Data on variables were measured based on variable description and variable type [see Additional file 2]. However, we provide here further clarifications on some of the variables. First, MARRIED variable takes the value of one for all married households and zero for others. Similarly, STRANGER variable takes the value of one of all households whose length of stay in the community is one year and below and for others zero. The PUBMED variable takes the value of one for households using public medical facilities for the treatment of their malaria cases and zero for all others.

The SELF variable uses codes from 1 to 5, with 1 representing the rich and 5 the very poor, i.e. the higher value means lower status self-assessment. Therefore, a negative co-efficient for SELF variable implies a positive relationship between WTPMC and SELF variable.

The MPROTEC variable was proxied by the household's current cost of spraying the rooms regularly using aerosol insecticide sprays. This is because, although the leading method of protection among the households is using window/door nets (36.3%) {followed by spraying the rooms (28.2%)}, window/door netting is more of a capital expenditure, with a life span of between 2 and 4 years. Spraying of rooms on the other hand is carried out daily in most households using this method. Besides, the average cost of regularly spraying the rooms is the highest when compared with any other specifically mentioned methods. Consequently, the cost of spraying the rooms, being a recurrent expenditure, is expected to have a significant influence on what households are willing to pay for malaria control. Finally, the income variable is measured by the sum of household expenditures and savings because respondents would be reluctant to indicate their income. Using the expenditure approach, detailed questions were asked to determine the income of each household. [see Additional file 3]

Results
Below, we present the empirical results. First, the results in respect of the average sum that households are willing to pay for major methods of protection against malaria attacks as well as for total eradication of malaria are pre-

sented followed by the estimated parameters for equation (1) above.

Average willingness to pay
Table 1 indicates that households are willing to pay, an average of Naira 1,112 per month (USD 9.3) for the treatment of adult malaria victim and a slightly higher figure of Naira 1,132 (USD 9.4) for a child victim. Furthermore, it shows that they are willing to pay an average Naira1,325 (USD 11) for the supply of bed nets and about Naira 1,068 (USD 8.9) for area spraying. Similarly, it shows that the average sum that households are willing to pay for total eradication of malaria is an average of Naira 7,324 (USD 61).

To bring out the message in Table 1 more clearly, the average values therein are put side by side with relevant average actual expenditures made by households in Table 2. The implication of the difference between the actual cost of protection, treatment and indirect cost to the households and what the households are willing to pay on the average for the eradication of malaria represents the household valuation of the intangible costs. This is about Naira 2,715 (USD 22.6) per month per household.

Similarly, the difference of Naira 427 (USD 3.6) per month in respect of malaria treatment should be interpreted as the extra amount that they are prepared to pay if an organisation is offering malaria treatment insurance policy upon which they could draw as the need arises. An analogous interpretation should be given to the difference of Naira 324 (USD 2.7) per month for bed nets – payment for some inconvenience involved in self procurement of bed nets relative to it being provided.

Regression results
Tables 3 and 4 present the regression results. Variables that are not present in the estimated equations reported in the Tables are excluded because of their extreme insignificance for efficiency gain in line with standard econometric practice. A comparison of these two tables indicates the log-linear functional form performs better though the two results are fairly good especially for a cross-sectional study. Consequently, our analysis shall be based on

Table 1: Summary statistics of amounts that households are willing to pay

	N	Sum	Mean	Std. deviation
Willingness to pay for malaria treatment (Medcare) ADULT	1510	1679300	1112.1192	921.5009
Willingness to pay for malaria treatment (medcare) CHILD	1383	1565100	1131.6703	916.1412
Willingness to pay to avoid (protection) malaria attack (BED NETS)	1412	1870850	1324.9646	1103.5628
Willingness to pay for protection (area spraying, twice a year)	1437	1534750	1068.0237	1084.9464
Willingness to pay for total eradication of malaria	1440	1.1E + 07	7324.1667	9401.0222
Valid N (listwise)	1257			

Source: computed in the study