

Supplemental Tables

Supplemental Table 1. Distribution of enrollment characteristics and follow-up by study site

	Total	Namanolo	Ntaja
N Participants included	947	437	510
N Households included	238	115	123
People/household, mean (SD)	4.0 (1.9)	3.8 (2.0)	4.1 (1.9)
Households/cluster, mean (SD)	6.8 (0.9)	6.8 (0.7)	6.8 (1.0)
Clusters	35*	17	18
N Study visits	7099	3095	4004
Visits/person, mean (SD)	7.5 (3.5)	7.1 (3.6)	7.9 (3.4)
Person years of follow-up time	658.0	291.9	366.0
*3 clusters (1 in Namanolo, 2 in Ntaja) were replaced during the study because of withdrawals and inaccessibility.			

Supplemental Table 2. Gametocyte detection, probability of gametocyte detection, median gametocyte density, and proportion with high density gametocytes detected in the study population by time-varying covariates assessed at each visit (N = 7099 visits) (B). SES: socioeconomic status, HH: household.

Visit specific characteristics	N Total	N (%) positive for gametocytes	Probability of gametocyte detection [†]	Median (IQR) density gametocyte/ul	N (%) with ≥ 1 gametocyte /ul	N (%) with ≥ 10 gametocyte /ul
Total Observations	7099	560 (7.9)		0.9 (0.2, 4.7)	269 (3.8)	85 (1.2)
Visit Type			**			
Routine	6683	525 (7.9)	0.0007	0.9 (0.2, 4.7)	256 (3.8)	82 (1.2)
Passive case detection	416	35 (8.4)	0.0022	0.4 (0.2, 2.8)	13 (3.1)	3 (0.7)
Fever status			*			
Fever	836	61 (7.3)	0.0013	0.8 (0.3, 5.7)	28 (3.3)	9 (1.1)
No Fever	6263	499 (8)	0.0007	0.9 (0.2, 4.3)	241 (3.8)	76 (1.2)
Net Use previous night[#]		**				
No net used	1597	155 (9.7)	0.0006	0.9 (0.2, 4.6)	75 (4.7)	26 (1.6)
Net used	5070	369 (7.3)	0.0006	0.9 (0.2, 5.1)	180 (3.6)	56 (1.1)
Season					*	
Dry	3492	259 (7.4)	0.0007	0.6 (0.2, 3.7)	113 (3.2)	38 (1.1)
Rainy	3607	301 (8.3)	0.0010	1.1 (0.3, 5.2)	156 (4.3)	47 (1.3)

[†]Probability of gametocyte detection per visit calculated using mixed effect logistic regression with random effects for household and individual, estimated odds were converted to probabilities and multiplied by demographic weights – p-values were calculated from Wald tests using SE derived from logistic regression models.

[#]Missing: HH head education = 173, SES Index and HH Construction = 108

*p<0.05, **p<0.01, ***p<0.001

P-values for categorical variables calculated using Chi-squared tests, p-values calculated for median density using Wilcoxon and Kruskal Wallis tests for two and three category variables, respectively.

Supplemental Table 3. The proportion of participants that had *Pf* infections ever detected, the median density of detected parasites by fixed covariates assessed at enrollment (A) and time-varying covariates assessed at each visit (B). SES: socioeconomic status, HH: household, gam: gametocyte, PCD: passive case detection, SAC: school-aged children (5-15)

