

Notes from conversation between Holden Karnofsky of GiveWell and Richard Cibulskis of the WHO's Global Malaria Programme

Holden Karnofsky: The 2010 World Malaria Report lists countries where the data are believed to show a significant decline in malaria burden, and countries where the data are not believed to show such a decline. But within the latter category, it doesn't appear to distinguish between (a) countries where the data do show a *lack* of decline in malaria burden; (b) the data are too unreliable to show anything. How can we distinguish between these?

Richard Cibulskis: The 2011 World Malaria Report draws this distinction on page 75.

Holden Karnofsky: Thanks. I had overlooked that. So how does the report determine which countries are considered to have reliable data? I looked at the "data completeness scores" reported in an appendix of the 2010 report, but they didn't seem to be the right guide - Rwanda, for example, had very low data completeness scores, but is listed as a success story.

Richard Cibulskis: The completeness scores aren't the best indicators - those have to do with the number of cells they fill in on our form. When we try to judge the reliability of the data, overall, in terms of assessing trends, we try to focus on confirmed malaria cases - we don't consider the "presumed fevers" as malaria. We try to make sure the diagnostic effort is consistent - the number of patients tested is reasonably consistent over time. We try to look at subnational data. We also do a cross check between admissions for malaria and reported deaths and we look for inconsistencies; if there are inconsistencies we make queries; if we can't resolve them we may decide the data is inconclusive. We also get informal evidence about the quality of the surveillance systems over time. I know certain countries very well, while other colleagues know others and we also have a sense of whether the data can be trusted or not. So there are some judgment calls.

Holden Karnofsky: Is the process for determining data quality written up anywhere?

Richard Cibulskis: It is described on pages 39-40 of the World Malaria Report 2010. In most cases the assessment of trends is quite straightforward but there are a few borderline cases in which a decision needs to be made one way or another. We try to be on the conservative side; if there's any room for doubt we say there is insufficient evidence. We do take notes, but it would probably be difficult to recover the precise chain of thought that went into every decision.

Holden Karnofsky: Could you provide a list of which countries were considered to be clear vs. borderline cases?

Richard Cibulskis: That's possible. The data are already on the web.

Holden Karnofsky: Overall, do you feel that the data we're discussing constitutes affirmative evidence that malaria control "works?"

Richard Cibulskis: The difficulty is that the surveillance systems we have are pretty weak. Ideally what you'd want is to compare high bednet coverage to low bednet coverage and look at changes over time in the disease. The problem with that though is correlation between the countries with strong programs for ITNs and those with good surveillance systems. Rwanda is high intervention coverage but also a strong surveillance system. Zambia too ... what we want is a country with a strong surveillance system but not so much performance on bednet coverage. There are countries where that is true and the surveillance systems tells us there hasn't been much progress on reducing cases either. But there are not many examples of countries in these two groups.

Overall, though, it appears that when ITN distribution happens, malaria burden falls. That's largely true. There are bound to be exceptions where it doesn't work, places where there is insecticide resistance, or bednets are a bit long in the tooth so they've got lots of holes in them or they're not used.

There have been some broad evaluations done as well. One was done by Steve Lim and colleagues published in PLoS Med in 2011 Others by Rick Steketee, published in the Malaria Journal in 2010 and O'Meara and others in the Lancet in 2010. The Lim paper came up with effects of ITNs comparable to those seen in randomized controlled trials. It was an observational study that which attempted to control for potential confounders

Holden Karnofsky: One of the reasons we're asking these question is because we're hesitant to extrapolate from randomized controlled trials to effects of large-scale programs, because we know that in randomized controlled trials there was an intensity - particularly when it comes to promoting and ensuring constant use of the ITNs - that is likely not to be present in larger-scale programs.

Richard Cibulskis: There are indeed very good reasons to be hesitant from extrapolating from randomized controlled trials. But as the 2011 report says, when we examine data from DHS and MIS surveys, we see that nets are used at a very high rate when they are available in households. Also Lim et al observe similar effect sizes in DHS type surveys as in randomized controlled trials so that's some evidence on that point.

Holden Karnofsky: We've looked at that data, but we're not sure how seriously to take it. It's survey data, not data from household examinations. People may be telling surveyors what they think the surveyors ought to hear.

Richard Cibulskis: This could be happening in post-campaign surveys - if there is a link between the net providers and surveyors then household respondents can give exaggerated ownership & usage figures. There's less scope for it in the DHS-type surveys, I believe. They're very lengthy surveys, covering family planning, maternal health, and other topics. And it's not as if there were a quick yes/no answer that is given;

there are fairly detailed responses. The surveyors ask who sleeps under each net. At some point it probably becomes easier to tell the truth.

I've lived in Africa, Indonesia, and Papua New Guinea. By and large, I've seen that people use bednets. The data from the DHS-type surveys are consistent with this. So it isn't a major issue in my mind.

I will accept, however, that there is some discrepancy in numbers of bednets declared as available ... I'm not sure what's happening here, whether it's that a household is given more bednets than it needs, perhaps keeping them under the bed. It's possible that there is an under-recording of bednets that are actually out there.