SECTION III: GLOBAL FINANCING, COMMODITIES AND SERVICE DELIVERY

I. FINANCING

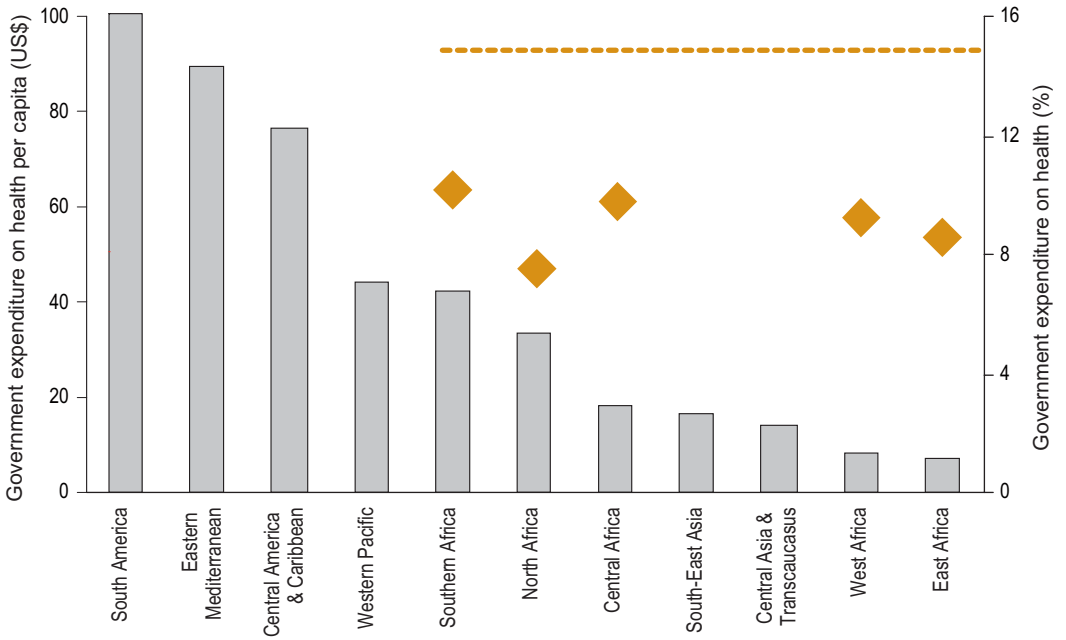
The estimated cost to support the minimum set of malaria interventions required to achieve the 2010 Abuja targets and the Millennium Development Goals for malaria by 2015 for 82 countries with the highest burden of malaria is around US$ 3.2 billion per year (US$ 1.9 billion for African countries and US$ 1.2 billion for the others (*38*)). Earlier estimates for scaling up malaria interventions suggested that US$ 2.5–4.0 billion was needed for 50–70% coverage (*58*). Of this total cost, LLINs would account for about 10%, ACTs—which as of 2004 cost over 10 times as much as conventional monotherapies—for around 36% and rapid diagnostic tests for around 17% (*38*). Programme costs involving improvement of health infrastructure, human resources and monitoring and evaluation would cover about 19% of costs. The remaining 17% would be directed towards specialized interventions such as against malaria in pregnant women in Africa, epidemic control and the treatment of severe and complicated episodes (*38*).

In most of the countries with a high malaria burden, the financial gap between what funds are needed and what are available remains large. Understanding the financial resources available for control activities is an important part of monitoring efforts. In general, government expenditures on health are lowest in those countries and regions with the highest burden of malaria, both for absolute per capita expenditures and for health expenditures as a proportion of all government expenditures (Fig. 40). The Maputo Declaration in July 2003 (*59*) reaffirmed the commitment of African governments to increase financial support for the health sector to a target level of 15% of all government expenditures. In most African countries, private and out-of-pocket expenditures on malaria prevention and treatment are high relative to government expenditure (*60*). In addition, among African households, out-of-pocket expenditures on malaria prevention and treatment as a proportion of annual income are greatest in the poorest households (*61*).

