Community Accountancy Report

REPORTING ABOUT MALARIA

FOR DISCUSSION ONLY

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July 2008

COMMUNITY ACCOUNTANCY
MALARIA FOCUS

INTRODUCTION

Malaria has been a serious tropical disease since colonial times. Some progress was made in understanding the disease by the end of the 19th century, and it was possible to get sufficient control of the disease in the early 20th century for the Panama Canal construction to go forward to completion. This was accomplished using an integrated approach that targeted the environment, the vector, and the parasite. There was a maximum of prevention as well as the best possible curative treatment for the time.

In the few years since 2000, there has been a vast increase in the funding for malaria research and malaria control. The data about the success of this was not well documented and it is not at all clear what interventions there have been, how much they have cost, how much has been done and where, what results have been achieved and the value that this represents.

The first thing that Community Accountancy must be able to have on the record about malaria is the following:

These conditions existed ---> We did this, costing this much ---> The results were.

These data are essential, because without them it is impossible to answer the following question:

If these conditions exist ---> and we do this, costing so much ---> the results will be.

It is very clear what constitutes progress in the control of malaria ... the goal is to make malaria a rare disease ... even to eradicate the disease ... and to achieve low cost sustainability and to minimize the socio-economic burden of malaria on society.

Progress in the control of malaria can be measured by the following:
1. reduction in morbidity caused by malaria;
2. reduction in work time lost due to malaria morbidity;
3. reduction in the number of cases of malaria;
4. reduction in the mortality due to malaria;
5. reduction of the prevalence of malaria parasite in the human host;
6. reduction of the prevalence of the malaria parasite in the mosquitoes;
7. reduction in expenditures associated with malaria control; and,
8. reduction in expenditures associated with malaria case treatment.

These data have added utility when the costs and amounts of the various interventions are also recorded. It is especially important to have data that includes both the spatial characteristics and the time to help with an understanding of the causalities. Maybe changes in the malaria situation are more to do with weather than any interventions being done.

With regard to temporal characteristics the science suggests that there are many data elements that change very rapidly ... rain today increase malaria transmission tonight ... and interventions optimized for results will change the data withing the week and withing the month.

And progress becomes sustainable when the health infrastructure is organized so that it knows what is happening ... screening of the people and surveillance of the area ... and there is a health and malaria intervention capacity to respond to control needs.
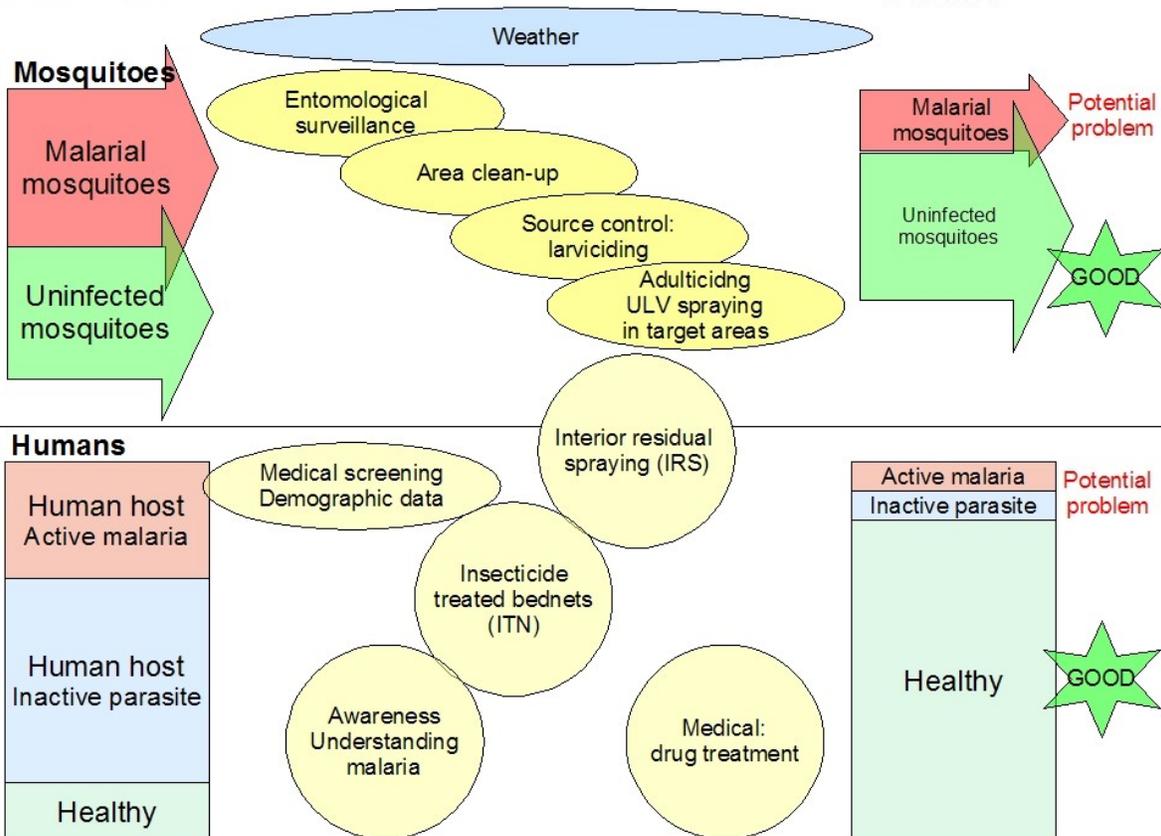
The following graphic shows the before and after situation for humans and mosquitoes with the range of interventions that can be used. It also shows schematically the strengthening of the health infrastructure. The graphic is a simplification, but a lot more comprehensive than most representations. The graphic aims to show how multiple interventions combine to provide an optimum outcome.

