

HEALTHCARE

Mosquito net science keeps killer at bay

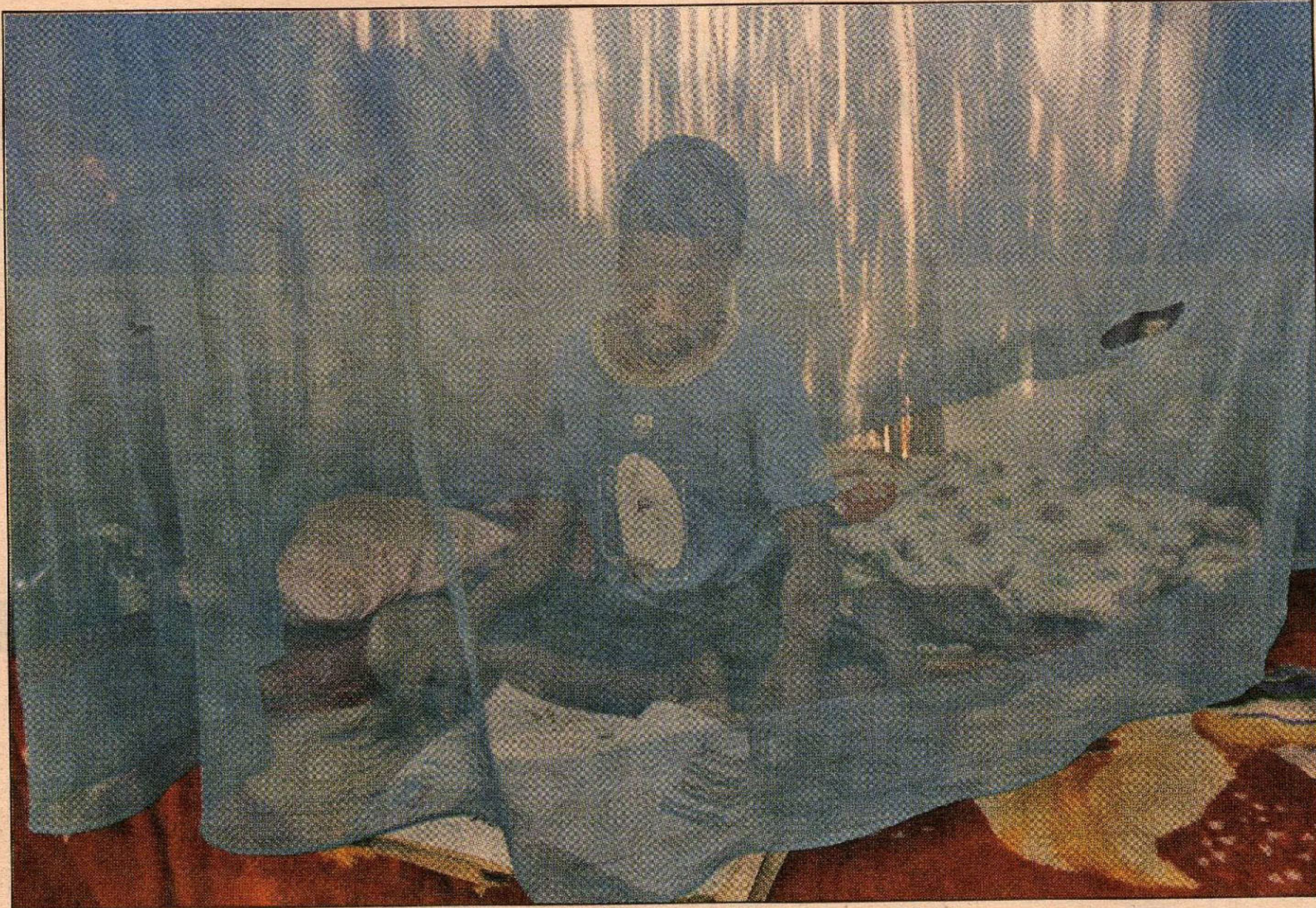
Andrew Jack reports on a Sumitomo Chemical project aimed at preventing malaria

Drugs companies may recently have grabbed attention with their search for cures for the "neglected diseases" of the developing countries, but other businesses have just as important a contribution to make in the fight against the biggest killer of all.

