

**Supplementary Table S1:** Characteristics of subset of children in cognitive cohort examined in biomedical surveys at baseline (classes 4 and 5 in 38 schools)

	<b>Control schools</b>	<b>Intervention schools</b>
Number of schools surveyed	19	19
Number of children surveyed	284	284
<b><i>School-level characteristics:</i></b>	<b>Mean (SD)</b>	<b>Mean (SD)</b>
School size: mean no. of pupils	205.1 (5.8)	185.4 (4.2)
Mean prevalence of malaria (range)	78.4% (54.0 to 94.1)	80.2% (52.0 to 92.0)
<b><i>Individual-level characteristics:</i></b>	<b>Mean (SD)</b>	<b>Mean (SD)</b>
Mean age in years	10.1 (1.1)	10.4 (1.3)
Female (%)	46.1% (131 / 284)	45.4% (129 / 284)
Enrolled in class 5 (%)	21.1% ( 60 / 284)	26.4% ( 75 / 284)
Nutritional status: Height-for-age z-score	-0.82 (1.20)	-1.06 (1.49)
Nutritional status: BMI-for-age z-score	-0.71 (0.81)	-0.84 (0.82)
Father is literate <sup>1</sup> (%)	73.4% (207 / 282)	70.3% (199 / 283)
Mother is literate <sup>1</sup> (%)	32.3% ( 91 / 282)	23.2% ( 66 / 284)
Household has a moped <sup>1</sup> (%)	75.4% (199 / 264)	80.6% (224 / 278)
Household has a telephone <sup>1</sup> (%)	75.0% (198 / 264)	82.4% (230 / 279)
Child slept under a net night before survey <sup>1</sup> (%)	42.1% (111 / 264)	43.0% (120 / 279)
<b><i>Study endpoints at baseline: Biomedical</i></b>	<b>Mean (SD)</b>	<b>Mean (SD)</b>
Prevalence of anaemia: Hb <110 g/L (%)	57.2% (159 / 278)	57.4% (160 / 279)
Mean haemoglobin concentration, g/L	111.1 (12.9)	112.6 (12.7)
<i>Plasmodium</i> infection:		
Prevalence of malaria parasites: all species (%)	78.7% (203 / 258)	79.1% (216 / 273)
Parasite density per $\mu$ L blood, all species in slide-positive children: geometric mean	654.4 (4.6)	449.2 (4.5)
Prevalence of gametocytes: all species (%)	3.5% ( 9 / 258)	4.4% (12 / 273)
<b><i>Study endpoints at baseline: Cognitive</i></b>	<b>Mean (SD)</b>	<b>Mean (SD)</b>
Code transmission: single digit task, z-score	0.075 (1.05)	-0.12 (0.94)
Code transmission: double digit task, z-score	0.024 (0.85)	-0.044 (1.06)
Visual search task, z-score	-0.019 (0.92)	0.041 (1.03)
Numeracy task, z score	-0.013 (1.00)	0.099 (1.00)
Vocabulary task, z-score	0.016 (1.05)	-0.010 (0.96)
Writing task, z-score	0.023 (0.92)	-0.015 (1.06)

Data are mean (SD), or % (n/N), unless specified otherwise.

<sup>1</sup> Data based on child report

**Supplementary Table S2:** Effect of the intervention on biomedical and cognitive outcomes at 15 months follow-up: Results in subset of children in cognitive cohort with data on biomedical outcomes and household environment (classes 4 and 5 in 38 schools)

Trial endpoints	Summary Statistics		Crude Change from Baseline		Effect estimate: Intervention vs Control schools Odds ratio / Difference (95% CI); <i>p</i> -value			
	Control schools	Intervention schools	Control schools	Intervention schools	Basic Model <sup>1</sup>		Fully Adjusted Model <sup>1</sup>	
<b>Biomedical outcomes<sup>2</sup> in February 2012</b>								
Anaemia: Hb<110 g/L	38.6% (103 / 267)	36.7% (101 / 275)	-18.6	-20.7	0.91 (0.51 to 1.60)	0.733	0.77 (0.42 to 1.43)	0.413
Mean Hb, g/L	119.4 (16.3)	120.7 (13.5)	+8.3	+8.1	-0.08 (-2.79 to 2.63)	0.955	-0.40 (-3.26 to 2.46)	0.783
<i>Plasmodium</i> infection: Trophozoites, all species	73.0% (200 / 274)	4.0% (11 / 276)	-5.7	-75.1	0.012 (0.00 to 0.03)	<0.001	0.012 (0.004 to 0.033)	<0.001
Gametocytes, all species	4.4% ( 12 / 274)	0.4% ( 1 /276)	+0.9	-4.0	0.06 (0.01 to 0.58)	0.015	-	-
<b>Cognitive outcomes<sup>3</sup> in February 2012</b>								
<i>Code transmission:</i> Single digit task, z-score	1.43 (0.96)	1.32 (0.93)	+1.36	+1.44	0.03 (-0.16 to 0.22)	0.774	0.21 (0.00 to 0.41)	0.053
Double digit task, z-score	0.42 (0.97)	0.58 (1.01)	+0.40	+0.62	0.22 (0.05 to 0.39)	0.014	0.19 (-0.01 to 0.39)	0.057
Visual search task <sup>4</sup> , z-score	0.75 (1.03)	0.74 (1.00)	+0.77	+0.70	-0.06 (-0.39 to 0.31)	n/s	0.06 (-0.27 to 0.43)	n/s
Numeracy task <sup>4</sup> , z-score	0.74 (0.93)	0.66 (0.93)	+0.75	+0.56	-0.11 (-0.32 to 0.12)	n/s	-0.09 (-0.36 to 0.16)	n/s
Vocabulary task <sup>4</sup> , z-score	0.66 (1.31)	0.73 (1.26)	+0.64	+0.74	0.08 (-0.38 to 0.52)	n/s	0.06 (-0.43 to 0.59)	n/s
Writing task <sup>4</sup> , z-score	-0.23 (1.33)	-0.38 (1.42)	-0.25	-0.37	-0.09 (-0.77 to 0.56)	n/s	-0.19 (-0.87 to 0.50)	n/s

Data are mean (SD), or % (n/N), unless specified otherwise.

<sup>1</sup> All statistical analyses account for clustering within schools and repeated measures within individuals over time.

<sup>2</sup> Fully adjusted analyses of biomedical outcomes control for age, sex, height for age z-score, ownership of household assets (proxy for socioeconomic status), and cluster-level prevalence of malaria parasitaemia at baseline (proxy for geographical differences risk of infection).

<sup>3</sup> All analyses of cognitive outcomes control for practice effects. Fully adjusted analyses control additionally for age, sex, school class, height for age z-score, parental literacy, ownership of household assets, and cluster- level prevalence of malaria parasitaemia at baseline.

<sup>4</sup> Analyses of these tasks additionally control for different versions of the tasks administered to classes 4 and 5. 95% CI are from bias-corrected bootstrap analyses using 2,000 bootstrap samples and n/s indicates that the results are not statistically significant at  $p=0.05$ .