Most of the data needed to make it possible to compile specific reports about a community are often already available ... but what is missing is the Community Accounting framework or system that makes it easy to bring data from different origins together. At the community level and item by item, the data needed are relatively simple.
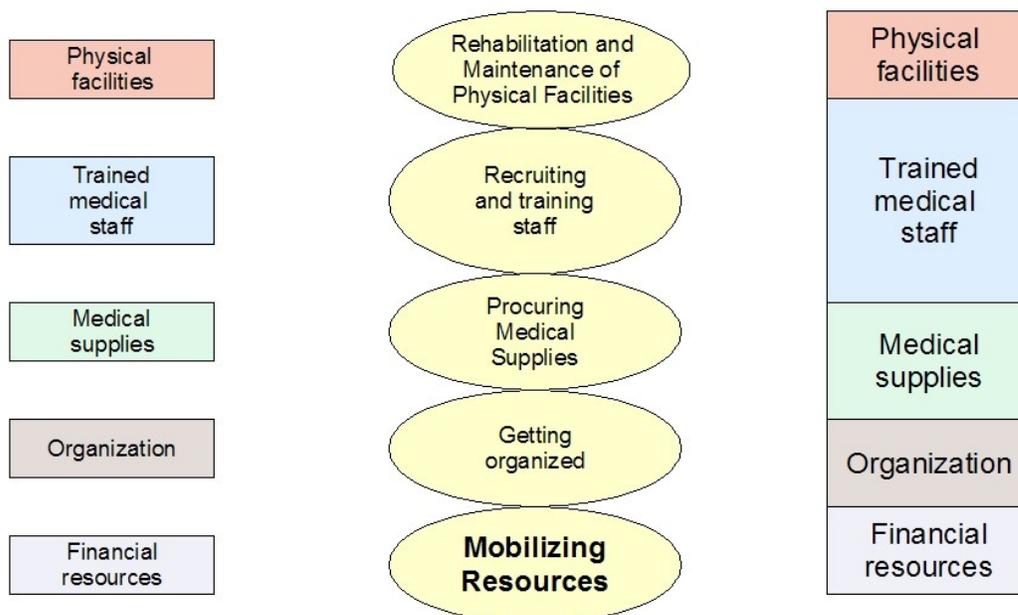
Integrated Malaria Management

