



Roll Back Malaria

WHO/CDS/RBM/2001.36
Distribution: General
Original: English

*Report of the Third Meeting
of the Technical Support Network*

Insecticide-treated netting materials

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Roll Back Malaria
World Health Organization
20, avenue Appia
CH-1211 Geneva 27, Switzerland
Tel: +(41) 22 791 3606, Fax: +(41) 22 791 4824,
E-mail: rbm@who.int
Web site: <http://www.rbm.who.int/>

Editor: Dr Kabir Cham

WHO/CDS/RBM/2001.36

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Roll Back Malaria
World Health Organization
20, avenue Appia
CH-1211 Geneva 27
Switzerland
e-mail: rbm@who.int or fax +41 22 791 4824
Website: www.rbm.who.int



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Abbreviations

ADB	African Development Bank
ADPP	Ajuda de desenvolvimanto do Povo para Povo
AFRO	WHO Region for Africa
ANC	Antenatal clinic
ANVR	African Network for Vector Resistance Monitoring
CDC	Centres for Disease Control
CISM	Centro de Investigacao em Saude de Manhica
CPE	Control, Prevention and Eradication
DANIDA	Danish International Development Agency
DIY	Dip It Yourself
DFID	Department for International Development
DHMT	District Health Management Team
DHS	Demographic Health Survey
EIR	Entomological Inoculation Rate
EU	European Union
FAO	Food and Agriculture Organization
GCPF	Global Crop Protection Federation
GIS	Geographical Information System
HAI	Health Alliance International
IDP	Internally Displaced Person
IMCI	Integrated Management of Childhood Illnesses
IN-DEPTH	International Network of Demographic Evaluation of Populations and their Health
IPCS	International Programme of Chemical Safety
IRAC	Insecticide Research Action Committee
ITM	Insecticide treated materials
ITN	Insecticide treated nets
KDr	Knockdown resistance
KINET	Kilombero Insecticide Treated Nets
KO	Knock out
LWF	Lutheran World Federation
MARA	Mapping Malaria Risk in Africa
MEDA	Mennonite Economic Development Associates
MOH	Ministry of Health
NGO	Non governmental organizations
NMCP	National Malaria Control Programme



OAU	Organization of African Unity
POPS	Persistent Organic Pollutants
PSI	Population Services International
PVC	Parasitic diseases and vector control
RBM	Roll Back Malaria
SEAMEO-TROPMED	Southeast Asian Ministers of Education Organization —Tropical Medicine Programme
SES	Socio-economic studies
SMR	Standard mortality risk
SSA	Sub-Saharan Africa
TEHIP	Tanzanian Essential Health Interventions Programme
TSN	Technical support network
UNICEF	United Nations Children's Fund
UNIDO	United Nations Industrial Organization
USAID	United States Agency for International Development
VAT	Value added tax
WB	World Bank
WHO	World Health Organization
WHOPES	World Health Organization Pesticides Evaluation Scheme
WPRO	Regional Office for the Western Pacific
WTO	World Trade Organization

Introduction

WHILE there has been an overall improvement in the global burden of malaria over the past 100 years, there remains the need for constant vigilance. Malaria monitoring must be maintained where improvements have been made alongside efforts to vigorously attend the concerns of those countries most affected by the disease. This meeting of the Technical Support Network (TSN) was held in order to review the current status of ITN interventions at country level, most notably in Africa, south of the Sahara, where malaria has continued to rise and which currently accounts for 90% of the world's malaria burden (mortality and morbidity). It also sought to review all aspects of the accumulated knowledge that will be essential in taking ITN interventions to scale in malaria endemic countries.

In twenty-seven countries selected in Africa, 350 million people are considered most at risk. Estimates of the number of insecticide treated nets (ITNs) needed to go to scale in Africa are in the region of 40 million units per year. The cost of providing this number of ITNs is not prohibitive, yet the methods of gaining reliable information on ITN use need to be improved so as to develop appropriate strategies. Similarly, the coordination of interested parties, including public and private enterprise sectors, is essential in developing the mechanisms capable of providing maximum coverage.

The meeting sought to identify the critical next steps for the TSN's contribution to support countries in going to scale with ITN interventions. While it is accepted that countries will have differing requirements relative to their own circumstances, consensus was sought on technological and scientific issues in addition to the manner by which information and experiences can be shared to the benefit of all.

Issues such as treated versus untreated nets, industry, marketing, distribution systems, prioritizing those most at risk and those most in need, advocacy on taxes and tariffs, were all part of the agenda. Examples of successful programmes in other parts of the world were heard, and consensus was reached in areas that will establish the ground for further developments.

Objectives

The objectives of the meeting were set as follows:

- Review of scientific and strategic issues related to ITNs.
- Review of the current status of ITN interventions at country level.
- Strategies for going to scale with ITNs.
- Mechanisms to effectively provide support and guidance to countries and agencies in going to scale with ITNs focusing on the structure of the TSN to address technological, managerial, promotional and legislation/regulation issues.

Participants included representatives from research institutions; international, multilateral and bilateral agencies; the World Bank; private sector companies (net and insecticide manufacturers) and NGOs. (See *Annex 1* for a full list of participants).

2 Review of scientific and strategic issues

2.1 Efficacy of ITNs in relation to coverage: personal versus community protection

Dr Jo Lines, London School of Hygiene & Tropical Medicine

Research question:

Do ITNs provide community protection as well as personal protection?

Review of the evidence:

The first evidence for the possibility of a “mass effect” on the mosquito population due to ITNs was achieved from an experimental hut in the United Republic of Tanzania (Lines *et al.*, 1987)¹. In studies on the age structure of the vector population, Magesa *et al* (1991)² gave clear evidence of reduced survival of vectors with both a decreased sporozoite rate and a decrease in vector density. The initial randomized trials looked at the impact of ITNs on child mortality by comparing people living in communities using ITNs with those in communities without ITNs, rather than looking at the individual status of users and non-users within these communities.

However, this result is far from conclusive as evidence from other studies done in The Gambia and the United Republic of Tanzania conflicts in the areas of mass protection and personal protection. A crossover trial in The Gambia, confirmed by malariometric data, produced clear evidence that the protection offered by ITNs was due to personal protection rather than to a “mass-killing effect” on the mosquito population—biting densities and sporozoite rates were both unchanged (Quinones *et al* 1998)³. In the United Republic of Tanzania, however, personal protection was found to be low in comparison to the “mass effect” observed (Curtis *et al* 1998)⁴. Further studies (Curtis in prep) found that villages where everyone was using an ITN showed greater reductions in the entomological inoculation rate (EIR), which was reduced by 90-95% in some areas, with levels of personal protection being less (50-80%) than the mass effect.

Evidence from other countries:

In Ghana indications of the mass effect have been achieved by using the standardised mortality risk (SMR) as a measurement. Evidence has shown that SMR increases with the distance from ITNs after distances of a few hundred metres. In Kenya, studies in Kilifi (coastal Kenya) showed a protective effect of ITNs up to 1 km and beyond.

Again in the United Republic of Tanzania, the KINET project, which socially markets ITNs (ITN use increased from 30 to 60% over course of the trial), the protective effect⁵ of ITNs was reported as 62% against parasitaemia and 63% against anaemia (Abdulla *et al* 2001)⁶. This shows an improvement compared with the protective efficiency of untreated nets, which was reported as 51% against parasitaemia and 37% against anaemia.

Consensus:

The benefits of untreated nets are experienced by the user(s) alone and are therefore a private, not a public good. It is also likely that untreated nets result in mosquito diversion to non-net users,

-
1. Lines JD, Myamba J, Curtis CF. Experimental hut trials of permethrin impregnated mosquito nets and eave curtains against malaria vectors in the United Republic of Tanzania. *Medical and Veterinary Entomology* 1987; 1: 37-51
 2. Magesa SM, Wilkes TJ, Mnzava AEP, Njunwa KJ, Myamba J, Kivuyo MVP, Hill N, Lines JD, Curtis CF. Trial of pyrethroid impregnated bednets in an area of the United Republic of Tanzania holoendemic for malaria Part 2. Effects on the malaria vector population. *Acta Tropica* 1991; 49: 97-108
 3. Quinones ML, Lines JD, Thomson MC, Jawara M, Greenwood BM. Permethrin-treated bed nets do not have a “mass-killing effect” on village populations of *Anopheles gambiae s.l.* in The Gambia. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 1998; 92(4): 373-8
 4. Curtis CF, Maxwell CA, Finch RJ, Njunwa KJ. A comparison of use of a pyrethroid either for house spraying or for bednet treatment against malaria vectors. *Tropical Medicine and International Health* 1998; 3 (8): 619-31
 5. Effectiveness under operational conditions
 6. Abdulla S, Armstrong-Schellenberg J, Nathan R, Mukasa O, Marchant T, Smith T, Tanner M, Lengler C. Impact on malaria morbidity of a programme supplying insecticide treated nets in children aged under two years in the United Republic of Tanzania: community cross-sectional study. *British Medical Journal* 2001; 322: 270-273

increasing their risk of infection. Yet in spite of these factors, more lives will be saved this year by untreated nets than by ITNs because of the greater numbers in use.

ITN use protects the individual and should therefore be promoted. The potential of a mass effect, which is achieved by higher coverage rates, should be regarded as an added bonus. ITNs are a public good because of the added benefit of protecting non-users in the same house and the potential mass effect (village scale) at higher coverage rates.

However there still remains a need to quantify how much extra benefit ITNs give in terms of a mass effect. Epidemiological variations, such as vector species and behaviour, will result in a range of mass effect outcomes. There is not enough evidence to base practical recommendations regarding the coverage rates needed to achieve a mass effect.

2.2 *Specifications and quality control for netting materials*

Pierre Guillet, WHO/CPE/PVC

Review of Status

The need for specifications is principally to help institutional buyers and control programmes in the purchase of quality nets by:

- Defining the product to buy.
- Comparing offers.
- Implementing quality control.
- Encouraging production of quality nets and stimulating competition between producers.

Simple guidelines are to be developed for the selection and purchase of mosquito nets and related insecticides, which will cover:

- Needs assessment at programme level.
- Choice of netting materials and insecticide products.
- How to proceed with orders.
- Possible assistance from WHO in the tender and procurement processes.
- Quality control.

WHO, together with its partners, has developed specifications for netting materials (*Specifications for Netting Materials WHO/CDS/RBM/2001.28*). An informal consultation was held in Geneva in February 2001 to draw up specifications for other netting materials, and interim specifications are now available for polyester. Specifications for polyethylene and cotton are to be developed, and WHO Collaborating Centre(s) will be designated for quality control of netting materials.

One risk of establishing specifications is that by favouring the purchase of quality nets, access to cheaper nets by the poorest may be denied. However, quality nets are not significantly more expensive (the average price of a good quality net at US\$ 2.5 gives better value than a less effective one at the marginally lower price of US\$ 1.5 or US\$ 2) and any possible detrimental effect is considered minimal.

Consensus:

The need for specifications arose from country level where indicators were required to establish a sufficient standard in the quality of nets available. It was agreed that suppliers should meet international standards, thereby ensuring that the quality of nets available will improve in the future. An acknowledgement that a net has been quality approved (e.g. a stamp upon the item when on sale) may also have the further benefit of appealing to buyers.

There is still a lack of consensus, beyond that of institutional buyers, on the need for net specifications. The main concern being expressed is that specifications may hurt or impede local manufacturers and suppliers from competing with the international market. It will be important to monitor the availability of locally manufactured nets on the market to ensure that the local industry does not suffer.

It is also important to recognise that there are approximately 20 million effective nets already in use in Africa, which now need to be treated with insecticides for improved effectiveness.

It is also perceived that specifications may be more important for insecticides than for nets, with further specifications being required for pre-treated nets (i.e. those treated in factories).

Issues that are not covered in the interim specifications for nets, which only cover fabrics, also include:

- The interaction of fabrics with insecticide.
- The quality of stitching (very important in determining the longevity of a net).

2.3 Long-lasting nets and their potential implications

Dr Kabir Cham, WHO/RBM

Review of Status:

Currently two brands of long-lasting nets are available—Olyset Nets[®] (2% permethrin incorporated into polyethylene fibres) and PermaNet[®] (deltamethrin 30-50mg/m² bound around polyester fibres).

Olyset Nets[®]

WHO field trials of Olyset Nets[®] in Cote d'Ivoire for over three years, and in Senegal for four years, continue to show acceptable efficacy (at least 80% mortality and 100% knockdown). Studies conducted in Montpellier, France, to examine the relationship of the insecticide on the net show that after 1-2 washes, the nets need to be heated (e.g. by putting in a bag in sunlight) to reactivate the insecticide. Results of further trials in the United Republic of Tanzania are due soon and WHOPEP approval of these nets should follow in October 2001.