1. Sources of national financing

From available data, governments are the main source of funding for malaria control programmes, accounting for 71% of financial contributions in Africa, 80% in Asia and 96% in the Americas (Fig. 41). The remaining contributions represent a mix of bilateral donations, foundations, multilateral lending agencies and international donations. The precise breakdown of nongovernmental contributions is not specified by all of the programmes.

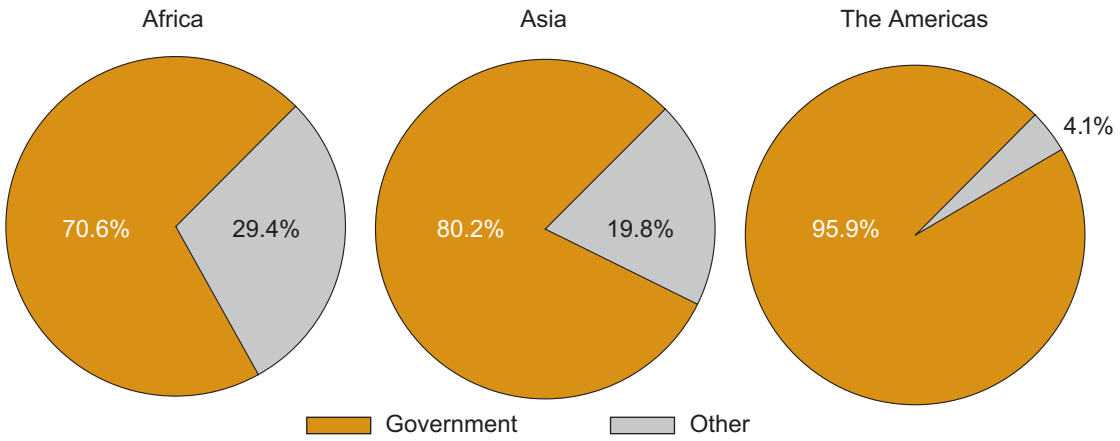
Figure 40. Average government expenditures on health per capita in malaria-endemic countries, 2001



Bars: absolute expenditures in US$, for all subregions.
Symbols: government expenditures on health as a proportion of total government expenditures for African subregions. The dotted line indicates the target of 15% of total government expenditures spent on health agreed by African countries in the Maputo Declaration in July 2003 (59).

Source: (62)

Figure 41. Financial contributions to malaria control, by region and source



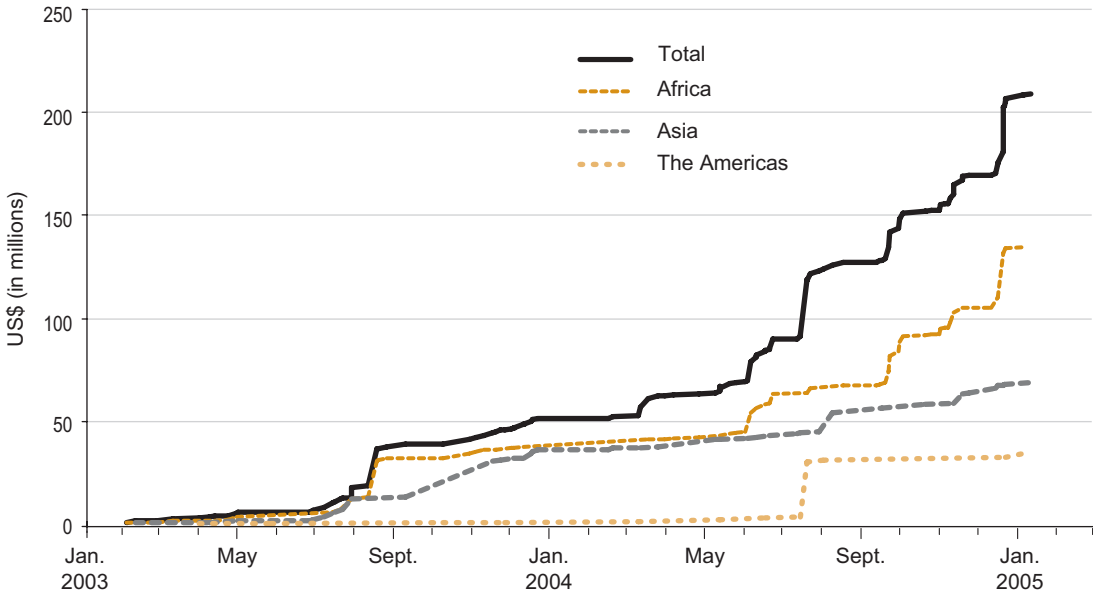
Government and other contributions for malaria control as reported by NMCPs. (Africa: 28 out of 49 programmes; Asia: 13 out of 38 programmes; the Americas: 14 out of 21 programmes). Data for Africa and Asia are from 2003 and from 2002 for the Americas.