Before

After

Weather

Mosquitoes

Malarial mosquitoes

Uninfected mosquitoes

Entomological surveillance

Area clean-up

Source control: larviciding

Adulticidng ULV spraying in target areas

Malarial mosquitoes — Potential problem

Uninfected mosquitoes

GOOD

Humans

Human host Active malaria

Human host Inactive parasite

Healthy

Medical screening Demographic data

Interior residual spraying (IRS)

Insecticide treated bednets (ITN)

Awareness Understanding malaria

Medical: drug treatment

Active malaria — Potential problem
Inactive parasite

Healthy — GOOD

Health infrastructure

Physical facilities

Trained medical staff

Medical supplies

Organization

Financial resources

Rehabilitation and Maintenance of Physical Facilities

Recruiting and training staff

Procuring Medical Supplies

Getting organized

Mobilizing Resources

Physical facilities

Trained medical staff

Medical supplies

Organization

Financial resources

Spreadsheet analysis

The Community Accountancy system provides a framework for data collection, data organization and storage. These data are neutral and organized so that they are easy to access and use for further analysis.

In order to facilitate easy analysis of the data, the Integrated Malaria Management Consortium (IMMC) has developed some simple spreadsheet analysis that integrates with the Community Accountancy data so that operational conclusions can be made.

Time frame

The manager in charge of a US vector control district has pointed out that the situation as of 2 pm in the afternoon is going to drive the decisions being made about mosquito control interventions to be carried out that night. Broadly speaking this is mere "nuisance control" ... hardly as important as the vector control where malaria is ubiquitous.

Most of the operations data need to be organized around days, weeks and months. The mosquito situation changes from day to day and interventions have an impact in hours so that day to day data is very meaningful. Prevalence of the malaria parasite in the mosquito should change from day to day and week to week with effective interventions ... if not, why not? Prevalence of the malaria parasite in the human host should reduce measurably month to month with effective interventions ... if not, why not?

Accordingly, management information should be compiled on a monthly cycle ... and this is a good period for cost data, summarized activity data and summarized results data. Monthly data are also useful to show the seasonality of mosquitoes, malaria, intervention activities and impact.

Interventions

There are a number of interventions that can be used to achieve the goals of reducing the burden of malaria on the society. These include the following:

- Medical:
    1. Treatment of active cases;
    2. Pre-emptive treatment of vulnerable groups;
    3. Screening to identify parasite carriers and treat;
- Vector control:
    1. Bednets (ITN);
    2. Indoor residual spraying (IRS);
    3. Source control (larvaciding);
    4. Mosquito control (ULV fogging);
    5. Entomological surveillance.
- Mobilization:
    1. Mobilization, relocation, setting up, getting started;
    2. Working capital ... inventory;
    3. Equipment.
- Support:
    1. Accounting and admin;
    2. Data collection and analysis ... data logistics;
    3. Maintenance and support services;
    4. Training.

The spreadsheet models have two components (1) historic; and, (2) future. The spreadsheets are designed to answer three simple questions:

