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Appendix 1. A summary matrix of selected studies on economic impact of malaria

Study	Study site	Objectives	Methodology	Findings
Alaba and Olumyiwa 2006	Rural Nigeria	To analyze the incidence of malaria in rural Nigeria and its implication for the country's efforts to meet the targets of MDG	Cost of illness approach	Substantial resources and domestic output is lost annually to malaria attack in Oyo state.
Asante, Asenso-Okyere and Kusi 2005	Ghana	To estimate the impact of the burden of malaria on economic growth. To estimate the costs of malaria illness and control. To determine the ability and willingness to pay for malaria control.	Production function Cost of illness Willingness to pay	It is found that malaria has a negative effect on real GDP growth. A single malaria episode in the household resulted in an estimated average cost of $15.39.
Asenso-Okyere and Dzator 1997	Two districts in Ghana	To measure the cost of treating malaria	Survey of 1289 households	The average treatment cost of an episode including the direct costs and opportunity cost of traveling and waiting time is $8.67 or 3.7 days of male output or 4.7 female output
Asenso-Okyere, Dzator, Osei-Okoto 1997	Ghana	To estimate a disease-specific demand function for determining the utilization of the	Multinomial logit regression model	The choice of malaria care provider is found to be influenced by facility price, travel time,

		health service of a health care provider or treatment of malaria		waiting time for treatment, education, sex, age and quality of care measured in terms of drugs availability
Attanyake, Fox-Rushby and Mills 2000	Sri Lanka	To measure and value the direct and indirect costs of perceived malaria morbidity at the household level	Survey of 1080 households from central province of Sri Lanka	To fully recover from malaria, a household on average incurs total cost of $7. It incorporates 22% as indirect cost, 24% as direct cost and 32% as indirect cost for households.
Brohult et al. 1981	Liberia	To assess the impact of malaria prophylaxis upon the physical working capacity of Liberian industrial workers	Group samples of industrial workers	There is no significant difference across groups of men with and without malaria prophylaxis in terms of hemoglobin concentration, haematocrit, blood volume and physical performance.
Chima 2003	General	To review problems in using the data of the direct and indirect costs of malaria prevention and treatment of the existing studies.	Literature review	Past studies generally focus on febrile illness; overestimate the cost of uncomplicated malaria but underestimate the costs of severe illness.
Chuma, Thiede and Molyneux 2006	Kenya	To develop and apply a framework that incorporate a range of factors in exploring the link between malaria, poverty and vulnerability at the household level	Cross sectional survey in dry and wet seasons Regression model	The impact of malaria on household economic status is extended slowly over time. Coping strategy adopted can have negative implication, influencing household ability to

				withstand malaria and other contingencies in the future
Cropper et al., 1999	Tembien district of Ethiopia	To measure in monetary value the household costs in preventing malaria	Willingness to pay approach	The value of preventing malaria with vaccine is about $36 per household per year or 15% of the inputed annual income of the household
Endah and Ndambi 2006	Western Highlands of Cameroon	To examine the impact of malaria on food production	Epidemiological survey conducted on 515 people; blood sample and hospital laboratory	Malaria causes weakness of patients there by reducing labor outputs, causes cycles of interruptions and also causes deviation of funds from farm inputs to treatment cost for malaria
Ersado Amacher and Alwang 2003	Tigray Region in Ethiopia	To determine the interaction between investments, community health, adoption of productivity and land enhancing technologies by households	Cross section survey of 800 households Econometric model (adoption sequencing)	Time spent on treating sickness and opportunity cost of caring for the sick affect adoption through its impact on household income and labor decision
Ettling et al. 1994	Malawi	To explore the knowledge, attitude, perception and practices of malaria	KAP survey on Malawian households	
Gallup and Sachs 2001	Countries affected by Malaria across the world	To determine the cause of malaria between countries To Compare the effect of malaria on growth between countries before and after malaria eradication	Regression model Indexing	The location and severity of malaria are mostly determined by climate and ecology not poverty per se. The geographically favored region has been able to reduce malaria has grown substantially.

