



## SUMMARY OF ZAMBIA 2004 ITN SURVEY AND COMPARISON WITH 2000 BASELINE SURVEY

### HIGHLIGHTS

**In 2000, 51% of respondents were aware of treated nets**

**In 2004, 88% of respondents were aware of treated nets**

**In 2000, 27% of households owned a net**

**In 2004, 50% of households owned a net**

**In 2000, 6% of households owned a currently treated ITN\***

**In 2004, 35% of households owned a currently treated ITN\***

**In 2000, 12% of children under five slept under a hanging net the prior night**

**In 2004, 25% of children under five slept under a hanging net the prior night;**

**25% slept under a hanging or baby net**

**In 2000, 2% of children under five slept under an ITN the prior night\***

**In 2004, 17% of children under five slept under an ITN the prior night\***

**In 2000, 4% of pregnant women slept under a net the prior night**

**In 2004, 22% of pregnant women slept under a net the prior night**

**In 2000, 0% of pregnant women slept under a currently treated ITN the prior night\***

**In 2004, 14% of pregnant women slept under a currently treated ITN the prior night\***

\*Roll Back Malaria Core Indicator; ITN=long lasting net or one treated within the prior 12 months



NetMark is a USAID-funded program administered by the Academy for Educational Development (AED) under Cooperative Agreement #HRN-A-00-99-00016-00.

## SUMMARY

### ZAMBIA 2004 ITN SURVEY AND COMPARISON WITH 2000 BASELINE SURVEY

NetMark conducted a baseline survey on ITNs in Zambia in October of 2000, and a follow-up survey in November of 2004. Both surveys included the same five sites and sampling procedure.

#### SAMPLE

- Sites: Lusaka, Choma, Mansa, Kitwe, Kaoma
- Sample size
  - In 2000: 1000 respondents (400 urban; 600 rural)
  - In 2004: 2000 respondents (800 urban; 1200 rural)
- Respondents: women aged 15-49 who were mothers or guardians of at least one child under the age of five

#### KEY FINDINGS

##### Net Ownership

- The percent of households owning at least one net has nearly doubled: in 2000, it was 27%; in 2004, 50%. Ownership varied somewhat by site: it was lowest in Choma at 44% and highest in Kitwe site at 59%. As in 2000, net ownership in 2004 was higher in urban areas (69% vs. 37%) and in households of higher socio-economic status (SES) (22% in lowest quintile and 83% in highest quintile).
- Among net-owning households, the average number of nets owned has increased. In 2000, the average number of nets owned was 1.4; in 2004 it was 1.8. The increases occurred in every site, but only in urban and upper SES households.
- Baby nets are not common: in 2004, 1% of households owned a baby net with a built-in frame<sup>1</sup>.
- Among non-owners in both 2000 and 2004, the top reason given for not owning a net was lack of money: 89% in 2000, 83% in 2004. This represents 65% of the entire sample in 2000 and 42% in 2004.

##### ITN Awareness and Ownership

- Awareness of *treated* nets has increased significantly, from 51% in 2000 to 88% in 2004.
- There has been a dramatic increase in ownership of *ever-treated* nets. From 2000 to 2004, the proportion of households owning an *ever-treated* net increased four-fold: from 10% to 40%. In 2004, Choma had the lowest proportion (35%) and Kitwe the highest (46%). Ownership of *ever-treated* nets was higher in urban areas (56% vs. 30%) and in upper SES segments (17% in the lowest SES quintile and 71% in the highest).

---

<sup>1</sup> Baby nets are small nets that are not hung but have built-in frames and are placed over an infant. They are not counted in household net coverage figures.

- Even more significant were the gains in ITN coverage. Between 2000 and 2004, the percent of households owning an *ITN (a currently treated net)* increased six-fold: from 6% to 35%. In 2004, ITN ownership was lowest in Choma (31%) and highest in Kitwe (41%). As in 2000, ITN ownership in 2004 was higher in urban areas (49% vs. 25%) and in upper SES segments (15% in the lowest quintile and 62% in the highest).
- Among ITN-owning households, the average number of ITNs owned has increased. In 2000, the average number of ITNs owned was 1.4; in 2004 it was 1.7.

