

Estimates of AHT probability and likelihood ratios for 72 observed combinations of the PediBIRN-7's seven predictor variables, applying definitional criteria<sup>1</sup> to label patients as AHT vs. non-AHT.

	Resp Compromise PTA	Bruising of TEN	Bilat or interhem SDH	Complex skull fx(s) <sup>2</sup>	Abnormal SS <sup>3</sup>	Abnormal retin exam <sup>4</sup>	Brain HIE or swelling	Estimated Probability (95% CI)	LR+
6-7 variables	•	•	•	•	•	•	•	0.98 (0.96,0.99)	94.18
	•	•	•	•	•	•	•	0.96 (0.88,0.99)	32.18
	•	•	•	•	•	•	•	0.94 (0.83,0.98)	23.77
	•	•	•	•	•	•	•	0.85 (0.68,0.94)	8.35
	•	•	•	•	•	•	•	0.83 (0.66,0.92)	6.82
5 variables	•	•	•	•	•	•	•	0.98 (0.94,0.99)	69.57
	•	•	•	•	•	•	•	0.98 (0.93,0.99)	60.33
	•	•	•	•	•	•	•	0.96 (0.88,0.98)	31.69
	•	•	•	•	•	•	•	0.94 (0.87,0.98)	24.43
	•	•	•	•	•	•	•	0.94 (0.83,0.98)	21.72
	•	•	•	•	•	•	•	0.93 (0.87,0.97)	19.95
	•	•	•	•	•	•	•	0.91 (0.77,0.97)	15.23
	•	•	•	•	•	•	•	0.79 (0.58,0.91)	5.35
	•	•	•	•	•	•	•	0.55 (0.37,0.72)	1.77
4 variables	•	•	•	•	•	•	•	0.94 (0.85,0.98)	23.41
	•	•	•	•	•	•	•	0.93 (0.82,0.98)	20.30
	•	•	•	•	•	•	•	0.93 (0.82,0.97)	18.04
	•	•	•	•	•	•	•	0.92 (0.80,0.97)	15.65
	•	•	•	•	•	•	•	0.91 (0.81,0.96)	14.74
	•	•	•	•	•	•	•	0.90 (0.78,0.96)	12.78
	•	•	•	•	•	•	•	0.85 (0.68,0.94)	8.22
	•	•	•	•	•	•	•	0.82 (0.67,0.91)	6.71
	•	•	•	•	•	•	•	0.80 (0.56,0.92)	5.63
	•	•	•	•	•	•	•	0.78 (0.67,0.87)	5.17
	•	•	•	•	•	•	•	0.76 (0.57,0.89)	4.60
	•	•	•	•	•	•	•	0.69 (0.45,0.86)	3.23
	•	•	•	•	•	•	•	0.54 (0.30,0.76)	1.69
	•	•	•	•	•	•	•	0.51 (0.27,0.74)	1.47
	•	•	•	•	•	•	•	0.48 (0.27,0.69)	1.31
	•	•	•	•	•	•	•	0.44 (0.27,0.62)	1.13
	•	•	•	•	•	•	•	0.41 (0.22,0.64)	1.01