Gikandi et al. 2008	Rural Kenya	To evaluate barriers preventing pregnant women from using Insecticide Treated Nets (ITN) and Intermittent Presumptive Treatment (IPT) with sulphadoxine pyrimethaine (SP), 5 years after the launch of national malaria strategy in rural Kenya	Survey of 72 households	Although the use of ITN had increased by 10 fold, the use of IPT coverage remains low.
Girardin et al. 2004	Rural Cote d'ivoire	To assess the feasibility and quantify the microeconomic consequences and health impact of a project that aims at agricultural intensification through off-season vegetable farming	Survey of 64 households	During a single cabbage production cycle, those farmers who were prescribed sick because of malaria for more than 2 days had 47% lower yields and 53% lower revenue than farmers who missed a maximum of two days.
Greenwood 2005	General	To explore ways to improve malaria prevention and treatment	Literature review	Insecticide treated bed- nets is a simple but effective means of preventing malaria especially with the development of long-lasting nets in which insecticide is incorporated into the net fibers
Guiguemde et al. 1994	Bobo-Dioulasso town in Burkina Faso	To measure the household expenditure on malaria prevention and treatment for households in Bobo-Dioulasso town	Survey of households conducted over 6 months period	The average total costs of treating malaria for the 6 months are $42 per household. Malaria prevention techniques include chemical prophylaxis, aerosol

				sprays, mosquito coils and impregnated bednets and the average cost for the 6 months period is $33 per household.
Hutubessy,Bendib and Evans 2001	Various issues on malaria interventions	To explore the costs and consequence of various malaria control interventions by allocative efficiency To explore methodological improvement on interventions that would allow the result to be more generalized To explore a way of measuring long term effects on malaria interventions	Literature review	
Konradsen et al. 1997	Five villages in dry zones of Sri Lanka	To measure the economic cost of malaria to households in Sri Lanka	Survey of 298 household over a one- year period	The annual economic cost to household for malaria is $15.56 and $47.46 for other illness
Konradsen, Van der Hoek, Amersinghe 1997	Five villages in dry zones of Sri Lanka	To explore the community perceptions, preventive measures and illness behavior to malaria costs	218 households surveyed	Malaria was ranked the third most important concern and overall knowledge of malaria causes, symptoms, and treatment is high. Preventive measure by households include bed nets, mosquito coils and insecticides
Kumar et al. 2007	India	To describe the magnitude of malaria burden in	Disability adjusted life years	Retrospective analysis showed that disability adjusted

		India's nine anophleline vectors		life years lost due to malaria is 1.86 million years
Leighton and Foster 1993	Nigeria and Kenya	To examine the economic impact of malaria To measure the annual work days lost to production due to malaria	Focus group discussion and secondary data	In Kenya, the agriculture sector suffers much in terms of lost agriculture production while in Nigeria the service sector is the one that is affected most.
McCarthy, Wolf and Wu 2000	Various countries across the world with special focus to Sub-Saharan African countries	To explore the cross sectional difference in malaria morbidity and examine the linkage between malaria and economic growth	Descriptive statistics regression model	There is a significant negative association between high malaria morbidity and the growth rate of GDP per capita
Russell 2003	General	To review and summarize studies that have measured the economic costs and consequences of illness for patients and families	Literature review	Nearly all studies presented evidence on what costs of illness had contributed directly and indirectly for patients and how costs might be lowered through improvement in the health service delivery or financing
Picard and Mills 1992	Two districts in Nepal	To analyze the extent, and incidence and the loss of effective work time caused by malaria	695 patients and 695 control groups	The mean pair-wise difference in period worked wholly or partially disabled by illness in the month preceding interview were respectively 5.31 and 1.21 days
Sachs and Malaney 2002	Various countries across the world	To explore the global malaria transmission patterns To re-examine the relationship between malaria and poverty	Literature Review	

Sauerborn et al. 1991	Burkina Faso	To estimate the direct and indirect costs in Burkina Faso	Survey of 626 households in Solenzo medical district of Burkina Faso in 1985	Cost per case was averaged $5.96 and cost per capita is $1.96. Indirect cost due to mortality is $0.79 per capita, and direct cost incurred by users (e.g transportation and direct purchases) is $0.22 per capita.
Sawyer 1993	Brazil	To analyze the economic and social consequences of malaria in colonization projects of the settler populations in new frontier areas	Descriptive analysis	High malaria prevalence interferes with the scope and stability of permanent agricultural settlements, and it imposes economic and social costs which extend far beyond immediate need for control and treatment of the disease