With an estimated 300m to 500m cases of malaria occurring each year, and treatment proving inaccessible, ineffective or unaffordable for most of the world's population, prevention remains at least as important as cure. For that, bed nets to keep mosquitoes away are essential.

Sumitomo Chemical, the Japanese group, has a logical role to play, since it is a large-scale supplier of the insecticide permethrum. In its natural, plant-derived form, the chemical is useful in agriculture and pet care because it breaks down over time. In its synthetic form, including in the struggle against malaria, it is invaluable for the opposite reason: it lasts for a long time.

"Malaria is very controllable with today's chemistry," says Phil Davis, managing director for environmental health at the company. However, using the insecticide to protect potential malaria vic-



Net protection: with a global fund and an awakened community, 'the issue today is getting on with it'

tims in Africa who have few resources and limited access to transport presents a considerable challenge for its use. While a number of longer lasting insecticide-treated nets are overcoming the weaknesses of an older

generation of nets, most still have a relatively short lifespan.

After three years of washing and handling, the insecticide has normally rubbed off, making the ability to repel mosquitoes very limited. But Sumitomo developed a pioneering "delivery" technology which makes bed nets more protective, longer lasting and potentially cheaper and easier to deliver to the rural communities affected by malaria.

Its Olyset Net is made of weaved polyethylene fibre that, instead of being simply coated with synthesised permethrum, incorporates it within the material. Over time, the insecticide "migrates" from within to the surface. That both ensures longevity, because a fresh supply of insecticide is always moving to the surface to replace the quantities rubbing off; and presents less of a health risk to humans, since the amount on the surface at any one time is more limited.

Field testing suggested that, even seven years after manufacture, the nets could knock down 92 per cent of anopheles mosquitoes after three minutes' exposure.

Olyset is unconditionally approved by the World Health Organisation for use over five years. The relatively lengthy lifespan means the nets are estimated to protect a whole family for less than \$2 a year. With quite a large weave, the nets also permit good ventilation, reducing the all-too frequent decision of mothers to lift the nets to allow their children to sleep more comfortably, in the process placing them at great risk of being bitten. The biggest challenge remains distribution, however.

"Five years ago, it was a

question of funding. Now there is the Global Fund, and an awakened global community," says Mr Davis. "The issue today is getting on with it. That means dealing with governments, logistics and distribution to villages without roads. A vaccine can be delivered on a bike, but nets are bulky."

Sumitomo's approach has been to manufacture the perethrum in bead form and provide it to local producers to carry out extrusion to make the bed net material in factories in China and Tanzania. The idea is that the nets could ultimately then be transported for weaving by local communities, helping the local economy and reducing costs and distribution problems in order to spread access.

Sumitomo is in discussions with a new Tanzanian partner for a substantial scaling up of production. Total annual output has risen from 3m nets in 2003 to about 7m and could be 20m by the end of this year. Mr Davis estimates that Sumitomo has already spent "mil-

lions" of dollars on the project, which it views as being part of its programme of corporate social responsibility. Other smaller companies are developing the nets as a commercial business, helping establish a basic price of about \$5 a net. The principal problem ahead for anti-malaria bed net distribution remains how best to get them far enough into rural Africa to ensure that they reach the smallest villages and are correctly used by the largest number of families. levels.

But for Sumitomo, the immediate challenge is estimating how much to invest in new production. While current plans suggest 50m nets are required each year, some analysts suggest the figure to protect the entire adult as well as child population at risk is nearer to 80m.

"The huge danger is that we are a not-for-profit project and so the risks are that we will quickly make a huge loss if we produce too much," he says. "On the other hand, if we are over-cautious, people die."



Pests: 'if we are over-cautious, people die'