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Business and Malaria: A Neglected Threat?

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Foreword

The World Economic Forum seeks to harness the potential of public-private partnerships to address today's global challenges. The Global Health Initiative was launched in 2002 to respond to the global threat posed by the three major diseases: HIV/AIDS, tuberculosis (TB) and malaria. In partnership with UNAIDS, the World Health Organization and the Stop TB and Roll Back Malaria Partnerships, we asked our network of member companies to step up to the challenge, and to bring their resources to bear to increase the quality and quantity of private sector responses in the fight against HIV/AIDS, TB and malaria.

Today, the global fight against malaria is enjoying unprecedented momentum, in terms of increased funding, political support and greater convergence on policies and programming. What role can the business community play in this context? What is the impetus for private sector action, and what is still needed in order for their contributions to truly make an impact? An important dimension of the GHI is to monitor and report on the business response to HIV/AIDS, TB and malaria. Our latest report, *Business and Malaria: A Neglected Threat?* seeks to examine some of these questions, through an analysis of a survey of over 8,000 business leaders from over 100 countries. The report provides us with clues on how businesses view the threat of malaria, and where they believe the responsibilities for action lie.

The report's analysis shows that in sub-Saharan Africa, 72% of companies are reporting a malaria impact, with 39% perceiving these impacts to be serious. The challenge now is to use this budding understanding to catalyse effective business interventions against malaria. Complementary to this report, the GHI's *Guidelines for Employer-Based Malaria Control Programmes* provides practical tools for companies to plan and implement malaria control programmes, and our case study library outlines in detail best-practice examples of how companies have responded to the challenge of fighting malaria.

We would like to thank David Bloom at the Harvard School of Public Health and his team for their work on this report, and David Kim, the GHI's Manager for Africa and Malaria, for his assistance in designing the report and managing its production. We also would like to express our appreciation to the Bill and Melinda Gates Foundation for their support to this report and sincerely thank the report's reviewers for their time, insightful input and advice.

We hope this report will help to foster a greater understanding of the potential for private sector engagement in the fight against malaria.

Richard Samans
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Summary and key findings

Introduction

Malaria is a serious threat to humanity. Centuries of effort to mitigate its impact have borne fruit in some regions, but the disease remains a resilient foe in many countries. Responsible for at least one million deaths each year, malaria has persisted in large regions of the world and resurged in others in recent decades as resistance to drugs and pesticides has spread.

So far, governments have been responsible for most malaria control efforts. Many governments, however, lack the resources for effective prevention and treatment, which has led to calls for greater private sector involvement.

For some firms, involvement in malaria control is likely to be in their best interest. Poor health can affect businesses directly, through its impact on workers, customers and corporate reputation. Although the academic literature is thin, there is some empirical evidence that malaria has directly impeded business activities, and several large corporations have engaged in malaria control in order to limit its impacts on them.

Poor health can also affect businesses indirectly by holding back a country's economy; malaria has been found to have significant indirect impacts on economies.

For many businesses, on the other hand, such as those that export most of their production or that sell primarily to other firms or to communities untouched by the disease, malaria will not significantly affect their customer base. In addition, although it is clear that workers with malaria are problematic for a business (due to lassitude, absence and even death), businesses may decide that local labour surpluses mean that it is less expensive to deal with these problems than to invest in the health of their workers.

This report discusses the impacts of malaria on business. Part One describes malaria and outlines prevention and treatment methods. It also looks at the international response to the disease. Part Two reviews the academic literature on the impacts of malaria on economies and businesses. Part Three of the report presents data from the World Economic Forum's annual Executive Opinion Survey. The survey polls the views of over 8,000 business leaders in over 100 countries. In the past three years, it has included questions on the business impacts of malaria. Part Four of the report discusses the actions the private sector can take to combat malaria, and reviews examples of business malaria programmes. The final section makes some recommendations for businesses considering engagement in malaria control.

Summary and key findings

Key findings

The challenge of malaria

- Nearly half the world's people live in areas that are vulnerable to malaria. Sub-Saharan Africa and South and South East Asia are the most affected regions. In countries where the disease is endemic, pregnant women and children are most at risk. In epidemic areas, both adults and children are at risk.

- Although effective prevention and treatment methods are available, these are inaccessible to many individuals who need them. Resistance to pesticides and drugs has contributed to an increase in malaria prevalence in some regions in recent decades.

- The World Health Organization believes that, despite a spate of new initiatives such as the Global Fund to Fight AIDS, Tuberculosis and Malaria, global financing for malaria control is inadequate.

Why malaria matters for businesses

- Health problems affect businesses both directly, through their impact on employees, customers, and corporate reputation, and indirectly, through their effect on economies.

- Data on the effects of malaria on economies and businesses are weak. Some southern European economies grew rapidly following malaria eradication, and one major study found that the economies of countries with high malaria prevalence grew 1.3 percentage points less per year than other countries between 1965 and 1990. Other studies find smaller effects.

- Several companies report that malaria has had severe impacts on operating costs in recent years. In a survey in Ghana, where malaria is endemic, 30 per cent of business leaders who responded reported that the disease had had a strong impact on productivity.

Business concerns over malaria: the Executive Opinion Survey

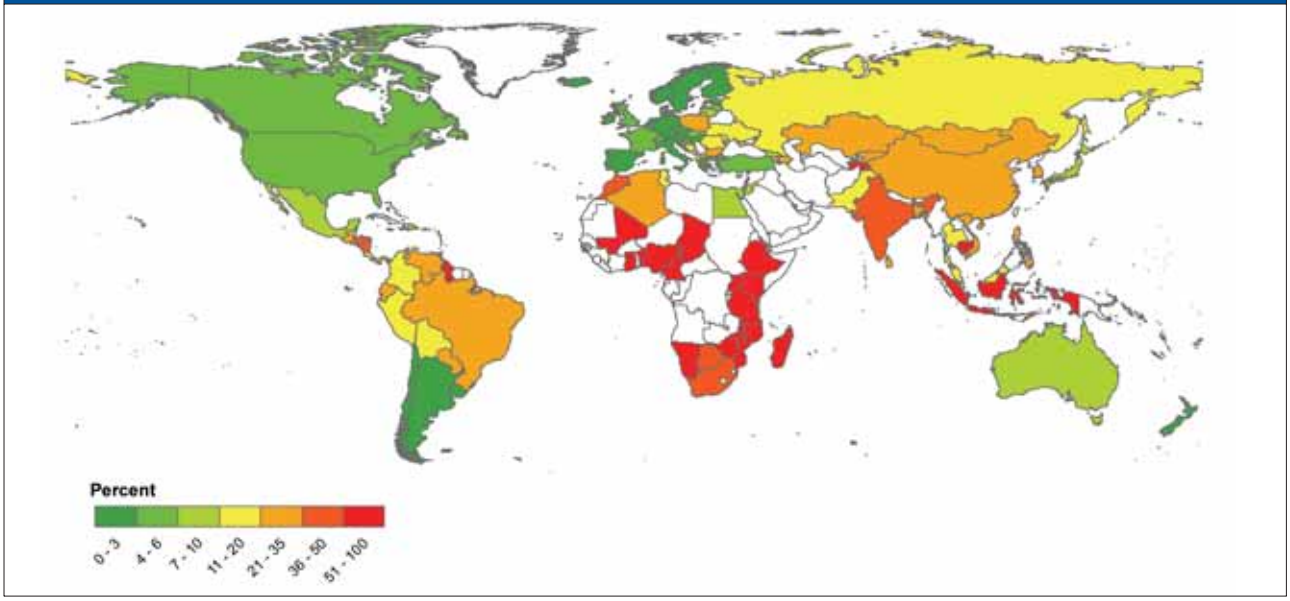
- 22 per cent of business leaders who responded to the World Economic Forum's Executive Opinion Survey in 2004 report that malaria currently affects their business. 10 per cent report serious impacts.

- In Sub-Saharan Africa, 72 per cent of respondent firms reported current impacts in 2004, with 39 per cent perceiving these impacts to be serious.

- Respondents think the future toll of the disease is likely to be similar to its current effect. (see map 1). However, concern over the future increased somewhat between the 2004 and 2005 surveys.

- In countries with at least some malaria, 40 per cent of firms expect impacts within the next five years.

Map 1 – Predicted future impact of malaria, 2005



Summary and key findings

- Firms in countries with both epidemic and endemic malaria are significantly more concerned than those where malaria is only endemic. This could be because epidemic malaria takes a greater toll on adults or because the unpredictability of epidemics makes it harder for firms to prepare for them.

- Worldwide, HIV/AIDS and tuberculosis cause slightly more concern to businesses than malaria. However, in countries where malaria is present, business concern over future malaria impacts is higher than business concern over future TB impacts in countries with TB (i.e., all countries).

- Concern over malaria is reduced in countries that are perceived to be generally well-governed and that have a socially responsible private sector. It appears that businesses believe both they and their governments have a role to play in malaria control.

Business action on malaria

- Many of the resources needed for malaria control match the skills and capabilities of businesses.

- Several major businesses have taken action on malaria, and have benefited from the consequent development of new business contacts, the promotion of worker and customer loyalty, and the protection of workforces and, to some extent, markets.

- Even if malaria is affecting customers, however, some individual businesses may not be motivated to take steps to combat it. They could, with good reason, see malaria as a problem that affects all businesses, and that it would not be cost-effective to take expensive actions that would lead to little benefit that specifically accrues to the business itself.

Recommendations

- Not all firms need to act on malaria. Businesses should begin by identifying a need, likeliest to appear where government action has proved inadequate. An accurate assessment of the problem is key to developing an effective response.

- Firms should not go it alone in malaria control efforts. Governments, non-governmental organizations, other companies and business associations may all have specialist knowledge that would strengthen a company's programme.

- Programmes should begin by targeting employees. The most immediate effects of malaria on firms are likely to derive from its impact on workers. Workers are also an easily accessible segment of the population for companies.

- If expanding programmes to include workers' families or communities, firms should be careful to define the programmes' reach and to manage expectations.

- If encouraging contractors or suppliers to engage in malaria control, firms should assist them by sharing policies and materials.

- Long-term evaluation of the impact and cost-effectiveness of programmes is key to their continued success.

One: The Challenge of Malaria

The epidemiological background

- There are 350 to 500 million clinical episodes of malaria each year. The disease causes over 1 million deaths and is the eighth most important disease in terms of lost disability-adjusted life years (DALYs).[1]

- Nearly half of the world's population lives in vulnerable areas. Episodes of the disease in Sub-Saharan Africa, which hosts the most deadly malaria-transmitting mosquito and the most deadly malaria parasite, account for 54 per cent of cases but 90 per cent of fatalities. Children below the age of four in the region account for 82 per cent of malaria deaths and lost DALYs worldwide.[2]

- Some regions, including Sub-Saharan Africa and South and South East Asia, have seen increases in malaria in recent decades as resistance to pesticides and drugs has spread.

- Control efforts in other regions, such as Southern Europe, Latin America and the Caribbean, have greatly reduced the threat posed by malaria.

What is malaria and how is it transmitted?

Malaria has been a scourge of humanity for millennia. Ancient Chinese and Sanskrit medical texts described its symptoms and Hippocrates referred to the disease in the 4th Century BC.[3]

Despite advances in both prevention and treatment in the 20th Century, malaria is still a major killer today, and deaths from the disease have increased in the past three decades. 3.2 billion people – almost half the world's population – live in areas where the disease is either endemic or epidemic.[4] It affects 107 countries, most of them tropical. Malaria causes over a million deaths each year (2 per cent of the global total of deaths), with hundreds of millions of clinical episodes per annum.

The name malaria comes from the Italian, meaning "bad air"; it was once thought that the dank air over marshes caused malaria infections. In 1880, scientists discovered that it is transmitted by bites from female *Anopheles* mosquitoes carrying the *Plasmodium* parasite.

There are four types of *Plasmodium* parasite, of which two are widespread in the developing world. By far the most deadly is *Plasmodium falciparum*, which causes nearly all malaria fatalities. This is the most common parasite in Sub-Saharan Africa, Haiti, Southeast Asia and Papua New Guinea. A second type, the *Plasmodium vivax* parasite, causes over 80 million episodes of malaria each year, but only a small fraction of deaths. It is more prevalent in Asia, Oceania and Latin America than in Africa.[5]

The symptoms of malaria, which usually occur between nine and fourteen days after an infective bite, include high fever, chills and vomiting. An acute infection can cause death via cerebral malaria or respiratory distress. Repeated infections can kill via severe malarial anaemia and hypoglycaemia.[6] Malaria also makes its victims more vulnerable to other potentially lethal infections such as acute respiratory diseases and diarrhoea. If malarial anaemia results in blood transfusions, there is also a risk of HIV/AIDS, hepatitis B or hepatitis C infections.

Who is at risk?

Most of those who die of malaria are children, and most of those children live in Sub-Saharan Africa. Every 30 seconds, malaria kills an African child.[7]

Adult fatalities are more rare. The effect of malaria on adults differs in endemic and epidemic regions. In endemic areas – generally tropical and sub-tropical regions – people contract the disease regularly throughout their lives. Beginning at the age of five years, individuals who have survived childhood infections gradually build up resistance. In endemic areas, therefore, most cases in adults are asymptomatic, with very few resulting in death.

In regions where malaria transmission is not stable and occasional epidemics occur, both adults and children are vulnerable because neither build up resistance. Epidemics occur because of climatic anomalies and changes, social upheaval such as sudden migrations, or migration by a group to an endemic area. Regions that border endemic areas such as southern Africa, the Sahel and northern India are among the most vulnerable to epidemics. Malaria epidemics typically have higher fatality rates than endemic malaria: an epidemic in Ethiopia in 1958, for example, killed 150,000 of

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the three million individuals infected – a 5 per cent fatality rate.[8] The World Health Organization estimates malaria epidemics kill 110,000 people per year.[9]

In both endemic and epidemic regions, pregnant women are susceptible to the disease. In endemic regions, malaria during pregnancy mainly affects the foetus or newborn child. It can result in spontaneous abortion or neonatal death; more commonly, it leads to low birth weight, which has negative impacts on health later in infancy and childhood. Malaria causes 75,000 to 200,000 infant deaths per year in endemic areas of Africa.[10] In epidemic regions, where adults have not built up immunity, pregnancy increases vulnerability to the disease – WHO estimates that in these areas, pregnant women are two to three times more likely to develop severe malaria than women who are not pregnant.[11] In Sub-Saharan Africa, malaria causes almost 4 per cent of maternal deaths.[12]

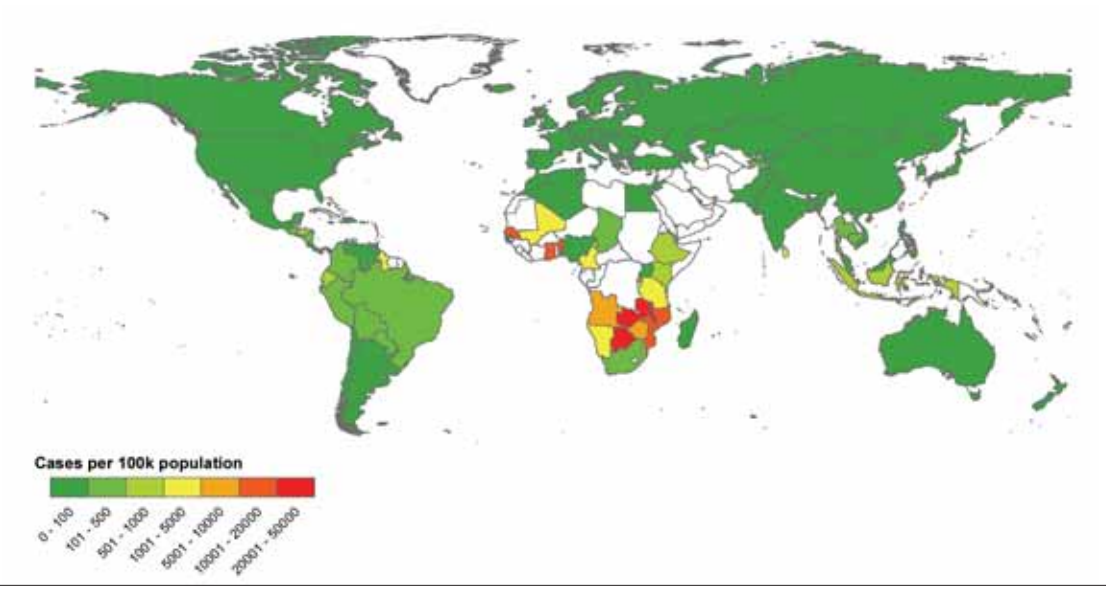
Malaria causes more harm in Africa than in any other region (see map 2). It is the second highest cause of disease in the continent, causing 9 per cent of deaths. In children below the age of five, it is responsible for 18 per cent of deaths.[13] Although only 54 per cent of global malaria cases in 2004 occurred in Africa, the region accounted for almost 90 per cent of malaria fatalities.[14]

A large proportion of care for malaria cases takes place within households, but the disease also places a significant burden on health services. In African countries with endemic malaria, it accounts for over 25 per cent of outpatient visits and over 20 per cent of hospital admissions.[15]

Malaria's devastating impact on Africa is partly attributable to the fact that the most efficient transmitters of the disease – the *Anopheles gambiae* s.l. and *An. funestus* s.l. mosquitoes – are much more prevalent there than in any other world region. *An. gambiae* and *An. funestus* have long lifespans, breed in peridomestic habitats and focus their biting on people. In some parts of Africa where the disease is endemic, individuals can receive over 300 malaria-transmitting mosquito bites each year.[16]

The most deadly parasite – *Plasmodium falciparum* – is also most prevalent in Africa. It causes 35 per cent of malaria cases in Asia and 18 per cent in the Americas. In Africa, it is responsible for 93 per cent of cases.[17] In recent years, the parasite has developed resistance to chloroquine and sulfadoxine-pyrimethamine (SP), the most commonly used and most easily available and affordable malaria treatments in the region, contributing to an increase in morbidity and mortality in some areas (changing agricultural practices, deforestation, population movements into malarial areas and declining health systems have also contributed to the increase). In the

Map 2 – Worlwide malaria prevalence, 2000



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period between 1990 and 1998, the number of deaths due to malaria in children below the age of five years in eastern and southern Africa was double the number in the preceding eight years.[18]

Other regions are less hard hit by the disease, and the ratio of deaths to cases is much lower.[19] Ten per cent of malaria deaths occur in Asia. South East Asia and some parts of Central Asia have seen a resurgence in malaria incidence in the past decade as eradication programmes have faltered or vector or parasitic resistance to drugs has grown. Some Asian countries have achieved great success in the fight against malaria. Vietnam, for example, cut deaths by 97 per cent and cases by 59 per cent between 1992 and 1997 through an intensive control programme.[20]

In other areas, malaria incidence is very low. The disease was common in southern Europe until its eradication there in the 1940s and 1950s. In the southern United States, too, it was wiped out in the last century. Today the main threat to Europeans and North Americans is from travel to malarious regions.

