

Supplementary Materials

Supplementary Table 1: Lab details and definitions based on age and sex used at Karolinska University Karolinska, Stockholm, Sweden.^{17,18}

Lab details			
	Age	Sex	Definition
Anemia (g/L)	6m-7y	F/M	<107
	8-11y	F/M	<118
	12-17y	F	<112
	12-17y	M	<126
	≥18y	F	<117
	≥18y	M	<134
Leukopenia (x10⁹/L)	6m-8y	F/M	<3.5
	9-17y	F/M	<4.1
	≥18y	F/M	<3.5
Lymphocytopenia (x10⁹/L)	6m-5y	F/M	<1.8
	6-12y	F/M	<1.3
	13-17y	F/M	<1.2
	≥18y	F/M	<1.0
Neutropenia (x10⁹/L)	6m-14y	F/M	<1.6
	15y-17y	F/M	<2.0
	≥18y	F/M	<1.6

Thrombocytopenia (x10⁹/L)	6m-10y	F/M	<210
	11-17y	F/M	<190
	≥18y	F	<165
	≥18y	M	<145
Elevated ALAT (μkat/l)	6m-8y	F	>0.39
	6m-8y	M	>0.29
	9-17y	F/M	>0.51
	≥18y	F/M	>0.76
Elevated ASAT (μkat/l)	6-12m	F/M	>1.1
	1-4y	F/M	>0.93
	5-8y	F/M	>0.8
	9-17y	F/M	>0.72
	≥18y	F/M	>0.61
Elevated Creatinine (μmol/l)	6m-1y	F/M	>48
	2-5y	F/M	>53
	6-10y	F	>70
	6-10y	M	>76
	11-14y	F	>70
	11-14y	M	>90
	15-17y	F	>86
	15-17y	M	>106
	≥18y	F	>90

$\geq 18y$	M	>100
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Supplementary Table 2: Details of Malaria scoring system for adults (2A) and children (2B) presented in the manuscript.

A	Sensitivity	Specificity	Correctly	LR+	LR-	PPV	NPV
	%	%	Classified			%	%
≥ 0	100	0	4.7	1.0		88.9	50.1
≥ 1	99	39.1	41.9	1.6	0.02	42.9	74.2
≥ 2	91	78	78.6	4.1	0.1	81.2	71.0
≥ 3	85	91.5	91.2	10	0.2	50.0	67.3
≥ 4	59	97	95.2	20.1	0.4	50.0	93.1
≥ 5	33	99.7	96.5	132.6	0.6	21.2	100
≥ 6	7	99.9	95.5	140.9	0.9	0	0
≥ 7	0	99.9	95.2	0	1.0	-	-

B	Sensitivity	Specificity	Correctly	LR+	LR-	PPV	NPV
	%	%	Classified			%	%
≥ 0	100	0	5.9	1		100	45.5
≥ 1	100	31	35.1	1.4	0	0.0	68.7
≥ 2	83.3	68.9	69.8	2.6	0.2	100	67.4
≥ 3	83.3	86.3	86.1	6.1	0.2	50	67.7
≥ 4	58.3	94.7	92.5	11.1	0.4	40.0	88.9
≥ 5	33.3	98.9	95.1	31.6	0.6	50.0	50.0
≥ 6	16.7	99.4	94.5	31.6	0.8	-	-
≥ 7	0	100	94.1		1.0	-	-

LR+ = Positive likelihood ratio, *LR-* = Negative likelihood ratio. *PPV*= Positive predictive value.

NPV=Negative predictive value.

Supplementary Table 3: Details of sensitivity and specificity of Dengue score for adults (3A) and children (3B) presented in the manuscript.

A	Sensitivity	Specificity	Correctly	LR+	LR-	PPV	NPV
	%	%	Classified				
≥ 0	100	0	4.1	1		100	44.5
≥ 1	100	33.8	36.5	1.5	0.0	71.3	66.7
≥ 2	91.1	76.2	76.8	3.8	0.1	54.8	78.8
≥ 3	75.5	93.2	92.5	11.1	0.2	57.5	73.2
≥ 4	55.8	97.8	96.1	25.7	0.4	39.5	81.0
≥ 5	29.1	99.5	96.6	58.9	0.7	40.0	80.0
≥ 6	11.6	99.9	96.3	117.8	0.8	-	-

B	Sensitivity	Specificity	Correctly	LR+	LR-	PPV	NPV
	%	%	Classified				
≥ 0 p	100	0	1.9	1		-	50.6
≥ 1 p	100	39.9	41.0	1.6	0	100.0	73.3
≥ 2 p	100	78.7	79.2	4.7	0	50.0	75.7
≥ 3 p	75	92.9	92.5	10.6	0.2	50.0	69.3
≥ 4 p	50	97.4	96.5	19.8	0.5	50.0	80.0
≥ 5 p	25	99.4	98.0	49.5	0.7	-	-

LR+ = Positive likelihood ratio, LR- = Negative likelihood ratio. PPV= Positive predictive value.

