

Impact of indoor residual spraying with pirimiphos-methyl (Actellic 300CS) on entomological indicators of transmission and malaria case burden in Migori County, western Kenya

Authors

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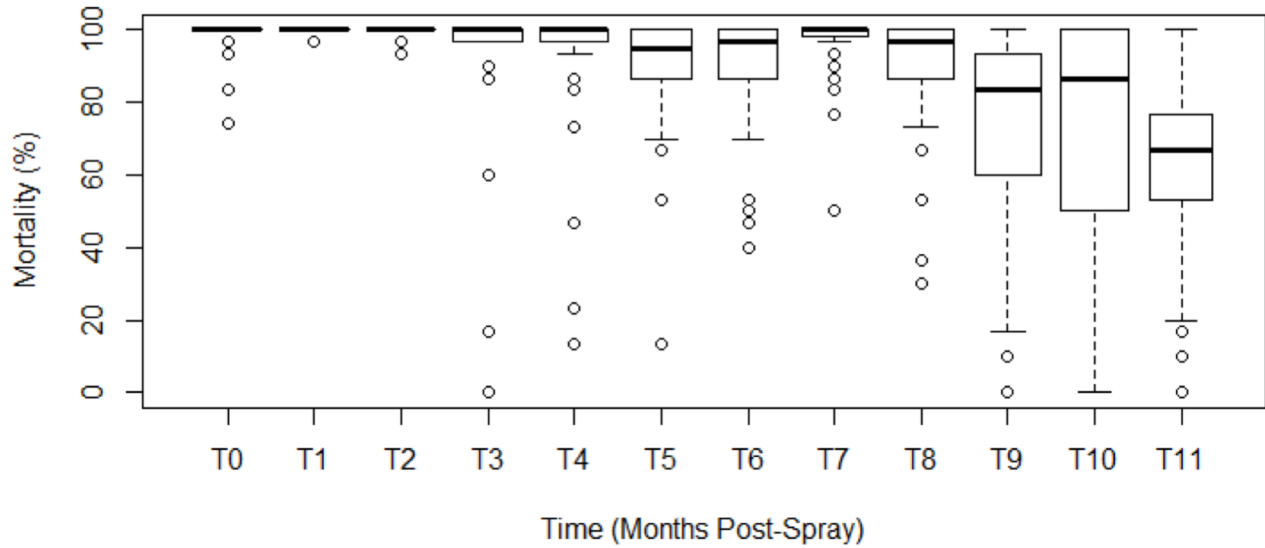
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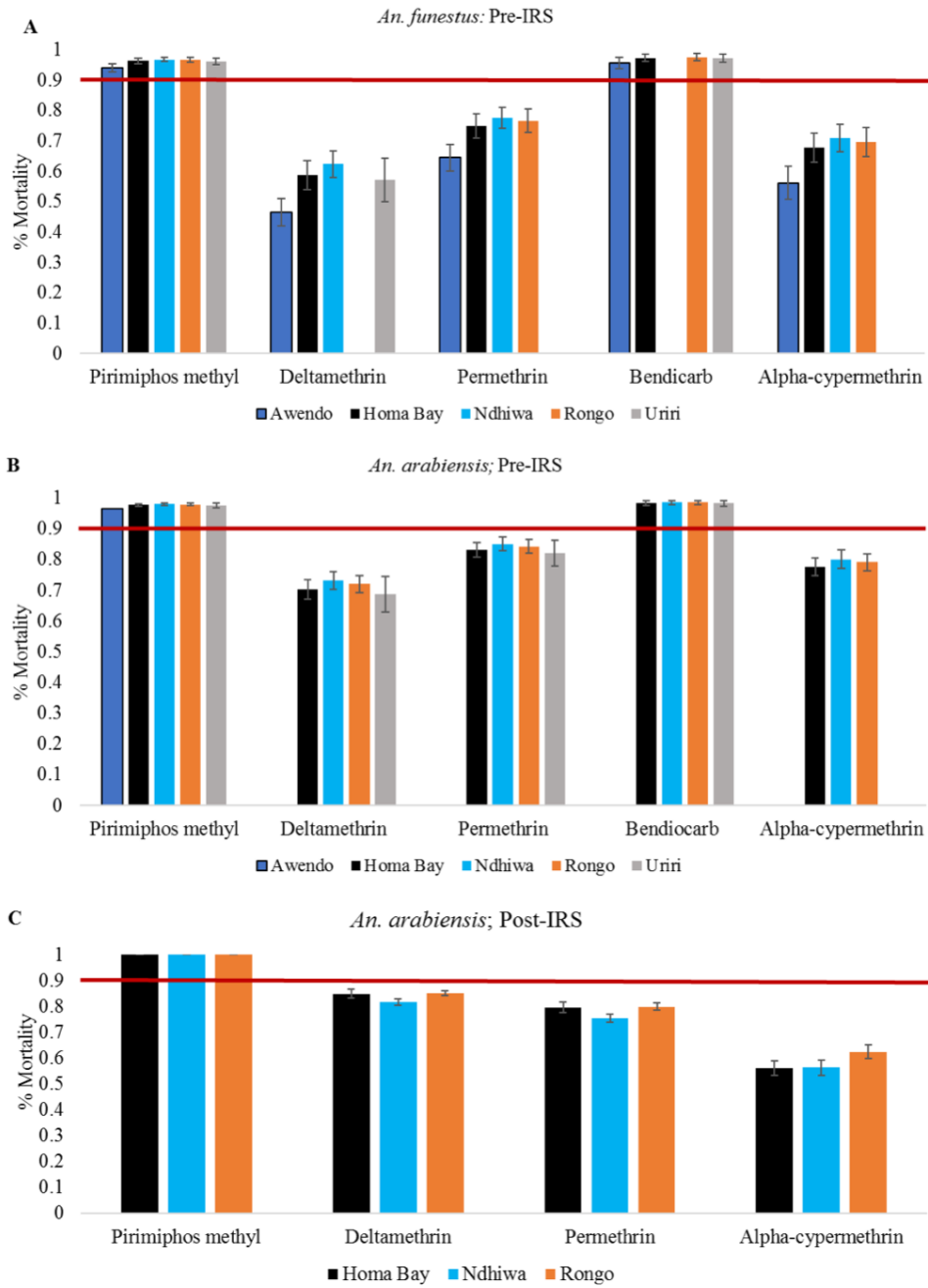
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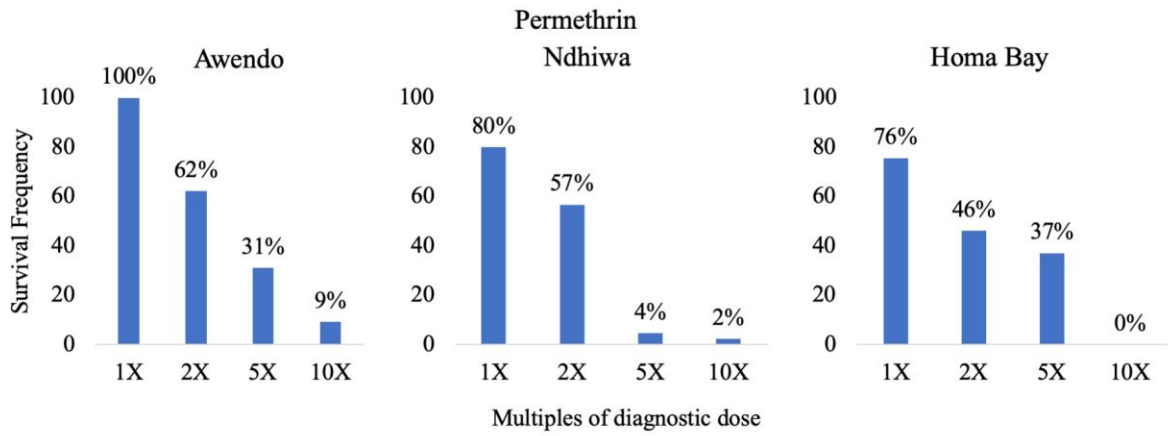
Supplementary figures