South America, Central America and the Caribbean have also greatly reduced the threat of malaria. There are fewer than four cases per 1,000 people each year in these regions, and cases rarely prove fatal.[21]

How can malaria be prevented and treated?

- In the continued absence of a malaria vaccine, prevention of the disease centres on altering the external environment to remove breeding sites for mosquitoes and protecting dwellings and individuals by killing mosquitoes.

- Indoor residual spraying with pesticides and insecticide-treated bednets have been used to great effect in many areas to reduce malaria.

- The World Health Organization recommends intermittent preventive drug treatment for pregnant women and young infants, who are particularly vulnerable to severe malaria.

- Artemisinin-based combination therapies are the most effective malaria treatment, as resistance has rendered earlier drugs, such as chloroquine, ineffective.

- The costs of tools for prevention and treatment have proved beyond the financial means of many endemic-country governments, leading to calls for more donor and private sector intervention. Initiatives such as the Global Fund to Fight AIDS, Tuberculosis and Malaria have begun to answer these calls.

Prevention

A combination of prevention and treatment interventions has been central to success in fighting malaria in many regions.

Prevention efforts have ranged from altering the external environment to protection within households. Draining or filling certain wetlands, pools of water and even puddles robs malarial mosquitoes of breeding sites and forces them out of populated areas. Spraying breeding sites with insecticides (known as larviciding) helps rid urban areas and refugee camps of mosquitoes. Improved weather forecasting helps in predicting epidemics, giving communities more time to prepare.

A more common use of insecticides involves spraying the interiors of dwellings. The residue left by the chemicals stops mosquitoes from entering or kills them when they land on walls. Most sprays last up to six months, although dichlorodiphenyl trichloroethane (DDT), which contributed greatly to malaria eradication in southern Europe and the United States, lasts longer. DDT also helped reduce malaria cases in South East Asia, but resistance to it has grown and, although some dispute that the amounts needed for indoor spraying are sufficient to cause damage, there are concerns that it harms the environment. As a result, its use is less common today.[22] Pyrethroid insecticides have replaced DDT as the standard indoor residual spray in many areas, although DDT-resistant mosquitoes are often also resistant to pyrethroids.

Insecticides are also used to treat bednets. Bednets have been used in malaria prevention for centuries, but insecticide-treated nets (ITNs) have been adopted only recently. ITNs either kill mosquitoes that land on the net or deter them from entering a dwelling (malaria-transmitting mosquitoes bite mainly at night). The latest generation of bednets (long-lasting insecticidal nets or LLINs) last over four years before they need to be replaced and, unlike earlier nets, they

also withstand washing and do not require bi-annual retreatment. Unlike other forms of prevention, such as indoor spraying, bednets are easy for members of the public to use without expert assistance.

ITNs are associated with sharp reductions in mortality. In five locations in Sub-Saharan Africa, they reduced child mortality by an average of 18 per cent.[23] One study in Tanzania found that mortality was reduced by 27 per cent with ITNs and 19 per cent with untreated nets.[24] Another found that children who slept under bednets grew more than unprotected children and were half as likely to develop anaemia.[25] According to a study in Kenya, meanwhile, women protected by ITNs gave birth to fewer premature or low birth weight babies than unprotected mothers.[26]

Insecticide-treated bednets protect more than those sleeping under them. Because they either kill mosquitoes or reduce the longevity of those that come into contact with the net, their effect extends over several hundred metres. If many people in a village use them, others will be protected.[27]

ITNs are a central focus of international efforts to control malaria; however, even at a cost of around US$ 5 per net (or US$ 4 for untreated nets), this adds up to a significant imposition on health budgets in some countries if provided by the public purse alone. The government of Malawi, for example, spends about US$ 6 per year per person on health, and the government of Angola spends about US$ 16 per year per person. By contrast, the cost may not be prohibitive in other countries, such as Botswana, where the corresponding figure for health expenditures is US$ 106.[28]

The World Health Organization estimates that 260 million ITNs are needed to provide protection for all Africans at risk of malaria.[29] In 2000, African countries committed to achieving ITN coverage for 60 per cent of the highest risk groups and pregnant women by 2005. Only a few reached the target, with WHO reporting in 2003 that only 2 per cent of African children sleep under ITNs and another 15 per cent under untreated nets.[30] So far, most of those using ITNs have been from wealthy households. However, national subsidies of delivery through public health systems in countries like Ghana and Nigeria and distribution with measles vaccinations in Togo have helped the poor gain access in some areas.[31] As discussed above, even use that is limited to wealthy members of a community can have beneficial effects on others due to the protection ITNs offer to those in their vicinity.

Improved nutrition or prophylactic drugs can also help prevent the worst effects of malaria. Micronutrient supplements have been found to protect children against the disease, as strengthened bodies and robust immune systems are better able to withstand its impacts.[32] For pregnant women at high risk of severe malaria, WHO recommends intermittent use of antimalarial drugs – normally sulfadoxine-pyrimethamine – as a preventive measure. The drug is given twice during pregnancy to women attending antenatal clinics.

Other prevention tools include mosquito coils to repel the insects and repellents sprayed on the skin, but their usefulness is limited. Coils are less cost-effective than ITNs, and repellents are relatively expensive and used mainly by tourists or business people visiting malarial areas for short periods.[33]

The cost of prevention varies widely depending on geographical circumstances, population density, and prevalence of infective mosquitoes, among other factors. Different studies, moreover, find different costs. Goodman et al (2000) found that the cost of ITNs per lost DALY averted was between US$ 19 and US$ 85. For two rounds of residual spraying per year, it was US$ 32-58; and for intermittent preventive treatment (IPT) for pregnant women it was US$ 4-29.[34] Breman et al (2006) found an average cost per lost DALY averted of US$ 11 for ITNs, US$ 11-34 for two rounds of residual spraying per year, and US$ 13 for IPT for pregnant women.[35]

With many African governments spending less than US$ 10 per person per year on health care, such costs are likely to be prohibitive in endemic regions unless there is international or private sector support. This is true even after taking into account the fact that not everyone lives in a malarial area and that not all prevention expenditures need to be made on an annual basis.

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Most countries where malaria is endemic are poor and their health systems are weak. Public health services are not available to all sectors of the population and governments lack the funds to undertake education campaigns to encourage families to take care of their own health. Even the provision of cheap interventions that have many benefits, such as micronutrient supplements, has proved beyond some governments, and many poor countries lack the resources for more costly prevention activities, such as draining wetlands.

With bednets, although the private sector is involved in distribution through markets and pharmacies, coverage remains uneven, with the poor and people in remote rural areas finding it particularly hard to access or afford nets, or to re-treat those they already own. Indoor spraying and IPT for pregnant women requires specialist skills and human resources that many malarial regions lack. Because even the most cost-effective new malaria prevention tools add to the financial burden on public health systems, many governments remain unable to cope. As we discuss in Part Two of this report, this has led to calls for businesses to become more involved in addressing health problems.

Treatment

Treatment of malaria is also a form of prevention. By reducing infectivity in those who have contracted the disease, and thus making it less likely that humans will pass the malaria parasite to uninfected mosquitoes, treatment protects those who have not yet been infected.

Treatment is highly effective in curing malaria. However, it is often the case that malaria drugs are given for any fever, even if the symptoms are not confirmed as malaria. Overuse of the drugs has promoted resistance to them.[36] Resistance to the traditional malaria drug chloroquine has built up in most malarial areas, contributing to the resurgence of morbidity and mortality from the disease. In eastern and southern Africa and more slowly in West Africa, resistance to chloroquine's replacement, sulfadoxine-pyrimethamine, is also spreading.

WHO currently recommends artemisinin-based combination therapies (ACT) as the preferred malaria treatment. Artemisinin, which is found in the shrub *Artemisia annua*, has been used in Chinese traditional medicine for centuries to cure a range of illnesses. In the 1970s, scientists working for the Chinese army discovered its effectiveness as a malaria drug. As resistance to chloroquine has spread in recent years, more countries have switched to the drug. Used in combination with other drugs such as sulfadoxine-pyrimethamine to prevent resistance, it has proved highly effective in reducing malaria morbidity in countries such as Vietnam and China.

Twenty-three African countries had incorporated ACT into malaria control programmes by 2004, but the cost of the drug has hampered efforts in some areas.[37] At between US$ 0.75-2.75 per treatment, ACT is currently ten to twenty times more expensive than older drugs such as chloroquine.[38]

As with prevention methods, providing treatment to all who need it has proved beyond the capabilities of many poor countries. Several governments in regions hard-hit by malaria promote home treatment, training mothers to identify and respond to symptoms and providing them with pre-packaged treatment tools. In most African countries, out-of-pocket expenditure on malaria exceeds government spending.[39]

How is the international community assisting in malaria prevention and treatment?

The World Health Organization has stated that US$ 3.2 billion per year is needed to finance malaria control worldwide. It suggests that $ 1.9 billion of this should be spent in Africa.[40] Of the global total, it recommends that 10 per cent be spent on long-life ITNs, 36 per cent on artemisinin-based combination therapy, 17 per cent on rapid diagnostic tests for malaria, 17 per cent on interventions such as IPT for pregnant women and epidemic control, and the remainder on improving health infrastructure and delivery and monitoring systems.

Only a fraction of the target sum is currently available, according to WHO.[41] "In most countries with a high malaria burden, the financial gap between what funds are needed and what are available remains large."[42] In Africa, 71 per cent of total public funding for malaria is provided through governments. In Asia, they provide 80 per cent and in the Americas, 96 per cent.[43] WHO reports that government provision in many countries is insufficient, and suggests that international donors should step in to boost the response.

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A number of international malaria control initiatives have sprung up in recent years. The most prominent is the Roll Back Malaria Partnership (RBM), which was launched in 1998 by WHO, UNICEF, the United Nations Development Programme and the World Bank. RBM brings together governments of affected countries, donors, the private sector, non-governmental organizations and academic bodies to help countries draw up five-year plans to combat malaria. It aims to halve malaria deaths by 2010, and again by 2015, by assisting countries in accelerating access to treatment, increasing ITN coverage, improving malaria control among pregnant women and scaling up responses to epidemics.

Among RBM's most important partners is the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM). GFATM committed US$ 881 million for malaria control in 2005-06 to help countries achieve the RBM targets. It has funded programmes in Africa, Asia and the Americas.

Other programmes include the US President's Initiative on Malaria, another RBM partner. This initiative has pledged to increase funding for malaria control by US$ 1.2 billion in five years, thereby halving malaria deaths in its target countries within three years of implementation. Angola, Tanzania and Uganda are its initial targets, but it aims to expand into fifteen or more hard-hit countries. The World Bank, meanwhile, has increased its investment in malaria through its Booster Programme for Malaria Control, and UNICEF's accelerated Child Survival and Development programme has helped increase bednet provision and cut child mortality in eleven countries in West Africa.[44]

Work on a malaria vaccine involves a number of international agencies, many of them partners of the GAVI Alliance (formerly the Global Alliance for Vaccines and Immunization). Spending on the development of a malaria vaccine has increased in recent years, but malaria is comparatively neglected in terms of research, accounting for just US$ 100 million of the global biomedical research total of US$ 56 billion.[45] Among the most important partners of the GAVI Alliance are the PATH Malaria Vaccine Initiative, the World Bank, UNICEF, the Bill and Melinda Gates Foundation and the International Finance Facility for Immunization (which aims to boost funding for vaccine development by borrowing against future aid flows to pay for increased current investments).

Some governments have worked with these and other international agencies to successfully tackle malaria, but others have seen a worsening in its impact in recent decades. The latter are now the focus of international malaria reduction efforts. Within these efforts, Roll Back Malaria views the private sector as an important partner in addressing the disease, and in the next section of the report, we consider the case for business involvement.

Two: Why malaria matters for businesses

Health and wealth

- Health problems affect businesses by their indirect impact on economies and their direct impact on operations.

- Health affects economies by boosting or damaging a child's education; strengthening or weakening labour productivity; influencing decisions on savings and investment and altering a country's demographic structure. Research has demonstrated significant impacts in each of these areas.

- Health can affect businesses through its impact on workforces, customers, and corporate reputation. Actions that promote good health can help companies create new business opportunities and protect themselves from potential negative effects.

Macro-economic impacts

Health problems affect businesses in two ways: first, by damaging the overall environment in which businesses operate, and second, through direct effects on firms' workforces, supply chains, customer bases or reputations.

There is growing literature on the importance of health to economies. Healthy populations are seen as an important engine of economic growth, while health shocks can cause great economic damage, as recent scares over SARS, mad cow disease, and foot and mouth disease show. HIV/AIDS, moreover, is thought to be hindering many African countries' prospects of escaping poverty.[46]

Good health affects economies in four main ways. First, good health improves children's' education. Healthy children are able to attend school regularly. They are also more capable of learning when in class than peers with poor health. Vaccines, for example, have been shown to have strong effects on cognitive abilities: a recent study of children in the Philippines showed that immunized children score higher in language and IQ tests taken several years after receiving basic vaccines than children who have not been immunized.[47] Improved cognitive abilities in children, in turn, are associated with higher earnings – and therefore potentially stronger economies – in adulthood.

A second channel through which health affects economies is its impact on labour productivity. Healthier workers, like healthier schoolchildren, attend work more often and are more energetic and mentally agile when at work. If workers' communities are healthier, moreover, they need less time off to look after sick relatives. A one-year increase in life expectancy is thought to boost labour productivity by as much as 4 per cent.[48]

Good health also boosts economies by promoting saving and investment. People who expect to live longer have a greater incentive to save for retirement, and their saving increases the funds available for investment in the economy. For economies to grow, investment – which promotes job creation, higher incomes, and improved technology – is essential. Those companies considering investments are more likely to take the plunge if they are not threatened by the effects of poor health. Foreign investors, too, may be more likely to invest in healthy workforces. Recent evidence indicates that overall population health is a significant determinant of a nation's ability to attract foreign investment.[49]

The fourth channel through which health affects economies relates to demography. As a country's health improves, more infants survive to childhood and then adulthood. As parents perceive that their children are more likely to reach adulthood, they also eventually realize they need fewer children to attain their desired family size. Birth rates fall as parents concentrate their resources in fewer children, thus improving the educational and health prospects of these children. In the lag between health improvements increasing survival and birth rates falling, a "boom" generation of children is created, which is larger than both its preceding and succeeding generations. As this boom generation reaches adulthood and swells the size of the workforce compared to the non-working age population, it has the potential, if the policy environment allows, to contribute significantly to the economy. It has been estimated that this "demographic dividend" was responsible for one-third of East Asia's rapid growth between 1965 and 1990.[50]

Two: Why malaria matters for businesses

Direct effects on business

Beyond altering the macro-economic environment, health may affect businesses more directly. The most immediate effect of a health problem like malaria is its impact on the workforce. Employees who fall sick are less able to work effectively and more liable to take time off to recover. If workers' family members fall ill, workers may have to take time off to care for them. Staff morale, too, may be affected by illness among colleagues and family members, and this is likely to be magnified if illness leads to death. Death due to disease also presents companies with increased costs as they recruit and train replacement workers.

The effect on communities is not limited to its impact on staff attendance and morale. If customers are hard hit by an illness, they may have to divert resources towards healthcare. This diversion can benefit some businesses, such as those developing healthcare products or funeral services, but it damages others as overall consumption declines.

The impact of health on corporate reputation is another consideration for some firms. Corporate social responsibility has become a buzzword in the modern economy. With activists, governments, consumers and sometimes shareholders pressuring companies to behave in a socially responsible manner, many businesses have invested in either cleaning up their act (for example, by not polluting the environment or not employing children) or engaging in activities that promote societal improvements (for example, corporate philanthropy or sponsorship of health programmes). In the health sector, pharmaceutical companies have been pressed to cut drug prices for developing countries for diseases such as HIV/AIDS and many firms have engaged in public-private partnerships on public health. Such actions can strengthen brands and enhance the loyalty of workers and customers.

These three motivations – workforce health, reputation and, to some extent, the customer base – can lead to action by businesses that either averts negative impacts of health problems or creates positive health outcomes. Firms working to avert negative impacts are inspired by the need to protect themselves from problems such as litigation, bad publicity, or the effects of disease on workers and customers. Firms working to create positive impacts are more likely to be spurred by a desire to capitalize on new business opportunities. Strengthening a brand through a proactive stance on social issues may be an important motivation for such firms. In addition, firms may seek opportunities to build relationships with policy-makers or other businesses involved in similar activities.

The effects of malaria on economies and businesses

- There are few robust findings on the economic impacts of malaria. Research on its effects on demography, savings and investment or health system costs is limited.
- Malaria's effects on attendance at work and land use can translate into significant impacts on productivity. The disease also has negative effects on schooling and cognitive abilities.
- Countries including Greece, Spain, Italy and Jamaica have experienced rapid economic growth after eradicating malaria.
- According to a study by Gallup and Sachs, economies with high malaria prevalence grew 1.3 percentage points less per year than others between 1965 and 1990.
- Businesses have been known to be negatively affected by malaria, from the construction of the Panama Canal to more recent large construction projects in Africa.
- A survey of firms in Ghana found that nearly one-third of business leaders believed the disease was having strong impacts on productivity.

Data limitations

Measuring the impact of malaria on economies is complicated by inadequate data on malaria morbidity and mortality. In the most affected areas, official health monitoring systems are weak and post-mortem reports often attribute all deaths preceded by fevers to malaria despite the existence of other diseases with similar symptoms such as pneumonia.[51]

An extensive review of the academic literature conducted by Goodman and co-authors in 2000 found that, "the weakness of the literature available on the economic impact of malaria is

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clearly evident. No studies can be highlighted as models of good methodology." "Excessive effort," the authors continue, "has been devoted to indirect studies that use often very weak data on earnings and days lost to make gross and potentially misleading estimates." [52]

Of the major channels from health to wealth discussed above, no robust studies assess the demographic impact of malaria, although it is possible that high infant and child mortality due to the disease will keep fertility high and prevent heavily affected countries from enjoying a demographic dividend.

In terms of the effect on savings and investment, Gallup and Sachs (2001) found circumstantial evidence showing that the eradication of malaria in southern Europe in the 1940s and 1950s spurred economic growth via a large increase in foreign investment and tourism to the region.[53] Again, further literature on the subject is limited.

The effect on productivity

A few studies discuss how malaria influences the other channels from health to wealth, including productivity.