Population	N Total	N (%) ever positive for Pf.	Ratio of N individuals gam pos/ <i>Pf</i> pos	N (%) w/ > 1 Pf. positive visit	Mean Log Density of detected Pf. (SD)
A. Enrollment Characteristics	947	678 (71.6)	0.32	382 (40.3)	3.0 (3.0)
Age Group		***	***	***	*
Under 5	177	116 (65.5)	0.20	59 (33.3)	3.2 (3.4)
SAC	337	267 (79.2)	0.46	176 (52.2)	3.6 (3.1)
Over 15	433	295 (68.1)	0.23	147 (33.9)	2 (2.2)
Sex			*		
Female	558	406 (72.8)	0.27	220 (39.4)	2.7 (2.8)
Male	389	272 (69.9)	0.4	162 (41.6)	3.2 (3.1)
Site					
Namanolo (lower elevation)	437	310 (70.9)	0.35	189 (43.2)	3 (3.1)
Ntaja (higher elevation)	510	368 (72.2)	0.29	193 (37.8)	2.9 (2.9)
HH head education (N=774)		*		*	
None	195	152 (77.9)	0.35	97 (49.7)	3 (3.1)
Primary only	296	223 (75.3)	0.33	126 (42.6)	2.9 (2.9)
Some secondary or higher	283	192 (67.8)	0.31	104 (36.7)	2.8 (2.9)
SES Index (N=839)			*	***	
Low	222	163 (73.4)	0.37	106 (47.7)	2.9 (2.9)
Medium	489	351 (71.8)	0.34	211 (43.1)	3 (3)
High	128	94 (73.4)	0.18	34 (26.6)	2.4 (3)
HH Construction (N=839)				**	
Unfinished	530	384 (72.5)	0.36	241 (45.5)	2.9 (2.9)
Finished	309	224 (72.5)	0.27	110 (35.6)	2.9 (2.9)
B. Follow-up characteristics					
Gametocyte detection in follow-up		***		***	*
Only 1 gam+	98	94 (95.9)	1.0	68 (69.4)	3.5 (3.2)
2 or more gam+	118	118 (100)	1.0	117 (99.2)	3.8 (2.8)
No gam+	731	466 (63.7)	0.0	197 (26.9)	2 (2.7)
Visit specific characteristics	N Total	N (%) ever positive for Pf.	Ratio of N individuals gam pos/ <i>Pf</i> pos		Mean Log Density of detected Pf. (SD)
Total Observations	7099	1631 (23.0)	0.34		3.0 (3.0)
Visit Type		***	*		*
Routine	6683	1466 (21.9)	0.36		2.7 (2.7)
PCD	416	165 (39.7)	0.21		4.9 (4.2)
Fever status		**	**		*
Fever	836	266 (31.8)	0.23		4.7 (4)
No Fever	6263	1365 (21.8)	0.37		2.6 (2.6)
Net Use Previous Night (N=6,667)					
No net use	1597	398 (24.9)	0.39		2.8 (2.6)
Net Used	5070	1065 (21)	0.35		2.7 (2.7)
Season					
Dry	3492	761 (21.8)	0.34		2.9 (2.9)
Rainy	3607	870 (24.1)	0.35		3 (3)

*** p-value < 0.001, ** p-value < 0.01, * p-value < 0.05

Supplemental Table 4. Among total population (N = 947), associations between number of detected gametocyte-positive infections over time and predictor variables from negative binomial models SES: socioeconomic status, HH: household, SAC: school-aged children (5-15), ppy: per person year, RtR: Rate Ratio

Characteristic	N gam positive infections	Total Visits	Incidence rate, pv	RtR (95% CI)
Total Population (N = 947)	560	7099	0.08	
Age Group				
Under 5	77	1408	0.05	Ref
SAC	356	2632	0.14	2.50 (1.57, 3.96)
Over 15	127	3059	0.04	0.79 (0.49, 1.26)
Site				
Namanolo	234	3095	0.08	Ref
Ntaja	326	4004	0.08	0.97 (0.69, 1.38)
HH head highest education (missing = 173)				
None	148	1584	0.09	Ref
Primary only	188	2415	0.08	0.82 (0.51, 1.30)
Some secondary or higher	148	2226	0.07	0.70 (0.44, 1.13)
SES Index (missing = 108)		874	0.09	
Low	156	1748	0.09	Ref
Medium	327	4034	0.08	0.88 (0.58, 1.31)
High	40	918	0.04	0.49 (0.26, 0.90)
HH Construction (missing = 108)		399	0.09	
Unfinished	380	4476	0.08	Ref
Finished	143	2224	0.06	0.77 (0.53, 1.12)
Net use the previous night		399	0.09	
No net use	130	969	0.13	Ref
Net use	430	6130	0.07	0.56 (0.35, 0.87)

Supplemental Table 5. Among total population (n = 947), association between number of detected *Pf* positive infections over time and predictor variables from negative binomial models. SES: socioeconomic status, HH: household, SAC: school-aged children (5-15), ppy: per person year, RtR: Rate Ratio