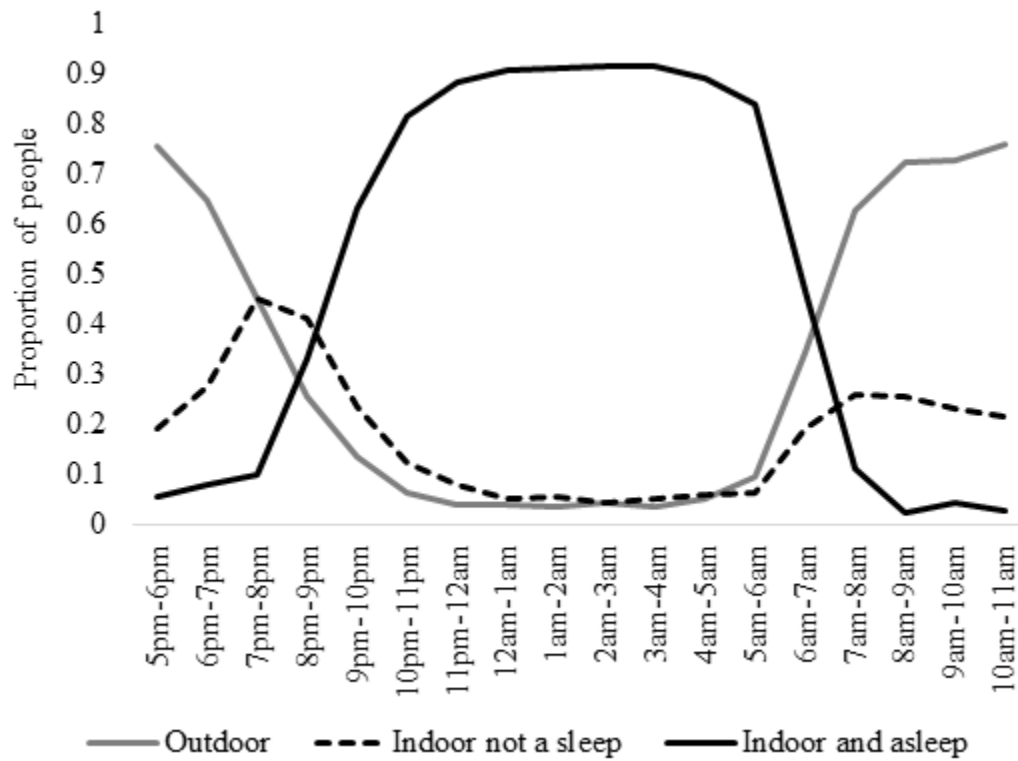
Supplemental Fig. 1. 24-hour mortality rates of susceptible *An. gambiae s.s.* exposed to mud and concrete sprayed walls over eleven months post-IRS. Distribution of mortality rates by box-whisker plots showing median values and interquartile ranges. Data were pooled for all sites.