NPV=Negative predictive value.

Supplementary Table 4: Probability of malaria (%) and overall prevalence for each point of malaria scoring system for adults and children.

Adults	Children
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	Prevalence (%)	Probability (%)	P- value	95% CI	Prevalence (%)	Probability (%)	P- value	95% CI
0p	789 (37.3)				59 (29.2)			
1p	791 (37.4)	0.1	0.28	-0.01 - 0.03	74 (36.6)	2.7	0.45	-0.04-0.09
2p	278 (13.0)	2.0	0.08	-0.01 - 0.04	33 (16.6)	0.4	1.00	-0.09-0.09
3p	137 (6.5)	18.9	0.00	0.16 - 0.22	19 (9.4)	15.8	0.00	0.05-0.26
4p	80 (3.8)	32.4	0.00	0.29 - 0.36	11 (5.5)	27.3	0.00	0.14-0.40
5p	30 (1.4)	86.5	0.00	0.81 - 0.93	3 (1.5)	66.7	0.00	0.43-0.90
6p	7 (0.3)	99.9	0.00	0.88 - 1.12	3 (1.5)	66.7	0.00	0.43-0.90
7p*	1 (0.05)	-0.1	0.99	-0.32 - 0.32	*	*	*	*

**Insufficient data, only 1 observation for adults had 7 points and no children were included.*

Supplementary Table 5: Probability of dengue (%) and overall prevalence for each point of dengue scoring system for adults and children.

	Adults				Children			
	Prevalence (%)	Probability (%)	P-value	95% CI	Prevalence (%)	Probability (%)	P-value	95% CI
0p	687 (32.5)				79 (39.1)			
1p	865 (40.9)	0.8	0.33	-0.01 - 0.02	77 (38.1)	0.4	1.00	-0.04 - 0.04
2p	359 (16.9)	3.9	0.00	0.02 - 0.06	29 (14.4)	3.4	0.20	0.02 - 0.09
3p	110 (5.2)	15.5	0.00	0.12 - 0.19	10 (4.9)	10	0.02	0.02 - 0.18
4p	57 (2.7)	40.4	0.00	0.36 - 0.45	5 (2.5)	20	0.00	0.08 - 0.32
5p	23 (1.1)	65.2	0.00	0.58 - 0.72	2 (0.9)	50	0.00	0.32 - 0.68
6p	12 (0.6)	83.3	0.00	0.74 - 0.93	*	*	*	*

*No data for 6p in children.

Supplementary Table 6: Results of internal validation with optimism-corrected AUC by bootstrap with 200 replications.

	Adults		Children	
	Optimism corrected AUC	Optimism corrected AUC	Optimism corrected AUC	Optimism corrected AUC
Malaria scoring system	0.004	0.93	0.001	0.88
Dengue scoring system	0.002	0.92	*	*

*The outcome for dengue is too low in children.

Supplementary table 7: Results of OR with 95% Confidence interval (CI) of unadjusted univariate logistic regressions of all predictors.

The statistically significant predictors are presented in Figure 1.

