	Sex	m/f
	Birth weight	Grams (g)
	Gestational age (GA)	Weeks
	Apgar score at 5 minutes	Scores (0-10)
	Respiratory failure (RF)	Degree (1-3)
	Heart rate (HR)	Beats per minute (bpm)
	Oxygen saturation	Percentages (%)
	Blood group (BG)	(O, A, B, AB)
	Rhesus factor (Rh)	Positive/Negative
<b>Complications of the early neonatal period</b>	Presence of respiratory distress syndrome (RDS)	Yes/No
	Presence of intraventricular hemorrhage (IVH)	Yes/No
	Presence of disseminated intravascular coagulation syndrome (DIC)	Yes/No
	Presence of necrotizing enterocolitis (NEC)	Yes/No

**Supplementary table S2.** Final hyperparameters for the DeepSurv and RSF models

Model	Hyperparameters
DeepSurv	Input features: 11; Hidden layers: [511, 141, 127, 16]; Activations: ReLU; BatchNorm: Yes; Dropout: [0.201, 0.496, 0.106, 0.28]; Output: 1; Optimizer: Adam; Learning rate: 0.0045; Weight decay: 0.00097; Batch size: 128; Epochs: 100
RSF	ntree: 1000; nodesize: 1; mtry: 2; splitrule: bs.gradient; importance: permute; nsplit: 10; samptype: swr

**Supplementary table S3.** General and clinical characteristics of the subjects

Characteristic	Overall N = 958 <sup>1</sup>	Train N = 672 <sup>1</sup>	Test N = 286 <sup>1</sup>	p-value <sup>2</sup>
<b>BOH</b>	594 (62%)	406 (60%)	188 (66%)	0.14
<b>Preeclampsia</b>	298 (31%)	210 (31%)	88 (31%)	>0.9
<b>Chorioamnionitis</b>	55 (5.7%)	36 (5.4%)	19 (6.6%)	0.5
<b>IUGR</b>	237 (25%)	184 (27%)	53 (19%)	0.005
<b>Childbirth</b>	665 (69%)	462 (69%)	203 (71%)	0.5
<b>Sex</b>	477 (50%)	331 (49%)	146 (51%)	0.7
<b>Birth weight, m±SD</b>	1,107 ± 305	1,101 ± 307	1,121 ± 298	0.3
<b>Apgar score at 5 minutes</b>				0.046
2	20 (2.1%)	10 (1.5%)	10 (3.5%)	
3	89 (9.3%)	64 (9.5%)	25 (8.7%)	
4	142 (15%)	111 (17%)	31 (11%)	
5	136 (14%)	87 (13%)	49 (17%)	
6	255 (27%)	184 (27%)	71 (25%)	
7	282 (29%)	189 (28%)	93 (33%)	
8	31 (3.2%)	25 (3.7%)	6 (2.1%)	
9	3 (0.3%)	2 (0.3%)	1 (0.3%)	
<b>GA, m±SD</b>	29 ± 3	29 ± 3	29 ± 3	0.4
<b>RF</b>				0.2
1	15 (1.6%)	13 (1.9%)	2 (0.7%)	
2	512 (53%)	351 (52%)	161 (56%)	
3	431 (45%)	308 (46%)	123 (43%)	
<b>HR</b>	114 ± 27	114 ± 28	114 ± 27	0.9
<b>Oxygen saturation</b>	75 ± 14	75 ± 14	75 ± 14	0.9
<b>BG</b>				0.9
O (I)	323 (34%)	232 (35%)	91 (32%)	
A (II)	282 (29%)	195 (29%)	87 (30%)	
B (III)	274 (29%)	191 (28%)	83 (29%)	
AB (IV)	79 (8.2%)	54 (8.0%)	25 (8.7%)	
<b>Rh</b>	915 (96%)	636 (95%)	279 (98%)	0.069
<b>RDS</b>	777 (81%)	535 (80%)	242 (85%)	0.085
<b>IVH</b>	490 (51%)	341 (51%)	149 (52%)	0.8
<b>DIC</b>	382 (40%)	261 (39%)	121 (42%)	0.4
<b>NEC</b>	139 (15%)	97 (14%)	42 (15%)	>0.9



**Figure S1.** Significant variables determined by the Boruta algorithm