Health Economics for Health Workers Involved in Malaria Control Programmes

Basic concepts, tools and applications

Tutors’ guide: Trial Edition

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Note to tutors

This module is somewhat different from the other modules in the course – largely because economics will be a completely new subject for many of the learners. Some learners may need to be persuaded of the importance of economics, though many will immediately understand its relevance. Showing how economics can be used practically – and demonstrating what happens when costs and budgets are ignored – is an important part of this module.

The overall objective of the module is: to provide learners with basic knowledge and skills in health economics to enable them to increase and improve resource allocation for and within malaria control programmes. The idea is to give learners an appreciation of what economics can offer – the expectation is not that they will be able to do complex costings or economic evaluations themselves after this short module.

Ideally, two tutors will team-teach this course. Between them they should have practical experience of health economics, malaria and aid instruments. Handling a large class, on a new subject, with many activities is difficult for a solitary tutor.

This tutors’ guide deliberately does not give precise timings for each session. Tutors will need to adapt timings to suit the needs, interests and experience of a particular class. There are more than enough activities to keep a class occupied for 3 working days – it is up to tutors to select which activities they wish to use. Because there are so many activities, it is recommended to use a variety of ways of organising them – some can be done in largish groups, some in pairs, some in groups of 4 etc. Sometimes each group can feed back; other times one group can give their response and others can add any new, different thoughts. Some reading in advance is suggested (specifically Annexes 1-3) – however the module is very intensive and learners should not be expected to do too much work out of normal hours.

To give a broad idea of timing, Learning Unit 1 can be finished by morning coffee break or lunchtime of the first day. Unit 2 can take up the rest of day 1, and up to morning coffee break or lunchtime of day 2. Units 3 and 4 can take up to lunchtime, or afternoon tea break, on day 3.

Obviously, the more up-to-date the materials used, the better. Tutors should look at the Roll Back Malaria, Global Fund and GAVI (for Financial Sustainability Plans) websites in advance of teaching the module. The web addresses are respectively:

- Roll Back Malaria www.rbm.who.int
- Global Fund www.theglobalfund.org
- GAVI (for Financial Sustainability Plans) www.vaccinealliance.org

Links can be made between this module and course fieldwork. For example, learners could ask people how much they have spent on malaria treatment/
control recently. (Remember that people will only recall fairly recent expenditures.)

Most modules in this course start with a pre-test and end with a post-test, which is the same questions in a different order. Suggested questions are given at the end of this guide. Tutors should decide whether or not they want to give a pre-test – it is recommended not to do this, as economics will be a new subject for most of the learners.

Potential tutors who wish to talk with someone who has practical experience of using these materials should contact:

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Tuoyo Okorosobo   okorosobot@whoafr.org
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ANC</td>
<td>antenatal care</td>
</tr>
<tr>
<td>BCC</td>
<td>behaviour change and communication</td>
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<tr>
<td>CER</td>
<td>cost-effectiveness ratio</td>
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<td>CQ</td>
<td>chloroquine</td>
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<tr>
<td>DALY</td>
<td>disability-adjusted life-year</td>
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<td>EPI</td>
<td>Expanded Programme on Immunization</td>
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<tr>
<td>FSP</td>
<td>Financial Sustainability Plan</td>
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<tr>
<td>GAVI</td>
<td>Global Alliance for Vaccines and Immunisation</td>
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<tr>
<td>GDP</td>
<td>gross domestic product</td>
</tr>
<tr>
<td>GFATM</td>
<td>Global Fund to Fights AIDS, Tuberculosis and Malaria</td>
</tr>
<tr>
<td>GNP</td>
<td>gross national product</td>
</tr>
<tr>
<td>HAART</td>
<td>highly active anti-retroviral treatment</td>
</tr>
<tr>
<td>HIPC</td>
<td>Heavily Indebted Poor Country</td>
</tr>
<tr>
<td>IEC</td>
<td>information, education and communication</td>
</tr>
<tr>
<td>IMF</td>
<td>International Monetary Fund</td>
</tr>
<tr>
<td>ITN</td>
<td>insecticide-treated nets</td>
</tr>
<tr>
<td>MDG</td>
<td>Millennium Development Goal</td>
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<tr>
<td>MoF</td>
<td>Ministry of Finance</td>
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<tr>
<td>MoH</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>MTEF</td>
<td>medium-term expenditure framework</td>
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<tr>
<td>NGO</td>
<td>non-governmental organisation</td>
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<tr>
<td>PRSP</td>
<td>Poverty Reduction Strategy Paper</td>
</tr>
<tr>
<td>RBM</td>
<td>Roll Back Malaria</td>
</tr>
<tr>
<td>SP</td>
<td>sulfadoxine-pyrimethamine</td>
</tr>
<tr>
<td>SSA</td>
<td>sub-Saharan Africa</td>
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<tr>
<td>SWAp</td>
<td>Sector-wide Approach</td>
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<tr>
<td>VHW</td>
<td>village health worker</td>
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</tbody>
</table>
Learning Unit 1