## Use of Nets and ITNs<sup>2</sup>

### *Children under five*

- Twice as many children under five slept under a net in 2004 than in 2000. Among all households, the percent of children under five sleeping under a *net* the prior night increased from 12% to 25%. The proportion was lowest in Lusaka site (19%) and Choma site (20%), and highest in Kitwe site (32%) and Lusaka city (31%). As in 2000, the proportion was higher in urban than in rural areas (42% vs. 13%), and increased with SES (7% in the lowest quintile; 55% in the highest).
- Among all households, there was a large increase in the percent of children under five sleeping under an *ITN* the prior night, from 2% in 2000 to 17% in 2004, ranging from a low of 13% in Lusaka site to a high of 23% in Kitwe site. As in 2000, the proportion was higher in urban than in rural areas (27% vs. 9%), and increased with SES (5% in the lowest quintile; 40% in the highest).
- Within net-owning households, roughly the same percentage of children under five slept under a net the prior night in 2000 (48%) and 2004 (50%).
- Within net-owning households, as in 2000, children under two were more likely than those over two (but under five) to sleep under a net/ITN.
- As in 2000, there was no gender bias in childhood net use; approximately equal proportions of male and female children slept under a net.

### *Pregnant women*

- Among all households, there was more than a five-fold increase in the percent of pregnant women sleeping under a *net* the previous night: from 4% in 2000 to 22% in 2004. The lowest proportion was in Choma (8%) site and the highest in Mansa site (31%). As in 2000, the proportion was higher in urban than in rural areas (35% vs. 15%), and increased with SES (11% in the lowest quintile; 36% in the highest).
- Among all households, no pregnant woman in the sample had slept under an *ITN* in 2000; in 2004, 14% did so. The lowest proportions were in Choma and Lusaka sites (6%) and the highest in Kaoma site (19%). As in 2000, the proportion was higher in urban than in rural areas (20% vs. 11%), and increased with SES (8% in the lowest quintile; 18% in the highest).
- Pregnant women are now given priority for sleeping under a net. Within net-owning households, in 2004, 51% of pregnant women slept under a net the previous night. This compares to 18% in 2000 (n=17).

---

<sup>2</sup> In both 2000 and 2004, the survey was conducted prior to the rainy season. The percent of people sleeping under a net is likely to be much higher during the rainy season when mosquito densities are higher.

## General patterns

- Vulnerable groups are given preference for using household net(s). Within net-owning households, the household members most likely to sleep under a net were children under five (and especially children under two) and pregnant women. Children aged 5-14 were least likely to sleep under a net.
- The percent of households using their nets all year round doubled – from 15% in 2000 to 30% in 2004.
- The average number of months during the year that nets were used increased – from 6.4 in 2000 to 7.1 in 2004.
- A sizeable proportion (38%) of nets owned was not used the prior night in 2004. Rates of non-use were highest in the two lowest SES quintiles. The rate of non-use was slightly lower in 2000, at 33%.