Characteristic	N <i>Pf</i> positive infections	Total Visits	Incidence rate, pv	cRtR (95% CI)
Total Population (N = 947)	1633	7099	0.23	
Age Group				
Under 5	257	1408	0.18	Ref
SAC	789	2632	0.3	1.65 (1.37, 1.98)
Over 15	587	3059	0.19	1.06 (0.88, 1.28)
Site				
Namanolo	747	3095	0.24	Ref
Ntaja	886	4004	0.22	0.91 (0.80, 1.04)
HH head highest education level (missing = 173)				
None	405	1584	0.26	Ref
Primary only	573	2415	0.24	0.93 (0.78, 1.11)
Some secondary or higher	432	2226	0.19	0.76 (0.63, 0.92)
SES Index (missing = 108)		874		
Low	428	1748	0.24	Ref
Medium	916	4034	0.23	0.92 (0.78, 1.08)
High	169	918	0.18	0.76 (0.60, 0.96)
HH Construction (missing = 108)		399		
Unfinished	1022	4476	0.23	Ref
Finished	491	2224	0.22	0.98 (0.84, 1.13)
Net use the previous night		399		
No net use	306	969	0.32	Ref
Net use	1327	6130	0.22	0.70 (0.58, 0.83)

Supplemental Table 6. Associations among total population (N = 947) between incidence of high density (>10) gametocyte infection and predictor variables from negative binomial models. SES: socioeconomic status, HH: household, SAC: school-aged children (5-15), ppy: per person year, RtR: Rate Ratio

Characteristic	N high density infections	Total Visits	Incidence rate, pv	cRtR (95% CI)
Total Population	85	7099	0.012	
Age Group				
Under 5	22	1408	0.016	Ref
SAC	55	2632	0.021	1.38 (0.68, 2.81)
Over 15	8	3059	0.003	0.18 (0.07, 0.45)
Site				
Namanolo	43	3095	0.014	Ref
Ntaja	42	4004	0.01	0.73 (0.39, 1.35)
HH head highest education level (missing = 173)				
None	22	1584	0.014	Ref
Primary only	31	2415	0.013	0.87 (0.39, 1.94)
Some secondary or higher	23	2226	0.01	0.71 (0.31, 1.64)
SES Index (missing = 108)		874		
Low	29	1748	0.017	Ref
Medium	47	4034	0.012	0.74 (0.38, 1.44)
High	4	918	0.004	0.28 (0.07, 0.90)
HH Construction (missing = 108)		399		
Unfinished	57	4476	0.013	Ref
Finished	23	2224	0.01	0.84 (0.43, 1.62)
Net use the previous night		399		
No net use	24	969	0.025	Ref
Net use	61	6130	0.01	0.40 (0.18, 0.84)

Supplemental Table 7. Coefficients from linear regression of association between proportion school-aged children and household gametocyte levels with and without accounting for spatial autocorrelation.

Predictor Variable	Linear Regression β (SE)	p-value
Proportion School-Aged	2.24 (0.76)	< 0.01
<i>Pf</i> level	2.14 (0.36)	<0.001
Socio-Economic Status		
Low	Reference	
Medium	-0.16 (0.40)	0.69
High	-0.79 (0.54)	0.15
Site		
Namanolo	Reference	
Ntaja	-0.38 (0.35)	0.28

Supplemental Table 8. Among 663 individuals that ever had *P. falciparum* infections, association between number of detected gametocyte positive infections over time and predictor variables from negative binomial models. SES: socioeconomic status, HH: household, SAC: school-aged children (5-15).

Enrollment Characteristic	N gam+ infections	Followup time, person-years	Incidence rate, ppy	cRtR (95% CI)
Total Population	560	507.87	1.10	
Age Group				
Under 5	77	89.89	0.86	Ref
SAC	356	205.02	1.74	2.11 (1.3, 3.38)
Over 15	127	212.97	0.6	0.71 (0.43, 1.15)
Site				
Namanolo	234	223.52	1.05	Ref
Ntaja	326	284.35	1.15	0.93 (0.65, 1.32)
HH head highest education level (missing = 76)				
None	148	123.81	1.2	Ref
Primary only	188	174.14	1.08	0.9 (0.57, 1.42)
Some secondary or higher	148	152.96	0.97	0.81 (0.51, 1.3)
SES Index (missing = 37)				
Low	156	129.67	1.2	Ref
Medium	327	285.74	1.14	0.91 (0.6, 1.35)
High	40	65.53	0.61	0.47 (0.26, 0.87)
HH Construction (missing = 37)				
Unfinished	380	329.91	1.15	Ref
Finished	143	151.03	0.95	0.85 (0.58, 1.25)
Net use the previous night				
No net use	130	69.98	1.86	Ref
Net use	430	437.89	0.98	0.52 (0.32, 0.82)

Supplemental Figure 1. Gametocyte sex ratio (M:F) by gametocyte density stratified by age.