2. The Global Fund to Fight AIDS, Tuberculosis and Malaria

The GFATM, which started disbursements of grants for malaria control in 2003, has become an important international source of additional funding for scaling up malaria control (Fig. 42). In accordance with the RBM recommendation, the GFATM endorses the use of ACTs as the choice of antimalarial treatment for countries affected by drug-resistant falciparum malaria, in particular in Africa.

By the end of its first four funding rounds up to the end of 2004, the GFATM had US$ 3.1 billion dollars of committed funds, of which 31% has been targeted to support proposals for control of malaria. In 2003–2004, US$ 200 million was disbursed to 28 countries in Africa, 15 countries in Asia and 4 countries in the Americas. Malaria allocations on a five-year basis now total about US$ 1.8 billion, with the approved commitments for 2005–2006 totalling US$ 881 million. Up to this point there has been a longer than anticipated time lag in the implementation of GFATM grants; by September 2004 a total of US$ 130 million had been disbursed, but only eight malaria grants totalling US$ 33 million had already concluded one year in operation.

Figure 42. Cumulative disbursements for malaria control from the GFATM up to January 2005



II. COMMODITIES AND SERVICE DELIVERY

1. Net sales and (re-)treatments

By 2003, around 18 million mosquito nets had been sold or distributed in Africa: 8 million in East Africa, over 5 million in West Africa, close to 4 million in Southern Africa and close to 1 million in Central Africa. Around 13 million nets had been (re-)treated with insecticide, of which close to half were in East Africa (Fig. 43). Data totalled from 16 countries in Asia show that around 8 million nets had been distributed or sold and that over 65 million existing nets had been (re-)treated by 2003 (Fig. 44).

Figure 43. Cumulative number of mosquito nets sold or distributed and (re-)treated in Africa according to country reports, 1999–2003