In areas where malaria is endemic, pregnant women and children are most at risk from the disease. Neither group is likely to be highly productive in work, but both need care and will eventually either return to or begin working. The immediate economic effect of malaria among these groups is likely to be most strongly felt by health systems, which expend resources on treatment and by families who take time off work and draw down savings to pay for care. The monthly cost of malaria prevention in Sub-Saharan Africa ranges from US$ 0.05-2.10 per person. The cost of treatment ranges from US$ 0.41-3.88 per person per month – a significant burden on poor households suffering frequent malaria episodes.[54] A study in Rwanda calculated that 19 per cent of the country's health budget was consumed by malaria treatment in public health facilities.[55] And an epidemic in a district in Zimbabwe in 1996 and 1997 was found to increase the cost of malaria control to the Ministry of Health by US$ 290,000.[56]

Absenteeism from work is a more direct contributor to increased business costs resulting from the disease. Adults who fall sick from malaria have been found to miss between one and five days of work per malaria episode. They miss a similar period when caring for sick children.[57] WHO has calculated even larger effects, estimating that a malaria episode costs an equivalent of ten working days in terms of lost labour.[58]

Foster and Leighton (1993) estimated the value of malaria-related lost production to be between 2 and 6 per cent of Kenya's gross domestic product (GDP) and between 1 and 5 per cent of Nigeria's GDP.[59] They found that different sectors felt different impacts. In Kenya, agriculture was hardest hit, with total production 13 per cent lower than it would have been without malaria. In Nigeria, the service sector bore the brunt of losses, losing 8 per cent of production. According to the authors, the difference in effects among sectors reflects the different proportions of women working in each. Most of the agricultural workforce in Kenya is female; in Nigeria, the service sector has a high concentration of women.

Studies that consider absenteeism as the main economic impact of malaria rarely take account of the surplus of labour in many malarial countries. If healthy individuals fill in for sick workers, output may remain stable. In Sudan, for example, family members compensated for 62 per cent of working hours lost to malaria and schistosomiasis; however, as it was often children that filled in for their sick parents, schooling may have suffered.[60]

Productivity effects need not only include changes in worker productivity. Changes in land use may also have an effect. Previously unfarmed areas of Corsica, Italy, Greece and Nepal, for example, became highly productive agriculturally as a result of the eradication of malaria.[61]

Notwithstanding the above studies, there remain problems with the literature on malaria's economic impacts in terms of lost productivity. No robust studies assess the effect of malaria on workers' performance while at work, for example. Gallup and Sachs, meanwhile, (2001) opined that the disease's impacts on productivity "cannot be assessed with the current state of research."[62] Goodman et al (2000) agreed, adding that most studies neglect the effect of household coping strategies and the impact of malaria on aspects of productivity such as willingness to invest.[63] There is much scope for further research in this area.

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The effect on schooling

A handful of studies have found that malaria can impede a child's schooling, with potential long-term harm to economies. The effect works primarily through absenteeism and damage to cognitive abilities.

According to Holding and Kitsao-Wekulo (2004), malaria accounts for 15 per cent of health-related absenteeism from school in some areas.[64] In Kenya, a focus group-based study found that primary school students miss an average of 20 school days per year because of the disease. This amounts to over 10 per cent of total school days. Secondary school children miss eight school days per year.[65]

Malaria's effect on learning abilities is also important. Cerebral malaria kills over 100,000 children in Africa each year.[66] Of children who survive, between 10 and 15 per cent are left with some neurological damage, including behavioural problems, language difficulties and epilepsy. In a study in Zimbabwe, malaria was found to account for 16 per cent of seizures in children, and a study in Kenya found it caused 31 per cent of seizures.[67] Epileptic seizures can weaken cognitive abilities in children and impair their ability to benefit from schooling.[68]

Protecting children against malaria can help reduce its negative impacts on schooling. A randomized study in Sri Lanka showed that children who were given chloroquine as a prophylactic had improved language and mathematics scores compared to those who received a placebo.[69] The prophylactic made no difference to attendance. A controlled study in Gambia showed that absenteeism due to fever was higher among children unprotected by ITNs than among protected children.[70]

Overall economic impacts

Estimates of the overall impact of malaria on economies vary. In the last century, Greece, Spain, Italy and Portugal grew faster than the average for the rest of Western Europe after the eradication of malaria. Jamaica and Taiwan also saw increased growth and grew quickly relative to their regions after wiping out the disease in the late 1950s and early 1960s. Mauritius, on the other hand, did not experience a similar effect after malaria eradication.[71]

A study comparing incomes in the US, Brazil, Colombia and Mexico before and after the malaria eradication campaigns in the 20th Century found that those born after eradication had higher incomes in adulthood than the preceding cohort, and that this change is temporally linked to the campaigns rather than a pre-existing trend in income growth.[72]

In a widely cited study by Gallup and Sachs (2001), the economies of countries with a significant malaria burden were calculated to have grown 1.3 percentage points less per year than others between 1965 and 1990, after taking account of other factors such as tropical location, colonial history, economic policy, life expectancy and initial wealth.[73] The study also found that a reduction in malaria cases of 10 per cent per year was associated with increased growth of 0.3 per cent.

Many studies have focused on Africa. A study by Shepard et al analyzed four countries and showed that malaria cost Sub-Saharan Africa 0.6 per cent of its GDP.[74] In Zambia, it was estimated that an improved malaria control programme would boost the national economy by 1.8 per cent of GDP.[75] And McCarthy, Wold and Wu (2000) found that although malaria was associated with reduced growth, its impact differed greatly among countries, with the strongest effects felt in Sub-Saharan Africa.[76]

The economic impact of malaria is disproportionately felt by the poor. Many poor people live in environmentally vulnerable areas and are less able to afford protection and treatment than wealthier groups. A study in Tanzania found that mortality resulting from acute fever among the poorest children was 39 per cent higher than among the wealthiest children.[77] A study in Zambia found similar effects.[78] Moreover, drawing down savings or selling off limited assets to pay for treatment may make it more difficult to escape poverty. In northern Ghana, malaria care was found to take up 1 per cent of wealthy families' income, but it consumed 34 per cent of that of poor households.[79]

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The effects of malaria on businesses

As with research on the effect of malaria on economies, research into its impact on businesses is patchy. Spielman et al (2002) cite the historical example of the construction of the Panama Canal, where a French team had to abandon the project because of the high toll of malaria and yellow fever. The canal could only be built after scientific advances related to vector control and quinine-based treatment allowed an American-financed group to combat the threat of disease.[80]

A further historical example is the case of the Creole Petroleum Corporation, which in 1946 began a DDT house-spraying programme in Venezuela in collaboration with the country's government. The programme cut workforce malaria cases for the corporation from 362 in 1946 to 91 a year later.[81]

More recent evidence of the impacts on the private sector is found in a survey of business leaders in 119 firms in Ghana. The survey, a part of the World Economic Forum's *Africa Competitiveness Report 2000-2001*, found significant reported impacts on business operations.[82] 30 per cent of those surveyed reported that malaria had a strong impact on productivity, with 35 per cent perceiving no impact. 63 per cent of firms reported that the disease caused absenteeism among employees, and many believed the removal of malaria would improve certain aspects of operations. In particular:

- 72 per cent of firms surveyed believed malaria eradication would increase efficiency and production
- 46 per cent believed it would reduce operating expenses
- 45 per cent believed it would increase sales
- 39 per cent believed it would create wider marketing opportunities
- 30 per cent believed it would have little or no effect

The reports of some individual firms also demonstrate effects on business. The construction of BHP's Mozal smelter in Mozambique was badly hit by malaria. The company suffered 6,000 malaria cases in two years. Absenteeism, illness, and medical costs reportedly led to company losses of $ 2.7 million.[83] Exxon Mobil reports that its workplace malaria programme in Chad and Cameroon, which included employees, contractors, and the community, saved it US$ 8.9 million (for a US$ 3 million investment) in productivity gains. This figure does not include healthcare cost savings.[84]

Unfortunately, there is no research showing the different impacts of malaria on businesses in endemic and epidemic regions. In the latter, the effects of the disease on workers are likely to be periodic but severe, with the unpredictability of epidemics making it hard for firms to develop management strategies. It seems likely that the nature of impacts differs, and this would appear a worthwhile avenue for future research.

Three: Business concerns over malaria: the Executive Opinion Survey

The survey

This section of the report discusses data from the World Economic Forum's annual Executive Opinion Survey (EOS), which forms part of its *Global Competitiveness Report*. The EOS polls over 8,000 business leaders worldwide about their views on a range of issues that influence the competitive environment. The firms surveyed come from over 100 countries (see Table 1).

For the purposes of our analysis, we divided respondents into groups according to the region in which they are based, national income of their country and malaria prevalence in their country (Tables 2 and 3).[85] The largest group of firms (between 46 and 48 per cent of the sample in each of the three years) is that of countries with no reported malaria cases. Between 27 and 31 per cent are based in countries with 1 to 99 malaria cases per 100,000 people. The smallest proportion comes from higher prevalence settings; between 5 and 8 per cent of firms surveyed are based in the countries hardest hit by malaria, where there are 5,000 or more reported cases per 100,000 people.

In each of the past three years, the EOS included questions about the effects of HIV/AIDS, tuberculosis and malaria on the business environment. In 2003, respondents were asked one question about the perceived current and future impacts of malaria on their companies. In 2004, they were asked separate questions about current and future impacts, and in 2005, they were only asked about future impacts.[86]

In this assessment of the survey results, we first look at the responses of the overall sample before moving on to different regions, prevalence groups and income categories.

Business concern

- 22 per cent of business leaders who responded to the World Economic Forum's Executive Opinion Survey in 2004 believe malaria is affecting their business. 10 per cent report serious current impacts.

- In countries with at least some malaria, 40 per cent of respondent firms in EOS 2005 predict impacts on their business within the next five years. The corresponding figure in EOS 2004 is 34 per cent.

- Based on EOS 2004, businesses in Sub-Saharan Africa are most likely to perceive effects, with 39 per cent reporting serious current impacts and 72 per cent reporting at least some impact. This is followed by South and South East Asia (where 30 per cent of respondents report impacts) and then by the Caribbean and East Asia.

- Firms in areas with high malaria prevalence and low incomes report the most severe current effects.

- Firms based in countries where malaria is both endemic and epidemic are significantly more concerned about its impacts than those in countries with endemic malaria only. This may be because epidemics hit adults harder than endemic malaria or because epidemics introduce an element of unpredictability to business operations that firms are less able to prepare for, or both.

- The future toll of the disease is thought likely to be similar to its current impact. However, concern over future effects increased slightly between the 2004 and 2005 surveys.

- Firms that believe their countries are generally well governed are less concerned than others about the future impacts of malaria. A responsible private sector is also associated with reduced concern. It appears that businesses believe both they and their governments have a role to play in malaria control.

- Worldwide, HIV/AIDS and tuberculosis cause slightly more concern to businesses than malaria. However, business concern over future malaria impacts is higher in countries with at least some malaria than is business concern over future TB impacts among countries with at least some TB (that is, all countries).

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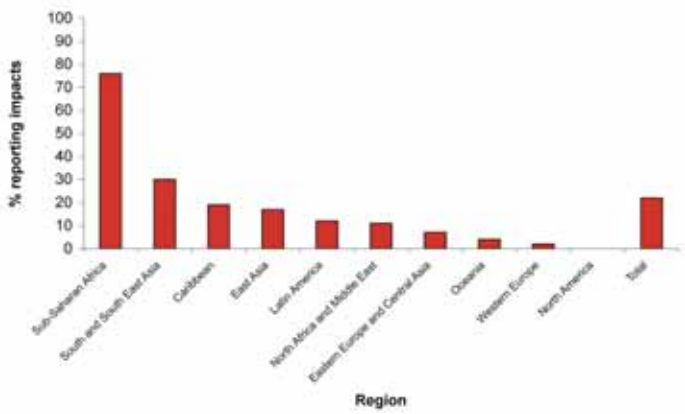
How serious are the perceived current impacts of malaria?

The latest year in which firms were asked about the current effects of malaria was 2004.[87] In that year, 22 per cent of respondents worldwide reported that the disease was affecting their business to some extent. 10 per cent reported serious impacts, and 76 per cent minimal impacts (see Map 3 and Table 4).

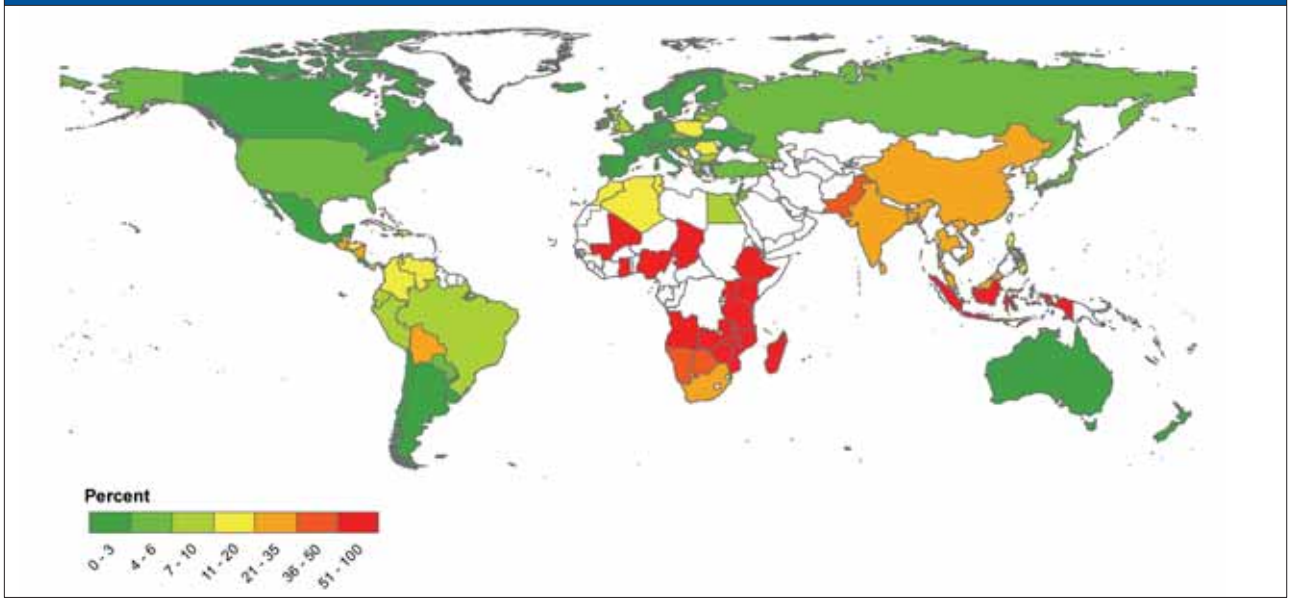
Not surprisingly, firms in Sub-Saharan Africa reported by far the most serious impacts (see Figure 1). In this region, 72 per cent of those surveyed observed some current effect from malaria, with 39 per cent reporting that these effects were serious. In some of the hardest hit African countries – including Angola, the Gambia, Malawi, Mozambique and Zambia (each of which has over 5,000 malaria cases per 100,000 population per year – at least eight of every ten firms reported impacts on their business. Even in Chad, Mali, Tanzania and Uganda, where the disease is less rife, a similarly high proportion of firms perceived impacts.

A significant minority of firms in South and South East Asia are also concerned about malaria. 30 per cent of respondent firms in this region reported some impact on their operations, with 6 per cent perceiving serious impacts. In the Caribbean and East Asia, 19 per cent and 17 per cent respectively reported impacts. In all other regions 12 per cent of firms or less believe the disease is affecting them.

Figure 1 – Reported current impacts of malaria on firms, 2004



Map 3 – Reported current impacts of malaria, 2004



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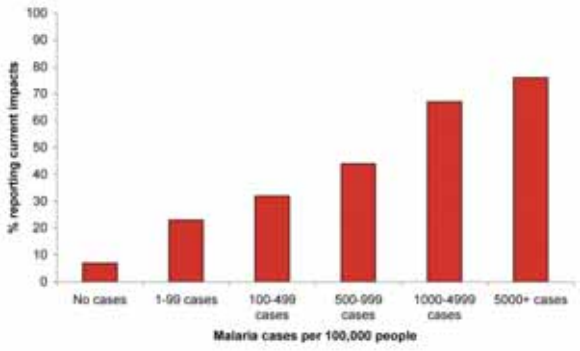
As one might expect, concern rises with malaria prevalence. As Figure 2 shows, firms in the hardest hit settings are much more likely to report effects of the disease than those in malaria-free regions.

Figure 2 – Reported current impacts, 2004, by malaria prevalence group



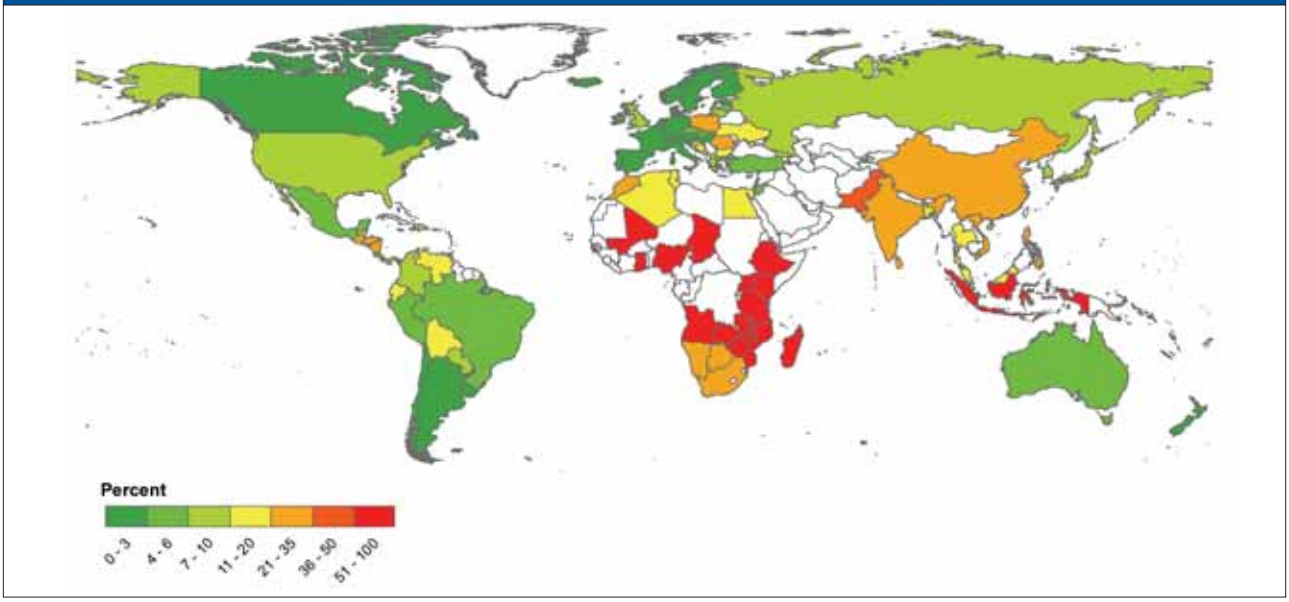
Concern is also greater in low-income countries. 66 per cent of firms in low-income countries believe malaria is affecting operations, compared to just 3 per cent in high-income settings. 35 per cent in the former group report serious impacts; in all other income groups 4 per cent of respondents or fewer believe they are hard hit by malaria.