Supplemental Fig 2. 24-Hour mortality of *An. funestus* and *An. arabiensis* following exposure to pirimiphos-methyl, deltamethrin, permethrin, bendiocarb, and alpha-cypermethrin pre-IRS (Fig 2A and B) and post-IRS (Fig 2C) in WHO susceptibility test.



Supplemental Fig 3. 30 minutes survival frequency of *An. arabiensis* from Awendo, Ndhiwa, and Homa Bay sub-counties, exposed to multiples of diagnostic doses of permethrin.



Supplemental Fig 4. Proportions of people within the study area at different locations during HLC collection.

Supplementary Tables

Supplemental Table 1. Model table for *Anopheles funestus* collected in light traps. Conditional estimates for the effect of pre- versus post-spray conditional on IRS status are also included.

Parameter	Level	Risk Ratio	Lower CL	Upper CL	t-value	P-value
Intercept	Interceptor	0.4	0.2	0.8	-2.841	0.013
Period	Post Spray	0.98	0.69	1.38	-0.127	0.899
	Pre Spray	Ref				
Status	Intervention	0.64	0.28	1.45	-1.063	0.288
	Control	Ref				
Period*Status	PostSpray*Intervention	0.12	0.07	0.21	-7.513	<0.001
	PostSpray*Control	Ref				
	PreSpray*Intervention	Ref				
	PreSpray*Control	Ref				
Net Use	All under net	1.11	0.77	1.6	0.576	0.565
	Some under net	1.2	0.77	1.86	0.816	0.415
	None under net	Ref				
Eaves	Closed	0.68	0.48	0.96	-2.174	0.030
	Partially open	0.84	0.56	1.27	-0.817	0.414
	Open	Ref				
Cattle	Yes	1.62	1.22	2.13	3.395	0.001
	No	Ref				
Period (Conditional on IRS)	Post Spray	0.12	0.07	0.19	-8.615	<0.001
	Pre Spray	Ref				
Period (Conditional on non-IRS)	Post Spray	0.98	0.69	1.38	-0.127	0.899
	Pre Spray	Ref				

Supplemental Table 2. Model table for *Anopheles funestus* collected by pyrethrum spray catches. Conditional estimates for the effect of pre- versus post-spray conditional on IRS status are also included.