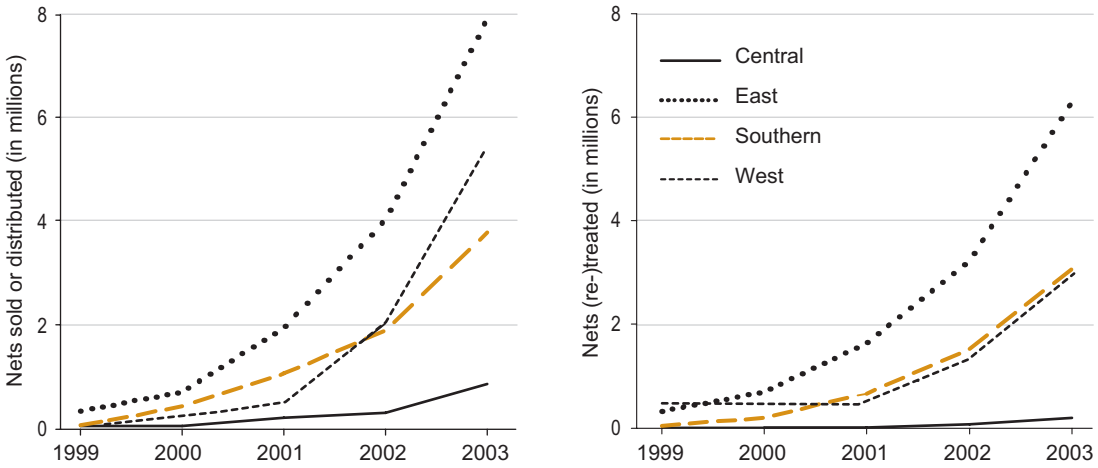
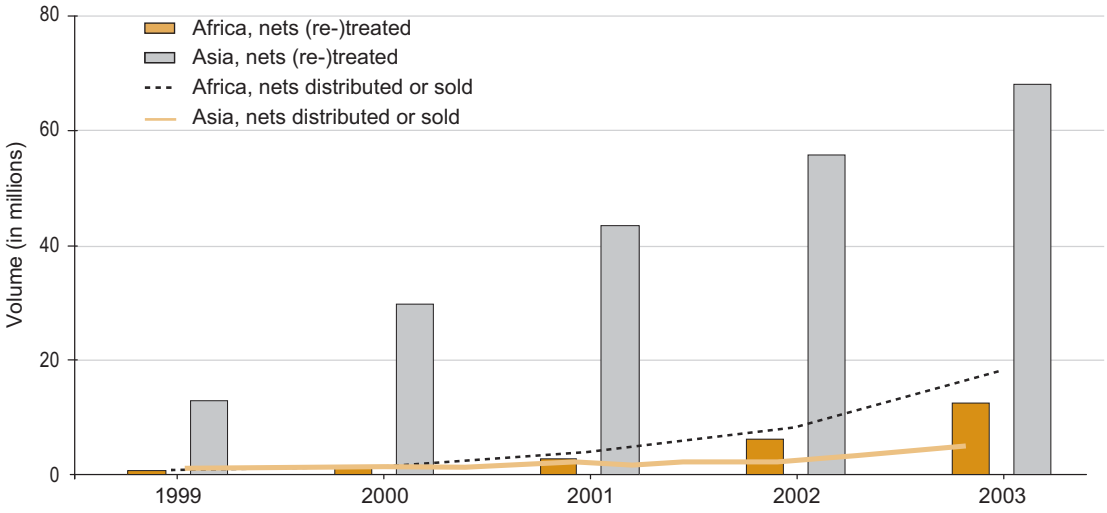


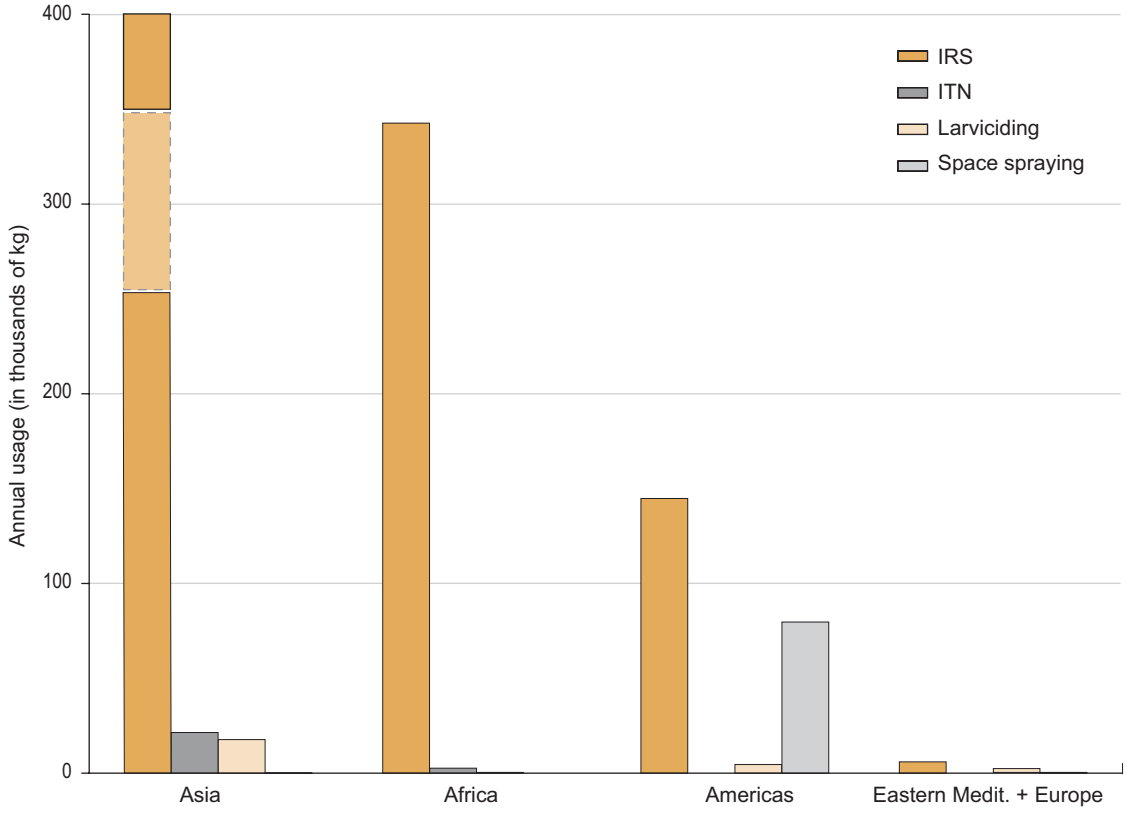
Figure 44. Cumulative number of mosquito nets distributed, sold or (re-)treated by region according to country reports, 1999–2003