PermaNet[®]

The manufacturers claim 100% knockdown and 90% mortality after 21 washes in laboratory conditions. However, limited field trials by independent researchers show only a limited increase in efficacy over traditionally treated nets using deltamethrin. WHOPEP approval of PermaNets[®] is not due until next year due to delays in supplies from the manufacturer.

Other long-lasting treated fabrics currently under development by textile companies, net manufacturers and scientific institutions include:

- Cotton or polyester fabrics treated with permethrin (1 to 1.2 gr/m²) which resist more than 50 ISO normalised washes.
- Fabrics which use etofenprox as an alternative to permethrin.
- Possible use of long lasting treated curtains and fabrics against vectors of dengue, African trypanosomiasis, chagas, lymphatic filariasis and leishmaniasis.
- Long-lasting plastic sheeting for refugee camps and emergency situations; and
- Two-in-one concept (bednets treated with two different insecticides).

The medium-term goal is a long-lasting, affordable (no more than US\$3 per net) net which is effective against susceptible and resistant malaria vectors and culex, and which is both acceptable and available at the community level.

Discussion

The global community cannot wait three or four years before making a decision on whether to recommend long-lasting nets as these nets are already entering projects and markets. WHOPEs is therefore working hard to minimize the requirements for testing long-lasting nets. In addition to laboratory studies, WHOPEs is conducting studies in at least two different ecological settings using experimental huts to confirm laboratory findings. As more information becomes available from field use WHOPEs will reassess its recommendations.

There are a number of methodological issues that must be considered by researchers attempting their own evaluations of long-lasting nets if comparisons are to be made between their studies and WHOPEs trials. These include:

- The time elapsed between washing nets and testing knockdown.
- The measure of knockdown (after 60 minutes exposure; time until 6th mosquito is knocked down).
- The number of nets used.
- Bioassay versus experimental hut trials.

A word from the manufacturers:

Vestergaard Frandsen

Vestergaard claims that efficacy of its PermaNet continues beyond 18 washes, and even up to 50 washes. Laboratory tests have confirmed that the insecticidal properties return if a net is left for two days after 20 washes. However, manufacturing capacity is limited and the company cannot meet current levels of demand. Their target is to manufacture one million nets per year, and new factories have been set up in Viet Nam and Thailand to this end while the possibilities of setting up factories in Africa are being explored. Vestergaard has also commissioned further field tests in Pakistan and Cote d'Ivoire.

Sumitomo

The Olyset Net[®] consists of permethrin incorporated into polyethelene fibres so that the fibres of the net act as a continuous reservoir of insecticide. Permethrin continuously diffuses towards the surface of the fibres so that, when washed, it is replenished. The time for this process to occur is temperature-dependent and can be accelerated from seven days under normal conditions to six hours if the net is heated to 60°C (by leaving it in the sun). Field trials have shown that the nets remain effective for between three and four years.

Consensus:

While there is currently not enough evidence to support widescale use of the products currently available on the market, WHOPEs approval of Olyset Nets[®] is imminent.

Once WHOPEs approval has been granted for any long-lasting net product, the transfer of the manufacturing technology to local producers is critical if the RBM partnership is to achieve one of its objectives (60% coverage of those at risk with ITNs by 2005). The meeting agreed that the technology must arrive in Africa where nets are most needed, and that manufacturing capacity must plug into local distribution systems. The global capacity for making these nets is available but the current priority of manufacturers is in making more profitable items such as knitwear.

Finally, every effort must be made to ensure that long-lasting nets are made available at reasonable cost.

2.4 Impact of pyrethroid resistance on the efficacy of ITNs

Dr Pierre Carnevale, Institute Pierre Richet, Cote D'Ivoire

Research questions:

What is the current status of insecticide resistance and its evolution? What influence do ITNs have on the behaviour of susceptible and resistant malaria vectors? What is the epidemiological influence of ITNs on resistant malaria vectors?

Review of the evidence:

Extensive studies have been conducted in Cote d'Ivoire in order to address these questions as part of WHO network (mapping of insecticide resistance in *An. gambiae*) and WHOPES phase II (entomological impact of insecticide resistance) and phase III (epidemiological impact) trials.

Synthesis of main entomological data obtained in experimental huts for WHOPES II trials are synthesized in Tables 1 and 2.

Table 1: Influence of different models of insecticide treated mosquito nets on pyrethroid resistant *Anopheles gambiae*.

	Deterrent effect Entry rate/C	Expellent effect u/VT or outside net %/C	Inhibitory effect % blood fed π/C		Lethal effect %Mort. π/C	
Permethrin 500mg torn	-18%	+80%	31%	-55%	40%	x10
Deltamethrin 25mg torn	-43%	+85%	30%	-65%	56%	x14
Pirimiphos-methyl 1000mg torn	no	+9%	52%	no	67%	x3
Etofenprox 200mg torn	no	+55%	57%	no	14%	no
Alphacypermetrin 20mg torn	no	+36%	33%	-22%	16%	no
Carbosulfan 200mg torn	no	+52%	14%	-67%	81%	x4
Olyset # 900mg new intact	44%	+62%	15%	=	28%	x10
Olyset used, washed	no	+43%	25%	=	15%	x5
Olyset used, dirty intact	-23%	+24%	22%	=	16%	x6
Olyset used, dirty intact ++	-20%	+47%	24%	=	25%	x9
Bifenthrin 50mg intact	no	+28%	8%	-40%	80%	x8
PermaNet 50mg intact	-18%	=	6%	-56%	86%	x9
Carbosulfan 300mg intact	-26%	no	3%	-76%	89%	x9
Carbosulfan + Deltametrin intact	-17%	+8%	11%	-13%	87%	x9
Carbosulfan + Bifenthrin intact	no	=	6%	-50%	92%	x10

Table 2: Field studies in experimental hut of influence of different deltamethrin treated nets on pyrethroid resistant and susceptible *Anopheles gambiae* populations

	Pyrethroid Resistant			Pyrethroid Susceptible				
	Delta (25) torn	PermaNet (50) intact	Tablet (15) intact	Tablet (25) intact	SC (15) intact	SC (25) intact	WT (25) intact	WSC (25) intact
Entry rate	-43%	-18%	-63%	-61%	-63%	-79%	-78%	-68%
Exit rate % in VT ≠/T	44% +83%	29% -21%	≠30% —	#56% +75%	#48% +50%	#59% +85%	69% +116%	47% +47%
Blood feeding % ≠/T	30% -56%	# 6% -56%	# 16% -49%	# 20% -10%	# 21% -37%	# 14% -44%	# 6% -70%	# 26% -20%
Mortality	# 56% x 14	87% x 9	# 60%	# 60%	# 43%	# 49%	# 55%	# 54%
Imm. Mort.	92%	95%	94%	96%	86%	86%	89%	90%

≠/T = difference according to total

Tablet 15 or 25 = impregnated with KO-Tab at 15mg a.i./m² or 25mg a.i./m²

SC 15 or 25 = impregnated with SC (« flow ») at 15 mg a.i./m² or 25 mg a.i./m²

W = washed

Imm. Mort. = immediate mortality rate

Consensus:

In spite of emerging insecticide resistance, ITNs can still achieve an important entomological impact in reducing entry rate, increasing exit rate, reducing blood feeding and increasing mortality rate. The high mortality obtained with “bi-treated mosquito nets” has to be underlined and needs further research.

Multidisciplinary trials at village levels in the northern part of Cote d’Ivoire (Korhogo area) where *An. gambiae* is highly pyrethroid-resistant with kdr allelic frequencies >80%, showed that in villages where lambda-cyhalothrin-treated nets were introduced the parous rate decreased by 31%, sporozoitic indices decreased by 71% and vectorial capacities dramatically dropped (from #10 to #0.3). In still unprotected villages the yearly incidence rate of *P. falciparum* attacks in children (< 5 years old) remained in the same order (from 2.3 before to 1.9 after) while it dropped from 2.8 to 0.9 in villages where ITNs were introduced—thus showing an interesting epidemiological impact.

This was the first trial at village level to determine the impact of ITNs against malaria transmitted by a pyrethroid-resistant *An.gambiae* population. This type of trial should be repeated in other countries with different insecticides and different levels of resistance involving several mechanisms.

Nevertheless, monitoring insecticide resistance and resistance management remain important areas for research and development.

It is possible that insecticides with high excito-repellency properties (e.g. permethrin) increase the risk of malaria among non-ITN users in the same village, whereas insecticides with high insecticidal properties (e.g. deltamethrin or lambda-cyhalothrin) provide more of a public health benefit due to their contribution to the mass killing of mosquitoes. Further research is still needed

to examine the impact of insecticide resistance on the mass effect of ITNs, the impact of large scale implementation of ITNs on pyrethroid resistance level, the efficacy of other pyrethroids and association of two insecticides (pyrethroid plus another product) and to identify new resistance mechanisms as they evolve. However no consensus was reached on exactly how much more research would be required. (*See Working Group report on Technology p26*)

2.4 Long-term impact of ITNs on malaria transmission

Christian Lengeler, Swiss Tropical Institute, Basel, Switzerland

Research questions:

Does the consistent use of an insecticide treated net (ITN) really decrease morbidity and mortality from malaria, or is there merely a shift in both disease and mortality to a later age? Are ITNs going to make a difference, especially in highly malarious areas in Africa, south of the Sahara?

Review of the evidence:

The best direct method for assessing the long-term impact of ITNs on morbidity and mortality is a large-scale randomised controlled trial over five years, which is impractical.

Other options include:

- Indirect methods, such as desktop reviews, in order to correlate malaria specific morbidity and mortality rates or all-cause mortality with transmission.
- Follow-up after ITN trials comparing intervention and control groups (e.g. Burkina Faso and Ghana).
- Evaluation of large-scale ITN programmes using mortality trends and birth cohorts of users and non-users (e.g. the United Republic of Tanzania).

While data on the long-term impact of ITNs are of strategic importance, it currently falls short of what is required. A summary of the current available data follows:

Desktop reviews

A review comparing the rates of severe disease (using hospital data in Africa) and transmission rates showed that malaria disease rates apparently peak in medium transmission intensity settings among children aged 0-9 years and then drop (Snow *et al.* 1997, Lancet). However, hospital data are not representative because very young children are not so readily brought to health facilities for malaria. This is largely due to the fact that the pattern of malaria changes from a severe anaemia picture in younger children under high intensity transmission to a cerebral malaria syndrome picture in older children under lower transmission. Since young children with severe anaemia are less likely to be recognized as seriously ill they are much less frequently reported at health facilities, and this introduces an important assessment bias.

A total of 21 community-based studies in children under five years of age, which looked at overall mortality showed that, as malaria transmission increases, overall mortality also increases, with no suggestion that mortality tails off and/or declines. Virtually all the effect was due to an increase in infants, while there is no such trend among children aged 1-4 years. The added risk of malaria mortality in high transmission areas therefore appears to be clearly concentrated in the first year of life (Smith *et al.* Trends in Parasitology 2001, 17(3), 145-9).

Follow-up to trials

In the Burkina Faso follow-up study, there has only been a slight and non-significant increase in mortality risk in all age groups five years after the introduction of insecticide treated curtains, with a clear mortality reduction overall compared to pre-intervention levels (Diallo *et al.* in preparation). Furthermore, the slight increase that was observed was seen in all age groups, including in children born well after the end of the trial, and it is therefore unlikely to be due to a delayed mortality effect.

All cause mortality is mostly a problem in a child's first year of life (death rate over 80 per 1000), reducing to approximately 20-30 per 1000 from ages 1 to 4 years. Data from Burkina Faso show that given the benefits of insecticide-treated curtains in the short-term, a net increased survival would not be lost to delayed mortality unless there is 50% increased mortality in the ages 3-5 years. This change is enormous and has never been observed.

Evaluation of large-scale ITN programmes

In the KINET project in the United Republic of Tanzania, overall childhood mortality was reduced by 16% (users and non-users) over 3 years, with no sign of any delayed mortality effect. (Armstrong Schellenberg *et al.* 2001, *Lancet* **357**, 1241).

Based on the data currently available it is concluded that there is no evidence of rebound mortality following the introduction of ITNs, and that ITNs make a valuable contribution to improved child survival rates.

Consensus:

Infants are at the greatest risk of death from malaria, one factor being that low birth weight causes a four-fold increase in the risk of mortality in infants. It therefore follows that ITN programmes should pay special attention to pregnant women. The advantage of focusing upon pregnant women is that not only are they relatively easy to identify but also are easily contacted through their presence at antenatal clinics (ANCs) (70-80% attendance in many countries in Africa). Clinics, however, are not always an ideal distribution point for ITNs, and while policies such as voucher systems may offer a practical solution they often need further refinement as they also have the potential to be abused. It is also argued that more extensive campaigns should include the coverage of all women of reproductive age.