Is the disease thought likely to hit harder in future?

In the 2004 survey, a comparison of perceived current impacts and concern for future impacts reveals only slight differences. 22 per cent of firms report current impacts and 21 per cent believe the disease will affect them in the next five years (see Map 4 and Table 5). The proportion expecting serious future impacts (8 per cent) is slightly lower than the proportion reporting serious current effects (10 per cent).

When these perceptions are considered by region, the biggest difference between current and future concern is seen in Sub-Saharan Africa. 72 per cent of African firms believe malaria is currently affecting them and 68 per cent expect future impacts. 39 per cent believe current impacts are serious, compared to 31 per cent predicting that future impacts will be similarly grave. As with current concern, however, firms in Sub-Saharan Africa are by far the ones that are most concerned about the future effects of malaria, even after controlling for income, malaria prevalence, industry group and firm size (for a full description of regression analyses that assess future concern after controlling for key variables, see Appendix 1).

Map 4 – Predicted future impacts of malaria, 2004



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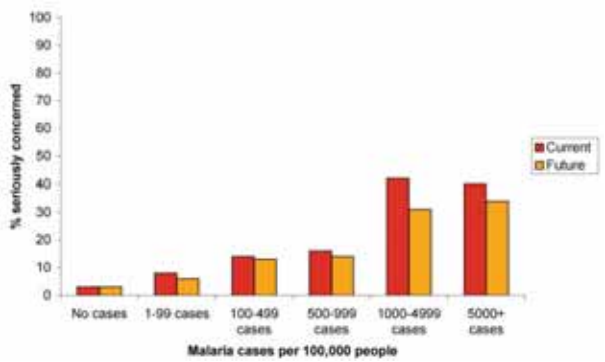
This finding corresponds to the reported impacts by malaria prevalence. Most of those countries that are hard hit by malaria are in Sub-Saharan Africa, and, as with that region, businesses in heavily affected countries expect future impacts to be less severe than reported current effects. As Figure 3 shows, businesses in the hardest hit settings think serious impacts in particular are likely to be less widespread in the future.[88]

Figure 3 – Serious current impacts versus serious future concern, by malaria prevalence group

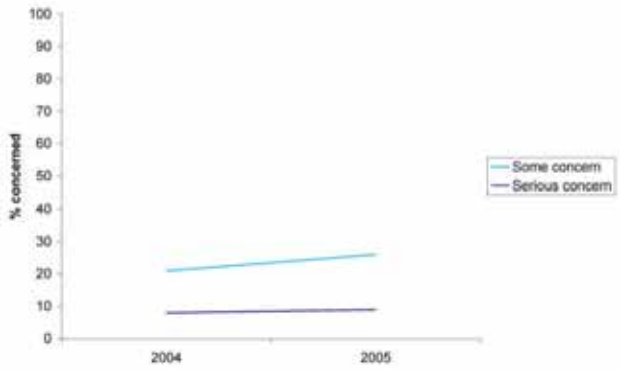


When looked at by income group, future concern is very similar to current concern in all income categories bar the lowest. In the low-income countries, the proportion of firms seriously concerned about future impacts is 28 per cent, 7 percentage points lower than the proportion reporting current effects. Future concern tends to fall as per capita income rises, even after controlling for malaria prevalence, geographic region, industry group and firm size.

Compared to diseases such as HIV/AIDS, whose effect on societies and businesses may be cumulative as more and more people become infected, malaria's impacts are more likely to remain stable over time. In endemic areas in particular, incidence waxes and wanes slightly, but its overall predictability gives businesses time to adjust and adopt coping strategies. Even in countries hit by periodic epidemics, it is difficult to predict that the disease's future effects on businesses will increase. That future concerns are no greater than current reported impacts is therefore not surprising.

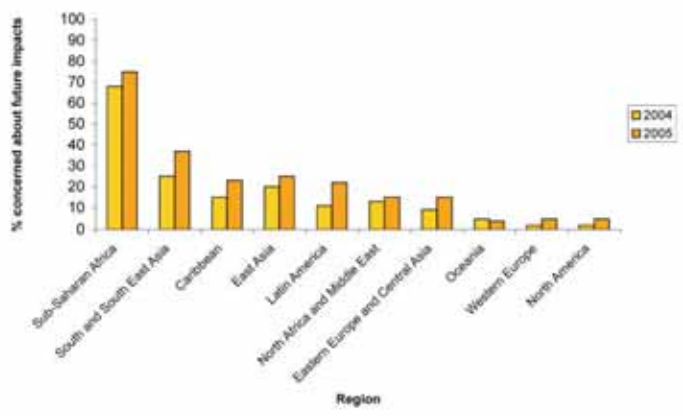
In the 2005 Executive Opinion Survey, reported future concern over malaria increased slightly from the previous year (Table 6). As Figure 4 shows, 26 per cent of firms in the 2005 survey expected the disease to affect them in the next five years, compared to 21 per cent in 2004. Serious concern, however, remained more or less stable at around 9 per cent. This finding holds even after taking into account differences in the countries included in the survey, malaria prevalence rates, and income per capita over the two years (see Appendix 2 for an explanation of the methodology used for the year-on-year comparisons).

Figure 4 – Future concern over malaria, 2004 versus 2005



At a regional level, the largest year-on-year increases in concern occurred in South and South East Asia and in Latin America. In the former, the overall proportion of firms concerned grew from 25 to 37 per cent and serious concern doubled from 5 to 10 per cent. In Latin America, the proportion expecting impacts increased from 11 to 22 per cent. The North Africa and Middle East region and the Caribbean region also saw significant increases in future concern, while Sub-Saharan Africa saw a smaller increase (Figure 5).

Figure 5 – Future concern 2004 versus 2005 by region



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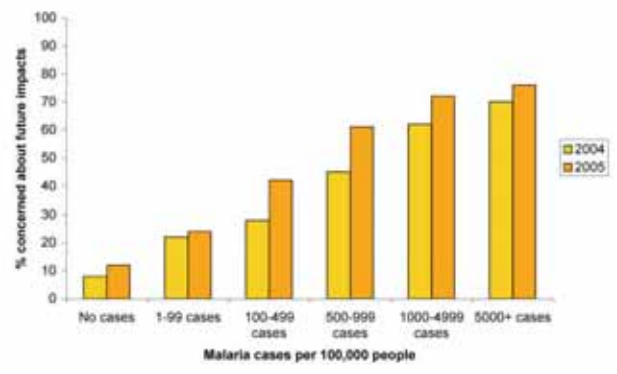
Future concern also spread in areas with high malaria prevalence. In countries with 100 or more malaria cases per 100,000 people, the proportion expecting the disease to affect them in the next five years rose sharply between 2004 and 2005 (Figure 6). It may be that health systems in these countries are weakening or that surveyed firms in general were for some reason more pessimistic about infectious disease in 2005 than 2004 (concern over HIV/AIDS and TB also increased year on year). Many factors might have influenced concern, including increased attention from global leaders and the media; however, the data do not allow us to draw conclusions.

Figure 6 – Future concern 2004 versus 2005 by malaria prevalence group



Looking at the year-on-year results by national income group shows small increases in future concern in high-income and upper middle-income countries and a slightly larger increase in lower middle-income settings. In low-income countries, future concern fell marginally over the two years.

Does future concern vary in different industries or firms of different sizes?

We conducted regression analyses to determine whether firms in different sectors reported differing levels of concern over malaria. After taking account of location, income, malaria prevalence and firm size, we found little variation in either current or future concern.

With firm size too, after controlling for location, income, malaria prevalence and industry group, we found little difference in current or future concern. However, in the 2005 survey, firms with over 10,000 employees were found to have lower levels of concern than firms with fewer than 5,000 employees, after taking account of the above variables (see Appendix 1 for details of regression analyses).

The importance of governance

We also conducted a number of analyses aimed at exploring whether significant variation in future concern could be accounted for by other aspects of the social, economic and political environment, as perceived by the survey respondents.

Our main descriptive findings, based on both the 2005 and 2004 surveys, are that business concern over the future impact of malaria tends to be less when countries are perceived as generally well governed. If a country's economic prospects over the next year are perceived with optimism and if governments are seen to be effective in terms of providing for public goods, developing and maintaining a strong infrastructure and reducing poverty and inequality, businesses tend to be less pessimistic about the future effects of malaria. A free media is also associated with reduced business concern, perhaps because government health programmes can be more easily held up to scrutiny in such an environment.

The relationship between business and society also has an effect on private sector concern over malaria. Where labour relations are cooperative, and where corporate codes of conduct and other aspects of corporate social responsibility are the norm, concern is reduced. Businesses appear to believe malaria control is the responsibility of society as a whole. Effective and fair governments, a free media and a private sector where corporate codes of conduct and other aspects of corporate social responsibility are frequent are all seen to have an influence on how malaria will affect businesses. Firms do not appear to believe addressing the disease is the task of governments alone.

Concern, endemicity and epidemics

It is interesting to ask whether business concern about malaria varies depending on whether malaria in a country is endemic (meaning that it is constantly present in a country) or whether the country has areas in which it is epidemic (meaning that the disease flares up from time to time).[89] Quite plausibly, businesses in areas where malaria is endemic, but not epidemic, would have less concern about malaria, for several reasons. First, endemicity confers a certain level of immunity on adults, so workers are less likely to be affected. Second, in endemic areas, businesses are used to

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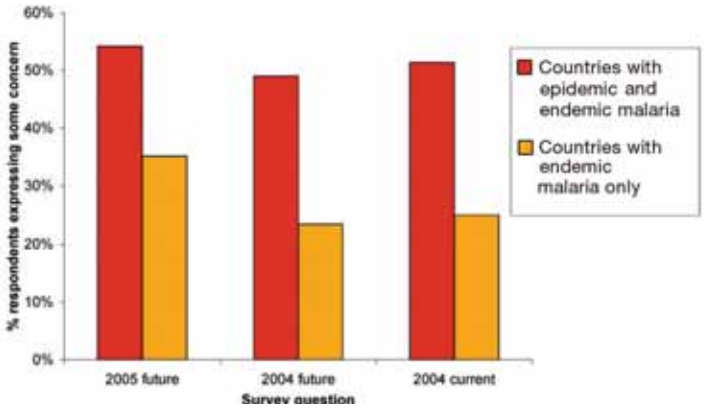
malaria, so they have, perhaps, already adjusted business practices in response to the constant threat of malaria. Finally, periodic malaria epidemics bring uncertainty to a business: it is unclear when one will occur, and if one occurs in an area where few people have immunity, workers may be severely affected.[90]

To answer this question, we calculated the percentage of businesses that have "some concern" about malaria and found the following:

Figure 7 – Concern where malaria is epidemic and endemic, versus endemic only

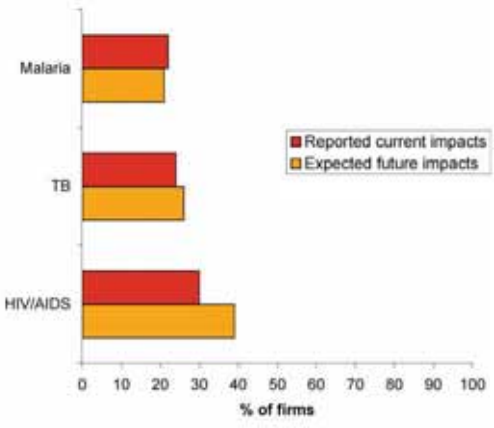


Businesses are significantly more concerned about malaria when it is both epidemic and endemic in a country than when it is only endemic. However, examination of the survey data in conjunction with prevalence data shows that malaria prevalence is also significantly higher (not surprisingly) in countries in which the disease is both endemic and epidemic, than where it is only endemic. It would be possible, therefore, that the difference in business concern could be due entirely to greater malarial prevalence in the prior set of countries. Regression analyses of the data allow us to answer this further question: prevalence does increase business concern, but controlling for malarial prevalence (in addition to income per capita), businesses are more concerned about malaria in countries where it is both epidemic and endemic than where it is only endemic.

Malaria, HIV/AIDS and tuberculosis

Executive Opinion Survey respondents were also asked about the impact of HIV/AIDS and tuberculosis on their operations. In 2004, these diseases were perceived as having a greater current impact on firms than malaria. 30 per cent of respondents reported that HIV/AIDS was affecting them and 24 per cent perceived impacts from TB. As we have seen, 22 per cent believed malaria was having an impact. The proportion of firms expecting future impacts of HIV/AIDS and TB was also higher in both 2004 and 2005 (see Figure 8 and Table 7), as was the proportion expecting those impacts to be serious. The year-on-year increase in future concern, too, was slightly more marked for HIV/AIDS and TB.

Figure 8 – Current and future concern over the impacts of HIV/AIDS, TB and malaria, 2004



If we narrow our analysis for malaria down to countries with at least some reported cases of malaria (that is, 1 or more case per 100,000 population), perceptions of the disease become more significant relative to HIV/AIDS and TB.[91] In these countries, 40 per cent of respondent businesses in 2005 believe malaria will affect them in the next five years. 14 per cent expect serious impacts (see figure 9 and table 8). This compares to 46 per cent of firms worldwide expecting impacts from HIV/AIDS and 33 per cent expecting impacts from TB (table 9).

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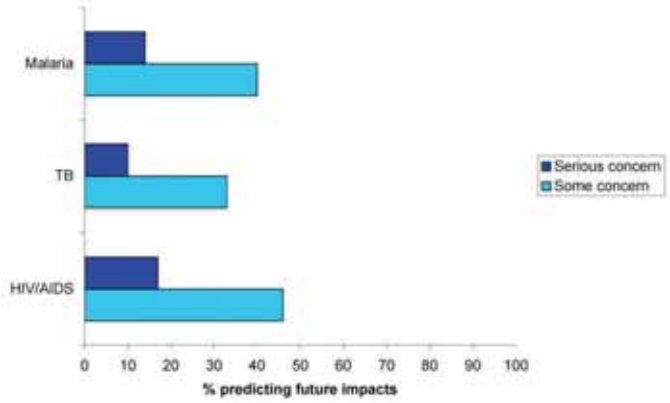
Figure 9 – Future concern over malaria in countries with malaria, versus future concern worldwide over HIV/AIDS and TB, 2005



Respondents were more concerned about the business impacts of malaria in areas that are hard hit by HIV/AIDS.[92] This may reflect a weak overall health environment in these settings, and weak health systems. It may also be related to the increased vulnerability to malaria of people whose immune systems are compromised by HIV/AIDS.

Given that HIV/AIDS kills over 3 million people per year, many of them adults of prime working age; it is not surprising that the latter is perceived to take a higher toll on business than malaria. Indeed, one might perhaps expect a bigger difference.

Four: Business action on malaria

What can businesses do?

- Many of the resources needed for malaria control match core business skills and capabilities.
- Companies in many different sectors, including but not limited to healthcare, have the potential to assist prevention and treatment programmes.
- Business associations can help firms by developing guidelines of good practice.
- Several major businesses have taken action on malaria, with benefits including developing new business contacts, promoting worker and customer loyalty and protecting workforces and, to some extent, markets.

Parts Two and Three of this report outline why some businesses might benefit from involvement in malaria prevention and treatment. We have seen that many businesses believe that the disease is either currently affecting their operations or likely to affect them in future, and that both they and their governments can play a part in malaria control. The potential impacts on employees, reputations and, to some extent, customers may motivate firms to act. In this section, we discuss what businesses can do to combat malaria and highlight the actions some companies have taken.

Many of the requirements of successful malaria control match the skills and capabilities of the private sector. Devising strategies, developing new technologies, distributing and marketing products and financing programmes or campaigns are all important aspects of malaria control efforts and also a part of the private sector's day-to-day activities. Businesses also have close relationships with employees and their families, and often with suppliers and customers, so they are well placed to assist with health education campaigns. That many firms in malarial areas already have workplace HIV/AIDS or other health education programmes also leaves them well positioned to develop new programmes.

Most firms currently involved in malaria control are those that either manufacture or deliver prevention and treatment tools as a core part of their business. Pharmaceutical companies develop and sell drugs and mosquito repellents, for example, and a variety of firms have helped develop pesticides and insecticide-treated bednets. The private sector is also heavily involved in vaccine research, and pharmaceutical companies are key partners in the Malaria Vaccine Initiative and other international vaccine-promoting agencies.

A recent report by the World Economic Forum lists possible roles in malaria control for firms working in particular sectors.[93] For example:

- Firms working in the health sector can develop new drugs, cheaper and more efficient diagnostic malaria tests, and vaccines, and can also work to strengthen medical infrastructure and training
- Construction and engineering firms can build mosquito-proof structures, and promote vector control by draining or filling in breeding sites
- Energy companies can make dam reservoirs safe against malaria
- Firms working in the food, beverage and retail sectors can use their strong distribution networks to deliver malaria prevention and treatment tools
- Information technology businesses can work with governments to develop surveillance systems to track the disease and predict outbreaks and can also work to strengthen health management systems
- Media and entertainment firms can promote awareness of malaria and educate consumers about prevention and treatment
- Financial services firms can help the poor cope better with malaria by developing micro-credit programmes that are linked to the provision of information about health insurance or its purchase
- Logistics and transport firms can deploy their services in delivering malaria commodities

Roles in malaria control are not limited to firms in these sectors. For example, all firms in vulnerable areas can educate employees and their families about prevention and treatment or train community-based volunteers to educate. They can also provide or facilitate the administering of drugs and distribution of bednets. In addition, firms can assist governments in building up more robust malaria databases by collecting data on the disease's incidence among employees and the surrounding

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communities. Firms in non-malarial regions, meanwhile, can protect workers who travel to endemic or epidemic zones.

Business associations may also play a role. By distributing good practice guidelines to firms and acting as an information resource, these associations can help firms that lack the resources to create malaria programmes themselves. They can also encourage manufacturers of drugs and ITNs to provide more comprehensive information about the disease to consumers, and to combat the problem of counterfeit drug sales, which is prevalent in many developing countries.

What is business doing?

Private sector involvement in malaria control includes some action by firms for which malaria control is a core business activity and some for firms wishing to protect employees and communities.

Action on malaria as a core business activity

For Sumitomo Chemical Company, a Japanese firm, malaria control is a core business activity. The company developed an insecticide-treated bednet, the 'Olyset net', which lasts for at least five years without re-treatment and withstands washing.[94] In 2001, the World Health Organization approved the net, and in order to increase distribution of the nets and reduce their cost, Sumitomo Chemical agreed to transfer the technology used in making the nets to the largest net manufacturer in Africa, A to Z Textile Mills. With financial and technical assistance from a range of other organizations, production rose from 300,000 nets in 2004 to 3 million a year later. 95 per cent of those nets produced in 2004 were sold to high-risk populations in 25 countries.