2. Insecticides used for vector control

Reports to WHO from countries on quantities of insecticides used for malaria control, including ITN production and (re-)treatment, and on numbers of units, houses or rooms, sprayed with insecticides give some indication of the extent of vector control. Of all regions, South-East Asia reports by far the largest volume of insecticide usage for IRS (Fig. 45); in contrast, the reported number of units sprayed is greatest in Africa (Fig. 46). This difference indicates that reporting on units sprayed is not complete from all Asian countries; or it might be explained by different regions using different definitions of units sprayed: houses or rooms. Countries in South-East Asia reported a non-negligible amount of insecticide usage for larviciding. Some American countries reported on the use of insecticides for IRS and space spraying, but none reported on units sprayed. The lack of a standardized approach for reporting on IRS makes it difficult to compare countries and regions and to track trends over time.

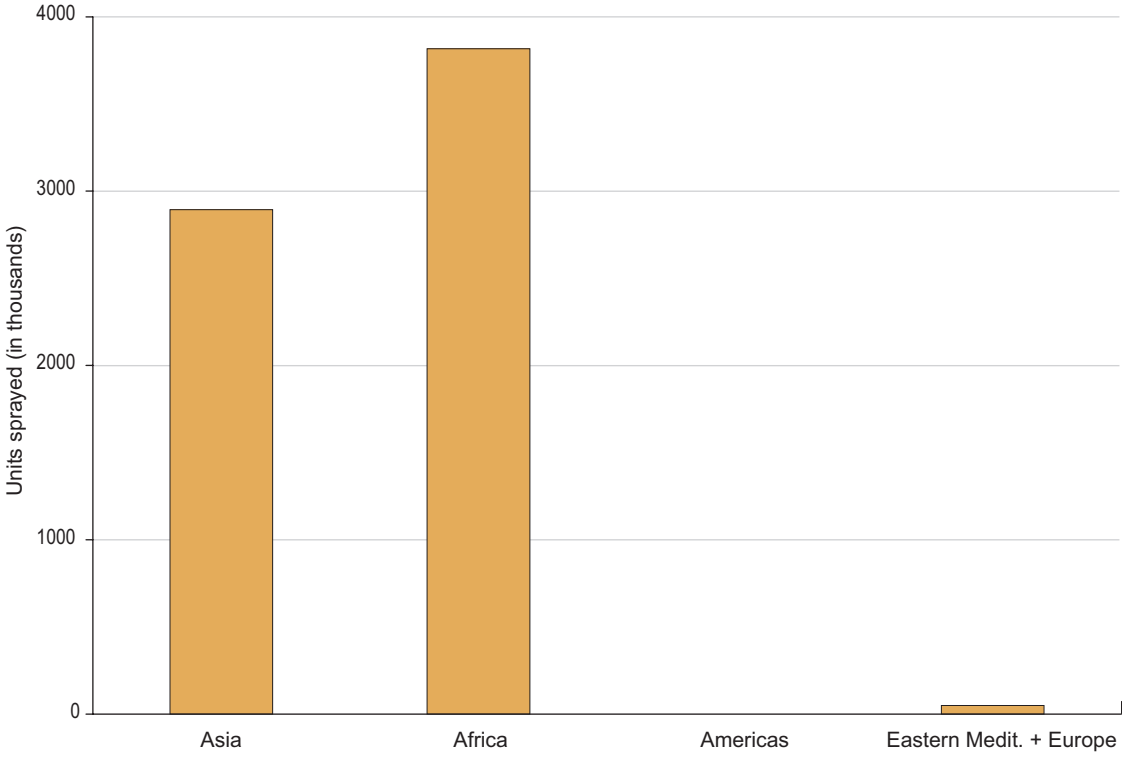
Figure 45. Annual insecticide usage for malaria control, by kilogramme of active ingredient, vector control strategy and world region, averaged over 2000–2002