## Characteristics of Nets<sup>3</sup>

### *Net treatment, washing, and adverse effects*

- There has been a tremendous increase in the proportion of nets that have *ever been treated*: from 36% in 2000 to 80% in 2004. The proportion of nets ever treated did not vary much by site, urban/rural, or SES.
- From 2000 to 2004 there has been more than a three-fold increase in the percent of nets that are *currently treated*: from 21% to 66%. The proportion of currently treated nets did not vary much by site, by urban/rural, or by socio-economic status.
- The percent of *pre-treated* nets has more than doubled: from 28% in 2000 to 62% in 2004. The percent of nets *treated since acquired* also more than doubled: from 16% in 2000 to 42% in 2004.
- In 2000, nets packaged (“bundled”) with an insecticide treatment were just coming on the market. In 2004, 21% of nets owned were acquired bundled.
- Among nets that were treated since acquired, 65% were treated at home by a member of the household the last time they were treated, 32% were treated somewhere else (usually by a health worker), and 4% were treated by someone who came to the house specifically to treat the net.
- The source of the treatment product for nets treated at home was most often commercial: 48% came bundled with the net (primarily nets from commercial sources), and 17% came from another commercial source. The rest (36%) came from a non-commercial source, primarily a health facility.
- It appears that nets are now washed less frequently. In 2000, 15% of nets had never been washed; in 2004, 24% had never been washed. (Note below that more nets are newer in 2004, so may not be ready to be washed.) In 2000, 43% were reportedly washed at least once a month; in 2004, 31% of nets were reportedly washed that frequently.
- There were few reports of adverse effects from treating nets at home. The most common complaints were sneezing, (3.0%), skin irritation (1.7%), “flu” (1.5%), coughing (1.3%), and rash (1.1%).

---

<sup>3</sup> This section reports on proportions of *nets*, not on proportions of *households* owning nets.

- For the majority (72%) of nets treated at home, respondents said there was no insecticide solution left over. The most common places leftover solution was disposed were a latrine (17%) and the ground (4%). No one reported disposing the leftover solution in a stream, river, or pond.

#### *Net type, age, source, brand, price, and purchaser*

- Virtually all (99.7%) nets owned were factory-made rather than tailor-made.
- Compared to 2000, a far greater proportion of nets were recently acquired—that is, nets were newer: In 2000, 38% of nets were acquired within the prior 2 years. In 2004, 63% were.
- Compared to 2000, a higher proportion of nets now come from a non-commercial source, usually a clinic. In 2000, 69% of nets came from a commercial source; in 2004, 39% did. The highest proportion of nets from commercial sources was in Lusaka (47%), Choma (56%), and Kitwe (47%). Ownership of commercial nets increased with SES (from 10% in the lowest quintile to 47% in the highest) and was higher in urban than in rural areas (46% vs. 28%).
- The brand was unknown for 40% of commercially-made nets owned. The main brands of nets identified were Safenite (21%), “NetMark” (14%) and K-O Net (10%).
- The median price of nets owned decreased from 14,500 Kwacha (US\$4.84) in 2000 to 13,000 Kwacha (US\$2.63) in 2004. In 2004, better-off families were more likely to have obtained a free net than poorer families. However, among those who paid for a net, poorer families paid less than better-off families.
- Nets were about equally likely to be purchased by the respondent (38%) as by the husband (36%). Another 22% of nets were obtained by another member of the family.

#### *Net size, shape, and color*

- People are purchasing more double-sized nets: in 2000, 64 % were double; in 2004, 76% were. Fewer nets were single (19%), king (4%) or cot-sized (0.1%).
- Most nets owned (55%) were conical, followed by rectangular-shaped (43%).
- Most nets owned (63%) were white; the second most common color was green (31%).

#### **Net Preferences**

- There was a definitive preference for large nets: 58% preferred double nets and 32% triple/king.
- Two-thirds (67%) of respondents preferred conical nets and 26% preferred rectangular.
- Preferred colors were white (32%), green (32%), and dark blue (11%). Colors most disliked were black (48%), gray (28%), yellow (27%), and the dark multi-color sample shown (26%); 19% disliked white.
- White was more preferred in urban areas and higher SES groups than in other groups.

#### **Brand awareness, and use and perceptions of other insect control products**

- There is little net/ITN brand awareness in Zambia: 60% recognized at least one brand after being shown and read a card with logos with associated brand names. Awareness was highest for Safenite at 28%, followed by NetMark at 24% and K-O Net at 19%.