Pharmaceutical firms have also acted to assist malaria control in developing countries. ICI, Aventis and Bayer, for example, have all distributed insecticides at low cost in the developing world.[95] Similarly, Novartis has partnered with WHO to provide its artemisinin-based Coartem drug to poor countries at a fraction of its cost in the industrialized world.[96]

Action to protect employees and communities

Some firms have engaged in malaria control because of the toll it takes on employees and communities.

As noted earlier, BHP Billiton's construction of its Mozal aluminium smelter in southern Mozambique was seriously threatened by malaria.[97] The total cost of malaria to the company was estimated at almost US$ 2.7 million. It therefore joined the Lubombo Spatial Development Initiative (LSDI), a public-private partnership that aims to improve the health and economic strength of the region. Malaria control is a key part of the LSDI programme. LSDI introduced indoor residual spraying to southern Mozambique, developed a computerized tracking system to track the effect of malaria control, and promotes early treatment with ACTs. BHP Billiton helped fund the programme and loaned its project-management skills to the indoor-spraying campaign. Its costs have come down as a result of joining and contributing to LSDI and it has been able to build a second smelter.

In a similar example, the oil firm ExxonMobil found that malaria would increase the costs of constructing an oil pipeline from Chad to Cameroon.[98] A survey of employees and contractors revealed a case incidence of 1,750 malaria cases per 1,000 workers per year. In the absence of an effective malaria control effort, construction would take over 4 days longer than planned and cost an extra US$ 4 million. These motivations spurred ExxonMobil to invest in a comprehensive malaria control programme aimed at employees, contractors, and the wider community. The company required contractors to offer prevention and treatment services to their workers, and worked with NGOs to provide such services to communities. Programme monitoring shows that the project saved ExxonMobil US$ 3.8 million in project delay costs, as malaria incidence was reduced by 70 per cent compared to the pre-programme survey. The number of additional days' work, moreover, was sharply reduced.

Several mining firms have also become involved in malaria control. In Zambia, Konkola Copper Mines reacted to very high malaria incidence in their surrounding communities by launching a

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prevention campaign based on household spraying.[99] Malaria incidence during the programme's first five months was 57 per cent lower than in the same period the previous year, and cost savings have been estimated at US$ 177,500.

In Indonesia, the mining company Freeport McMoRan's malaria control programme included draining swamps, larviciding and indoor spraying.[100] The campaign dramatically cut malaria cases around the mine and the company has also invested in prevention activities in a wider area.

In the above examples, companies used their skills and resources to create new business opportunities and enhance customer and employee loyalty, or to avert negative impacts by protecting workers and communities. Each of the interventions had measurable benefits both for the companies involved and for the populations of hard hit regions. The actions of these and other companies that have already taken up the gauntlet provide guidelines for firms wishing to begin or step up malaria control activities, as discussed in Part Five.

Five: Conclusions and recommendations

Conclusions

A significant minority of business leaders worldwide are concerned that malaria is either impacting their operations currently or will affect them in the near future. In countries where the disease poses a threat to populations, two in every five firms that responded to the Executive Opinion Survey expect impacts from the disease in the next five years. This concern increased slightly between 2004 and 2005.

Firms in poor countries and in countries ravaged by other infectious diseases such as HIV/AIDS are the firms most concerned about malaria. In these settings, it appears governments have been unable to reduce its toll on societies and businesses. Firms appear to believe that tackling the disease effectively requires a combination of public and private sector activity – effective governments and socially responsible businesses are both associated with reduced concern over malaria.

The private sector, with its skills in strategic planning, technology development, product distribution and marketing, can make an important contribution to malaria control. The examples of some companies, moreover, show that action can affect the bottom line as well as boost relationships with employees, customers and other organizations.

Recommendations[101]

Given business concerns over malaria, and taking into account the factors that have influenced the success of company malaria programmes, those firms wishing to engage in or step up malaria activities may benefit from the following considerations:

- Businesses should first identify a need for action on malaria. For many firms worldwide, this will be limited to protecting workers who travel to malarial regions. In some countries where malaria is widespread, government health programmes are coping effectively with the problem. In others, the public sector needs business support. Firms conducting a careful assessment of the problem and its impacts on them and the countries in which they operate will be best placed to develop an appropriate and effective response.

- Firms engaging in malaria control activities should seek partners to assist their efforts. Many of those companies that have taken successful action to combat malaria have enlisted the support of governments, non-governmental organizations and other businesses. Business skills are well matched to those required for malaria control, but by tapping into the specialist knowledge and resources of other organizations, partnered actions are more likely to effectively address the problem. Business associations may also have an important role to play in providing information and training to companies.

- In most circumstances, programmes should begin in the workplace. As the survey of businesses in Ghana showed, the most immediate business impacts of malaria are likely to be felt by workers, who are also the easiest for companies to reach with programmes. Protecting employees' families may also provide direct benefits to firms in terms of reduced absenteeism and improved workforce morale.

- Firms should be careful to define the coverage of programmes. The workplace is likely to be the initial focus of malaria programmes, but some programmes will then expand into communities. Managing expectations among both workers and communities is important for protecting corporate reputations and for programme planning.

- Some of the firms' programmes reviewed above benefited by encouraging suppliers and contractors to protect their workers against malaria. In the case of ExxonMobil, the company required contractors to join malaria programmes. Given that such measures are likely to increase contractors' costs (at least in the short term, before the benefits accrue), companies should look to assist suppliers and contractors by sharing policies and materials.

- Finally, rigorous evaluation of programmes will help firms to ensure programmes' continued success and cost-effectiveness. This includes monitoring coverage of prevention and treatment methods among target audiences and measuring programmes' impact on health. Assessing financial impact relative to cost tells companies whether they are getting the most out of their investment in a programme. Because malaria is a durable disease that can resurge if control programmes are neglected, assessing impacts over the long term will help firms keep engaged in the problem.

Appendix 1: Notes on multiple regression analyses

Descriptive multiple regression analyses were conducted, focusing on 2 key variables:

- Future concern about the impact of malaria – 2005
- Future concern about the impact of malaria — 2004

Ordered logits — statistical tools appropriate to the nature of the data — were fit to the different dependent variables. Robust standard errors were estimated. All computations were done using the statistical software package STATA.

All regressions included the following controls:

- Per capita income in 2002 (or, if not available, per capita income in 2001 with a dichotomous variable indicating that the data refer to 2001; these data come from the World Bank's World Development Indicators)
- Malaria prevalence category for the country (these data come from the WHO, defined as per the attached league tables)
- Geographic region dummies (grouped as per the attached league tables)
- Industry group categories from the Global Business Survey (GBS)
- Firm size categories (from the GBS)

The baseline regression analyses for 2005 and 2004 reveal the following:

- There is a good deal of regularity in the data: the patterns are sensible and reveal multiple independent covariates of future concern about malaria in terms of its impact on the company.
- Future concern about malaria tends to fall with per capita income, controlling for malaria prevalence, geographic region, industry group and firm size.
- Future concern about the business impact of malaria tends to rise with the country's malaria prevalence, controlling for income, geographic region, industry group and firm size. Business leaders in countries with malaria prevalence greater than 100 cases of malaria per 100,000 population tend to have much greater concern than their counterparts in countries with malaria prevalence less than 100.
- There are significant differences across geographic regions in future concern, even after controlling for income, malaria prevalence, industry group and firm size. Business leaders in Sub-Saharan Africa have the greatest concern about the future impact of malaria on their businesses, followed by business leaders in East Asia.
- There is little variation in current or future concern across industry groups, controlling for country, income, malaria prevalence and firm size.
- There is little variation in current or future concern across firm size categories, controlling for country, income, malaria prevalence and industry group. However, in the 2005 GBS, large firms (i.e., those with more than 10,000 employees) have lower levels of future concern than firms with less than 5000 employees, other things equal.

Appendix 2: Notes on shift-share analyses of year-on-year changes in concern over future malaria impacts

Identical questions were asked about the future impact of malaria in the 2005 and the 2004 surveys. In the 2005 (2004) survey, Question 7.15A (7.21A) asks "How serious do you consider the future impact of malaria on your company in the next 5 years?" The objective of the shift-share analyses is to make meaningful comparisons of average responses in 2004 and 2005 to the question about the future business impact of malaria.

The per cent of respondents expressing some concern about the future impact of malaria on their business increased from 22.1 to 26.6 per cent from 2004 to 2005. Is this notable increase an artefact of changes in the set of countries included in the GBS sample and in the distribution of survey responses coming from different countries, or does it reflect a genuine increase in concern among similarly situated business leaders? A simple sample-wide comparison could be biased by changes in the list of countries sampled from year to year (some countries are added and some are dropped). It could also be biased by a lack of representation of the GBS sample within countries or by changes in representation over time.

Tables 10, 11 and 12 provide the results of three shift-share analyses. We conducted one set of analyses from the perspective of malaria prevalence in 2000 (as reported by WHO), another from the perspective of country income per capita and a third from the perspective of geographic region.

The virtue of the shift-share analysis is that it evaluates every respondent on the basis of the malaria prevalence of the country (or the per capita income of the country, or the geographic region in which it is located) from which they come. This is the sense in which respondents are said to be "similarly situated" in 2004 and 2005.

The shift-share analysis proceeds from the observation that the overall level of concern can be expressed as a weighted-average of the levels of concern within malaria prevalence categories, within income groups or within geographic regions. The weights are the proportions of respondents in those prevalence categories, income groups or geographic regions. Thus, we decompose the changes in the proportion indicating **some concern** into two parts:

1. Changes in the distribution of respondents in different prevalence categories (or income groups or geographic regions)
2. Changes in the degree of concern within prevalence categories (or within income groups or geographic regions)

We do this by estimating the proportion of respondents that would have expressed some concern in 2005 if the proportions of respondents in the different prevalence categories, income groups or geographic regions had been unchanged from 2004. Insofar as the 2005 estimate of the proportion expressing concern is higher than the 2004 figure, we find that we can attribute at least some of the rise to increases in concern within prevalence categories, income groups or geographic regions (depending on the analysis). Because the estimate for 2005 is constructed under the assumption that the proportions of respondents in the different prevalence categories, income categories or geographic regions are unchanged, we can be sure the year-to-year change in overall concern is not due to changes in sample composition.

Based on all three shift-share analyses, the bottom line is quite clear: the year-to-year increase in malaria concern from 2004 to 2005 was due substantially to changes in levels of some concern within prevalence categories (or income groups or geographic regions) – not to changes in sample composition. Indeed, the proportion of GBS respondents expressing some concern increased from 2004 to 2005 in every prevalence category, income group (with the exception of low-income) and geographic region (with the exception of Oceania).

We repeated this analysis for serious future concern. This statistic increased more modestly from 8.5 per cent of respondents in 2004 to 9.5 per cent of respondents in 2005. These shift-share analyses (by malaria prevalence group, income group and geographic region) generally confirm that this increase is not due to changes in sample composition; rather, it is due to changes in levels of future concern among respondents who are comparable in terms of the malaria prevalence of their country, the income of their country, or the geographic region within which their country is located.

All of the results cited here are based on non-missing responses for the variables in question.

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Endnotes

[88] Again, future concern is higher in countries with high malaria prevalence even after controlling for key variables such as income, geographic region, industry group and firm size.

[89]The countries for which we attempted to answer this question are those in the survey that had either endemic malaria or that had both endemic and epidemic areas. The list of countries with endemic malaria is from WHO. The list of countries with epidemic malaria is from Anthony Kiszewski, Harvard School of Public Health. From these two lists, we constructed a list of countries in which malaria is endemic but not epidemic: Algeria, Argentina, Armenia, Azerbaijan, Benin, China, Costa Rica, Dominican Republic, East Timor, Egypt, El Salvador, the Gambia, Georgia, Ghana, Guatemala, Guyana, Honduras, India, Kyrgyz Republic, Malaysia, Mexico, Morocco, Nicaragua, Nigeria, Panama, Paraguay, South Korea, Tajikistan, Turkey and Venezuela. We also constructed a list of countries where it is both endemic and epidemic: Angola, Bangladesh, Bolivia, Botswana, Brazil, Cambodia, Cameroon, Chad, Colombia, Ecuador, Ethiopia, Indonesia, Kenya, Madagascar, Malawi, Mali, Mozambique, Namibia, Pakistan, Peru, Philippines, South Africa, Sri Lanka, Tanzania, Thailand, Uganda, Vietnam, Zambia and Zimbabwe.

[90] It is also worth noting that relative rates of infection among indigenous and expatriate workers vary between endemic and epidemic regions. In endemic regions, for example, infections tend to be asymptomatic among adult, long-term residents. By contrast, expatriates are at elevated risk of infection in endemic regions and tend to suffer severe illness when infected. Insofar as expatriates are able to rely on chemoprophylaxis in epidemic settings, their risk of infection is correspondingly reduced.

[91] The latter are presumed to exist in every country, so we compare malaria concern in malarial countries with HIV/AIDS and TB concern worldwide.

[92] Bloom DE, LR Bloom, D Steven and M Weston (2005): Business and HIV/AIDS: Commitment and Action? World Economic Forum, Global Health Initiative, Geneva.

[93] World Economic Forum (2006): Harnessing Private Sector Capabilities to Meet Public Needs: The Potential of Partnerships to Advance Progress on Hunger, Malaria and Basic Education. World Economic Forum, January, Geneva.

[94] World Economic Forum, Global Health Initiative (2005): Building a public-private partnership to transfer the technology of a life-saving malaria prevention tool in Africa. Public-Private Partnership Case Example, World Economic Forum, Geneva.

[95] Spielman et al (2002) op cit: 8

[96] ibid: 11

[97] World Economic Forum (2006) op cit.

[98] World Economic Forum, Global Health Initiative (2006): Using malaria control strategically to improve workers' health and prevent project delay. Private Sector Intervention Case Example, World Economic Forum, Geneva.

[99] Spielman et al (2002) op cit. 16

[100] ibid: 17-18

[101] See World Economic Forum, Global Health Initiative (2006): Guidelines for Employer-Based Malaria Control Programmes. World Economic Forum.

Survey Tables

Table 1 - Classification of respondents in Executive Opinion Surveys 2003 - 2005

(1) COUNTRY	(2) Firms surveyed in EOS 2003 (number)	(3) Firms surveyed in EOS 2004 (number)	(4) Firms surveyed in EOS 2005 (number)	(5) Total country population (thousands) 2005	(6) Notified Malaria cases per 100,000 population 2000	(7) Income Group	(8) Region
Albania	-	-	93	3,130	-	LMI	Western Europe
Algeria	71	90	64	32,854	2	LMI	North Africa & Middle East
Angola	47	46	-	15,941	8,773	LI	Sub-Saharan Africa
Argentina	61	68	97	38,747	1	UMI	Latin America
Armenia	-	-	102	3,016	4	LMI	Eastern Europe & Central Asia
Australia	18	66	91	20,155	-	HI	Oceania
Austria	83	90	117	8,189	-	HI	Western Europe
Azerbaijan	-	-	66	8,411	19	LI	Eastern Europe & Central Asia
Bahrain	-	44	38	727	-	HI	North Africa & Middle East
Bangladesh	76	85	96	141,822	40	LI	South & South-East Asia
Belgium	46	38	62	10,419	-	HI	Western Europe
Benin	-	-	143	8,439	10,697	LI	Sub-Saharan Africa
Bolivia	79	92	79	9,182	378	LMI	Latin America
Bosnia and Herzegovina	-	75	75	3,907	-	LMI	Eastern Europe & Central Asia
Botswana	56	79	62	1,765	48,704	UMI	Sub-Saharan Africa
Brazil	63	69	212	186,405	344	LMI	Latin America
Bulgaria	167	131	156	7,726	-	LMI	Eastern Europe & Central Asia
Cambodia	-	-	95	14,071	476	LI	South & South-East Asia
Cameroon	56	-	90	16,322	2,900	LI	Sub-Saharan Africa
Canada	75	102	126	32,268	-	HI	North America
Chad	84	151	216	9,749	197	LI	Sub-Saharan Africa
Chile	170	177	164	16,295	-	UMI	Latin America
China	110	254	299	1,315,844	1	LMI	East Asia
Colombia	63	46	53	45,600	250	LMI	Latin America
Costa Rica	70	83	81	4,327	42	UMI	Latin America
Croatia	111	110	103	4,551	-	UMI	Eastern Europe & Central Asia
Cyprus	-	81	78	835	-	HI	Eastern Europe & Central Asia
Czech Republic	109	101	99	10,220	-	UMI	Eastern Europe & Central Asia
Denmark	42	25	50	5,431	-	HI	Western Europe
Dominican Republic	35	63	70	8,895	6	LMI	Caribbean
East Timor	-	-	61	947	-	LI	South & South-East Asia
Ecuador	98	129	87	13,228	728	LMI	Latin America
Egypt	104	105	119	74,033	0	LMI	North Africa & Middle East
El Salvador	48	48	49	6,881	11	LMI	Latin America
Estonia	65	55	88	1,330	-	UMI	Eastern Europe & Central Asia
Ethiopia	85	89	89	77,431	556	LI	Sub-Saharan Africa
Finland	36	63	36	5,249	-	HI	Western Europe
France	93	86	163	60,496	-	HI	Western Europe
Gambia, The	79	83	80	1,517	17,340	LI	Sub-Saharan Africa
Georgia	-	78	77	4,474	5	LI	Eastern Europe & Central Asia
Germany	72	65	78	82,689	-	HI	Western Europe
Ghana	174	61	83	22,113	15,344	LI	Sub-Saharan Africa
Greece	98	73	73	11,120	-	HI	Western Europe
Guatemala	61	130	261	12,599	386	LMI	Latin America
Guyana	-	-	49	751	3,074	LMI	Latin America
Haiti	25	-	-	8,528	15	LI	Caribbean
Honduras	82	68	82	7,205	541	LMI	Latin America
Hong Kong SAR	60	40	56	7,041	-	HI	East Asia
Hungary	106	79	59	10,098	-	UMI	Eastern Europe & Central Asia
Iceland	27	25	30	295	-	HI	Western Europe
India	63	56	100	1,103,371	7	LI	South & South-East Asia
Indonesia	38	39	93	222,781	920	LI	South & South-East Asia
Ireland	40	40	38	4,148	-	HI	Western Europe
Israel	21	17	37	6,725	-	HI	North Africa & Middle East
Italy	48	96	141	58,093	-	HI	Western Europe
Jamaica	58	90	70	2,651	-	LMI	Caribbean
Japan	72	77	75	128,085	-	HI	East Asia
Jordan	85	75	88	5,703	3	LMI	North Africa & Middle East
Kazakhstan	-	-	82	14,825	0	LMI	Eastern Europe & Central Asia
Kenya	75	123	101	34,256	545	LI	Sub-Saharan Africa
Korea, Rep.	103	132	190	47,817	9	HI	East Asia
Kuwait	-	-	62	2,687	-	HI	North Africa & Middle East
Kyrgyz Republic	-	-	100	5,264	0	LI	Eastern Europe & Central Asia
Latvia	184	194	170	2,307	-	UMI	Eastern Europe & Central Asia
Lithuania	134	155	135	3,431	-	UMI	Eastern Europe & Central Asia
Luxembourg	34	30	32	465	-	HI	Western Europe