	Malaria				Dengue			
	Adults		Children		Adults		Children	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Cough	0.5	0.4-0.5	-	-	0.3	0.2-0.4	-	-
Vomiting	1.4	1.2-1.6	1.2	0.4-4.1	1.2	1.1-1.5	0.6	0.06-5.6
Diarrhea	0.4	0.3-0.4	-	-	0.5	0.4-0.6	0.7	0.07-6.8
Abdominal pain	0.5	0.4-0.6	0.6	1.2-2.4	0.5	0.4-0.6	-	-
Nausea	1.0	0.8-1.1	1.5	0.4-5.7	2.1	1.8-2.4	4.5	0.6-33.0
Malaise	0.6	0.5-0.7	2.2	0.7-6.9	0.9	0.7-1.1	-	-
Pulse ¹	2.8	2.5-3.2	1.6	0.5-5.1	0.4	0.4-0.5	-	-
Saturation ¹	1.9	0.7-4.7	-	-	-	-	-	-
Respiratory rate ¹	1.5	1.3-1.7	3.0	0.8-10.8	0.8	0.7-0.9	0.8	0.07-8.9
Headache	2.5	2.2-2.8	3.8	1.2-12.5	2.3	2.1-2.7	2.5	0.3-18.4
Rash	0.2	0.1-0.3	-	-	4.2	2.5-6.8	17.5	1.75-173.8
Muscle pain	1.7	1.5-1.9	3.6	1.0-13.0	5.0	4.4-5.7	2.2	0.22-22.0
Urine symptom	1.0	0.7-1.3	2.4	0.3-21.1	0.4	0.3-0.6	-	-
Confusion	-	-	-	-	0.04	0.04-0.04	-	-
Anemia	4.7	4.2-5.3	2.6	0.7-10.6	0.4	0.3-0.5	-	-
Leukopenia	4.6	4.0-5.7	0.9	0.1-7.2	31.1	19.1-50.8	36.0	3.5-373.1
Leukocytosis	1.0	0.07-1.1	0.3	0.04-2.6	0.07	0.05-1.0	-	-
Thrombocytopenia	28.7	17.4-47.2	11.1	2.8-43.6	10.0	8.7-11.4	1.0	0.1-9.7
Thrombocytosis	-	-	-	-	0.2	0.1-0.4	-	-
Neutropenia	3.3	2.7-3.8	2.9	0.5-15.6	17.3	15.1-19.8	6.9	0.6-84.1
Neutrophilia	0.07	0.04-0.1	0.2	0.02-1.3	0.17	0.1-0.2	-	-

Lymphocytopenia	4.3	3.8-4.9	1.7	0.5-5.6	3.7	3.3-4.3	1.1	0.1-12.6
Lymphocytosis	0.8	0.4-1.4	2.7	0.3-26.3	-	-	-	-
CRP>50	3.6	3.2-4.1	2.0	0.6-7.4	0.1	0.09-0.1	-	-
CRP 10-50	0.6	0.6-0.7	1.6	0.5-5.6	0.4	0.3-0.5	-	-
CRP<10	0.2	0.1-0.3	0.2	0.02-1.4	7.9	6.9-9.1	-	-
<38.0 °C	0.2	0.1-0.2	1.2	0.4-4.0	1.0	0.8-1.0	1.7	0.2-12.5
38-39.5 °C	1.7	1.6-2.0	0.2	0.04-1.0	1.1	1.0-1.3	1.1	0.2-8.2
>39.5 °C	6.2	5.4-7.1	4.2	1.2-14.4	0.8	0.6-1.0	-	-
Elevated Creatinine	2.0	1.8-2.3	-	-	1.7	1.4-1.9	-	-
Elevated ASAT	2.7	2.4-3.0	0.6	0.06-4.8	5.4	4.7-6.2	2.4	0.2-29.3
Elevated ALAT	2.0	1.8-2.3	0.2	0.02-1.8	2.4	2.1-2.6	1.0	0.08-11.1
Sub-Saharan Africa	9.2	7.9-10.9	-	-	0.05	0.03-0.07	-	-
Asia & Pacific	0.1	0.06-0.1	-	-	13.4	11.1-16.3	6.4	0.7-63.0
South/Latin America	0.2	0.1-0.3	-	-	0.75	0.6-1.0	-	-
South Europe (Subtropical area)	-	-	-	-	-	-	-	-
Middle East/North Africa	-	-	-	-	-	-	-	-
North America	-	-	-	-	-	-	-	-

¹Abnormal vital parameters referred to NEWS or PEWS.

Supplementary Figure 1: Results of multiple imputations of missed data of hemoglobin (A), leukocytes (B), thrombocytes (C) and neutrophils (D).

Observed = Original data, completed = total data after imputations, imputed = missed data that is imputed. Y-axis = density of number of observations, X-axis = variable value.

Supplementary Figure 2: Results of multiple imputations of missed data of CRP (A), creatinine (B), ALAT (*alanine aminotransferase*) (C) and ASAT (*aspartate transaminase*) (D).

Supplementary Figure 3: Results of multiple imputations of missed data of lymphocytes.