3 Review of current status of ITN interventions at country level

3.1 Status of country level ITN interventions in the WHO Region for Africa

Lucien Manga, WHO/AFRO

The WHO Regional Office for Africa has developed a framework for the promotion of ITNs. Guidelines for situation analysis, monitoring and evaluation have also been prepared and are currently being evaluated by national teams in 17 countries, each including one international entomologist. Situation analyses are being undertaken in three districts of each of the countries where ITNs are currently being promoted.

Preliminary observations from surveys in the 17 countries show that:

- Political commitment has not yet been translated into national policies and actions.
- National authorities have little involvement in ITN promotion.
- Communities are not involved in any meaningful way.
- All countries have technical guidelines—but these are often inadequate, lacking, for example, promotional strategies.
- Most respondents (from eight francophone countries) learnt of ITNs on the radio or through health centres.
- All countries are promoting ITNs, yet remain without any comprehensive plan or coordination mechanism.
- Supplies are dependent upon donor support.
- Supply and distribution of nets and insecticides are inadequate.
- The cost of nets on the market is beyond the reach of the majority of the population (prices range from US\$ 2 in Rwanda and Malawi to US\$ 21 in Burkina Faso).

- Five out of 17 countries have taxes and tariffs exemptions for insecticide.
- In a total household sample of 11 032 households, 9387 untreated nets (0.85 nets per household) and 2707 ITNs (0.25 nets per household) were found. The highest coverage rate for ITNs was found in the United Republic of Tanzania (261 ITNs in 358 households visited i.e. 73% households with one net or fewer households with more than one net).
- At least half of the householders using nets are among the target groups (pregnant women and children under five).

This evaluation provides baseline information for districts already implementing ITNs but it is not representative of the rest of Africa. Based on this information, the estimated number of nets and quantity of insecticide needed to meet RBM objectives and cover those most at risk in the African Region (264 million) are thought to be in the region of 115 million nets (or 30 million new nets per year) and 105 million doses of insecticide per year. The total cost of delivering this quantity of nets and insecticides over the next four years, including operational and programmatic costs, is estimated to be in the region of US\$ 835 million.

The evaluation has shown that the rate of treatment and re-treatment of nets is extremely low and there remains a need to define an appropriate indicator for ITN coverage. Countries will have to prioritize areas and populations for a focused effort and maximum impact if they are to reach the Abuja targets set in April 2000 for the year 2005.

3.2 *Status of country level interventions outside Africa*

Kevin Palmer, WHO/WPRO

ITNs were first introduced in the WHO Region for the Western Pacific (WPRO) in China in 1986, where more than 5 million nets were treated in the first year, protecting almost 9 million people. By 1995, China had further expanded coverage with ITNs to protect more than 55 million people. China remains the world's leader in the total number of people protected by ITNs, currently estimated to be in the region of 600 million, representing just over 20% of China's total population.

At first ITNs were seen as a replacement for residual spraying in China, yet this spraying with DDT and pyrethroids remains the most effective method of malaria control in the WPRO region. However, ITNs were preferred by the local populations, were more cost-effective in an era of reduced funding to malaria control programmes, and simultaneously created an opportunity to integrate vector control with the general health services.

Other programmes in the Western Pacific Region have also made a successful switch from residual spraying to ITNs. Vanuatu and the Solomon Islands have achieved high rates of ITN coverage as a percentage of the total population (approximately 70% and 85% respectively).

However, Vanuatu has not been successful in maintaining high re-treatment rates. These are currently about 14% using a new indicator—for nets in use treated within the previous year. Despite this low rate of re-treatment, initial efforts to distribute nets between 1990 and 1993 were effective in reducing malaria incidence from 196 per 10 000 in 1990 to 35 per 10 000 in 1996, and this level has remained stable for the last four years. ITNs are the only vector control strategy now used in Vanuatu.

By contrast, the Solomon Islands has managed to sustain high re-treatment rates (over 80%) in spite of civil conflict in early 1999, in what is considered to be one of the most successful ITN programmes in the world. Malaria incidence in the Solomon Islands has been reduced from 440 per 1000 in 1992 to 143 per 1000 in 1999.

Lessons learned from implementing ITNs in the Western Pacific region:

- ITNs work even where malaria vectors, such as *Anopheles farauti*, bite outdoors and early in the evening as in the Solomon Islands. This is thought to be because the vector population biting in

the early evening is primarily young nulliparous (non-infective) mosquitoes whereas the vector population biting throughout the night are the older parous mosquitoes responsible for most disease transmission.

- ITNs are not easier to implement than residual spraying—the idea that communities can do most of the work towards implementing ITN interventions is a myth.
- Social marketing through commercial channels has not proved to be an effective way to distribute ITNs because it fails to reach the poor.
- The principle that nets should not be given free of charge has been accepted by all ITN programmes in the region. However, revolving funds do not work and trust funds may provide a viable alternative for donors who can roll over funds.
- Health workers are generally poor communicators and community organisers, and lack basic understanding of the human behaviours involved with the acceptance and use of ITNs.
- Net ownership does not equate with appropriate net use.
- No ITN programme has solved the problem of net replacement.
- Few programmes have achieved acceptable rates of re-treatment.
- Mass dipping is the best way to treat large numbers of new nets, yet re-treatment of nets should be done individually or by the household.
- The choice of insecticide is usually based on cost. Comparative insecticide studies in Viet Nam showed that Fendona and ICON had the longest residual effect, followed by Imperator, K-Othrin and Vectron. All five insecticides tested caused minimal rates of side effects and were well accepted.

WPRO is now focusing on expanding the capacity for ITNs in the region.

Issues requiring further attention:

Current indicators for ITN coverage are not satisfactory⁷ and good indicators, such as a coverage index, which relates to compliance, are urgently needed. Indicators need to be fed into Demographic and Health Surveys, which generally cover pregnant women and children under five. Standard indicators may also need to be adapted according to local epidemiology since the target groups will vary from region to region. (*See Management Working Group report p. 28*).

Re-treatment rates for nets can be improved by replacing mass dipping with house-to-house dipping or home treatment kits. Although safety issues are relevant to home treatment kits no safety hazards have been reported in either the United Republic of Tanzania or Malawi where tens of thousands of kits have been distributed by Population Services International (PSI) over the last five years. The safety of household kits should nevertheless remain a priority (*see Regulation Working Group report p. 30*).

3.3 Status of support activities for country level ITN interventions

3.3.1 Mozambique taking ITNs to scale: Partnership in Practice

Melanie Renshaw, UNICEF

ITNs have been introduced in two regions in Mozambique under very different settings—in Zambezia Province, through social marketing and community-based strategies, and in Gaza Province as part of the post-emergency response. A working group comprising representatives of the Ministry of Health, WHO, USAID, UNICEF and PSI, coordinates ITN activities. Other ITN programme partners are the African Development Bank (ADB), DANIDA and HAI.

⁷ Net coverage rates in the 17 African countries included in the AFRO evaluation are unusually high. Data on net coverage in non-ITN project areas are currently being compiled by the Malaria Consortium. Similarly NetMark has undertaken national studies in five countries in Africa which show similar figures (11-34%).

The Zambezia Initiative is a partnership between the MoH, UNICEF (US\$ 1.5 million), DFID (US\$ 3.5 million), PSI, World Vision and CISM, for a four-year period (1999-2002). This community-based malaria prevention and treatment project targets over 3 million people in rural areas, half of whom have no access to any form of formal health care. It has four key strategies—early recognition and treatment of malaria, community-based distribution of chloroquine, social marketing of ITNs and re-treatment kits, and a behaviour change strategy using participatory approaches to ensure correct use of ITNs and chloroquine.

This project has experienced strong demand for ITNs but there are concerns that remote rural populations will be unable to afford nets (sold at US\$ 3.5 compared to US\$ 6 in urban areas). Since the commercial network is underdeveloped, World Vision is exploring credit schemes, revolving funds and sunset funds linked to health councils in remote rural areas to make nets more accessible and affordable. Plans are also under way to expand the project to seven other districts in the province and further develop strategies for targeting poor and vulnerable populations. The impact that the distribution of free nets for victims of the recent flooding has had on the social marketing programme will also be assessed.

Flooding in Gaza in 2000 left 950 000 displaced people in need of humanitarian assistance. The immediate malaria control responses were to change the first-line drug from chloroquine to sulphadoxine-pyrimethamine, establish malaria wards, conduct participatory malaria prevention and treatment sessions in IDP camps, and undertake operational research on free net distribution during an emergency.

UNICEF provided 120 000 pre-treated nets distributed in partnership with World Vision, Save the Children USA, ADPP and LWF and 85 000 more with Oxfam. Lessons learned so far are that ITNs can be distributed effectively in an emergency setting (205 000 nets distributed in four months); that since the demand for ITNs already exists, the participatory process can be taken to scale; and that effective partnerships with NGOs can and should be developed. Future plans include estimating the proportion of nets that are still in use, the re-treatment of nets distributed in Gaza in 2000 and stimulating the local production of nets by advocating for the removal of taxes and tariffs and drafting a national ITN strategy.

In spite of there being extreme poverty, poor access in remote areas, strong public sector support for residual spraying and almost no history of net use in Mozambique, ITNs have now become an important component of Mozambique's national malaria control strategy.

3.3.2 UNICEF Pretoria Procurement Centre activities

Frans Claassen, UNICEF

UNICEF is a major purchaser of ITNs, insecticide and other health and medical supplies within Africa and throughout the world. It hopes to use its country programmes to stimulate demand for ITNs to a level where private sector involvement becomes an attractive proposition.

UNICEF will simultaneously work with partners to stimulate demand and encourage the private sector to recognize the potential of the African ITN market and invest in it. One product of this activity is that ESSO have asked UNICEF to procure nets for all their workers in Africa.

In the short-term UNICEF intends to stimulate the market through:

- Bulk ordering and the use of central procurement. (To date the Pretoria office has procured US\$ 5 million worth of nets and insecticides for Africa).
- Identify new sources of supply in the region to improve procurement efficiency.
- Advocate for removal of taxes and tariffs on nets and netting materials.
- Obtain approval and registration of all WHOPES-approved insecticides to ensure fair competition.
- Engage the private sector by proving that there is a market for their products.
- Work with partner organisations, such as EU and UNIDO, to encourage private sector investment in local net production in malaria-endemic countries.

Through procurement and country assessments, the UNICEF Pretoria Procurement Centre has identified production facilities, suppliers and distributors for nets in the following countries in Africa: Angola, Ghana, Kenya, Malawi, Mozambique, Namibia, Nigeria, South Africa, the United Republic of Tanzania, Zambia and Zimbabwe. Insecticide manufacturers—BAYER, Aventis, BASF/Cyanamid and Zeneca— all have offices in South Africa with representation in several other African countries.

The UNICEF Procurement Center is also a resource centre for governments, NGOs and the private sector on issues such as specifications, prices and delivery of nets. The centre is currently one of the largest purchasers of RBM-related commodities.

Issues requiring further action:

There is limited experience of the public sector in stimulating markets for insecticides. Manufacturers generally require a commitment from buyers to provide steady production, as they do with nets. Therefore the public sector needs to look beyond short-term tenders in order to build a healthy climate for the private sector. However, they should also be wary of the potential problems associated with having sole suppliers, as previous experiences involving vaccines has illustrated.

4 Strategies for going to scale with ITNs

4.1 Research for public and private sector needs

Carol Baume, NetMark

NetMark is a five-year, USAID-funded, public-private partnership formed to develop sustainable markets for ITNs in selected countries in Africa. It also seeks to stimulate the commercial sector through integrated and technical marketing support.

NetMark has spent this past year conducting marketing and formative research to serve the needs of both the public health community and the private sector in a joint effort to develop a sustainable market for ITNs in Africa south of the Sahara. Selected research findings and their implications for constructing a public/private marketing plan have been drawn up according to the “4Ps” of marketing—product, price, place and promotion.

Table 3 illustrates how approaches to the “4Ps” generally differ between public and private sectors.

Table 3: The four “P”s—A public/private sector comparison

	Public sector	Private sector
Target	Vulnerable population	Anyone who can buy
Product	Generic product that meets technical specifications	Product that meets consumer preferences
Price	As low as possible	Recover costs; make profit if possible
Place	Health facilities some commercial	Commercial outlets
Promotion	Emphasis on appropriate use Strategy emphasizes health benefits Communication via health staff	Emphasis on sales Strategy emphasizes value to consumer Communication via media

Implications from the NetMark studies:

Key findings and implications related to PRODUCT

1. Net preferences: The ITNs that people currently own and what they would like are not always the same, so offer a variety of different types (colour, shape, size) of nets. People want large-sized nets, in conical or rectangular shape, prefer light colours, but want a choice of colours. Manufacturers should consider product modification to allow a rectangular net to hang from one point.
2. Net washing: Over 50% of respondents wash their nets once a month or more frequently. This has implications both for permanently treated nets (nets that last more than two years will need to be re-treated, or wash resistance must be significantly greater than 24 washes) and for re-treatment frequencies of normal nets.
3. Likes and dislikes for net treatment methods included spraying and dipping nets, including DIY kits. Findings showed very varied responses to the methods presented and therefore both options for treating nets should be considered. Consumers want a product that fully covers/saturates the net (so they can be sure of effectiveness), that is not wasted in the air, is not time-consuming, is easy/convenient and requires no mixing. Net treatment is essentially problematic and long-lasting nets provide the optimal solution.
4. Fears of fraudulent packaging and concern about the safety of insecticides mean that regulation and quality control are critical elements of any ITN programme.