Table 1 - Classification of respondents in Executive Opinion Surveys 2003 - 2005

(1) COUNTRY	(2) Firms surveyed in EOS 2003 (number)	(3) Firms surveyed in EOS 2004 (number)	(4) Firms surveyed in EOS 2005 (number)	(5) Total country population (thousands) 2005	(6) Notified Malaria cases per 100,000 population 2000	(7) Income Group	(8) Region
Macedonia, FYR	114	108	87	2,034	-	LMI	Western Europe
Madagascar	93	97	83	18,606	-	LI	Sub-Saharan Africa
Malawi	34	36	43	12,884	25,948	LI	Sub-Saharan Africa
Malaysia	96	93	85	25,347	57	UMI	South & South-East Asia
Mali	37	42	63	13,518	4,008	LI	Sub-Saharan Africa
Malta	78	67	53	402	-	HI	Western Europe
Mauritius	32	34	22	1,245	1	UMI	Sub-Saharan Africa
Mexico	105	89	135	107,029	8	UMI	Latin America
Moldova	-	-	91	4,206	-	LI	Eastern Europe & Central Asia
Mongolia	-	-	103	2,646	-	LI	East Asia
Morocco	101	125	73	31,478	0	LMI	North Africa & Middle East
Mozambique	75	79	70	19,792	18,115	LI	Sub-Saharan Africa
Namibia	47	31	39	2,031	1,502	LMI	Sub-Saharan Africa
Netherlands	84	103	87	16,299	-	HI	Western Europe
New Zealand	70	55	47	4,028	-	HI	Oceania
Nicaragua	71	70	66	5,487	402	LI	Latin America
Nigeria	198	216	153	131,530	30	LI	Sub-Saharan Africa
Norway	27	23	63	4,620	-	HI	Western Europe
Pakistan	49	73	55	157,935	58	LI	South & South-East Asia
Panama	75	86	62	3,232	36	UMI	Latin America
Paraguay	65	84	91	6,158	124	LMI	Latin America
Peru	79	79	71	27,968	258	LMI	Latin America
Philippines	47	59	43	83,054	15	LMI	South & South-East Asia
Poland	92	49	109	38,530	-	UMI	Eastern Europe & Central Asia
Portugal	46	42	42	10,495	-	HI	Western Europe
Qatar	-	-	63	813	-	HI	North Africa & Middle East
Romania	96	98	107	21,711	-	LMI	Eastern Europe & Central Asia
Russian Federation	264	340	473	143,202	1	LMI	Eastern Europe & Central Asia
Rwanda	50	-	-	9,038	6,510	LI	Sub-Saharan Africa
Senegal	27	-	-	11,658	11,925	LI	Sub-Saharan Africa
Serbia and Montenegro	100	103	98	10,503	-	LMI	Western Europe
Singapore	120	113	151	4,326	-	HI	South & South-East Asia
Slovak Republic	71	60	69	5,401	-	UMI	Eastern Europe & Central Asia
Slovenia	87	66	128	1,967	-	HI	Western Europe
South Africa	62	73	96	47,432	143	LMI	Sub-Saharan Africa
Spain	70	59	82	43,064	-	HI	Western Europe
Sri Lanka	86	82	90	20,743	1,110	LMI	South & South-East Asia
Sweden	28	20	44	9,041	-	HI	Western Europe
Switzerland	73	72	101	7,252	-	HI	Western Europe
Taiwan	43	59	82	22,749	-	HI	East Asia
Tajikistan	-	-	90	6,507	303	LI	Eastern Europe & Central Asia
Tanzania	69	122	102	38,329	1,207	LI	Sub-Saharan Africa
Thailand	45	52	64	64,233	130	LMI	South & South-East Asia
Trinidad and Tobago	61	78	108	1,305	1	UMI	Caribbean
Tunisia	75	72	74	10,102	1	LMI	North Africa & Middle East
Turkey	46	225	125	73,193	17	LMI	Eastern Europe & Central Asia
Uganda	148	111	90	28,816	46	LI	Sub-Saharan Africa
Ukraine	67	101	101	46,481	-	LMI	Eastern Europe & Central Asia
United Arab Emirates	-	84	54	4,496	-	HI	North Africa & Middle East
United Kingdom	65	47	97	59,668	-	HI	Western Europe
United States	52	84	158	298,213	-	HI	North America
Uruguay	65	59	79	3,463	-	UMI	Latin America
Venezuela	34	53	35	26,749	94	UMI	Latin America
Vietnam	118	100	157	84,238	95	LI	South & South-East Asia
Zambia	59	49	-	11,668	34,204	LI	Sub-Saharan Africa
Zimbabwe	33	30	28	13,010	5,410	LI	Sub-Saharan Africa
TOTAL NO. OF FIRMS/POPULATION:	**7,789**	**8,719**	**10,993**	**5,895,800**			
SOURCES:							
Income Group Classifications:	**Based on the World Bank's 2004 World Development Report**						
	LI: Low Income (GNI per capita of less than or equal to $735)						
	LMI: Lower Middle Income (GNI per capita of $736 - $2,935)						
	UMI: Upper Middle Income (GNI per capita of $2,936 - $9,075)						
	HI: High Income (GNI per capita greater than or equal to $9,076)						
Malaria prevalence estimates:	**United Nations Statistics Division, Millennium Indicators. Data from 2000 unless indicated with a note (1), in which case data are from an earlier year.**						

Table 1 - Classification of respondents in Executive Opinion Surveys 2003 - 2005

(1) COUNTRY	(2) Firms surveyed in EOS 2003 (number)	(3) Firms surveyed in EOS 2004 (number)	(4) Firms surveyed in EOS 2005 (number)	(5) Total country population (thousands) 2005	(6) Notified Malaria cases per 100,000 population 2000	(7) Income Group	(8) Region
Population Estimates:	UN, Department of Economic and Social Affairs, Population Division."Population and HIV/AIDS 2005", United Nations Publication, Sales No.E.05.XIII.2						
Region Classifications:	Based on the UNAIDS Classifications						

NOTES:

(1) Malaria estimates are based on years prior to 2000

(2) These countries were not included in the UNAIDS listing of countries (within each regional grouping); they were classified based on their geographical proximity to other countries that were listed.

(3) Taiwan's population is the 2002 population estimate; the 2005 population was not provided in the UN source document

Table 2 - Classification of respondents by income group and region: Executive Opinion Surveys 2003-2005

(1) INCOME GROUP	(2) Firms surveyed in EOS 2003 (number)	(3) Firms surveyed in EOS 2004 (number)	(4) Firms surveyed in EOS 2005 (number)	(5) Total country population (thousands) 2005
LOW INCOME:	1,863	1,836	2,684	2,265,305
PERCENTAGE OF OVERALL:	23.9%	21.1%	24.4%	38.4%
LOWER MIDDLE INCOME:	2,418	3,097	3,722	2,344,759
PERCENTAGE OF OVERALL:	31.0%	35.5%	33.9%	39.8%
UPPER MIDDLE INCOME:	1,697	1,702	1,762	305,372
PERCENTAGE OF OVERALL:	21.8%	19.5%	16.0%	5.2%
HIGH INCOME:	1,811	2,084	2,825	980,365
PERCENTAGE OF OVERALL:	23.3%	23.9%	25.7%	16.6%
REGION				
CARIBBEAN:	179	231	248	21,379
PERCENTAGE OF OVERALL:	2.3%	2.6%	2.3%	0.4%
EAST ASIA:	388	562	805	1,524,182
PERCENTAGE OF OVERALL:	5.0%	6.4%	7.3%	25.9%
EASTERN EUROPE & CENTRAL ASIA:	1,512	1,932	2,555	419,625
PERCENTAGE OF OVERALL:	19.4%	22.2%	23.2%	7.1%
LATIN AMERICA:	1,289	1,430	1,753	521,307
PERCENTAGE OF OVERALL:	16.5%	16.4%	15.9%	8.8%
NORTH AFRICA & MIDDLE EAST:	457	612	672	169,617
PERCENTAGE OF OVERALL:	5.9%	7.0%	6.1%	2.9%
NORTH AMERICA:	127	186	284	330,481
PERCENTAGE OF OVERALL:	1.6%	2.1%	2.6%	5.6%
OCEANIA:	88	121	138	24,184
PERCENTAGE OF OVERALL:	1.1%	1.4%	1.3%	0.4%
SOUTH & SOUTH-EAST ASIA:	738	752	1,090	1,922,869
PERCENTAGE OF OVERALL:	9.5%	8.6%	9.9%	32.6%
SUB-SAHARAN AFRICA:	1,620	1,552	1,653	547,088
PERCENTAGE OF OVERALL:	20.8%	17.8%	15.0%	9.3%
WESTERN EUROPE:	1,391	1,341	1,795	415,068
PERCENTAGE OF OVERALL:	17.9%	15.4%	16.3%	7.0%
TOTAL NO. OF FIRMS/POPULATION:	**7,789**	**8,719**	**10,993**	**5,895,800**
SOURCES:				
Income Group Classifications:	**Based on the World Bank's 2004 World Development Report**			
	LOW INCOME: GNI per capita of less than or equal to $735			
	LOWER MIDDLE INCOME: GNI per capita of $736 - $2,935			
	UPPER MIDDLE INCOME: GNI per capita of $2,936 - $9,075			
	HIGH INCOME: GNI per capita greater than or equal to $9,076			
Population Estimates:	**UN, Department of Economic and Social Affairs, Population Division."Population and HIV/AIDS 2005", United Nations Publication, Sales No.E.05.XIII.2**			
Region Classifications:	**Based on the UNAIDS Classifications**			

Table 3 - Classification of respondents by malaria prevalence: Executive Opinion Surveys 2003-2005

(1) COUNTRY	(2) Firms surveyed in EOS 2003 (number)	(3) Firms surveyed in EOS 2004 (number)	(4) Firms surveyed in EOS 2005 (number)	(5) Total country population (thousands) 2005	(6) Notified Malaria cases per 100,000 population 2000	(7) Income Group	(8) Region
5,000 PLUS REPORTED CASES/100,000 POPULATION:							
Botswana	56	79	62	1,765	48,704	UMI	Sub-Saharan Africa
Zambia	59	49	-	11,668	34,204	LI	Sub-Saharan Africa
Malawi	34	36	43	12,884	25,948	LI	Sub-Saharan Africa
Mozambique	75	79	70	19,792	18,115	LI	Sub-Saharan Africa
Gambia, The	79	83	80	1,517	17,340	LI	Sub-Saharan Africa
Ghana	174	61	83	22,113	15,344	LI	Sub-Saharan Africa
Senegal	27	-	-	11,658	11,925	LI	Sub-Saharan Africa
Benin	-	-	143	8,439	10,697	LI	Sub-Saharan Africa
Angola	47	46	-	15,941	8,773	LI	Sub-Saharan Africa
Rwanda	50	-	-	9,038	6,510	LI	Sub-Saharan Africa
Zimbabwe	33	30	28	13,010	5,410	LI	Sub-Saharan Africa
SUB-TOTAL:	**634**	**463**	**509**	**127,824**			
PERCENTAGE OF OVERALL:	**8.1%**	**5.3%**	**4.6%**	**2.2%**			
1,000 - 4,999 REPORTED CASES/100,000 POPULATION:							
Mali	37	42	63	13,518	4,008	LI	Sub-Saharan Africa
Guyana	-	-	49	751	3,074	LMI	Latin America
Cameroon	56	-	90	16,322	2,900	LI	Sub-Saharan Africa
Namibia	47	31	39	2,031	1,502	LMI	Sub-Saharan Africa
Tanzania	69	122	102	38,329	1,207	LI	Sub-Saharan Africa
Sri Lanka	86	82	90	20,743	1,110	LMI	South & South-East Asia
SUB-TOTAL:	**295**	**277**	**433**	**91,694**			
PERCENTAGE OF OVERALL:	**3.8%**	**3.2%**	**3.9%**	**1.6%**			
500 - 999 REPORTED CASES/100,000 POPULATION:							
Indonesia	38	39	93	222,781	920	LI	South & South-East Asia
Ecuador	98	129	87	13,228	728	LMI	Latin America
Ethiopia	85	89	89	77,431	556	LI	Sub-Saharan Africa
Kenya	75	123	101	34,256	545	LI	Sub-Saharan Africa
Honduras	82	68	82	7,205	541	LMI	Latin America
SUB-TOTAL:	**378**	**448**	**452**	**354,901**			
PERCENTAGE OF OVERALL:	**4.9%**	**5.1%**	**4.1%**	**6.0%**			
100 - 499 REPORTED CASES/100,000 POPULATION:							
Cambodia	-	-	95	14,071	476	LI	South & South-East Asia
Nicaragua	71	70	66	5,487	402	LI	Latin America
Guatemala	61	130	261	12,599	386	LMI	Latin America
Bolivia	79	92	79	9,182	378	LMI	Latin America
Brazil	63	69	212	186,405	344	LMI	Latin America
Tajikistan	-	-	90	6,507	303	LI	Eastern Europe & Central Asia
Peru	79	79	71	27,968	258	LMI	Latin America
Colombia	63	46	53	45,600	250	LMI	Latin America
Chad	84	151	216	9,749	197	LI	Sub-Saharan Africa
South Africa	62	73	96	47,432	143	LMI	Sub-Saharan Africa
Thailand	45	52	64	64,233	130	LMI	South & South-East Asia
Paraguay	65	84	91	6,158	124	LMI	Latin America
SUB-TOTAL:	**672**	**846**	**1,394**	**435,391**			
PERCENTAGE OF OVERALL:	**8.6%**	**9.7%**	**12.7%**	**7.4%**			
1 - 99 REPORTED CASES/100,000 POPULATION:							
Vietnam	118	100	157	84,238	95	LI	South & South-East Asia
Venezuela	34	53	35	26,749	94	UMI	Latin America
Pakistan	49	73	55	157,935	58	LI	South & South-East Asia
Malaysia	96	93	85	25,347	57	UMI	South & South-East Asia
Uganda	148	111	90	28,816	46	LI	Sub-Saharan Africa
Costa Rica	70	83	81	4,327	42	UMI	Latin America
Bangladesh	76	85	96	141,822	40	LI	South & South-East Asia
Panama	75	86	62	3,232	36	UMI	Latin America
Nigeria	198	216	153	131,530	30	LI	Sub-Saharan Africa
Azerbaijan	-	-	66	8,411	19	LI	Eastern Europe & Central Asia
Turkey	46	225	125	73,193	17	LMI	Eastern Europe & Central Asia
Haiti	25	-	-	8,528	15	LI	Caribbean
Philippines	47	59	43	83,054	15	LMI	South & South-East Asia
El Salvador	48	48	49	6,881	11	LMI	Latin America
Korea, Rep.	103	132	190	47,817	9	HI	East Asia
Mexico	105	89	135	107,029	8	UMI	Latin America
India	63	56	100	1,103,371	7	LI	South & South-East Asia
Dominican Republic	35	63	70	8,895	6	LMI	Caribbean
Georgia	-	78	77	4,474	5	LI	Eastern Europe & Central Asia
Armenia	-	-	102	3.016	4	LMI	Eastern Europe & Central Asia

Table 3 - Classification of respondents by malaria prevalence: Executive Opinion Surveys 2003-2005

(1) COUNTRY	(2) Firms surveyed in EOS 2003 (number)	(3) Firms surveyed in EOS 2004 (number)	(4) Firms surveyed in EOS 2005 (number)	(5) Total country population (thousands) 2005	(6) Notified Malaria cases per 100,000 population 2000	(7) Income Group	(8) Region
Jordan	85	75	88	5,703	3	LMI	North Africa & Middle East
Algeria	71	90	64	32,854	2	LMI	North Africa & Middle East
Argentina	61	68	97	38,747	1	UMI	Latin America
China	110	254	299	1,315,844	1	LMI	East Asia
Mauritius	32	34	22	1,245	1	UMI	Sub-Saharan Africa
Russian Federation	264	340	473	143,202	1	LMI	Eastern Europe & Central Asia
Trinidad and Tobago	61	78	108	1,305	1	UMI	Caribbean
Tunisia	75	72	74	10,102	1	LMI	North Africa & Middle East
SUB-TOTAL:	**2,095**	**2,661**	**2,996**	**3,607,668**			
PERCENTAGE OF OVERALL:	**26.9%**	**30.5%**	**27.3%**	**61.2%**			
NO REPORTED CASES/100,000 POPULATION (ALSO NO DATA):							
Egypt	104	105	119	74,033	0	LMI	North Africa & Middle East
Kazakhstan	-	-	82	14,825	0	LMI	Eastern Europe & Central Asia
Kyrgyz Republic	-	-	100	5,264	0	LI	Eastern Europe & Central Asia
Morocco	101	125	73	31,478	0	LMI	North Africa & Middle East
Albania	-	-	93	3,130	-	LMI	Western Europe
Australia	18	66	91	20,155	-	HI	Oceania
Austria	83	90	117	8,189	-	HI	Western Europe
Bahrain	-	44	38	727	-	HI	North Africa & Middle East
Belgium	46	38	62	10,419	-	HI	Western Europe
Bosnia and Herzegovina	-	75	75	3,907	-	LMI	Eastern Europe & Central Asia
Bulgaria	167	131	156	7,726	-	LMI	Eastern Europe & Central Asia
Canada	75	102	126	32,268	-	HI	North America
Chile	170	177	164	16,295	-	UMI	Latin America
Croatia	111	110	103	4,551	-	UMI	Eastern Europe & Central Asia
Cyprus	-	81	78	835	-	HI	Eastern Europe & Central Asia
Czech Republic	109	101	99	10,220	-	UMI	Eastern Europe & Central Asia
Denmark	42	25	50	5,431	-	HI	Western Europe
East Timor	-	-	61	947	-	LI	South & South-East Asia
Estonia	65	55	88	1,330	-	UMI	Eastern Europe & Central Asia
Finland	36	63	36	5,249	-	HI	Western Europe
France	93	86	163	60,496	-	HI	Western Europe
Germany	72	65	78	82,689	-	HI	Western Europe
Greece	98	73	73	11,120	-	HI	Western Europe
Hong Kong SAR	60	40	56	7,041	-	HI	East Asia
Hungary	106	79	59	10,098	-	UMI	Eastern Europe & Central Asia
Iceland	27	25	30	295	-	HI	Western Europe
Ireland	40	40	38	4,148	-	HI	Western Europe
Israel	21	17	37	6,725	-	HI	North Africa & Middle East
Italy	48	96	141	58,093	-	HI	Western Europe
Jamaica	58	90	70	2,651	-	LMI	Caribbean
Japan	72	77	75	128,085	-	HI	East Asia
Kuwait	-	-	62	2,687	-	HI	North Africa & Middle East
Latvia	184	194	170	2,307	-	UMI	Eastern Europe & Central Asia
Lithuania	134	155	135	3,431	-	UMI	Eastern Europe & Central Asia
Luxembourg	34	30	32	465	-	HI	Western Europe
Macedonia, FYR	114	108	87	2,034	-	LMI	Western Europe
Madagascar	93	97	83	18,606	-	LI	Sub-Saharan Africa
Malta	78	67	53	402	-	HI	Western Europe
Moldova	-	-	91	4,206	-	LI	Eastern Europe & Central Asia
Mongolia	-	-	103	2,646	-	LI	East Asia
Netherlands	84	103	87	16,299	-	HI	Western Europe
New Zealand	70	55	47	4,028	-	HI	Oceania
Norway	27	23	63	4,620	-	HI	Western Europe
Poland	92	49	109	38,530	-	UMI	Eastern Europe & Central Asia
Portugal	46	42	42	10,495	-	HI	Western Europe
Qatar	-	-	63	813	-	HI	North Africa & Middle East
Romania	96	98	107	21,711	-	LMI	Eastern Europe & Central Asia
Serbia and Montenegro	100	103	98	10,503	-	LMI	Western Europe
Singapore	120	113	151	4,326	-	HI	South & South-East Asia
Slovak Republic	71	60	69	5,401	-	UMI	Eastern Europe & Central Asia
Slovenia	87	66	128	1,967	-	HI	Western Europe
Spain	70	59	82	43,064	-	HI	Western Europe
Sweden	28	20	44	9,041	-	HI	Western Europe
Switzerland	73	72	101	7,252	-	HI	Western Europe
Taiwan	43	59	82	22,749	-	HI	East Asia