- Respondents were asked which brands they associated with killing mosquitoes, reducing malaria, being of high quality, good value for price, and a long-term solution to mosquito problems. K-O Net ranked highest on all five attributes and Safenite ranked equally highly on three of the attributes.
- Awareness of coils and aerosol insecticides was moderately high; 81% of respondents were aware of coils and 74% were aware of aerosols. However, a minority of households used these commercial insect control alternatives: 26% of the total sample had used coils in the past 12 months, and 17% had used aerosols. These figures are similar to those in 2000.
- There is a very positive view of ITNs in Zambia. Among various mosquito control products—coils, aerosols, nets, and ITNs—ITNs are ranked highest on all but one attribute that people want in such products, ranking even more highly than aerosols on “kills mosquitoes.”
- Few respondents—9%—said someone came to spray their house for mosquitoes. The figures were higher for Kitwe site (19%) and urban Lusaka (21%), and upper SES households.

## **Knowledge of malaria and perceptions of nets**

### *Recognition of and knowledge about malaria*

- As in 2000, recognition of the English term “malaria” is nearly universal at 99%.
- Knowledge of the symptoms of malaria was good in both 2000 and 2004. The main symptoms named in 2004 were fever (75%), chills (49%), head/body aches (46%), and nausea (44%). However, in both 2000 and 2004, only 3% mentioned convulsions, a symptom of severe malaria.
- When asked what causes malaria, 88% mentioned mosquitoes, up slightly from 81% in 2000. Many people also mentioned other causes such as the weather (22%), dirty water or cold/dirty food (19%), and dirty surroundings (12%).
- The proportion of respondents knowing both groups most vulnerable to malaria (children under five and pregnant women) increased from 63% in 2000 to 79% in 2004.

### *Perceived advantages and disadvantages of nets and ITNs for young children and pregnant women*

The perception of untreated nets and ITNs has changed since 2000, with the large-scale promotion of ITNs: Respondents view untreated nets less favorably, and ITNs are viewed very favorably.

- In 2000, 98% of respondents named advantages for a child under five to sleep under a net, compared with 63% in 2004. The chief advantages mentioned in both 2000 and 2004 were to avoid mosquito bites (44%) and prevent malaria (27%).
- In 2000, 19% of respondents named a disadvantage for a child under five to sleep under a net; in 2004, 68% did so. The most common disadvantage named in 2004 was that the mosquitoes can still bite through or get in the net (62%).
- The great majority of respondents cited an advantage for a child under five to sleep under a *treated* net: it is better at preventing malaria (54%), works better or results in fewer bites than with a net (43%), and it kills mosquitoes (40%). In 2000, the top two advantages were that it kills mosquitoes (41%) and that it is better at preventing malaria (34%).
- Use of treated nets for young children is now viewed more favorably: in 2000, 36% of respondents named a disadvantage for a child under five to sleep under an ITN; in 2004, 15% did so. The disadvantages most frequently cited were that the ITN could be dangerous if the child

sucked on it (6%), that it could cause irritation or cough (6%), and that it smells bad (6%). Levels of fear about the danger of young children sucking on the net and the potential to cause irritation or illness were much higher in 2000.

- Advantages most mentioned for a pregnant woman to sleep under an ITN were that it is better at preventing malaria (66%), works better or she gets fewer bites than with a net (37%), more protected (30%), and it kills mosquitoes (27%). The top advantages named in 2000 and 2004 were generally the same, but a much higher percent in 2004 mentioned that ITNs are better at preventing malaria (40% compared with 66%).
- ITN use by pregnant women is now viewed more favorably. In 2000, 40% named a disadvantage for a pregnant woman to sleep under an ITN; in 2004, 16% did so. The disadvantages most frequently cited were that the ITN smells bad (9%), could be dangerous to the fetus or cause nausea or vomiting in the woman (7%), and could cause irritation or cough (5%). Levels of fear about the dangers of treated nets for pregnant women were three to five times higher in 2000 than in 2004.