- How much did/will the interventions cost?
- Mow much of the interventions were used/are needed?
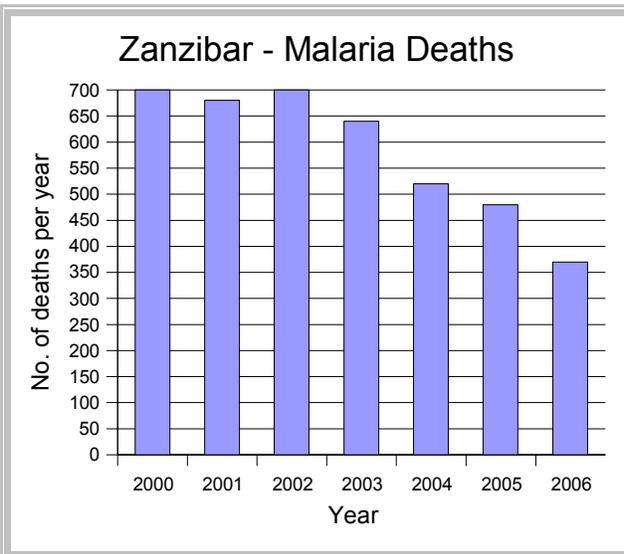- What results were achieved/can be expected?
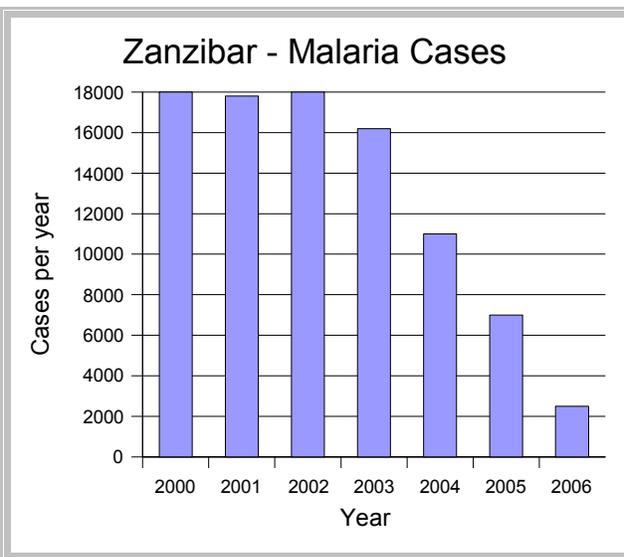
Example of time series – Malaria in Zanzibar
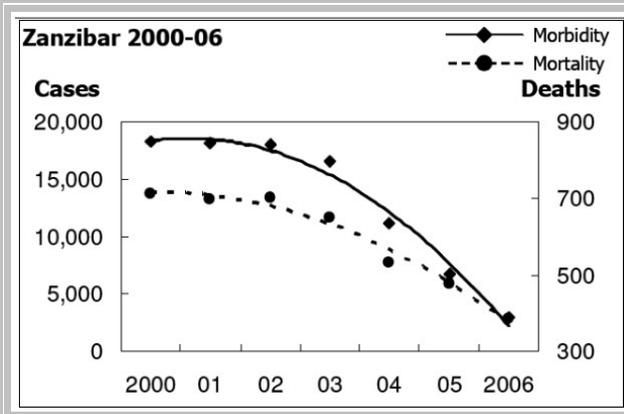
This time series shows mortality and morbidity reducing in Zanzibar between 2000 and 2006 ...

It is a widely circulated graphic ... but not visually accurate

Visually ... mortality and morbidity seem to be declining more or less equally rapidly ... but deaths does not have zero as the base!
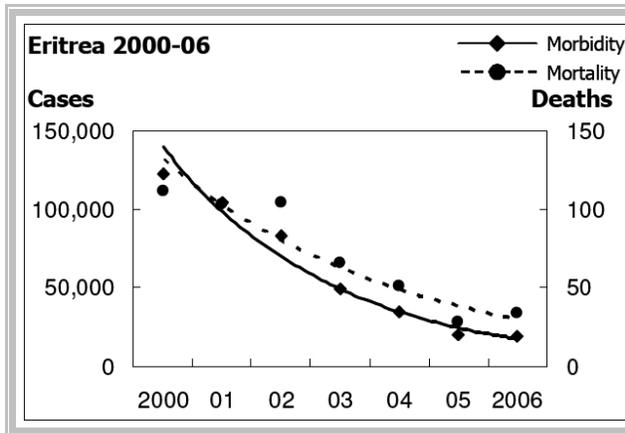

Malaria deaths in Zanzibar did not reduce almost to nothing, but were reduced about 50%. Better than nothing, but not as good as the first image looked.

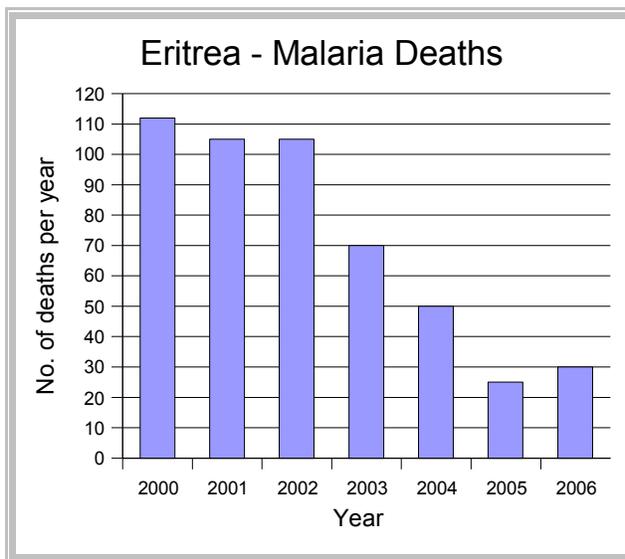Malaria cases dropped very substantially ... by about 85%.