Table 3 - Classification of respondents by malaria prevalence: Executive Opinion Surveys 2003-2005

(1) COUNTRY	(2) Firms surveyed in EOS 2003 (number)	(3) Firms surveyed in EOS 2004 (number)	(4) Firms surveyed in EOS 2005 (number)	(5) Total country population (thousands) 2005	(6) Notified Malaria cases per 100,000 population 2000	(7) Income Group	(8) Region
Ukraine	67	101	101	46,481	-	LMI	Eastern Europe & Central Asia
United Arab Emirates	-	84	54	4,496	-	HI	North Africa & Middle East
United Kingdom	65	47	97	59,668	-	HI	Western Europe
United States	52	84	158	298,213	-	HI	North America
Uruguay	65	59	79	3,463	-	UMI	Latin America
SUB-TOTAL:	**3,715**	**4,024**	**5,209**	**1,278,321**			
PERCENTAGE OF OVERALL:	**47.7%**	**46.2%**	**47.4%**	**21.7%**			
TOTAL NO. OF FIRMS/POPULATION:	**7,789**	**8,719**	**10,993**	**5,895,800**			
SOURCES:							
Income Group Classifications:	**Based on the World Bank's 2004 World Development Report**						
	LI: Low Income (GNI per capita of less than or equal to $735)						
	LMI: Lower Middle Income (GNI per capita of $736 - $2,935)						
	UMI: Upper Middle Income (GNI per capita of $2,936 - $9,075)						
	HI: High Income (GNI per capita greater than or equal to $9,076)						
Malaria prevalence estimates:	**United Nations Statistics Division, Millennium Indicators. Data from 2000 unless indicated with a note (1), in which case data are from an earlier year.**						
Population Estimates:	**UN, Department of Economic and Social Affairs, Population Division."Population and HIV/AIDS 2005", United Nations Publication, Sales No.E.05.XIII.2**						
Region Classifications:	**Based on the UNAIDS Classifications**						

NOTES:

(1) Malaria estimates are based on years prior to 2000

(2) These countries were not included in the UNAIDS listing of countries (within each regional grouping); they were classified based on their geographical proximity to other countries that were listed.

(3) Taiwan's population is the 2002 population estimate; the 2005 population was not provided in the UN source document

Table 4 - How serious do you consider the current impact of malaria on your company (2004)?

(1) COUNTRY/CATEGORY	(2) NUMBER OF FIRMS	(3) EXPECT SERIOUS IMPACT	(4) EXPECT SOME IMPACT	(5) EXPECT MINIMAL IMPACT	(6) NO RESPONSE
Algeria	90	4%	19%	80%	1%
Angola	46	43%	85%	13%	2%
Argentina	68	1%	1%	96%	3%
Australia	66	0%	0%	100%	0%
Austria	90	1%	1%	91%	8%
Bahrain	44	2%	5%	93%	2%
Bangladesh	85	9%	28%	72%	0%
Belgium	38	0%	0%	97%	3%
Bolivia	92	7%	23%	70%	8%
Bosnia and Herzegovina	75	9%	13%	84%	3%
Botswana	79	8%	44%	52%	4%
Brazil	69	1%	7%	93%	0%
Bulgaria	131	4%	9%	89%	2%
Canada	102	1%	3%	97%	0%
Chad	151	58%	87%	9%	4%
Chile	177	0%	1%	99%	0%
China	254	8%	30%	70%	0%
Colombia	46	2%	11%	89%	0%
Costa Rica	83	1%	2%	98%	0%
Croatia	110	9%	11%	88%	1%
Cyprus	81	10%	12%	88%	0%
Czech Republic	101	4%	6%	84%	10%
Denmark	25	0%	0%	100%	0%
Dominican Republic	63	2%	14%	84%	2%
Ecuador	129	3%	9%	87%	4%
Egypt	105	6%	10%	88%	3%
El Salvador	48	2%	8%	85%	6%
Estonia	55	2%	4%	96%	0%
Ethiopia	89	37%	56%	37%	7%
Finland	63	2%	2%	98%	0%
France	86	0%	2%	95%	2%
Gambia	83	51%	82%	14%	4%
Georgia	78	5%	10%	88%	1%
Germany	65	0%	0%	100%	0%
Ghana	61	33%	69%	30%	2%
Greece	73	1%	5%	92%	3%
Guatemala	130	8%	34%	65%	2%
Honduras	68	4%	19%	75%	6%
Hong Kong	40	0%	5%	95%	0%
Hungary	79	0%	3%	97%	0%
Iceland	25	0%	0%	100%	0%
India	56	11%	32%	68%	0%
Indonesia	39	5%	90%	10%	0%
Ireland	40	0%	0%	98%	3%
Israel	17	0%	0%	100%	0%
Italy	96	0%	0%	98%	2%
Jamaica	90	7%	14%	84%	1%
Japan	77	1%	5%	95%	0%
Jordan	75	3%	4%	92%	4%
Kenya	123	25%	69%	30%	1%
Korea	132	2%	8%	91%	1%
Latvia	194	1%	5%	88%	8%
Lithuania	155	1%	8%	92%	0%
Luxembourg	30	3%	3%	93%	3%
Macedonia, FYR	108	0%	4%	96%	0%
Madagascar	97	29%	70%	28%	2%
Malawi	36	56%	94%	6%	0%
Malaysia	93	0%	35%	61%	3%
Mali	42	52%	90%	5%	5%
Malta	67	1%	1%	79%	19%
Mauritius	34	0%	9%	91%	0%
Mexico	89	0%	3%	94%	2%
Morocco	125	5%	18%	79%	3%
Mozambique	79	57%	95%	5%	0%
Namibia	31	13%	42%	58%	0%
Netherlands	103	0%	1%	97%	2%
New Zealand	55	0%	0%	100%	0%
Nicaragua	70	9%	30%	67%	3%
Nigeria	216	34%	71%	25%	4%
Norway	23	0%	0%	100%	0%
Pakistan	73	14%	45%	55%	0%
Panama	86	3%	19%	80%	1%

Table 4 - How serious do you consider the current impact of malaria on your company (2004)?

(1) COUNTRY/CATEGORY	(2) NUMBER OF FIRMS	(3) EXPECT SERIOUS IMPACT	(4) EXPECT SOME IMPACT	(5) EXPECT MINIMAL IMPACT	(6) NO RESPONSE
Peru	79	0%	10%	86%	4%
Philippines	59	5%	20%	78%	2%
Poland	49	10%	20%	55%	24%
Portugal	42	0%	0%	98%	2%
Romania	98	8%	16%	81%	3%
Russian Federation	340	1%	6%	88%	6%
Serbia & Montenegro	103	0%	3%	95%	2%
Singapore	113	1%	7%	92%	1%
Slovak Republic	60	2%	2%	92%	7%
Slovenia	66	2%	2%	98%	0%
South Africa	73	5%	23%	73%	4%
Spain	59	0%	0%	100%	0%
Sri Lanka	82	10%	35%	63%	1%
Sweden	20	0%	0%	100%	0%
Switzerland	72	1%	1%	99%	0%
Taiwan	59	0%	5%	90%	5%
Tanzania	122	67%	86%	11%	2%
Thailand	52	4%	21%	79%	0%
Trinidad & Tobago	78	8%	28%	71%	1%
Tunisia	72	3%	11%	76%	13%
Turkey	225	2%	4%	93%	3%
Uganda	111	54%	86%	5%	8%
Ukraine	101	0%	3%	96%	1%
United Arab Emirates	84	2%	10%	87%	4%
United Kingdom	47	0%	9%	89%	2%
United States	84	4%	5%	95%	0%
Uruguay	59	0%	0%	100%	0%
Venezuela	53	2%	13%	83%	4%
Vietnam	100	7%	22%	74%	4%
Zambia	49	61%	82%	10%	8%
Zimbabwe	30	13%	60%	40%	0%
0 CASES REPORTED/NO DATA REPORTED	4024	3%	7%	91%	3%
1 - 99 CASES REPORTED/100,000 POPULATION	2661	8%	23%	74%	3%
100 - 499 CASES REPORTED/100,000 POPULATION	846	14%	32%	65%	3%
500 - 999 CASES REPORTED/100,000 POPULATION	448	16%	44%	53%	4%
1,000 - 4,999 CASES REPORTED/100,000 POPULATION	277	42%	67%	31%	2%
5,000 + CASES REPORTED/100,000 POPULATION	463	40%	76%	22%	3%
LOW INCOME	1836	35%	66%	32%	3%
LOWER MIDDLE INCOME	3097	4%	14%	83%	3%
UPPER MIDDLE INCOME	1702	2%	10%	86%	3%
HIGH INCOME	2084	1%	3%	95%	2%
CARRIBBEAN	231	6%	19%	80%	1%
EAST ASIA	562	4%	17%	82%	1%
EASTERN EUROPE & CENTRAL ASIA	1932	3%	7%	89%	4%
LATIN AMERICA	1430	3%	12%	86%	3%
NORTH AFRICA & MIDDLE EAST	612	4%	11%	85%	4%
OCEANIA	186	2%	4%	96%	0%
NORTH AMERICA	121	0%	0%	100%	0%
SOUTH & SOUTHEAST ASIA	752	6%	30%	69%	1%
SUB-SAHARAN AFRICA	1552	39%	72%	25%	3%
WESTERN EUROPE	1341	1%	2%	96%	3%
OVERALL	8719	10%	22%	76%	3%

NOTES:
Column 3 represents the percentage of firms that provided responses of 1 or 2 to question 7.20A
Column 4 represents the percentage of firms that provided responses of 1, 2, 3, 4 or 5 to question 7.20A
Column 5 represents the percentage of firms that provided responses of 6 or 7 to question 7.20A
Column 6 represents the percentage of firms that did not respond to question 7.20A

Table 5 - How serious do you consider the future impact of malaria on your company in the next five years (2004)?

(1) COUNTRY/CATEGORY	(2) NUMBER OF FIRMS	(3) EXPECT SERIOUS IMPACT	(4) EXPECT SOME IMPACT	(5) EXPECT MINIMAL IMPACT	(6) NO RESPONSE
Algeria	90	6%	18%	79%	3%
Angola	46	33%	83%	15%	2%
Argentina	68	1%	3%	94%	3%
Australia	66	2%	5%	95%	0%
Austria	90	0%	0%	90%	10%
Bahrain	44	2%	5%	93%	2%
Bangladesh	85	4%	19%	78%	4%
Belgium	38	0%	0%	97%	3%
Bolivia	92	5%	18%	74%	8%
Bosnia and Herzegovina	75	4%	15%	83%	3%
Botswana	79	10%	35%	61%	4%
Brazil	69	1%	4%	96%	0%
Bulgaria	131	5%	11%	85%	4%
Canada	102	1%	3%	96%	1%
Chad	151	53%	88%	7%	5%
Chile	177	0%	1%	98%	2%
China	254	6%	34%	66%	0%
Colombia	46	0%	7%	91%	2%
Costa Rica	83	1%	4%	96%	0%
Croatia	110	5%	12%	87%	1%
Cyprus	81	6%	14%	86%	0%
Czech Republic	101	3%	4%	85%	11%
Denmark	25	0%	0%	96%	4%
Dominican Republic	63	0%	8%	89%	3%
Ecuador	129	7%	17%	78%	5%
Egypt	105	9%	13%	83%	4%
El Salvador	48	2%	8%	81%	10%
Estonia	55	0%	0%	100%	0%
Ethiopia	89	28%	58%	31%	10%
Finland	63	0%	0%	97%	3%
France	86	0%	3%	94%	2%
Gambia	83	39%	72%	19%	8%
Georgia	78	5%	10%	88%	1%
Germany	65	0%	2%	98%	0%
Ghana	61	26%	64%	31%	5%
Greece	73	1%	7%	88%	5%
Guatemala	130	7%	23%	75%	2%
Honduras	68	6%	21%	75%	4%
Hong Kong	40	3%	10%	90%	0%
Hungary	79	1%	3%	97%	0%
Iceland	25	0%	0%	100%	0%
India	56	7%	23%	75%	2%
Indonesia	39	8%	87%	13%	0%
Ireland	40	0%	3%	95%	3%
Israel	17	0%	0%	100%	0%
Italy	96	0%	1%	97%	2%
Jamaica	90	6%	14%	84%	1%
Japan	77	3%	8%	92%	0%
Jordan	75	0%	5%	91%	4%
Kenya	123	19%	64%	33%	2%
Korea	132	2%	8%	91%	1%
Latvia	194	2%	4%	87%	9%
Lithuania	155	1%	9%	91%	0%
Luxembourg	30	3%	3%	93%	3%
Macedonia, FYR	108	2%	8%	60%	31%
Madagascar	97	27%	67%	30%	3%
Malawi	36	39%	94%	6%	0%
Malaysia	93	0%	20%	76%	3%
Mali	42	33%	81%	7%	12%
Malta	67	0%	0%	81%	19%
Mauritius	34	0%	12%	88%	0%
Mexico	89	1%	6%	93%	1%
Morocco	125	10%	24%	73%	3%
Mozambique	79	54%	89%	6%	5%
Namibia	31	6%	32%	68%	0%
Netherlands	103	0%	2%	96%	2%
New Zealand	55	0%	0%	100%	0%
Nicaragua	70	6%	24%	73%	3%
Nigeria	216	20%	61%	34%	5%
Norway	23	0%	0%	100%	0%
Pakistan	73	5%	41%	59%	0%

Table 5 - How serious do you consider the future impact of malaria on your company in the next five years (2004)?

(1) COUNTRY/CATEGORY	(2) NUMBER OF FIRMS	(3) EXPECT SERIOUS IMPACT	(4) EXPECT SOME IMPACT	(5) EXPECT MINIMAL IMPACT	(6) NO RESPONSE
Panama	86	13%	24%	73%	2%
Paraguay	84	4%	10%	87%	4%
Peru	79	4%	6%	87%	6%
Philippines	59	5%	24%	73%	3%
Poland	49	14%	24%	51%	24%
Portugal	42	0%	0%	98%	2%
Romania	98	9%	21%	76%	3%
Russian Federation	340	0%	10%	81%	9%
Serbia & Montenegro	103	0%	4%	93%	3%
Singapore	113	1%	5%	94%	1%
Slovak Republic	60	2%	5%	88%	7%
Slovenia	66	2%	2%	98%	0%
South Africa	73	4%	21%	73%	7%
Spain	59	2%	2%	97%	2%
Sri Lanka	82	7%	22%	73%	5%
Sweden	20	0%	0%	100%	0%
Switzerland	72	0%	0%	100%	0%
Taiwan	59	2%	5%	90%	5%
Tanzania	122	53%	91%	7%	2%
Thailand	52	4%	19%	81%	0%
Trinidad & Tobago	78	8%	21%	78%	1%
Tunisia	72	4%	15%	74%	11%
Turkey	225	0%	4%	93%	3%
Uganda	111	44%	80%	12%	8%
Ukraine	101	1%	16%	80%	4%
United Arab Emirates	84	2%	6%	87%	7%
United Kingdom	47	0%	9%	89%	2%
United States	84	2%	7%	92%	1%
Uruguay	59	0%	0%	100%	0%
Venezuela	53	4%	15%	81%	4%
Vietnam	100	10%	26%	69%	5%
Zambia	49	47%	76%	14%	10%
Zimbabwe	30	17%	60%	40%	0%
0 CASES REPORTED/NO DATA REPORTED	4024	3%	8%	88%	4%
1 - 99 CASES REPORTED/100,000 POPULATION	2661	6%	22%	74%	4%
100 - 499 CASES REPORTED/100,000 POPULATION	846	13%	28%	68%	4%
500 - 999 CASES REPORTED/100,000 POPULATION	448	14%	45%	50%	5%
1,000 - 4,999 CASES REPORTED/100,000 POPULATION	277	31%	62%	34%	4%
5,000 + CASES REPORTED/100,000 POPULATION	463	34%	70%	25%	5%
LOW INCOME	1836	28%	62%	34%	4%
LOWER MIDDLE INCOME	3097	4%	15%	80%	5%
UPPER MIDDLE INCOME	1702	3%	10%	87%	4%
HIGH INCOME	2084	1%	4%	94%	3%
CARRIBBEAN	231	5%	15%	84%	2%
EAST ASIA	562	4%	20%	80%	1%
EASTERN EUROPE & CENTRAL ASIA	1932	3%	9%	86%	5%
LATIN AMERICA	1430	4%	11%	85%	3%
NORTH AFRICA & MIDDLE EAST	612	5%	13%	82%	5%
OCEANIA	186	2%	5%	94%	1%
NORTH AMERICA	121	1%	2%	98%	0%
SOUTH & SOUTHEAST ASIA	752	5%	25%	73%	3%
SUB-SAHARAN AFRICA	1552	31%	68%	28%	5%
WESTERN EUROPE	1341	0%	2%	92%	6%
OVERALL	8719	8%	21%	75%	4%

NOTES:
Column 3 represents the percentage of firms that provided responses of 1 or 2 to question 7.21A
Column 4 represents the percentage of firms that provided responses of 1, 2, 3, 4 or 5 to question 7.21A
Column 5 represents the percentage of firms that provided responses of 6 or 7 to question 7.21A
Column 6 represents the percentage of firms that did not respond to question 7.21A

Table 6 - How serious do you consider the future impact of malaria on your company in the next five years (2005)?