Parameter	Level	Risk Ratio	Lower CL	Upper CL	t-value	P-value
Intercept	Interceptor	0.72	0.27	1.94	-0.704	0.493
Period	Post Spray	0.64	0.41	1.00	-1.945	0.052
	Pre Spray	Ref				
Status	Intervention	0.54	0.17	1.72	-1.047	0.296
	Control	Ref				
Period*Status	PostSpray*Intervention	0.06	0.03	0.13	-7.094	<0.001
	PostSpray*Control	Ref				
	PreSpray*Intervention	Ref				
	PreSpray*Control	Ref				
Net Use	All under net	0.96	0.61	1.5	-0.187	0.852
	Some under net	2.02	1.13	3.59	2.383	0.017
	None under net	Ref				
Eaves	Closed	0.8	0.5	1.3	-0.889	0.374
	Partially open	1.08	0.64	1.83	0.291	0.771
	Open	Ref				
Cattle	Yes	1.63	1.12	2.35	2.583	0.010
	No	Ref				
Period (Conditional on IRS)	Post Spray	0.04	0.02	0.07	-9.289	<0.001
	Pre Spray	Ref				
Period (Conditional on non-IRS)	Post Spray	0.64	0.41	1	-1.945	0.052
	Pre Spray	Ref				

Supplemental Table 3. Model table for *Anopheles arabiensis* collected in light traps. Conditional estimates for the effect of pre- versus post-spray conditional on IRS status are also included.

Parameter	Level	Risk Ratio	Lower CL	Upper CL	t-value	P-value
Intercept	Interceptor	0.03	0.01	0.07	-7.351	<0.001
Period	Post Spray	3.06	1.59	5.92	3.335	0.001
	Pre Spray	Ref				
Status	Intervention	1.79	0.55	5.76	0.972	0.331
	Control	Ref				
Period*Status	PostSpray*Intervention	0.45	0.2	1.01	-1.942	0.052
	PostSpray*Control	Ref				
	PreSpray*Intervention	Ref				
	PreSpray*Control	Ref				
Net Use	All under net	1.95	0.99	3.84	1.94	0.052
	Some under net	2.17	1.02	4.62	2.008	0.045
	None under net	Ref				
Eaves	Closed	0.57	0.33	0.96	-2.131	0.033
	Partially open	0.78	0.43	1.42	-0.814	0.416
	Open	Ref				
Cattle	Yes	1.33	0.89	1.98	1.383	0.167
	No	Ref				
Period (Conditional on IRS)	Post Spray	1.39	0.78	2.47	1.112	0.266
	Pre Spray	Ref				
Period (Conditional on non-IRS)	Post Spray	3.06	1.59	5.92	3.335	0.001
	Pre Spray	Ref				

Supplemental Table 4. Model table for *Anopheles arabiensis* collected by pyrethrum spray catches. Conditional estimates for the effect of pre- versus post-spray conditional on IRS status are also included.

Parameter	Level	Risk Ratio	Lower CL	Upper CL	t-value	P-value
Intercept	Interceptor	0.12	0.04	0.38	-3.954	0.001
Period	Post Spray	1.64	0.87	3.09	1.543	0.123
	Pre Spray	Ref				
Status	Intervention	1.16	0.3	4.44	0.214	0.831
	Control	Ref				
Period*Status	PostSpray*Intervention	0.36	0.16	0.82	-2.445	0.015
	PostSpray*Control	Ref				
	PreSpray*Intervention	Ref				
	PreSpray*Control	Ref				
Net Use	All under net	1.61	0.9	2.87	1.594	0.111
	Some under net	1.85	0.89	3.84	1.652	0.099
	None under net	Ref				
Eaves	Closed	0.34	0.18	0.67	-3.165	0.002
	Partially open	0.60	0.32	1.13	-1.583	0.114
	Open	Ref				
Cattle	Yes	1.53	1.00	2.34	1.944	0.052
	No	Ref				
Period (Conditional on IRS)	Post Spray	0.60	0.33	1.09	-1.681	0.093
	Pre Spray	Ref				
Period (Conditional on non-IRS)	Post Spray	1.64	0.87	3.09	1.543	0.123
	Pre Spray	Ref				