Key findings and implications related to PRICE

5. Price: Price is a critical barrier, especially in rural areas. It is a bigger barrier to net use in rural areas (as opposed to urban areas) in Nigeria and Senegal. Taxes and tariffs should be reduced or eliminated.

People do spend significant amounts of money on aerosols and coils, so promotion can emphasize that nets are more economical in the long run.

Key findings and implications related to PLACE (where product can be obtained)

6. Place: Over 90% of nets in Nigeria are bought from the private sector compared to 70% in Senegal and 60% in Zambia. As many as 30% of nets in Zambia were obtained from the public sector. Generally net traders are difficult to find in rural areas and net treatment is virtually non-existent; net traders are not willing to sell insecticides. Distribution and supply is therefore the key to ITN promotion. New types of packaging of nets and insecticides are needed to overcome barriers, in addition to increasing the type of outlets where these products are sold.

Key Findings and Implications related to PROMOTION

7. Preferences between nets and other insect control methods vary significantly between countries. For example, ITNs are popular in Zambia for mosquito control whereas aerosols are preferred in Nigeria. The consumer's perception of products increases with exposure and experience, so demonstrations will assist the marketing of products.
- "Kills mosquitoes" was ranked the most important attribute of an insect control product.
 - Other top-ranked attributes were "reduces malaria", "kills other insects, other than mosquitoes".
 - When respondents were asked to link attributes to insect control products, the image/place of nets varied dramatically among countries.

Key issues:

The NetMark research showed that countries have a variety of starting points (both within countries and particularly between countries) in terms of consumer and market characteristics. Country programmes also face a range of different operational and technical challenges as found in the AFRO assessment of 17 African countries. The prevailing country situation in terms of programmes, markets and consumer research that looks at product, price, place (distribution) and promotion should determine the shape of country strategic plans for ITNs.

Alternative methods for net treatment need to be developed. The Chinese have been spraying

nets for over 20 years, using workers trained to use the spray guns employed in residual household spraying. The efficacy and safety of using flit guns to spray nets still needs to be determined. (See *Technical Working Group report p. 26*).

4.2 Social marketing strategies for going to scale

Dr Desmond Chavasse, Population Services International, Malawi

Key issues in taking ITNs to scale are the capacity and efficiency of delivery systems, the cost and who bears the cost (donors, governments or consumers), and the objective — health impact versus cost recovery. PSI's experience in Malawi shows that while everybody wants to own a net, 90% of people surveyed stated "lack of money" as reason for non-ownership. Demand for nets and the rate of increase in net coverage is therefore price sensitive, and effective promotion will increase demand only if nets are available at an economically reasonable price.

This is further demonstrated by the positive correlation between net and radio ownership with socioeconomic status in rural Malawi, ownership increasing with increasing socioeconomic status.

The main challenge to scaling-up ITNs is presented by the fact that malaria risk is inversely proportional to socioeconomic status. Specific challenges are:

- Maximum coverage for minimum donor investment; and
- Coverage needed to achieve maximum health impact.

In order to meet these challenges it will be necessary to exert leverage on both the private and public sectors' capacities to meet a spectrum of socioeconomic and malaria risk needs. It should also be remembered that, in general, the private sector role decreases with distance from an urban centre. In Malawi's case, 85% of the population is rural.

The approach taken by PSI to marketing ITNs in Malawi is to target different socioeconomic groups by offering multiple products at a range of prices and distribution outlets backed up with focused promotion. A total of 260 000 nets have been sold by PSI in Malawi in just over two years. The 115 000 nets sold in Blantyre District (where the project began) has increased net ownership from 13% to 44% (in urban areas) and 5% to 15% (in rural areas). Though most people preferred the expensive nets in Blantyre, evaluation results confirmed that the targeted subsidies were effective in reaching the poor, since the subsidized nets predominated in poorer households.

Public sector delivery focuses on supplying a heavily subsidized net direct to pregnant women and children under 5 years through antenatal and under-5 clinics. The nature of the PSI/MoHP partnership is that the District Health Management Teams (DHMTs) provide the outlets, personnel, supervision and interpersonal communication while PSI is responsible for distribution, training, quality assurance and ensuring accountability. Lessons learned from the partnership are that MoH staff must see the activity as a DHMT (not PSI) responsibility and that the DHMT/PSI supervision rota and sales incentives are essential. This MoHP/PSI partnership in supplying ITNs through antenatal and under-5 clinics has now become national policy for public sector delivery of ITNs in Malawi.

Scaling up nationwide will, therefore involve:

- Expanding the efficient private sector delivery of nets as far as outlets permit.
- Maximizing demand through promotion.
- Increase focus upon targeting towards the most pertinent audience, deliver through antenatal and under-5s clinics only, and increase subsidies on nets.

Antenatal and under-5s clinics provide unique opportunities for reaching malaria risk groups. In Malawi, 98% of pregnant women attend ANCs at least once and 80% attend at least three times, and 97% of pregnant women perceive malaria risk to themselves or their unborn child. Nurses are able to manage registration systems; already 18 clinics in Blantyre are selling a total of 5000 nets per month (a 5-fold increase on previous model) with all cash and commodities clearly accounted for.

Plans for Malawi's scale-up of public sector delivery will begin in January 2002. The target is for

all ANC and under-5s clinics to be providing ITNs within two years. All DHMTs are to partner with a relevant organization (e.g. PSI, UNICEF, NGOs) and all partnerships are to adhere to national guidelines as defined by MoHP.

PSI's experience in the United Republic of Tanzania has also shown that 98% of subsidized nets remain in the purchasing household.

Key issues:

The private sector will not reach the majority of people in need of ITNs. However, neither does the public system alone have the capacity to reach them and must therefore develop relationships with other organizations e.g. PSI in Malawi, UNICEF and others in Mozambique. It is important that these relationships or partnerships evolve and develop their strategies, as more partners, particularly the private sector, become active. Supplying ITNs through antenatal and under-5 clinics is an effective and proven method of targeting subsidies to those at highest risk of severe malaria disease and death.

4.3 Targeted subsidies

Dr Jo Lines, London School of Hygiene & Tropical Medicine

When ITNs or untreated nets are sold through projects or programmes at prices similar to or below those of the commercial market, substitution/competition is expected “a priori”. If such projects bring about an increase in both project and non-project nets, then they are said to “crowd-in” the commercial market. Conversely, if sales of non-project nets decrease, then the market has been “crowded-out”. If the commercial sector is crowded out by an ITN project, can the public sector then cover the cost of providing everyone at risk of malaria with an ITN?

Although projects/programmes are able to buy nets at around US\$ 4 and sell them to target groups for around the same price, the cost to the donor is often much higher. Crude attempts to determine the cost to the donor per project/programme net delivered in some of the existing projects in Africa show a range of US\$ 7-17.

Clearly the public sector cannot afford to provide nets at this cost for everyone at risk, and therefore public health expenditure must target the biologically vulnerable—those most at risk from severe disease. Equally, the public sector must be aware and responsible in protecting the interests of the private sector by encouraging a vibrant competitive market, which still covers the needs of those not targeted with subsidies.

Targeting of subsidies means that instead of a thin layer of subsidy being given to all—including those who do not need it—those most at risk are covered. Those able to purchase nets through the private sector are not given unnecessary subsidies, and the commercial market is not compromised. The need to improve targeting of vulnerable groups by publicly funded programmes is therefore essential, both for judicious use of public funds and to protect the commercial sector from substitution or “crowding out”.

Little is known about the effects of subsidized programmes on the commercial market. A study in the United Republic of Tanzania, where a social marketing project operated by PSI targeted pregnant women by providing them with subsidized nets (clearly distinguishable from other nets designed to reach the remaining general public) and attempted to measure the effects of the project on the commercial market. It monitored the percentage of households with nets acquired from the private sector at the beginning and at the end of the project and concluded that the effect of the subsidized programme on the commercial market varied in different places.

In Mtwara and Dar es Salaam, there was an increase in the numbers of non-project nets in households visited. In Dodoma and Morogoro, there was some evidence that the subsidized programme has “crowded out” the commercial sector.

On examining the age of the nets (to determine number of nets less than two years old—the lifetime of the project), it was found that that many more new nets had been acquired in Dodoma through the project than through the commercial market. On the other hand, Morogoro showed

more stable private sector purchases. Dodoma is however a poorer community than Morogoro which may have resulted in greater purchase of cheaper project nets.

The effect of the project on the commercial market assessed from data gathered in these four areas is varied and inconclusive. However, it does indicate the importance of collecting data from the household level about where nets are bought. Therefore, in order to measure the success that projects achieve in targeting vulnerable groups, project nets need to be clearly distinguished from private sector nets—preferably by using a different colour.

There is little experience of effective mechanisms for targeting vulnerable groups. PSI projects in Malawi and the United Republic of Tanzania used different systems—Malawi nets sold at US\$ 1.75 at antenatal and under-5s clinics; in the United Republic of Tanzania subsidized vouchers were given to mothers to collect nets from the private sector outlets.

The advantage of the the United Republic of Tanzania approach is that the public sector does not have to handle nets, but this only works if the vouchers pass through the chain and are used to buy more nets. Experience from Malawi suggests that by introducing two net products—one for the targeted vulnerable groups and the other for the general public—a black market in the cheaper nets can be avoided. More experience of using vouchers and special nets for target groups is needed in order to gain evidence of the value of different systems.

How to target is closely linked with whom to target. Should it be the economically vulnerable, or the biologically vulnerable? Although there are justifications for targeting the poor, clear identification of the poorest amongst the population on a large scale is very difficult. It is easier to target the biologically vulnerable, such as pregnant women and children under 5, through clinics. It is clear that strategies are needed which involve all organizations, both public and private, working together in a concerted effort to reach the different segments and groups at risk within the general population.

Discussion

Use of public money to create demand is one way of subsidizing the private sector. However, if demand creation leads to a vibrant and competitive commercial market the prices of nets will decrease as shown in Malawi.

Experience in the use of vouchers for pregnant women attending antenatal clinics in the KINET project in the United Republic of Tanzania met with mixed results. Mid-term evaluation showed that only a third of pregnant women had heard about the scheme, mainly because clinic staff were not interested in the project due to lack of incentives. Twenty per cent of all net sales by the KINET project were made with vouchers, indicating a significant leakage of subsidized nets. The evaluation is however still ongoing and these results are not final.

Another problem is that there is limited experience of identifying the poor. UNICEF-supported community-based malaria control projects in Kenya and Zambia gave communities the responsibility of identifying their poorest members. Payment for nets in kind has been tried in Zambia but an external evaluation showed that although this strategy increased sales of nets, it also resulted in large amounts of money being lost from the revolving fund and the project was discontinued.

4.4 Enabling environment for going to scale with ITNs

4.4.1 The experience from the United Republic of Tanzania (1)

*Dr Steven Magesa, National Institute for Medical Research,
United Republic of Tanzania*

In the United Republic of Tanzania, a number of small-scale control initiatives have taken place over the past 15 years. These include research into the efficacy and effectiveness of ITNs, distribution of ITNs through revolving funds and social marketing, distribution of insecticide treatment and development of home treatment kits.

Although these activities have been limited in terms of both space and time they have had important outcomes, including demonstrating ITN usefulness, raising awareness and demand, and stimulating the net industry. They have also been important in demonstrating the possibilities for scaling-up in the United Republic of Tanzania where total ITN requirements are currently estimated to be in the region of 12 million nets and insecticide sufficient for 24 million treatments per year.

Creating an enabling environment has been important in the growth of the net manufacturing industry in the United Republic of Tanzania. Before 1994, taxes attracted 125% on ready-made nets although there was no tax on netting material. Sales tax was subsequently removed on nets. However, by 1998 10% sales tax had been re-introduced on all zero-rated items and VAT was introduced. In the same year the key stakeholders met to plan a strategy to lobby for the removal of taxes, by such means as a petition, letters and publications.

Locally manufactured nets now attract zero rating (no taxes), imported nets 5% duty, locally produced netting material 0% duty and 20% VAT (non-refundable), and imported netting material 5% duty and 20% VAT (refundable). Insecticides attract 5% duty, 0.5% assessment fee and 20% VAT (non-refundable). Since utilities and machinery contribute 60% of the cost of producing a net, importers have a competitive edge over local manufacturers.