(1)	(2)	(3)	(4)	(5)	(6)
COUNTRY/CATEGORY	NUMBER OF FIRMS	EXPECT SERIOUS IMPACT	EXPECT SOME IMPACT	EXPECT MINIMAL IMPACT	NO RESPONSE
Albania	93	4%	16%	81%	3%
Algeria	64	16%	27%	70%	3%
Argentina	97	0%	3%	96%	1%
Armenia	102	16%	29%	70%	1%
Australia	91	1%	8%	92%	0%
Austria	117	0%	0%	99%	1%
Azerbaijan	66	9%	33%	65%	2%
Bahrain	38	8%	13%	84%	3%
Bangladesh	96	7%	35%	65%	0%
Belgium	62	2%	2%	97%	2%
Benin	143	30%	76%	24%	1%
Bolivia	79	4%	20%	78%	1%
Bosnia and Herzegovina	75	4%	12%	88%	0%
Botswana	62	8%	48%	52%	0%
Brazil	212	8%	25%	75%	0%
Bulgaria	156	9%	22%	77%	1%
Cambodia	95	18%	60%	38%	2%
Cameroon	90	30%	76%	24%	0%
Canada	126	2%	4%	94%	2%
Chad	216	67%	94%	3%	4%
Chile	164	1%	2%	98%	1%
China	299	2%	31%	69%	0%
Colombia	53	2%	17%	79%	4%
Costa Rica	81	5%	12%	88%	0%
Croatia	103	3%	5%	95%	0%
Cyprus	78	5%	6%	94%	0%
Czech Republic	99	0%	2%	96%	2%
Denmark	50	0%	4%	96%	0%
Dominican Republic	70	6%	21%	77%	1%
East Timor	61	75%	98%	2%	0%
Ecuador	87	9%	33%	67%	0%
Egypt	119	3%	9%	90%	1%
El Salvador	49	2%	22%	76%	2%
Estonia	88	1%	3%	97%	0%
Ethiopia	89	42%	70%	27%	3%
Finland	36	3%	3%	97%	0%
France	163	2%	4%	95%	1%
Gambia, The	80	40%	81%	15%	4%
Georgia	77	4%	9%	90%	1%
Germany	78	0%	3%	97%	0%
Ghana	83	18%	80%	18%	2%
Greece	73	1%	3%	96%	1%
Guatemala	261	6%	33%	63%	4%
Guyana	49	37%	82%	16%	2%
Honduras	82	15%	38%	62%	0%
Hong Kong SAR	56	2%	16%	82%	2%
Hungary	59	2%	2%	98%	0%
Iceland	30	3%	3%	97%	0%
India	100	11%	41%	59%	0%
Indonesia	93	5%	81%	19%	0%
Ireland	38	0%	3%	97%	0%
Israel	37	3%	5%	92%	3%
Italy	141	1%	3%	97%	0%
Jamaica	70	7%	20%	79%	1%
Japan	75	1%	7%	93%	0%
Jordan	88	5%	7%	91%	2%
Kazakhstan	82	9%	21%	78%	1%
Kenya	101	42%	77%	23%	0%
Korea, Rep.	190	4%	29%	71%	0%
Kuwait	62	11%	15%	81%	5%
Kyrgyz Republic	100	7%	27%	66%	7%
Latvia	170	1%	5%	94%	2%
Lithuania	135	3%	10%	89%	1%
Luxembourg	32	3%	3%	97%	0%
Macedonia, FYR	87	15%	29%	68%	3%
Madagascar	83	31%	72%	28%	0%
Malawi	43	49%	86%	14%	0%
Malaysia	85	2%	20%	80%	0%
Mali	63	33%	84%	16%	0%
Malta	53	2%	6%	92%	2%
Mauritius	22	5%	14%	86%	0%
Mexico	135	2%	10%	87%	3%
Moldova	91	5%	19%	81%	0%
Mongolia	103	9%	29%	59%	12%
Morocco	73	18%	45%	52%	3%

Table 6 - How serious do you consider the future impact of malaria on your company in the next five years (2004)?

(1) COUNTRY/CATEGORY	(2) NUMBER OF FIRMS	(3) EXPECT SERIOUS IMPACT	(4) EXPECT SOME IMPACT	(5) EXPECT MINIMAL IMPACT	(6) NO RESPONSE
Mozambique	70	34%	87%	11%	1%
Namibia	39	21%	74%	26%	0%
Netherlands	87	0%	2%	98%	0%
New Zealand	47	0%	0%	100%	0%
Nicaragua	66	6%	39%	61%	0%
Nigeria	153	7%	58%	42%	0%
Norway	63	0%	2%	98%	0%
Pakistan	55	2%	16%	82%	2%
Panama	62	3%	27%	73%	0%
Paraguay	91	8%	22%	73%	5%
Peru	71	3%	17%	82%	1%
Philippines	43	2%	23%	77%	0%
Poland	109	3%	28%	70%	2%
Portugal	42	0%	0%	100%	0%
Qatar	63	3%	10%	87%	3%
Romania	107	4%	12%	87%	1%
Russian Federation	473	4%	11%	84%	5%
Serbia and Montenegro	98	0%	5%	93%	2%
Singapore	151	1%	18%	82%	0%
Slovak Republic	69	1%	7%	88%	4%
Slovenia	128	0%	3%	97%	0%
South Africa	96	11%	43%	57%	0%
Spain	82	0%	2%	94%	4%
Sri Lanka	90	8%	34%	64%	1%
Sweden	44	0%	0%	100%	0%
Switzerland	101	0%	4%	94%	2%
Taiwan	82	1%	6%	93%	1%
Tajikistan	90	26%	63%	32%	4%
Tanzania	102	49%	90%	10%	0%
Thailand	64	0%	17%	83%	0%
Trinidad and Tobago	108	6%	25%	72%	3%
Tunisia	74	7%	16%	80%	4%
Turkey	125	0%	4%	94%	2%
Uganda	90	47%	79%	21%	0%
Ukraine	101	5%	18%	77%	5%
United Arab Emirates	54	0%	6%	93%	2%
United Kingdom	97	2%	6%	94%	0%
United States	158	1%	4%	96%	1%
Uruguay	79	1%	3%	97%	0%
Venezuela	35	9%	23%	77%	0%
Vietnam	157	4%	21%	76%	3%
Zimbabwe	28	25%	71%	29%	0%
0 CASES REPORTED/NO DATA REPORTED	5209	4%	12%	87%	1%
1 - 99 CASES REPORTED/100,000 POPULATION	2996	6%	24%	75%	2%
100 - 499 CASES REPORTED/100,000 POPULATION	1394	18%	42%	55%	2%
500 - 999 CASES REPORTED/100,000 POPULATION	452	23%	61%	38%	1%
1,000 - 4,999 CASES REPORTED/100,000 POPULATION	433	30%	72%	27%	0%
5,000 + CASES REPORTED/100,000 POPULATION	509	29%	76%	23%	1%
LOW INCOME	2684	26%	61%	38%	2%
LOWER MIDDLE INCOME	3722	7%	23%	75%	2%
UPPER MIDDLE INCOME	1762	2%	12%	87%	1%
HIGH INCOME	2825	2%	7%	92%	1%
CARRIBBEAN	248	6%	23%	75%	2%
EAST ASIA	805	3%	25%	74%	2%
EASTERN EUROPE & CENTRAL ASIA	2555	5%	15%	83%	2%
LATIN AMERICA	1753	6%	22%	76%	2%
NORTH AFRICA & MIDDLE EAST	672	7%	15%	82%	3%
OCEANIA	284	1%	4%	95%	1%
NORTH AMERICA	138	1%	5%	95%	0%
SOUTH & SOUTHEAST ASIA	1090	10%	37%	62%	1%
SUB-SAHARAN AFRICA	1653	34%	75%	24%	1%
WESTERN EUROPE	1795	2%	5%	94%	1%
OVERALL	10993	9%	26%	72%	2%

NOTES:
Column 3 represents the percentage of firms that provided responses of 1 or 2 to question 7.15A
Column 4 represents the percentage of firms that provided responses of 1, 2, 3, 4 or 5 to question 7.15A
Column 5 represents the percentage of firms that provided responses of 6 or 7 to question 7.15A
Column 6 represents the percentage of firms that did not respond to question 7.15A

Table 7 - Overview of future worldwide business concern over malaria TB, and HIV/AIDS, 2004 and 2005

Percent of Survey Respondents Who Expressed Some Concern over Future Impact on Company of the Following Diseases		
	2005	2004
MALARIA:	26.6%	22.1%
TB:	32.7%	25.6%
HIV/AIDS:	46.5%	39.1%
Percent of Survey Respondents Who Expressed Serious Concern over Future Impact on Company of the Following Diseases		
	2005	2004
MALARIA:	9.5%	8.5%
TB:	9.8%	7.9%
HIV/AIDS:	16.8%	14.2%

Table 8 - Concern over future business impacts of malaria in countries with at least some malaria, 2005

(1) COUNTRY/CATEGORY	(2) NUMBER OF FIRMS	(3) EXPECT SERIOUS IMPACT	(4) EXPECT SOME IMPACT	(5) EXPECT MINIMAL IMPACT	(6) NO RESPONSE
LOW INCOME	2246	27%	64%	35%	1%
LOWER MIDDLE INCOME	2661	7%	25%	73%	2%
UPPER MIDDLE INCOME	687	4%	19%	80%	1%
HIGH INCOME	190	4%	29%	71%	0%
Caribbean	178	6%	24%	74%	2%
East Asia	489	3%	31%	69%	0%
Eastern Europe & Central Asia	933	7%	19%	78%	3%
Latin America	1510	7%	25%	73%	2%
North Africa & Middle East	226	8%	15%	81%	3%
South & South-East Asia	878	7%	36%	63%	1%
Sub-Saharan Africa	1570	35%	75%	24%	1%
OVERALL	5784	14%	39%	59%	2%

NOTES:
Column 3 represents the percentage of firms that provided responses of 1 or 2 to question 7.15A
Column 4 represents the percentage of firms that provided responses of 1, 2, 3, 4 or 5 to question 7.15A
Column 5 represents the percentage of firms that provided responses of 6 or 7 to question 7.15A
Column 6 represents the percentage of firms that did not respond to question 7.15A

Table 9 - Overview of future concern - malaria (firms in countries with some malaria) vs HIV/AIDS and TB (firms worldwide), 2004-2005		
Percent of Survey Respondents Who Expressed Some Concern over Future Impact on Company of the Following Diseases		
	2005	2004
MALARIA:	40.0%	33.9%
TB:	32.7%	25.6%
HIV/AIDS:	46.5%	39.1%
Percent of Survey Respondents Who Expressed Serious Concern over Future Impact on Company of the Following Diseases		
	2005	2004
MALARIA:	14.2%	13.1%
TB:	9.8%	7.9%
HIV/AIDS:	16.8%	14.2%

NB: Restricted to firms that responded to the question about the expected future business impact of malaria.

Table 10 - Shift share analysis: malaria future concern by income group

	EOS 2005		
(1)	(2)	(3)	(4)
Income Group	% of Survey Respondents, who answered Q7.15A, and come from countries in Income Group	% of Respondents in (2) Expressing Some Future Concern	% of Respondents in (2) Expressing Serious Future Concern
Low Income	24.3%	61.8%	26.3%
Lower Middle Income	33.7%	23.4%	6.7%
Upper Middle Income	16.1%	11.7%	2.4%
High Income	25.9%	6.9%	1.7%
OVERALL:	100.00%	26.6%	9.5%

	EOS 2004		
(1)	(2)	(3)	(4)
Income Group	% of Survey Respondents, who answered Q7.21A, and come from countries in Income Group	% of Respondents in (2) Expressing Some Future Concern	% of Respondents in (2) Expressing Serious Future Concern
Low Income	21.0%	64.6%	28.8%
Lower Middle Income	35.1%	16.1%	4.2%
Upper Middle Income	19.6%	9.9%	3.3%
High Income	24.3%	3.9%	1.1%
OVERALL:	100.00%	22.1%	8.5%

WHAT IF ANALYSIS: EOS 2004 INCOME GROUPS WITH EOS 2005 RESPONSES			
(1)	(2)	(3)	(4)
Income Group	% of Survey Respondents, who answered Q7.21A, and come from countries in Income Group	% of Respondents in (2) Expressing Some Future Concern	% of Respondents in (2) Expressing Serious Future Concern
Low Income	21.0%	61.8%	26.3%
Lower Middle Income	35.1%	23.4%	6.7%
Upper Middle Income	19.6%	11.7%	2.4%
High Income	24.3%	6.9%	1.7%
OVERALL:	100.00%	25.2%	8.8%

NOTES:
Question 7.15A in the 2005 EOS, and Question 7.21A in the 2004 EOS, ask the same question of respondents: ”How serious do you consider the future impact of Malaria on your company in the next five years?”

Table 11 - Shift share analysis: malaria future concern by region

	EOS 2005		
(1)	(2)	(3)	(4)
Region	% of Survey Respondents, who answered Q7.15A, and come from countries in Region	% of Respondents in (2) Expressing Some Future Concern	% of Respondents in (2) Expressing Serious Future Concern
Caribbean	2.2%	23.0%	6.2%
East Asia	7.3%	25.2%	3.2%
Eastern Europe & Central Asia	23.1%	15.3%	5.1%
Latin America	15.9%	22.5%	5.9%
North Africa & Middle East	6.0%	15.9%	7.3%
Oceania	2.6%	3.9%	1.4%
North America	1.3%	5.1%	0.7%
South & Southeast Asia	10.0%	37.4%	9.8%
Sub-Saharan Africa	15.1%	75.5%	34.7%
Western Europe	16.4%	5.0%	1.7%
OVERALL:	100.00%	26.6%	9.5%

	EOS 2004		
(1)	(2)	(3)	(4)
Region	% of Survey Respondents, who answered Q7.21A, and come from countries in Region	% of Respondents in (2) Expressing Some Future Concern	% of Respondents in (2) Expressing Serious Future Concern
Caribbean	2.7%	15.0%	4.8%
East Asia	6.7%	19.7%	3.9%
Eastern Europe & Central Asia	21.9%	9.9%	2.9%
Latin America	16.6%	11.8%	4.0%
North Africa & Middle East	7.0%	14.1%	5.5%
Oceania	2.2%	4.9%	1.6%
North America	1.4%	2.5%	0.8%
South & Southeast Asia	8.8%	25.4%	4.9%
Sub-Saharan Africa	17.6%	71.0%	33.0%
Western Europe	15.1%	2.6%	0.5%
OVERALL:	100.00%	22.1%	8.5%

WHAT IF ANALYSIS: EOS 2004 INCOME GROUPS WITH EOS 2005 RESPONSES			
(1)	(2)	(3)	(4)
Region	% of Survey Respondents, who answered Q7.21A, and come from countries in Region	% of Respondents in (2) Expressing Some Future Concern	% of Respondents in (2) Expressing Serious Future Concern
Caribbean	2.7%	23.0%	6.2%
East Asia	6.7%	25.2%	3.2%
Eastern Europe & Central Asia	21.9%	15.3%	5.1%
Latin America	16.6%	22.5%	5.9%
North Africa & Middle East	7.0%	15.9%	7.3%
Oceania	2.2%	3.9%	1.4%
North America	1.4%	5.1%	0.7%
South & Southeast Asia	8.8%	37.4%	9.8%
Sub-Saharan Africa	17.6%	75.5%	34.7%
Western Europe	15.1%	5.0%	1.7%
OVERALL:	100.00%	28.0%	10.3%

NOTES:
Question 7.15A in the 2005 EOS, and Question 7.21A in the 2004 EOS, ask the same question of respondents: "How serious do you consider the future impact of Malaria on your company in the next five years?"

Table 12 - Shift share analysis: malaria future concern by prevalence group

	EOS 2005		
(1)	(2)	(3)	(4)
Reported Malaria Cases per 100,000 Population	% of Survey Respondents, who answered Q7.15A, and come from countries in Prevalence Group	% of Respondents in (2) Expressing Some Future Concern	% of Respondents in (2) Expressing Serious Future Concern
No cases/no data	47.4%	11.7%	4.3%
1 - 99 cases	27.2%	24.2%	6.1%
100 - 499 cases	12.6%	43.3%	18.0%
500 - 999 cases	4.1%	61.2%	23.2%
1,000 - 4,999 cases	4.0%	72.6%	30.4%
5,000 + cases	4.6%	77.1%	29.3%
OVERALL:	100.00%	26.6%	9.5%
	EOS 2004		
(1)	(2)	(3)	(4)
Reported Malaria Cases per 100,000 Population	% of Survey Respondents, who answered Q7.21A, and come from countries in Prevalence Group	% of Respondents in (2) Expressing Some Future Concern	% of Respondents in (2) Expressing Serious Future Concern
No cases/no data	46.1%	8.4%	3.1%
1 - 99 cases	30.6%	23.0%	6.7%
100 - 499 cases	9.7%	29.6%	13.5%
500 - 999 cases	5.1%	47.1%	15.0%
1,000 - 4,999 cases	3.2%	65.0%	32.7%
5,000 + cases	5.3%	73.6%	35.5%
OVERALL:	100.00%	22.1%	8.5%
WHAT IF ANALYSIS: EOS 2004 PREVALENCE GROUPS WITH EOS 2005 RESPONSES			
(1)	(2)	(3)	(4)
Reported Malaria Cases per 100,000 Population	% of Survey Respondents, who answered Q7.21A, and come from countries in Prevalence Group	% of Respondents in (2) Expressing Some Future Concern	% of Respondents in (2) Expressing Serious Future Concern
No cases/no data	46.1%	11.7%	4.3%
1 - 99 cases	30.6%	24.2%	6.1%
100 - 499 cases	9.7%	43.3%	18.0%
500 - 999 cases	5.1%	61.2%	23.2%
1,000 - 4,999 cases	3.2%	72.6%	30.4%
5,000 + cases	5.3%	77.1%	29.3%
OVERALL:	100.00%	26.5%	9.3%

NOTES:
Question 7.15A in the 2005 EOS, and Question 7.21A in the 2004 EOS, ask the same question of respondents: "How serious do you consider the future impact of Malaria on your company in the next five years?"

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