Note: reported usage of IRS in Asia was 1 970 000 kilogrammes.
Data from country reports to WHOPES averaged over 2000–2002 (*63*).

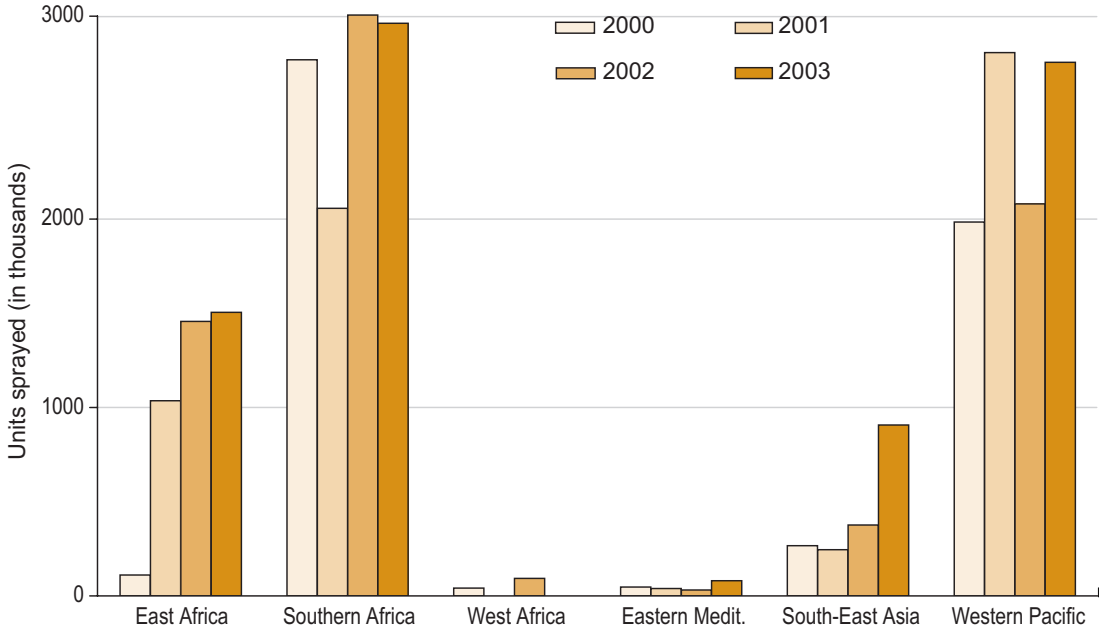
The reported number of households or units using IRS by region and by year increased between 2000 and 2003, especially in East Africa and South-East Asia (Fig. 47). This suggests that IRS activity is being intensified, even though the reporting by countries was not complete, especially in the earlier years.

Figure 46. Units sprayed with residual insecticide by region, averaged over 2000–2003



Data reported to WHO.