The results of zero rating on locally-produced nets has been:

- Net prices went down from US\$ 5 to US\$ 4.
- A third manufacturer has entered the marketplace.
- Local net production has risen to 4 million units a year.
- Manufacturers include mobile distribution to consumers.
- Joint ventures between insecticide manufacturers and bednet producers (e.g. Cyanamid/A to Z supplying SAFI-FENDONA, Zeneca/TMTL supplying bundled net/Iconet insecticide).
- Net treatment kits are now available in all 114 districts.

Regulatory issues for insecticide registration, supply and retailing include:

- Registration—government approval for sale and use.
- Lengthy process—one to three years in the United Republic of Tanzania.
- Costly to manufacturer.
- Excessive number of trials—local trials required despite WHOPES approval.
- Disincentive to entering market.
- Restricted distribution channels since insecticides are supposed to be distributed through registered suppliers.

Regulatory issues for net quality include:

- Minimal technical standards adopted from WHO (fibre strength, knitting, mesh size, shrinkage, breaking strength, fire safety, etc.).
- Technical Bureau of Standards developing standards for nets based on the technical norms of WHO, although consumers will be free to choose colour, brand size, etc.
- An ITN national Quality Logo is to be developed.

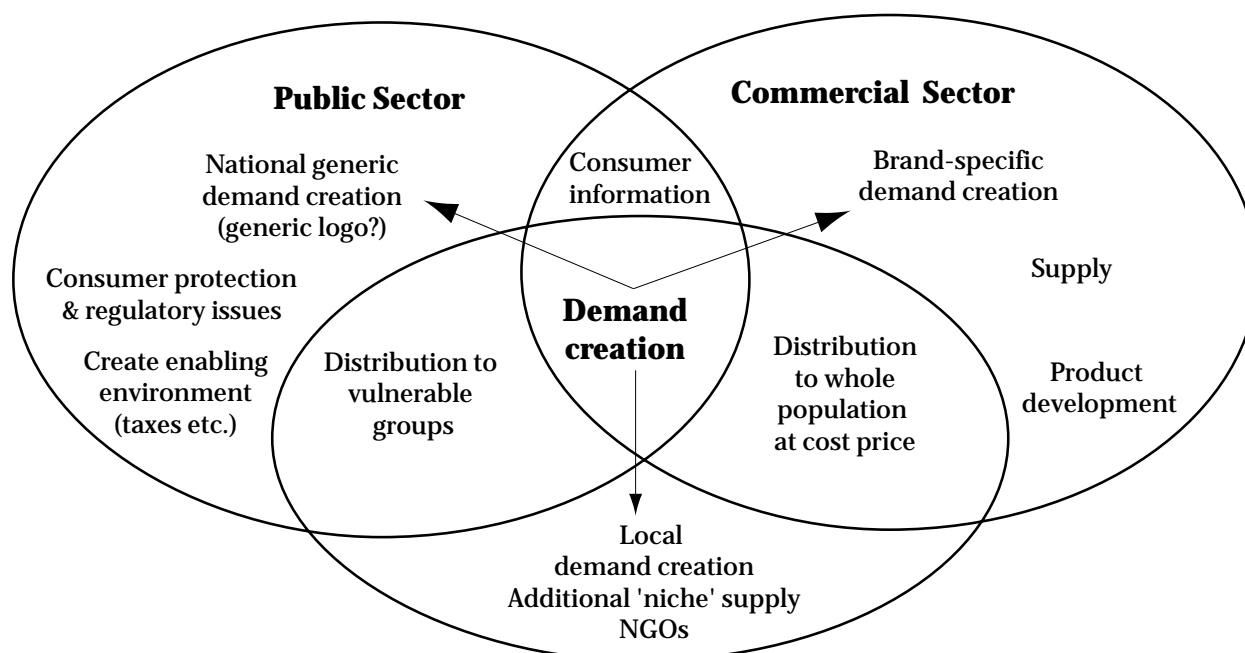
The current status of ITN activities in the United Republic of Tanzania is that a National Strategic Plan has been developed and approved by the Ministry of Health. A new broader Steering Committee has been proposed and mandated to carry forward the plan, which aims to achieve 60% ITN coverage by 2005.

4.4.2 The experience from the United Republic of Tanzania (2)

Dr Don de Savigny, Director, TEHIP, the United Republic of Tanzania

The National ITN Plan and Strategy was first developed at a meeting of stakeholders following the Second International ITN Conference in Dar es Salaam. The United Republic of Tanzania ITN Strategic Plan was an accomplishment gained by the cooperation of interested partners at this conference. The centrepiece of the national strategy is to create demand at all levels, from national down to regional and local. Key stakeholders (public, commercial and NGOs) share areas of common ground in this process, but they also occupy specific niches.

National Scale for ITNs in Tanzania: A Strategic Framework for Partners



Research partners: A new research agenda emphasizing market research, product development, economic social behavioral and operational research to support all partners

Donor partners: Support strategy development, demand creation, facilitated access for vulnerable groups

The United Republic of Tanzania has learnt important lessons, which could be applied to other countries. While there are no recipes for success, emerging experience points towards the need to:

- Identify a champion/interlocutor between the public and private sector.
- Identify, map and engage all potential stakeholders/partners.
- Use the convening power of the public sector.
- Host a broad stakeholder process.
- Encourage partners to buy-in on respective roles.
- Demonstrate commitment (e.g. deal with taxes and regulatory issues).
- Create a representative task force or steering committee and push the process.
- Maintain a level playing field for the private sector.
- Be cautious with tenders for competition. This process is fragile as tendering processes potentially crowd out the small private sector—the cheapest and largest always win.

Key issues:

Treated nets, being more expensive, will be unable to compete with untreated nets unless they are readily identifiable. Logos upon treated nets are needed so that they may be distinguished from the untreated variety. Also, a logo to mark WHOPES-approved insecticides has been requested by manufacturers, and should be considered.

However there is still a lack of consensus on the need for net specifications. A representative from one local net manufacturer in the United Republic of Tanzania (Sunflag) expressed concern that small companies will not be able to conform to net specifications and will continue to sell their nets cheaply. Although this may not be a problem for the international companies, who benefit from economies of scale, local tailors should be included in the national stakeholder forum.

The biggest challenge in rationalizing taxes and tariffs on nets and insecticides has been in convincing Ministries of Finance. Ministries of Health have not been as astute in doing this as Ministries of Agriculture who have been successful in getting taxes on agricultural pesticides waived. Perhaps a lack of the necessary negotiating experience and skills is due to their being primarily service-oriented, but it has been more difficult to argue the case for nets than insecticides. Complications arise from their classification as textiles, which are generally regarded as luxury goods rather than public health goods. Guidelines are therefore needed to assist them. (*See working group report on Regulation. p 30*).

The distribution of free nets is detrimental to local manufacturers and should be limited to special situations e.g. for use in emergencies, for public institutions such as hospitals or schools, or for high-risk groups such as pregnant women.

5 Working Group Reports

5.1 Working Group on technical issues

Dr Michael MacDonald, BASICS, USA

Registration and Pesticide Management

Recognizing the long process of registration (e.g. the United Republic of Tanzania 1-3 yrs) and the cost implications for industry.

- Use WHOPES more effectively.
- Pursue Regional Registration Systems.
- Support countries to develop their registration systems with FAO, IPCS, Occupational Health, ILO, etc.

Registration Action steps

Capacity and facilitation for registration tied to POPS, FAO, GCPF, IPCS, ILO, etc

- Vector Control Needs Assessment.
- WHOPES advocacy documents: visibility.
- Ensure large procurements follow WHOPES.
- Global partners' meeting endorsement.
- Regional and country meetings and action.

Pesticide Management: Quality Assurance

Linking with POPS, FAO, etc.

- Quality assurance of insecticide in market and on nets (in particular pre-treated nets).
- Expand collaborating centres in regions.
- Expand the capability to test for factors such as wash resistance, bioavailability etc.
- Continue the development of rapid measurement tests: different vectors, standard kits.

Resistance Monitoring

- Collaborate with GCPF.

- Standardize protocols.
- Build up the capacity of ANVR and four sub-networks.
- Develop networks for other regions.
- Link to GIS: MARA and SEAMEO-TROPMED.

Resistance Management

- Link to GCPF and IRAC.
- Develop policy guidelines and indicators for specific epidemiological situations. The issue is disease control, not just entomological indicators.
- Epidemiological impact on knock-down resistance (KDr) and *An. gambiae*, now need information on *An. funestus*, and non-KDr mechanisms.

Factory Pre-treated Nets

For reasons of quality control and education these are not recommended for use, except in emergency situations e.g. refugees.

(Pending evidence from experience in Mozambique on the impact of pre-treated nets on re-treatment rates.)

Simplification of Dipping

- Ensure instructions on dipping are endorsed by regulatory bodies and are included with product.
- Unit doses for insecticide.
- Limited number of water volumes for nets.
- Use standard plastic bags, as has been done in the Philippines.

Environmental Safety

- WHOPES/RBM developing document on environmental safety.
- Link to USAID Programmatic Environmental Assessment.
- Link to industry for building capacity for safe use and disposal of insecticide.

Research Topics

- Resistance management—collaboration with IRAC.
- Impact of Insecticide Treated Nets (ITNs) on KDr frequency.
- Epidemiological impact of one net per house when it is being used by the head of the household: personal protection for net user vs. collective protection for others in the house.
- More information is needed as soon as possible on long-lasting nets and wash resistance.
- Long-term behavioural surveillance on appropriate use of ITNs.
- How long does a net last?
- Combination insecticides (e.g. including non-pyrethroids).
- Safety issues and risk assessment.

Discussion

Pre-treated nets, i.e. nets treated with conventional techniques at the place and time of manufacture, are generally not recommended (except in the case of emergencies) as there is little scope for quality control. Also, the educational development benefit of people treating their own nets is lost if nets are supplied with pre-treated nets. CDC is currently undertaking a three-way trial in Malawi to compare factory-treated nets, PermaNet[®] and KO Tab treated nets.

WHO is currently developing a simple framework for net treatment, which aims at adapting the common properties of pyrethroids for local use by countries and programmes. If done properly this may take time. For example, net re-treatment instructions developed over two years of research in the United Republic of Tanzania still required 10-15% further refinement. However, the investment is worthwhile. In Malawi 85% of nets sold with a kit were found to be treated and 80% of those treated were treated correctly. The same instructions required further 20% changes for use in Mozambique.

More information on long-lasting nets is required but an endpoint has not been agreed upon. The same safety criteria used for single treatment packages should also apply to the insecticides used for long-lasting nets.

5.2 Working Group on Management issues

Christian Lengeler, Swiss Tropical Institute, Basel, Switzerland

Management issues for the TSN can be divided into proactive and reactive work. The proactive work is considered to be a priority for the TSN, while the reactive work is in response to individual country requests. Management of the TSN itself also needs to be addressed.

A brief review of country experiences with ITNs (Burundi, Ghana, Kenya, Mali, Mozambique and Nigeria) highlighted several issues:

- A broad range of stakeholders must be involved in the development of national ITN strategies, recognising their different interests.
- A strong (neutral) champion is needed.
- Since each country is different advice cannot be prescriptive.
- The process must begin with consensus on a long-term vision.
- Reliable information is needed (e.g. local information, technical, experiences and lessons).
- The enabling environment is critical for the success of going to scale with ITNs.

Key management issues for the TSN:

- A full-time co-ordinator and support staff will be needed to manage the TSN.
- Proactive and reactive work will require different mechanisms in terms of financial and human resource requirements—the TSN should be as proactive as possible.
- Communication between network members and between the TSN and NMCPs and other country level partners needs considerable improvement.

Priority management-related activities for the TSN include:

- Collating and sharing information (e.g. databases on projects, consultants and coverage), and sharing lessons targeting NMCPs, NGOs and the private sector.
- Development of guidelines e.g. taxes and tariffs, public/private partnerships and market evaluation.
- Advocacy is required on matters such as taxes and tariffs.
- Responding to country needs—specific requests for information and proactive input into the strategic development process in each country.
- Operational research.

Discussion

Strong coordination of ITN activities at national level is essential. As well as a coordinating committee, countries need a technical group for ITNs. NGOs should have at least one representative on the coordinating committee, which may also include regional stakeholders, although its exact composition may vary from country to country, depending on sub-national level representatives.