	Resp Compromise PTA	Bruising of TEN	Bilat or interhem SDH	Complex skull fx(s) <sup>1</sup>	Abnormal SS <sup>2</sup>	Abnormal retin exam <sup>3</sup>	Brain HIE or swelling	Estimated Probability (95% CI)	LR+
3 variables	•	•	•	•	•	•	•	0.91 (0.79,0.97)	15.00
	•	•	•	•	•	•	•	0.89 (0.75,0.96)	11.56
	•	•	•	•	•	•	•	0.87 (0.71,0.95)	9.44
	•	•	•	•	•	•	•	0.81 (0.63,0.91)	6.07
	•	•	•	•	•	•	•	0.79 (0.57,0.91)	5.27
	•	•	•	•	•	•	•	0.78 (0.61,0.89)	4.96
	•	•	•	•	•	•	•	0.75 (0.53,0.89)	4.30
	•	•	•	•	•	•	•	0.73 (0.56,0.85)	3.82
	•	•	•	•	•	•	•	0.70 (0.53,0.82)	3.31
	•	•	•	•	•	•	•	0.67 (0.45,0.83)	2.95
	•	•	•	•	•	•	•	0.55 (0.38,0.70)	1.74
	•	•	•	•	•	•	•	0.52 (0.31,0.72)	1.55
	•	•	•	•	•	•	•	0.45 (0.27,0.65)	1.19
	•	•	•	•	•	•	•	0.45 (0.22,0.71)	1.18
	•	•	•	•	•	•	•	0.39 (0.18,0.65)	0.91
	•	•	•	•	•	•	•	0.37 (0.21,0.56)	0.84
	•	•	•	•	•	•	•	0.21 (0.09,0.43)	0.39
2 variables	•	•	•	•	•	•	•	0.21 (0.10,0.38)	0.38
	•	•	•	•	•	•	•	0.17 (0.07,0.37)	0.30
	•	•	•	•	•	•	•	0.73 (0.53,0.87)	3.89
	•	•	•	•	•	•	•	0.69 (0.49,0.84)	3.18
	•	•	•	•	•	•	•	0.65 (0.40,0.84)	2.67
	•	•	•	•	•	•	•	0.63 (0.46,0.78)	2.45
	•	•	•	•	•	•	•	0.60 (0.38,0.79)	2.18
	•	•	•	•	•	•	•	0.47 (0.33,0.62)	1.29
	•	•	•	•	•	•	•	0.44 (0.26,0.65)	1.14
	•	•	•	•	•	•	•	0.44 (0.27,0.62)	1.12
	•	•	•	•	•	•	•	0.41 (0.22,0.62)	0.99
	•	•	•	•	•	•	•	0.35 (0.20,0.52)	0.76
	•	•	•	•	•	•	•	0.22 (0.11,0.38)	0.40
	•	•	•	•	•	•	•	0.18 (0.07,0.36)	0.31
	•	•	•	•	•	•	•	0.16 (0.09,0.29)	0.28
	•	•	•	•	•	•	•	0.15 (0.07,0.29)	0.25
	•	•	•	•	•	•	•	0.06 (0.03,0.12)	0.09
1 variable	•	•	•	•	•	•	•	0.38 (0.21,0.60)	0.90
	•	•	•	•	•	•	•	0.36 (0.25,0.50)	0.82
	•	•	•	•	•	•	•	0.34 (0.20,0.51)	0.73
	•	•	•	•	•	•	•	0.28 (0.16,0.44)	0.56
	•	•	•	•	•	•	•	0.15 (0.08,0.27)	0.26
0	•	•	•	•	•	•	•	0.04 (0.02,0.08)	0.06
0	•	•	•	•	•	•	•	0.12 (0.08,0.17)	0.19

**Abbreviations:** AHT=abusive head trauma; CI=confidence interval; LR+=positive likelihood ratio; PediBIRN=pediatric brain injury research network; RESP=respiratory; PTA=prior to admission; TEN=torso, ear(s) or neck; SDH=subdural hemorrhage or fluid collection(s); SS=skeletal survey; fx(s)=fracture(s); HIE=hypoxic ischemic encephalopathy

<sup>1</sup> PediBIRN definitional criteria were modified to minimize circularity. See *Child Abuse & Neglect* 2019;88:266-274

<sup>2</sup> Defined a priori as any skull fracture(s) other than an isolated, unilateral, nondiastatic, linear, parietal skull fracture

<sup>3</sup> Defined a priori as skeletal survey that reveals rib fracture(s), classic metaphyseal lesion fracture(s), epiphyseal separation(s), fracture(s) of the scapula or sternum, fracture(s) of digit(s), vertebral body fracture(s) or dislocation(s) OR fracture(s) of spinous process(es)

<sup>4</sup> Defined a priori as retinal exam by an ophthalmologist that reveals retinoschisis OR retinal hemorrhages described as dense, extensive, covering a large surface area, and/or extending to the ora serrata

[NOTE: The positive likelihood ratio (LR+) describes the likelihood of the specific cluster of findings given AHT, divided by the likelihood of the same findings given non-AHT. For example, a LR of 5 means the specific cluster of findings was observed 5X more often in patients meeting definitional criteria for AHT than in patients meeting definitional criteria for non-AHT.