Figure 47. Reported use of indoor residual spraying by region, 2000–2003



3. Drug supplies

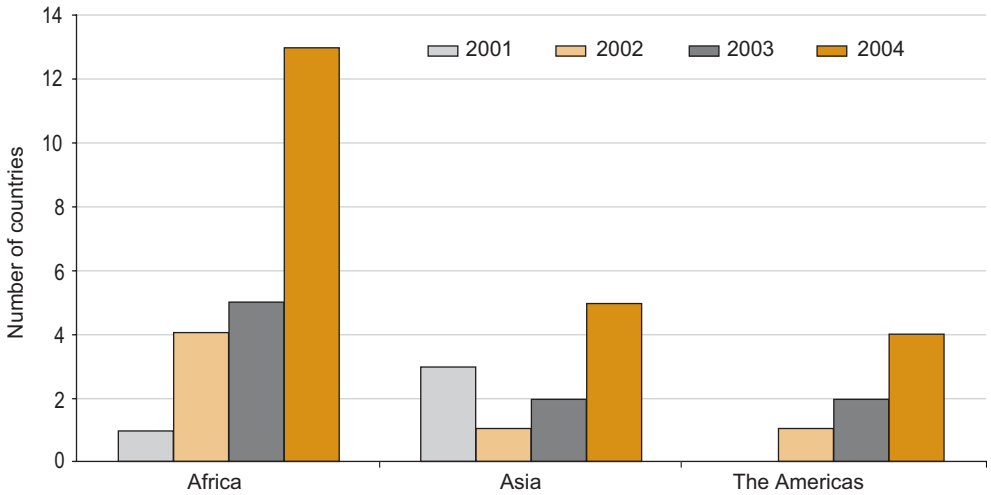
For ACTs, production and financing presents a major challenge to meet the estimated global demand for 120 million adult treatment courses in 2005 (*64*). An increasing number of countries adopted ACTs as their national policy and have started procuring artemether–lumefantrine (Fig. 48), with most procurements in dosages for young children (Fig. 49).

In 2004, a shortage arose of artemether–lumefantrine. Novartis Pharma AG, the manufacturer of Coartem®, has secured sufficient artemisinin derivatives for 30 million treatment courses in 2005; however, over half of this will be produced during the last 3 months of the year, which means that the drug combination will only become available after the high transmission season in many malarious areas.

Scaling up the cultivation of *A. annua* is under way in China and Viet Nam. With support from USAID, WHO and other RBM partners, the possibility of large-scale production of artemisinin in Africa is being explored. Pilot cultivation schemes in Kenya and United Republic of Tanzania are encouraging.

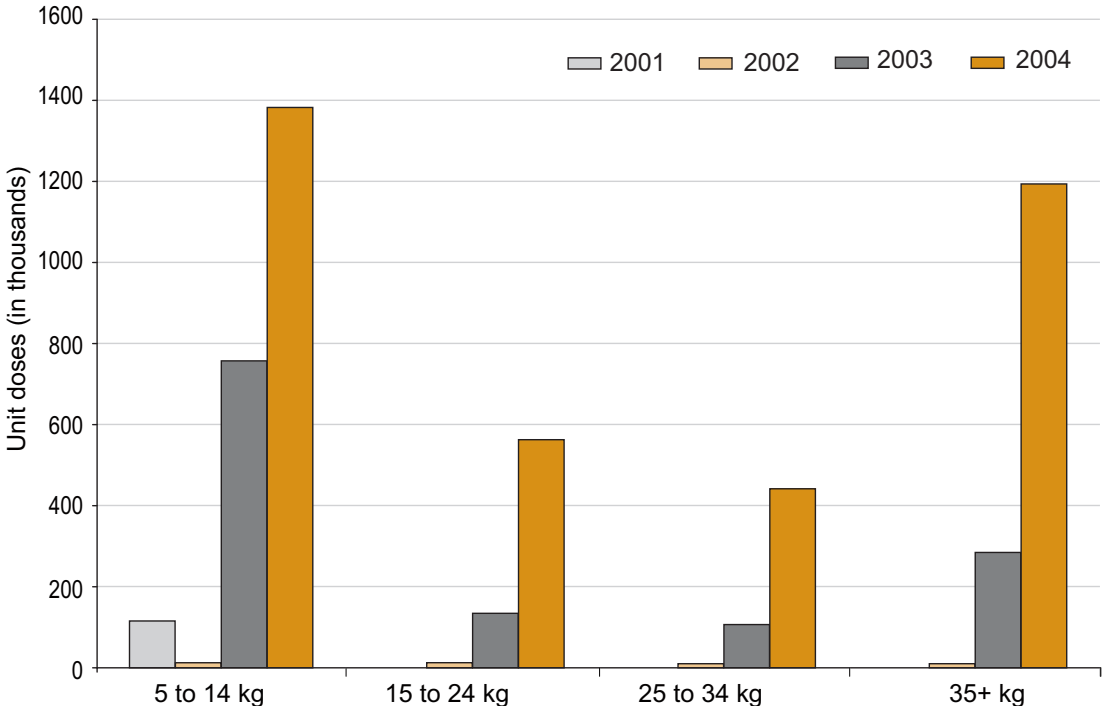
For antimalarial drugs other than Coartem®, global production and supply are currently not being monitored. Some countries record and report volumes of drugs procured, but these data were not available in standardized format and in sufficient completeness to permit analyses for this report.