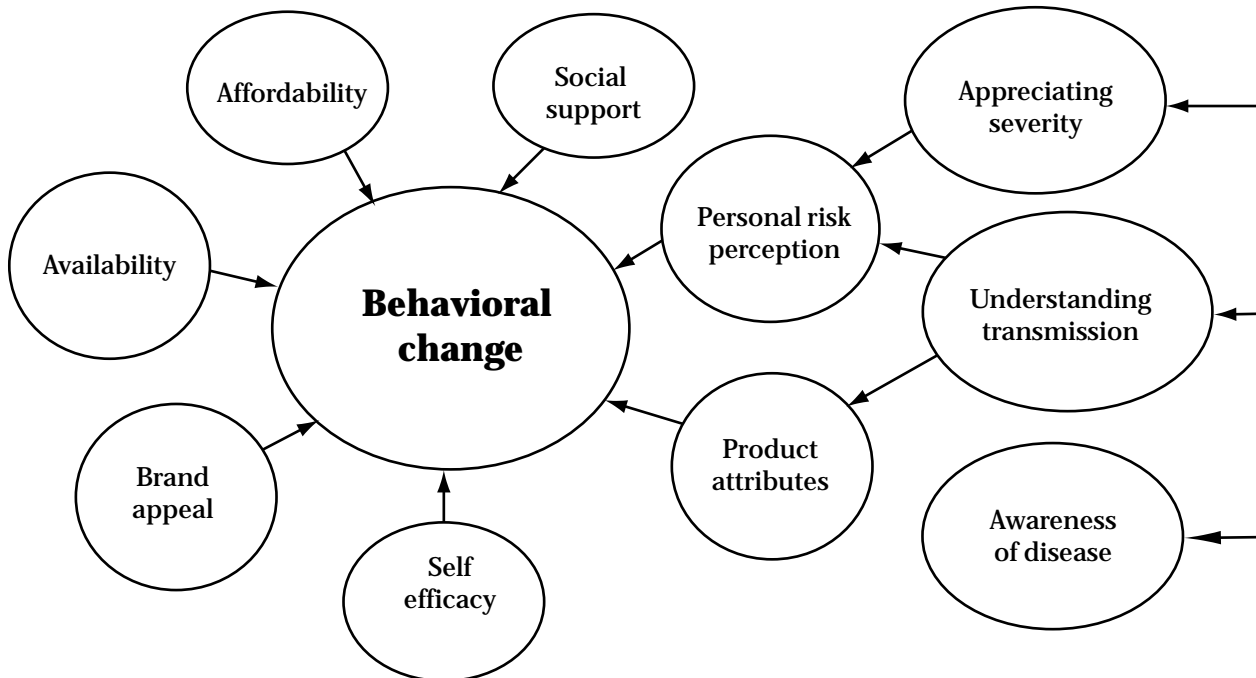
The need for a TSN coordinator was endorsed by the meeting, as was the need for RBM to have an operational research agenda for ITNs and mechanisms for the coordination of work.

5.3 Working Group on Promotional issues

Dr Desmond Chavasse, Population Services International, Malawi

There are a number of issues which need to be understood in order to effect behaviour change and ITN use, as illustrated in the diagram below. For example, an imbalance exists in the attention given to affordability as a barrier to ITN use over the other highlighted issues.

Understanding behaviour change



Both public and private sectors have a role in the promotion of ITNs as well as in formative research, though the private sector focus will be on marketing, as opposed to protecting vulnerable groups.

Issues for promotion and going to scale with ITNs include:

- Engage the private sector from the outset.
- Build up capacity for promotion—capacity building is important for all partners, not only the MOH, but also local researchers.
- Undertake an audit of national capacity for promotion to identify countries requiring external capacity (NMCP capacity for promotion is generally weak).
- Educate donors to raise the profile of promotion—promotion is usually given a low priority, receiving only a limited proportion of budgets, and generally goes hand in hand with short-term projects. However, ITN promoters must learn to think like commercial companies (such as Coca Cola) and recognize the value of long-term, aggressive and penetrating promotion.
- Regional promotion should be developed for efficiency, drawing from extensive collective experience and made relevant to local circumstances. Local capacity should then be used to highlight local variations. Not enough attention has been given to an international marketing board and pooling of resources (public and private) at the regional level, as is done by agricultural marketing boards such as the milk industry.
- A new question should be added to the IMCI algorithms: If a child is brought for fever it should be asked whether the child sleeps under a net. In this way mothers will start realizing the importance of ITNs for the children.
- Radio is commonly used as promotion but is expensive; whether radio is state controlled or private, try to negotiate for free promotional airtime.

Discussion

Specific messages targeting the poor are needed, and it is important that good formative research identify the particular issues most relevant to them. Specialized regional ITN promotion for pregnant women can and should be combined with case management and intermittent preventive treatment.

While specialized targeting is necessary, it must also be asked how is it possible to provide generic promotion for a segmented market, and to what extent will specific targeting affect a regional promotion strategy for ITNs. There will be conflicting interests to balance between the added efficiency that regional promotion offers and the need to deliver messages for specific groups.

Specific promotional strategies are also needed for emergencies. Countries undergoing, or recovering from, civil war are resource poor and do not generally have access to mass media. In Malawi, however, traditional media and participatory approaches have been used to reach over 250 000 vulnerable people encouraging them to access and use ITNs.

The extent to which the private sector is willing to contribute to generic, rather than brand specific, advertising is not known. The MEDA consultation initiative has not been successful, although some German-based companies are working together on generic promotion, independent of brand advertising.

To date, most ITN projects have undertaken both promotion and supply roles but efficiency and cost-effectiveness would probably increase if these activities were conducted by different agencies.

RBM has not yet developed a comprehensive communication strategy. The movement needs to take further advantage of events like Africa Malaria Day, but should also be working with both local and national groups. It should organize grass roots activities such as school competitions as well as targeting heads of state. Innovative approaches to ITN promotion should be considered, such as adapting the examples of Tupperware or cosmetics parties, which may involve mothers in campaigns.

5.4 Working Group on Regulation and Legislation

Katie Reed, Malaria Consortium, Liverpool, UK

Taxes and Tariffs on mosquito nets, netting materials, insecticides for net treatment

Current Status

Since April 2000, when 44 Heads of State met in Abuja, Nigeria, for the Africa Summit on Roll Back Malaria, little progress has been made in the rationalization of taxes and tariffs. This has been shown by a quick survey (details in Annex 2) which shows that very few countries have revised, changed or considered changing their taxes and tariffs, and informed data still needs to be gathered.

Recommended Actions

- *Congratulate*, publicly, those countries that have changed.
- *Encourage*, publicly, those countries in the process of revising policies.
- *Remind and ASSIST* those countries that have yet to act.

To support health sector staff in researching and drafting new policies it is specifically recommended that:

- The Tanzanian (and other) case study(s) concerning the removal and reduction of taxes and tariffs be developed as a reference for circulation to NMCPs and NGOs.
- Support, in the form of tax and finance expertise, be offered to countries to help review and develop their policy (e.g. PriceWaterhouseCooper, or other local accounting houses). This should enable the timely drafting of good policy which addresses the complexities of individual countries.

- WHO and other partners should encourage the public and private sectors to work together “in country”.
- RBM should encourage international partners (WB, ADB, UNICEF, WTO etc.) to support the removal of taxes and tariffs.

At country level information is required concerning:

- Existing tax structure (there are several in Africa, south of the Sahara).
- Existing taxes and tariffs policy.
- Existing net and insecticide prices and availability.
- Knowledge of stakeholder activity, especially regarding the projected promotion of ITNs or investment in manufacture.

At international level

- Collect case studies of the process of change (*see example of the United Republic of Tanzania p. 23*).
- Collate information concerning change in policies.
- Monitor the potential impact of these changes on product price, availability and the commercial sector.

Legislation on “Home use” net treatment kits

Current Status

WHOPES has approved seven insecticide products (representing five pyrethroid compounds) for the treatment of mosquito nets and netting, along with recommended dosages⁸. It is the responsibility of the manufacturers to register these products with any given country or group of countries. The insecticide products, which have been approved, are intended for the use of “expert users” (i.e. spray teams, hospitals, NGOs, etc.) and once registered can be distributed through specialized outlets.

A number of the approved products have been developed in single dose units intended for “home treatment”. However, the “insecticide product” that the kits contain is a concentrated form of the insecticide, previously registered for distribution through specialized retail outlets. A common aim of many ITN programmes is to make home treatment kits as widely available as possible. Confining the sale of kits to registered pharmacies, for example, will severely limit access.

While WHO supports the use of home treatment kits it recognizes that “the supply of insecticide over the counter for treatment of nets by householders has particular safety concerns. The importance of proper labelling of insecticide packages and containers, and the provision of instructions on the safe and proper use of the product, is greater than otherwise might be the case. All packages should bear all product information, durably and legibly, in the local language⁹. But the final decision concerning the distribution of kits will rest with the “permission” granted by the national Pesticide Registration Authorities.

Recommended Actions

Home treatment kits are a very new malaria control tool, and additional support for their introduction and promotion could be given by:

- Gathering examples of successful sales of home treatment kits through a variety of different outlets i.e. KINET in the United Republic of Tanzania, PSI in the United Republic of Tanzania and Malawi. These might include descriptions and examples of the insecticide product, its labelling and packaging, instructions for use, numbers distributed through different outlets, and experiences of use or misuse (and how this was assessed). This information would provide valuable information to WHOPES and the insecticide manufacturers.

⁸ Report of the Fourth WHOPES Working Group Meeting, WHO/CDS/WHOPES/2001.2

⁹ Full details can be found in *Safety of pyrethroid treated mosquito nets*, WHO 1999

- Manufacturer(s) must request permission to sell the home treatment kits from the local Pesticide Registration Authority. Ideally, this request for permission should be supported by the other national stakeholders.

The “package” (insecticide, packaging, trademark and intended positioning) needs to be registered.

Consumer protection

Current Status

No systems are yet in place for products supplied through the retail sector (as opposed to through tenders).

Recommended action

Both institutional and retail customers must be protected. Monitoring criteria for the two main products, nets and insecticides (with some overlap), is illustrated in the following table.

Products	Possible monitoring criteria
Insecticide	Is it what it claims to be? (Does it comply with WHO specifications for safety and efficacy?)
Pretreated nets	Have the nets been treated with the correct (advertised insecticide) at the stated dosage? Has the net been treated with an insecticide complying with WHO specifications?
Long Lasting nets	Does the net provide the efficacy claimed on the label? Does the insecticide used on the net comply with WHO specifications?
Nets	Does the product match the advertised specifications? (Dimensions, denier, etc)

Consumer protection involves sampling, testing and action. This process was seen to be very important and requires more consideration and investigation, but the following points were highlighted for each stage:

Sampling

Drug monitoring (for counterfeit or adulterated drugs and medicines) is already well established and NMCPs already monitor antimalarials available in their country. Lessons can be learned from the existing structure.

Each consignment of insecticides should be analysed for compliance with WHO specifications and a certificate issued.

Testing

The initial insecticide registration fee is meant to cover the cost of sampling and testing of insecticides by the local Insecticide Registration Authority. However, WHO collaborating centres may be able to provide easier access to testing facilities.

Testing the quality of insecticides on a *pre-treated* net is very difficult and such orders should be discouraged, except under special circumstances.

WHOPES will develop specifications for *long-lasting* nets to make quality control possible (in WHO Collaborating Centres or any other national quality control laboratory).

Discussion

USAID-funded projects implement an Environmental Impact Assessment procedure, which leads to a series of recommendations for safe insecticide use. Agencies are invited to obtain details of this procedure from USAID.

Both WHO and FAO have standard specifications on sampling for quality control. For testing, they both provide collaboratively internationally tested and standardized methods. The company providing the product pays for the quality control tests.

Action is needed by a regulatory body to ensure that net prices drop to lower levels once taxes and tariffs have been lifted.

Registration is a major barrier to market entry for insecticide manufacturers, the process and procedures for registration of insecticides are cumbersome and expensive. The manufacturers will surely benefit from support from the international community in relation to the registration process.

WHO has contracted Boston University to provide a country update on taxes/tariffs, to be published by Africa Malaria Day.

6 *Priority Issues for the TSN and Workplan*

Priority activities for the TSN were selected from the working group reports as follows:

Technical issues

- Monitoring and management of resistance.
- Evaluating long-lasting nets.
- Supporting regional workshops and networks for pesticide resistance monitoring and management strategy development.
- Promoting global advocacy for rationalizing taxes and tariffs.
- Investing in research and development for alternative insecticides.
- Determining a simple method for measuring insecticide on nets (some collaborators are currently developing the tests with WHOPES).

Legislative/Regulatory issues

- Collating best practices for rationalizing taxes and tariffs, as has been done in the United Republic of Tanzania.
- Determining indicators to track changes in the availability of products and price changes as a result of policy changes.
- Status of rapid assays for pyrethroids.
- Creating a network for quality control and quality assurance.
- Encouraging best practices for DIY kits (United Republic of Tanzania and Malawi).