**Estimates of AHT probability and likelihood ratios for 72 observed combinations of the PediBIRN-7's seven predictor variables, applying physicians' final consensus diagnoses to label patients as AHT vs. non-AHT.**

	Resp Compromise PTA	Bruising of TEN	Bilat or interhem SDH	Complex skull fx(s) <sup>1</sup>	Abnormal SS <sup>2</sup>	Abnormal retin exam <sup>3</sup>	Brain HIE or swelling	Estimated Probability (95% CI)	LR+
6-7 variables	•	•	•	•	•	•	•	0.999 (0.997,0.9999)	1647.92
	•	•	•	•	•	•	•	0.999 (0.99,0.9998)	962.98
	•	•	•	•	•	•	•	0.999 (0.99,0.9998)	631.64
	•	•	•	•	•	•	•	0.99 (0.98,0.999)	178.90
	•	•	•	•	•	•	•	0.98 (0.93,0.996)	54.02
5 variables	•	•	•	•	•	•	•	0.999 (0.995,0.9999)	1080.91
	•	•	•	•	•	•	•	0.998 (0.99,0.9997)	530.25
	•	•	•	•	•	•	•	0.997 (0.99,0.9995)	366.66
	•	•	•	•	•	•	•	0.997 (0.99,0.999)	306.14
	•	•	•	•	•	•	•	0.99 (0.97,0.999)	148.45
	•	•	•	•	•	•	•	0.99 (0.96,0.999)	140.54
	•	•	•	•	•	•	•	0.99 (0.96,0.998)	92.45
	•	•	•	•	•	•	•	0.93 (0.77,0.98)	12.02
	•	•	•	•	•	•	•	0.92 (0.80,0.97)	10.04
4 variables	•	•	•	•	•	•	•	0.997 (0.99,0.9995)	347.81
	•	•	•	•	•	•	•	0.995 (0.98,0.999)	200.81
	•	•	•	•	•	•	•	0.99 (0.96,0.999)	117.98
	•	•	•	•	•	•	•	0.99 (0.97,0.997)	98.51
	•	•	•	•	•	•	•	0.99 (0.95,0.996)	68.12
	•	•	•	•	•	•	•	0.99 (0.94,0.997)	60.64
	•	•	•	•	•	•	•	0.98 (0.91,0.99)	37.76
	•	•	•	•	•	•	•	0.97 (0.88,0.99)	29.75
	•	•	•	•	•	•	•	0.97 (0.89,0.99)	27.58
	•	•	•	•	•	•	•	0.97 (0.88,0.99)	26.11
	•	•	•	•	•	•	•	0.96 (0.85,0.99)	20.57
	•	•	•	•	•	•	•	0.95 (0.89,0.98)	17.17
	•	•	•	•	•	•	•	0.93 (0.78,0.98)	12.81
	•	•	•	•	•	•	•	0.90 (0.66,0.98)	8.33
	•	•	•	•	•	•	•	0.88 (0.69,0.96)	6.58
	•	•	•	•	•	•	•	0.80 (0.53,0.93)	3.59
	•	•	•	•	•	•	•	0.71 (0.51,0.85)	2.23