This is an impressive reduction.

Example of time series – Malaria in Eritrea

Eritrea 2000-06

Cases — Morbidity
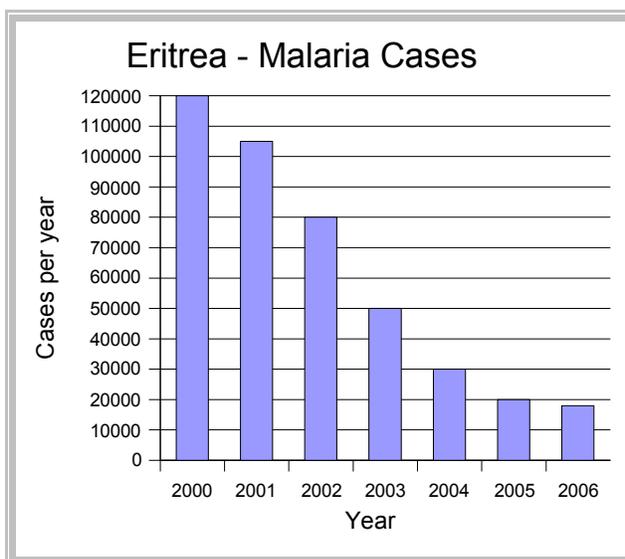**Deaths** --- Mortality

This time series shows mortality and morbidity reducing in Eritrea between 2000 and 2006 ...

It is a widely circulated graphic ... together with a similar graphic for Zanzibar

Eritrea - Malaria Deaths

Malaria deaths in Eritrea reduced by about 70%.

Eritrea - Malaria Cases

Malaria cases dropped very substantially ... by more than 80%.

This is an impressive reduction.

Commentary on the Malaria Time Series Graphics

The graphics tell a visual story ... and start to answer a lot of questions, but because the data are not easily available the questions go unanswered.

Morbidity and mortality are somewhat similar in that they are both measures of outcome ... there is nothing that is clear about the possible causative factors that produced these results.

There is nothing easily accessible that shows how much financial and other resources were used to achieve these results.

These results are not related to a population ... so the scale of the intervention and outcome is unknown.

Zanzibar

In the case of Zanzibar, the graphic is not visually accurate. Visually ... mortality and morbidity seem to be declining more or less equally rapidly ... but deaths does not have zero as the base!

When the graphic is reworked using a zero base it shows that morbidity has dropped more than mortality ... is this perhaps because IRS that has impact on all the family is more effective than bednets that are usually used mainly (or not) by children and who are still dying.

What about monthly data to show seasonality? Is the morbidity and mortality clustered at any special point in the year?

Why is it that there was almost no reduction in either mortality or morbidity in the three years from 2000 to 2002 and quite rapid decline after this. Was this because the primary intervention in the early years was a bednet intervention, and the intervention later was more effective IRS.

Zanzibar is a small island ... a part of Tanzania ... and hardly typical of the vast areas of Africa that have the burden of endemic malaria.

Eritrea

Over the 7 year period morbidity and mortality both dropped by a substantial percentage ... but according to the data it seems that the morbidity dropped more rapidly than mortality. Why is this?

What about monthly data to show seasonality? Is the morbidity and mortality clustered at any special point in the year?

Eritrea is at the edge of the Africa malaria endemic area. Does this have an impact on the data.

What relevance do these graphs have?

The number of child deaths attributed to malaria in Africa is 3,000 per day or just less than 1.1 million a year

- IF the results show for Zanzibar were typical for all Africa then these numbers would be 1,600 per day and 580,000 a year.
- IF the results shown for Eritrea were typical for all Africa then these numbers would be 800 per day and 290,000 a year.

There is something here that does not hang together!