## Communication

- The proportion of respondents who had seen or heard information about nets treated with insecticide in the prior 12 months was moderately high at 73%. In 2000, there was no comparable question; respondents were asked whether they had heard information about avoiding malaria in the prior 12 months: 58% said they had. (And only 51% had even heard of ITNs in 2000.)
- Among those who had seen or heard information on ITNs in the last 12 months, the main sources of information were health staff (70%), TV (22%) and radio (19%). Exposure via health staff was lowest in Lusaka (50%) and in the higher SES quintiles. Radio was highest in Lusaka (27%) and in the higher SES quintiles. Exposure via TV was highest in Kitwe (29%) and in urban areas (40%) and steeply increased with SES (0.5% in the lowest quintile and 60% in the highest).
- Among those who had seen or heard information on ITNs in the last 12 months, the ideas that were remembered most were: “prevent malaria” (37%), “treat net” (29%), and “kill mosquitoes” (21%).

## CONCLUSIONS AND IMPLICATIONS

Since the baseline in 2000 in Zambia, there have been dramatic increases in net and ITN ownership, and in the number of nets/ITNs per net-owning household. The great majority of nets owned have been treated. The proportion of children and pregnant women who slept under a net or ITN the prior night has increased significantly. The perception of ITNs is extremely favorable in the public mind.

The main challenge ahead is to make ITNs accessible to and affordable for lower SES households, so that ownership among poorer households is increased and becomes more equitable across the socioeconomic spectrum. A greater proportion of nets owned now come from non-commercial sources (usually a health clinic), a strategy that if targeted by economic criteria could increase ownership among the poor, but has ended up supplying over half of the nets owned by the highest SES households. A combination of economic/geographic targeting mechanisms should be put in place so that free and highly subsidized ITNs reach those who most need them and so that the subsidy is not wasted on those who have access to and can afford commercially priced nets. At the same time, continued effort is needed to strengthen the private sector, which has played an important role in increasing ITN ownership and in supplying net treatments in the country.

Favorable factors and trends for ITN supply, ownership, and use include:

- There are the beginnings of a “net culture,” and even an “ITN culture” in much of Zambia: nets/ITNs are much more common than in 2000 and are much more favorably viewed.
- A high proportion of nets (much higher than in 2000) was obtained in the past 1-2 years, indicating that recent promotion and distribution efforts have been effective.
- A large majority of people have heard of ITNs, compared with about half who had in 2000; promotion can move beyond awareness to focus on converting non-owners and net-owners into ITN owners, and on ensuring nightly use by vulnerable groups.
- People differentiate between nets and ITNs, perceiving ITNs to be far superior to untreated nets. The proportion of people with negative perceptions of the insecticide has decreased since 2000 and is now very small.
- The great majority of nets owned in Zambia have been treated. People have experience with both pre-treated nets and with treating them after getting them. Both the commercial sector and public sector supply net treatments, with the commercial sector supplying most of the kits used to treat nets at home.
- ITNs play a key role in insect control for Zambians. Use of other commercial insect control products is low, and people perceive ITNs to be a more desirable, effective, and cost-effective means of insect control than other commercial products.
- Poorer households are paying less for nets/ITNs than better-off households.
- Within net-owning households, the youngest children and pregnant women are given preference for sleeping under a net and it should be easy to reinforce and expand this practice.
- Households are using their nets for more months of the year than in 2000.
- There is universal recognition of the term “malaria”, and good knowledge of symptoms of simple malaria and its causes.

Main challenges to sustained ITN supply, ownership, and use include:

- The perceived (and real) cost of nets is still high for many households. Ownership of ITNs is still strongly associated with SES—i.e., is inequitable—despite the fact that most nets are now obtained from non-commercial sources. Economic targeting of free or highly subsidized nets to the lowest SES households should be implemented.
- The majority of nets/ITNs, including those owned by upper SES households, come from non-commercial sources, indicating the need for better targeting to poorer households and away from those who are able to access and afford commercially-priced ITNs.
- Although nets are washed less often than in 2000, they are still washed very frequently, a practice that could diminish the effectiveness of the insecticide; messages on washing should be included as part of communication.
- Most people have gotten information on ITNs from health workers but not from other channels. Information on ITNs via mass media should be expanded to in rural areas, run on a greater number of channels, and/or aired with greater frequency.
- Commercial ITNs face low brand recall; association of brands with features has not yet taken hold, suggesting that more brand advertising is desirable.

August 15, 2005