Management

- Monitoring progress for going to scale.
- Creating a framework/guidance procedure for developing a national strategy; writing reference documents on key strategic areas, e.g. how to stimulate/run public/private partnerships, market evaluations, etc.
- Forming a Secretariat/Coordinate for managing the TSN.
- Standardising advice for TSN consultants who are advising countries.
- Encouraging local donor coordination and commitment.
- Establishing a process for commending countries doing well with RBM.

- Providing technical advice on the role of ITNs in relation to other vector control interventions, especially in epidemic-prone areas.

Promotion

- Developing a framework for promotional strategies and activities.
- Preparing generic promotional material (although local adaptation would still be necessary).
- Conducting country audits of marketing research and capacity.
- Listing promotional opportunities (e.g. IMCI, safe motherhood package, free air-time).
- Investigating methods of improving re-treatment rates. Price barriers can possibly be overcome with subsidies, but what about behavioural barriers?

Operational Research and Monitoring and Evaluation Issues

- Investigating the impact of tax and tariff changes on street price.
- Establishing a mechanism for operational research, including a budget and selection process.
- Tracking coverage and compliance with ITNs (by SES) making use of existing networks such as MARA, DHS, IN-DEPTH and others. Developing consistent key indicators by reviewing existing data and instruments (e.g. DHS), and designing complementary studies (e.g. behaviour).
- Conducting an annual audit of RBM indicators by WHO Regional Offices to provide feedback to Heads of State, OAU and other parties.
- Establishing market monitoring indicators—agree on key indicators, such as availability and price.
- Targeting/segmentation mechanisms needed for impact and equity. It should be asked which groups to target (e.g. pregnant women and/or children under 5) with bundle interventions. The biggest difference in the population is between the top 20% and the rest, ranging from poor to poorest. Explore opportunities with social marketing.
- Studying ITN efficacy in areas endemic with malaria and leishmaniasis..

6.1 *Outline of a Workplan and Structure for the TSN*

- A secretariat should be created.
- Core indicators should be identified.
- Support should be given to countries to implement strategic plans; donor investment in those plans should be facilitated and guidance given. Experience, such as that gained in the creation of national task forces, should be shared.
- Current experiences in the implementation of ITN interventions should be documented.
- Create a partnership with Global Forum to advise on private/public partnerships.
- Technical and financial support should be provided for key action on taxes and tariffs, as well as in developing existing opportunities (e.g. inputs to the RBM Global Partnership meeting, Africa Malaria Day, the role of the OAU as reporting a mechanism for Abuja targets).
- More data needs to be collected on long-lasting nets.
- Funding for key action (strategy building) at national level should be sought.

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ANNEX 1

LIST OF PARTICIPANTS

(* Unable to attend)

Bilateral and Multilateral Organizations

- Switzerland – SDC

Dr Christian LENGELER, Project Leader, Department of Public Health and Epidemiology, Swiss Tropical Institute, Socinstrasse 57, P.O. Box, 4002 Basel, SWITZERLAND

Phone: +41 61 284 8221

Fax: +41 61 271 79 51

E-mail: lengeler@ubaclu.unibas.ch

- World Bank

Mr Lawrence BARAT, Technical Specialist on Malaria, The World Bank, 1818 H Street N.W., Washington D.C., 20433, USA

Phone: +1 202 458 9123

Fax: +1 202 473 8107

Endemic Country Governments

- Mali

Dr Sira Mama Diallo DIAKITE, Coordinator Programme National de Paludisme, Direction Nationale de la Santé Publique, Ministère de la Santé Publique, des Personnes âgées et de la Solidarité, Division de l'Epidémiologie, BP 2, Bamako, MALI

Phone: +223 22 64 97

Fax: +223 22 64 97

- Zambia

* Dr John CHIMUMBWA, National Malaria Control Coordinator, Ministry of Health, P.O. Box 32509, Lusaka, ZAMBIA

Phone: +260 1 282427

Fax: +260 1 292427 or +260 1 223209

E-mail: malaria@zamnet.zm

- Burundi

Dr Marianne BARUTWANAYO, Entomologist National Malaria Control Programme, Ministry of Public Health, Bujumbura, BURUNDI

Fax: +257 23 1771

- Viet Nam

National Institute of Malariology, Parasitology and Entomology

Dr Tran Duc HINH, Head, Department of Entomology, National Institute of Malariology, Parasitology and Entomology, B.C 10 200 Tu Liem, Ha Noi, VIET NAM

Phone: +84 4 854 2347

Fax: +84 4 845 3015

E-mail: anophen@hn.vnn.vn

- Myanmar

Entomology Research Division

Dr WilloughbyTun LIN, Deputy-Director Department of Medical Research, Entomology Research Division, Yangon, MYANMAR

Phone: +951 251 508 or 951 251 509

Fax: +951 212 605 or 951 251 514

E-mail: dmrlowerm@mptmail.net.mm or myo.paing.whom@undp.org

International NGOs

- BASICS

Dr Michael MACDONALD, BASICS, 1600 Wilson Boulevard, suite 300, Arlington VA, 22209, USA

Fax: +1 703 312 6900

- NetMark

Dr Halima A. MWENESI, Social Scientist, Africa Regional Bureau, NetMark, 192 Smit Street, Fairland, 2195 Johannesburg, SOUTH AFRICA

Phone: +27 11 678 6735

Fax: +27 11 678 6740

Ms Carol BAUME, NetMark, 1825 Connecticut Ave., Washington, D.C., NW 20009, USA

Phone: +1 202 884 8000

Fax: +1 202 884 8400

- PATH Canada

Ms Jane ROWLEY, (representing PATH Canada)

Phone: +44 20 7706 1213

Fax: +44 845 334 1735

E-mail: janerowley@compuserve.com

- PSI

Dr Desmond CHAVASSE, Population Services International, P.O.Box 529, Blantyre, MALAWI

Fax: +265 67 41 38

E-mail: Chavasse@malawi.net

International Private Sector, Donation or Umbrella Organizations

- Arthanor

* Mr Christian SZOLLOSI, Arthanor, 5 rue de l'église, F-68800 Vieux Than, FRANCE

Phone: +33 389 37 6887

Fax: +33 389 37 4029

E-mail: c.szollosi@e-athanor.com

- Bayer Corporation

Dr Gerhard HESSE, Public Health & Vector Control Coordinator, Global Crop Protection Federation, Bayer Corporation, Business Group Animal Health, D-51368 Leverkusen, GERMANY

Phone: +49 21 73 38 3207

Fax: +49 21 73.38.21 88/38 36 84

E-mail: gerhard.hesse.gh@bayer-ag.de

- Biotech International

Mr Vivek SINGHAL, Biotech International, Masjid Moth, Greater Kailash-II, New Delhi, INDIA

Phone: +91 11 646 2081 or +91 11 643 0546

Fax: +91 11 646 9166 or +91 11 647 3089

- Insecticide Resistance Action

Mr. John INVEST, Field Technical Manager, Vector Control Environmental Health, Global Crop Protection Federation, 3 Lower Green, Western Turville, Aylesbury, HP222,5YU Bucks, UK

Phone: +44 1296 614727

Fax: +44 1296 614727

E-mail: John.Invest@AgrEvo.com

- Malaria Consortium

Ms Jenny HILL, Deputy Director, Malaria Consortium, Liverpool School of Tropical Medicine, Pembroke Place, L3 5QA Liverpool, UK

Phone: +44 151 708 9393

Fax: +44 151 707 1673

Dr Jayne WEBSTER, Malaria Consortium, London School of Hygiene & Tropical Medicine, Keppel Street, WC1E 7HT London, UK

Phone: +44 20 7927 2439

Fax: +44 171 580 9075

E-mail: jayne.webster@ishtm.ac.uk

Ms Katie REED, Malaria Consortium, Liverpool School of Tropical Medicine, Pembroke Place, L3 5QA Liverpool, UK

Phone: +44 161 248 4095 or 07939 136667

Fax: +44 151 707 1673

- SiamDutch Mosquito Netting Co

Mr Marcel DUBBLEMAN, SiamDutch Mosquito Netting Co, 15 Sukhumvit soi 33 Road, 10110 Bangkok, THAILAND

Phone: +66 2 258 5621 or 66 2 258 5663

Fax: +66 2 259 5084

- Sumitomo Chemical Co.,Ltd

Dr Robert MARTIN, Business Development Manager, Sumito Chemical Co. Ltd, Horatio House, 77-85 Fulham Palace Road, W6 8JA London, UK

Phone: +44 208 600 7717

Fax: +44 208 600 7717

- Sunflag

Mr Vijay BAHARDWAJ, Sunflag, London, UK

Phone: +44 208 453 1153

Fax: +44 208 965 0676

E-mail: vjbhard3@aol.com

- Vestergaard Frandsen

Mr Toben Vestergaard FRANDSEN, Director, Vestergaard Frandsen, Akseltorv 4B, 6000 Kolding, DENMARK

Phone: +45 75 50 3044

Fax: +45 75 50 3050

E-mail: tvf@vestergaard-frandsen.dk

R&D and Academic

- OCCGE

Dr Jean Bosco OUEDRAOGO, Organisation de coordination et de cooperation pour la lutte contre les grandes endemies, BP 153, Centre Muraz, Bobo Dioulasso, BURKINA FASO

Phone: +226 97 4868

- London School of Hygiene & Tropical Medicine

Dr Jo LINES, London School of Hygiene & Tropical Medicine, Keppel Street, WC1E 7HT London, UK

Fax: +44 171 580 9075

E-mail: JO.LINES@LSHTM.AC.UK

- Centre Collaborateur, OMS

Dr Jean Marc HOUGARD, Centre Collaborateur, OMS, IRD, BP 5045, 911 Avenue Agropolis, F-34032 Montpellier, FRANCE

Phone: +33 467 04 3223

Fax: +33 467 54 2044

E-mail: hougard@mpl.ird.fr

- Institute Pierre Richet

Dr Pierre CARNEVALE, Organization de coordination et de cooperation pour la lutte contre les grandes endemies (OCCGE), Institute Pierre Richet, 01 BP 1500, Bouake 01, COTE D'IVOIRE

Fax: +225 31 63 52 51 or +225 31 63 27 38

E-mail: carneval@africaonline.co.ci or carneval@ird.ci

- International Development Research Centre

Dr Don DE SAVIGNY, Tanzania Essential Health Interventions Project, Ministry of Health, International Development Research Centre, P.O Box 78487, Dar es Salaam, UNITED REP. TANZANIA

Fax: +255 51 11 2068

- National Institute for Medical Research

Dr Stephan MAGESA, National Institute for Medical Research, Tanga Station, Bombo Hospital,
950 Tanga, UNITED REPUBLIC OF TANZANIA

E-mail: smagesa@hotmail.com

NGO & Civil Societies

- AMREF

* Dr Some Eliab SERONEY, Technical Manager, Strategic Planning and Evaluation, African
Medical and Research Foundation, Kenya Country Programme, Wilson Airport, P.O. Box 30125,
Nairobi, KENYA

Phone: +254 2 602 494 or 602 496 or 501 301

Fax: +254 2 606 340 or 506 112 or 609 518, 502 984, 336 886

- Ghana Social Marketing Foundation International

Dr Gladys TETTEH, Ghana Social Marketing Foundation International, Don Levy House, P.O. Box
CT 1847, Cantonments, Accra, GHANA

Phone: +233 21 77 93 95 or +233 21 77 96 81

Fax: +233 21 77 59 48

E-mail: tettehg@ghmail.com

Mr Alex BANFUL, Managing Director, Ghana Social Marketing Foundation International, Don
Levy House, P.O. Box CT 1847, Cantonments, Accra, GHANA

Phone: +233 21 77 93 95 or +233 21 77 96 81

Fax: +233 21 77 59 48

E-mail: alexbanful@ghmail.com

UN Organizations

- UNICEF

Dr Melanie RENSHAW, UNICEF, Avenida do Zimbabwe, P.O. Box 4713, 1440 Maputo,
MOZAMBIQUE

Fax: +258 1 491 679

Mr Frans CLAASSEN, UNICEF, P.O.Box 4554, 0001 Pretoria, SOUTH AFRICA

Fax: +27 12 320 4085

E-mail: fclaassen@unicef.org.za

Dr Kopano MUKELABAI, Senior Health Adviser, Health Section, Programme Division, UNICEF,
3 United Nations Plaza, New York, NY 10017, USA

Phone: +1 212 824 6318

Fax: +1 212 824 6460/888 7465

E-mail: kmukelabai@unicef.org

World Health Organization

- Regional office for Eastern Mediterranean

Dr Guido SABATINELLI, Regional Adviser Malaria Roll Back Malaria, World Health Organization,
Regional Office for Eastern Mediterranean (EMRO), Abdul Razzak Al-Sanhouri St, PO Box 7608