	Resp Compromise PTA	Bruising of TEN	Bilat or interhem SDH	Complex skull fx(s) <sup>1</sup>	Abnormal SS <sup>2</sup>	Abnormal retin exam <sup>3</sup>	Brain HIE or swelling	Estimated Probability (95% CI)	LR+
3 variables	•	•	•	•	•	•	•	0.99 (0.94,0.998)	77.39
	•	•	•	•	•	•	•	0.99 (0.95,0.996)	64.61
	•	•	•	•	•	•	•	0.98 (0.93,0.99)	44.68
	•	•	•	•	•	•	•	0.96 (0.86,0.99)	21.92
	•	•	•	•	•	•	•	0.96 (0.84,0.99)	19.51
	•	•	•	•	•	•	•	0.94 (0.80,0.98)	13.49
	•	•	•	•	•	•	•	0.92 (0.82,0.97)	11.27
	•	•	•	•	•	•	•	0.91 (0.74,0.97)	8.87
	•	•	•	•	•	•	•	0.88 (0.65,0.97)	6.62
	•	•	•	•	•	•	•	0.87 (0.66,0.96)	6.14
	•	•	•	•	•	•	•	0.86 (0.71,0.94)	5.53
	•	•	•	•	•	•	•	0.82 (0.48,0.95)	4.07
	•	•	•	•	•	•	•	0.81 (0.64,0.91)	3.82
	•	•	•	•	•	•	•	0.79 (0.49,0.94)	3.40
	•	•	•	•	•	•	•	0.63 (0.39,0.82)	1.55
2 variables	•	•	•	•	•	•	•	0.61 (0.39,0.80)	1.46
	•	•	•	•	•	•	•	0.44 (0.24,0.66)	0.72
	•	•	•	•	•	•	•	0.44 (0.16,0.76)	0.71
	•	•	•	•	•	•	•	0.39 (0.16,0.69)	0.59
	•	•	•	•	•	•	•	0.94 (0.82,0.98)	14.38
	•	•	•	•	•	•	•	0.86 (0.66,0.95)	5.82
	•	•	•	•	•	•	•	0.83 (0.58,0.94)	4.34
	•	•	•	•	•	•	•	0.81 (0.57,0.94)	4.02
	•	•	•	•	•	•	•	0.80 (0.63,0.90)	3.62
	•	•	•	•	•	•	•	0.73 (0.54,0.86)	2.51
	•	•	•	•	•	•	•	0.68 (0.39,0.88)	1.97
	•	•	•	•	•	•	•	0.57 (0.36,0.76)	1.23
1 variable	•	•	•	•	•	•	•	0.57 (0.25,0.84)	1.22
	•	•	•	•	•	•	•	0.45 (0.21,0.71)	0.76
	•	•	•	•	•	•	•	0.35 (0.17,0.59)	0.50
	•	•	•	•	•	•	•	0.34 (0.19,0.53)	0.47
	•	•	•	•	•	•	•	0.27 (0.13,0.48)	0.34
	•	•	•	•	•	•	•	0.20 (0.06,0.48)	0.23
	•	•	•	•	•	•	•	0.07 (0.03,0.15)	0.06
0	•	•	•	•	•	•	•	0.58 (0.33,0.80)	1.30
	•	•	•	•	•	•	•	0.47 (0.31,0.63)	0.81
	•	•	•	•	•	•	•	0.30 (0.11,0.59)	0.39
	•	•	•	•	•	•	•	0.20 (0.10,0.36)	0.23
	•	•	•	•	•	•	•	0.11 (0.05,0.22)	0.11
	•	•	•	•	•	•	•	0.04 (0.02,0.09)	0.04
	•	•	•	•	•	•	•	0.07 (0.04,0.12)	0.07

**Abbreviations:** AHT=abusive head trauma; CI=confidence interval; LR+=positive likelihood ratio; PediBIRN=pediatric brain injury research network; RESP=respiratory; PTA=prior to admission; TEN=torso, ear(s) or neck; SDH=subdural hemorrhage or fluid collection(s); SS=skeletal survey; fx(s)=fracture(s); HIE=hypoxic ischemic encephalopathy

<sup>1</sup> Defined a priori as any skull fracture(s) other than an isolated, unilateral, nondiastatic, linear, parietal skull fracture

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[NOTE: The positive likelihood ratio (LR+) describes the likelihood of the specific cluster of findings given AHT, divided by the likelihood of the same findings given non-AHT. For example, a LR of 5 means the specific cluster of findings was observed 5X more often in patients diagnosed with AHT than in patients diagnosed with non-AHT.