Figure 48. Number of countries procuring artemether–lumefantrine (Coartem®), by region, 2001–2004



Source: WHO. No procurement data are available for other ACTs.

Figure 49. Procurement of artemether–lumefantrine, by category of intended patients' weight, 2001–2004



Source: (*64*).

4. Development of new drugs, diagnostics, insecticides and vaccines

Effective insecticides and drugs to prevent and treat malaria exist, but the rapid development of resistance of *Plasmodium* to most available antimalarial drugs and of *Anopheles* mosquitoes to insecticides means that currently effective tools are likely to be less effective in the future. Therefore, continuing to deliver prompt and effective prevention and treatment for malaria depends on the ongoing discovery, development and implementation of new tools.

The funding and management of the discovery, development and registration of next generations of safe, effective and affordable antimalarial drugs—including new ACTs—is being coordinated by the Medicines for Malaria Venture, which brings together public, private and philanthropic sector partners (*65*). Its priority is to develop drugs with low intrinsic "cost of goods", in part by focusing on simple process chemistry and in part by manufacturing in countries such as China, India and the Republic of Korea, which are relatively competitive and where production costs are less. As of October 2004, the Medicines for Malaria Venture had 21 drug discovery and development projects for malaria in its portfolio. The organization estimates that it requires US$ 200 million to develop one new fixed-dose ACT. The continual development of new antimalarials for populations at endemic risk, including special groups such as children and pregnant women, at the rate dictated by the development of drug resistance will cost at least US$ 30 million per year,

possibly more after 2006 when more projects move into the expensive phases of clinical development.

For diagnosis of malaria, a considerable array of rapid diagnostic tests has become commercially available since their introduction in 1994. Rapid diagnostic tests are used increasingly in all malaria-endemic regions, particularly as a replacement to symptom-based (presumptive) diagnosis and often in the context of adopting a costly ACT as first-line malaria treatment. In Thailand, rapid diagnostic tests have been used experimentally for many years; in Botswana, Cambodia, South Africa and parts of Mozambique and Swaziland, they are now used routinely for confirmation of suspected malaria cases. In 2004, several new tests have become available, in particular tests for detecting non-falciparum malaria. There remain limitations in sensitivity and suitability of rapid tests for use in remote tropical environments, but more stable tests are under development. A planned WHO prequalification scheme will assist in purchasing good-quality tests (*66*).

Although no effective malaria vaccine is currently available for prevention of malarial disease, prospects for vaccine development improved with the completion of the genetic blueprints of the *Anopheles* mosquito and of *P. falciparum* in October 2002. In 2004, a Phase II trial with the pre-erythrocytic vaccine RTS, S/AS02A demonstrated a 30% reduction in total clinical episodes of malaria and 58% reduction in severe clinical episodes in young children in the short term in Mozambique. This suggests that the development of an effective vaccine against malaria is feasible (*67*). The Malaria Vaccine Initiative currently supports 10 vaccine projects globally, 2 of which have clinical trials under way in Africa (*68*).