Additional file 3:. Multivariable Firth penalized-likelihood logistic model for PCR-based malaria parasite positivity (all species), Northern Lao PDR ( $\mathrm{N}=5,082$ ).
Note: risk factors with $\mathrm{p}<0.05$ are in boldface; $\mathrm{HH}=$ household.

| Risk factor |  | aOR | [95\% Conf. Interval] | $p$-value |
| :---: | :---: | :---: | :---: | :---: |
| District | Paktha | reference | - | - |
|  | Muang Et | 1.70 | 0.51 to 5.65 | 0.386 |
|  | Nambak | 0.33 | 0.070 to 1.61 | 0.171 |
|  | Khua | 1.74 | 0.63 to 4.75 | 0.282 |
| Wealth quantile | highest | reference | - | - |
|  | middle high | 2.11 | 0.58 to 7.61 | 0.254 |
|  | middle low | 1.59 | 0.41 to 6.11 | 0.499 |
|  | lowest | 3.38 | 0.95 to 12.00 | 0.060 |
| Does HH own any type of net (bednet or hammock) to sleep under? | Yes | reference | - | - |
|  | No | 10.32 | 2.07 to 51.53 | 0.004 |
| Have you ever heard of malaria? | Yes | reference | - | - |
|  | No | 0.73 | 0.32 to 1.65 | 0.447 |
|  | Don't know | 4.21 | 1.06 to 16.78 | 0.041 |
| Source of malaria knowledge | Not brochure or poster | reference | - | - |
|  | Brochure or poster | 14.05 | 2.04 to 96.96 | 0.007 |
| Does anyone in HH go to forest or forest-fringe sites overnight? | No | reference | - | - |
|  | Yes | 1.74 | 0.71 to 4.26 | 0.222 |
| Any cases in village outside household? | No | reference | - | - |
|  | Yes | 2.99 | 1.37 to 6.52 | 0.006 |
| Any other cases in household? | No | reference | - | - |
|  | Yes | 12.04 | 4.97 to 29.19 | < 0.001 |
| Sex | male | reference | - | - |
|  | female | 1.18 | 0.61 to 2.27 | 0.632 |
| Age in years | continuous | 0.996 | 0.98 to 1.01 | 0.652 |