Nasr City, Cairo 11371, EGYPT

Phone: +202 276 5276

E-mail: sabatinellig@who.sci.eg

• **Regional office for Africa**

Dr Birkenish AYANESHEWA, VBC, World Health Organization, P.O. Box BE 773, Parirenyatwa Hospital, Harare, ZIMBABWE

Phone: +263 4 706951

Fax: +914 9009

E-mail: ayaneshewab@whoafr.org

Dr Ousman FAYE, ICP/MAL/CAB, World Health Organization, BP 820, Libreville, GABON

Phone: +241 73 4358 or +241 73 4356

Fax: +241 73 4365

Dr Lucien MANGA, RA/VBC/AFRO, World Health Organization, P.O. Box 773, Parirenyatwa Hospital, Harare, ZIMBABWE

Phone: +263 407 733 9373

Fax: +914 9009

• **Regional office for Western Pacific**

Dr Kevin PALMER, Vector Control Specialist, World Health Organization, P.O. Box 2932, 1099 Manila, PHILIPPINES

Fax: +632 524 4036

• **Headquarters**

Dr Charles DELACOLLETTE, Roll Back Malaria, World Health Organization, 20 Avenue Appia, CH-1211 Geneva, SWITZERLAND

Phone: +41 22 791 3745/2766

E-mail: delacollettec@who.int

* Dr Kamini MENDIS, Roll Back Malaria, World Health Organization, 20 avenue Appia, 1211 Geneva, SWITZERLAND

Phone: +41 22 791 3751

E-mail: mendisk@who.int

Dr Thomas TEUSCHER, Roll Back Malaria, World Health Organization, 20 avenue Appia, 1211 Geneva, SWITZERLAND

Phone: +41 22 791 3741

E-mail: teuscher@who.int

Mr Paul A. ACRVIADIS, PRS/EMP, World Health Organization, 20 avenue Appia, 1211 Geneva, SWITZERLAND

Phone: +41 22 791 2187/2805

E-mail: acrviadis@who.int



Dr Nadine EZARD, Roll Back Malaria, World Health Organization, 20 avenue Appia, 1211 Geneva, SWITZERLAND

Phone: +41 22 791 4316

Dr Morteza ZAIM, CDC/CPE/PVC, World Health Organization, avenue Appia 20, CH-1211 Geneva 27, SWITZERLAND

Phone: +41 22 791 3841/3820

E-mail: zaimm@who.int

* Dr Bernard NAHLEN, Roll Back Malaria, World Health Organization, 20 avenue Appia, 1211 Geneva, SWITZERLAND

Phone: +41 22 791 2869

E-mail: nahlenb@who.int

* Dr Andrea BOSMAN, Roll Back Malaria, World Health Organization, 20 avenue Appia, 1211 Geneva, SWITZERLAND

Phone: +41 22 791 3860/2498

E-mail: bosmana@who.int

* Dr Philip DESJEUX, CDS/CSR, World Health Organization, 20 avenue Appia, 1211 Geneva, SWITZERLAND

Phone: +41 22 791 3870

E-mail: desjeuxp@who.int

Dr Pierre GUILLET, CDC/CPE/PVC, World Health Organization, 20 avenue Appia, 1211 Geneva, SWITZERLAND

Phone: +41 22 791 3972/3839

E-mail: guilletp@who.int

Dr Michael NATHAN, CDC/CPE/PVC, World Health Organization, avenue Appia 20, CH-1211 Geneva 27, SWITZERLAND

Phone: +41 22 791 3830

E-mail: nathanm@who.int

* Dr Samira ABOUBAKERS, Family & Community Health, World Health Organization, 20 avenue Appia, 1211 Geneva, SWITZERLAND

Phone: +41 22 791 2618/2637

E-mail: aboubakers@who.int

Mr David ALNWICK, Project Manager, Roll Back Malaria, World Health Organization, avenue Appia 20, CH-1211 Geneva 27, SWITZERLAND

Phone: +41 22 791 2769/2394

E-mail: alnwickd@who.int

* Dr Richard ALLAN, Technical Officer Roll Back Malaria, Communicable Diseases, World Health Organization, 20 avenue Appia, 1211 Geneva, SWITZERLAND

Phone: +41 22 791 3739

E-mail: allanr@who.int

Dr Kabir CHAM, Roll Back Malaria, World Health Organization, 20 avenue Appia, 1211 Geneva, SWITZERLAND

Phone: +41 22 791 3842

E-mail: chamm@who.int

* Dr David HEYMANN, Executive Director Communicable Diseases Cluster, World Health Organization, 20 avenue Appia, CH-1211 Geneva, SWITZERLAND

Phone: +41 22 791 2212/2213/2214

E-mail: heymannd@who.int

Dr Awash TEKLEHAIMANOT, Roll Back Malaria, World Health Organization, 20 avenue Appia, 1211 Geneva, SWITZERLAND

Phone: +41 22 791 3749/2394

E-mail: teklehaimanota@who.int

* Dr Jane KENGEYA-KAYONDO, Coordinator IDE, World Health Organization, avenue Appia 20, CH-1211 Geneva, SWITZERLAND

Phone: +41 22 791 3234/3738

E-mail: kenheyak@who.int

ANNEX 2

Crude Survey of Tariffs and Taxes on ready-made mosquito nets
February/March 2001. C.E. Reed, Malaria Consortium 2001

Country	Import Duty Previous Nets	Import Duty Present Nets	Sales Tax Previous Nets	Sales Tax Present Nets	Source of information	Date of information
Benin	50%	18%	50%	18%	Siamdutch	2000
Burkina Faso	38%	18%	38%	18%	SiamDutch JB Ouedraogo	2000
Burundi	45%	21%	45%	21%	Siamdutch	2001
Cameroon	45%	21%	45% in process	21% in process	Siamdutch L. Manga WHOAFRO	2000
CAR	45%	21%	45%	21%	Siamdutch	2000
Côte d'Ivoire	75%	21%	0%	0%	NMCP C d'Ivoire	2001
Ethiopia	40%	n/a	n/a	n/a	Vestergaard Frandsen	2001
Ghana	47%	12.5%	in process	in process	NetMark Vestergaard Frandsen	2001
Guinea-Conakry	55%	21%	55%	21%	Siamdutch	2000
Kenya	12 ksh per m ²	17.5%	in process	in process	Vestergaard Frandsen	2001
Madagascar	55%	n/a	55%	n/a	Vestergaard Frandsen	2001
Mali	60%	18%	60%	18%	Siamdutch	2000
Malawi	n/a	20%	n/a	20%	PSI	2001

Country	Import Duty Previous Nets	Import Duty Present Nets	Sales Tax Previous Nets	Sales Tax Present Nets	Source of information	Date of information
Mauritania	60%	18%	60%	18%	Siamdutch	2000
Mozambique	n/a	n/a	in process	in process	UNICEF	2001
Nigeria	Moderately high	n/a	5%	in process	Jo Lines Liz Taylor	2001
Niger	38%	18%	38%	18%	Siamdutch	2000
Senegal	60%	21%	60%	21%	Siamdutch	2000
Sierra Leone	20%	20%	20%	20%	Vestergaard Frandsen	2001
The United Rep Tanzania	5%	0%	5%	0%	Nat Strategic Plan	2000
Togo	50%	18%	50%	18%	Siamdutch	2000
Uganda	n/a	n/a	0%	0%	Siamdutch NetMark	2000
Zambia	25%	17.5%	0%	0%	Nat. Mal. Cont. Prog	2001

The countries listed are those for which at least one piece of new information was offered. Except in the case of the United Republic of Tanzania this information has not been confirmed with the authorities in country.

“In process” means that we have information that the country was changing its tax status but there was no confirmation that the process had been finalised.

ANNEX 3

WORLD HEALTH ORGANIZATION
ORGANISATION MONDIALE DE LA SANTE
Meeting of the Technical Support Network
For Insecticide Treated Netting Materials
Geneva, 12-13 March 2001

OBJECTIVES, METHOD OF WORK & OUTCOME OF THE MEETING

OBJECTIVES OF THE MEETING

1. Review of scientific and strategic issues related to ITNs.
 - 1.1 Efficacy of ITNs in relation to coverage: personal versus community protection.
 - 1.2 Impact of pyrethroid resistance on the efficacy of ITNs.
 - 1.3 Specifications and quality control for netting materials and insecticides.
 - 1.4 Long lasting nets and their potential implications.
 - 1.5 Long term impact of ITNs on malaria transmission.
2. Review of the current status of ITN interventions at country level.
 - 2.1 Status of ITN interventions in the WHO Region for Africa.
 - 2.2 Status of ITN interventions outside of Africa.
 - 2.3 Status of support activities for ITN interventions at country level.
3. Strategies for “going to scale” with ITNs.
 - 3.1 Public Private Partnerships.
 - 3.2 Social Marketing.
 - 3.3 Targeted Subsidies.
 - 3.4 Enabling Environment.
4. Mechanisms to effectively provide support and guidance to countries and agencies in “going to scale” with ITNs focusing on the structure of the TSN to address:
 - 4.1 Technological issues.
 - 4.2 Managerial issues.
 - 4.3 Promotional issues.
 - 4.4 Legislation/regulatory issues.

METHOD OF WORK

1. The meeting will appoint its Chairpersons and Rapporteurs while WHO will provide the Secretariat.
2. Plenary session on scientific and strategic issues related to ITN interventions.
3. Plenary session on current status of ITN interventions at country level, including support activities.

4. Group work sessions followed by group presentations on strategies for “going to scale” with ITNs at country level.
5. Plenary discussions and analysis of presentations with a focus on support and guidance on strategies for “going to scale” at country level.
6. Formulation of mechanism (s) to effectively provide support and guidance to malaria endemic countries and agencies.

OUTCOME OF THE MEETING

- 1 A report of the findings and recommendations of the meeting on:
 - 1.1 Strategies for “going to scale” focusing on technological, managerial, promotional, and regulatory issues related to ITN interventions at country level identified during the meeting.
 - 1.2 Proposals addressing the above identified strategies.
- 2 An outline of Plan of Work for the Technical Support Network covering 2001-2002.

ANNEX 4

Meeting of the Technical Support Network for Insecticide Treated Netting Materials

AGENDA

Monday, 12 March 2001		14:45	Discussions and analysis of issues raised during presentations.
09:10	Roll Back Malaria Cabinet Project – Implications for “Going to Scale”. <i>David Alnwick</i>	Session 3:	Strategies for “Going To Scale” with ITNs: Presentations and Discussions Chair: Don De Savigny Co-chair: Tran Duc Ninh
09:40	Presentation & discussions: Draft objectives, method of work, expected outcomes and agenda. <i>Dr Awash Teklehaimanot</i>	15:45	Research for Public and Private Sector Needs <i>Carol Baume</i>
Session 1:	Review of Scientific and Strategic Issues Related to ITNs Chair: Christian Lengeler Co-chair: Jean Bosco Ouedraogo	16:15	Social Marketing Strategies for “going to scale”. <i>Desmond Chavasse</i>
10:30	Efficacy of ITNs in relation to coverage: personal versus community protection. <i>Jo Lines</i>	16:30	Targeted Subsidies. <i>Jo Lines</i>
10:50	Specifications and quality control for netting materials and insecticides. <i>Pierre Guillet</i>	16:45	Enabling Environment. <i>Don De Savigny</i>
11:10	Long-lasting nets & potential implications. <i>Kabir Cham</i>	17:00	Discussions and analysis of presentations.
11:30	Impact of pyrethroid resistance on efficacy of ITNs. <i>Pierre Carnavale</i>	Tuesday, 13 March 2001	
11:45	Long-term impact of ITNs on malaria transmission. <i>Christian Lengeler</i>	Session 4:	Mechanisms to Effectively Provide Support & Guidance to Countries & Agencies in “Going to Scale” with ITNs.
12:00	Discussions and analysis of strategic issues.	09:00	Group Work on: Technological Issues: Facilitator: <i>Michael MacDonald</i> Managerial Issues: Facilitator: <i>Christian Lengeler</i> Promotional Issues: Facilitator: <i>Desmond Chavasse</i> Legislation/Regulatory Issues Facilitator: <i>Catherine Reed</i>
Session 2:	Review of the Current Status of ITN Interventions at Country Level Chair: Kopano Mukelabai Co-chair: Ousman Faye	10:45	Continuation of Working Group Chair: <i>David Alnwick</i>
14:00	Status of country level ITN interventions in the WHO Region for Africa. <i>Lucien Manga</i>	14.00	Plenary Discussions on Group Work presentations: Analysis and Prioritization of issues identified. Chair: <i>Awash Teklehaimanot</i>
14:15	Status of country level ITN interventions outside Africa. <i>Kevin Palmer</i>	15.45	Proposals for Plan of Work for the TSN (2001- 2002) to address identified issues.
14:30	Status of support activities for country level ITN interventions. <i>Melanie Renshaw/Frans Classen</i>		