Introduction to the module, economics and health economics

Learning objectives for Unit 1

By the end of this unit, learners should have a broad appreciation of what economics is, the particular features of health economics, and why this is relevant to their professional lives.

Introduction to the module

Activity 1 - A1
(All activities in this module are numbered consecutively – A1, A2 etc.)

Discussion
How is economics relevant to your daily working life? What kinds of economics work do you do?

The class can draw up a list together, with individuals offering suggestions. This activity can be done at the very beginning of the session, and re-visited (and completed) after the introductory talk, to see if learners have come up with more ideas.

The list should at least include some version of the following:
- Budgeting and costing
- Lobbying for funds
- Allocating resources – staff, vehicles, drugs……Important to emphasise here that economics isn’t just about money. Staff time may be one of a programme’s most valuable resources.
- Prioritising –among and within different interventions
- Talking to communities about how they spend their money.

The module is organised to answer three broad questions:
- Where does money for malaria control come from? (Learning Unit 2)
- How can we use the money better? - costs, economic evaluation such as cost-effectiveness analysis (Learning Units 3-4)
- How can we use economic arguments to advocate for more and better spending on malaria control? (Learning Unit 5)
What is (health) economics?

*Pens*

Any relevant item can be used to explain the concepts – choose something relevant to the local context and place it in a local situation, such as the town market. Use some pens (or whatever object is being used as an example) as visual aids. Draw a basic supply/demand graph (price/quantity axes) to illustrate.

Imagine a woman who wants to buy a pen. Before she finally buys a pen, she makes a number of decisions:

- What is it for: class notes? gift?
- Colour: blue? black? red?
- Type: ball-point or fountain pen?
- Maker: BIC, BIRO, STAEDLER, etc?
- Cost: less than $1, $1-4, $5 or more?

There are several choices to be made - these are under her control. If she has a lot of money she may buy an expensive one or several pens; if the money is limited she will make a different choice. Depending on the circumstances, she may visit one or several shops.

If more and more people go to a particular shop to buy pens, the shop owner may decide to invest more money in pens. He will be *supplying* pens to meet the *demands* of potential pen-buyers.

In general, assuming no government restrictions, a business-person will invest in commodities and services that will bring him/her income. This relies on customers seeing goods and services which they like and can afford. As this process of supply and purchase continues over time, a pattern of distribution of the various commodities (and profits generated) emerges. Some people have more income than others and some are able to buy more goods than others. This distribution of commodities through the interaction between businesses and customers is the basis of capitalism and the market system.

Economics helps us to study how society uses its resources to produce commodities and services and distributes them among different groups. Economics can be harnessed to think about whether the available resources are being used in the best way possible. Are we doing the right things? Are we doing them right (efficiently)? Would the market for pens be better in some way if government intervened?
Malaria

### Activity 2 – A2

**Discussion**

How is malaria different from the example of pens?

Draw up a list together as a class, with individuals offering suggestions.

**Key points to bring out:**

- **Knowledge is different** – with pens, the consumer essentially knows what she wants. Malaria is more complicated.
- **Quality. The pen-buyer can test the quality of a pen by scribbling on a piece of paper to see how it writes. It is difficult for consumers to know the quality of malaria treatment.**
- **Timing and urgency. Buying a pen is generally not urgent – it can always wait. Malaria treatment is different.**
- **Government involvement. In general, governments want to be involved in health care – for many reasons, including popularity, basic human rights and improving the stock of human resources (i.e. having healthier people who can contribute to the economy).**
- **Some aspects of malaria control are collective. Spraying is most efficient if done for more than an individual – so there needs to be some kind of collective decision-making.**
- **Prevention is generally under-used. Individuals do not buy as much as would be efficient – lowering costs and/or increasing understanding can change this.**

If the woman in the above example about pens had a bad case of malaria she has a choice of going to a clinic, buying drugs from a drug seller (or pharmacist), or visiting a traditional healer. If she decided to go to the clinic, it is complicated for her to decide what services to buy to get back her health. There are questions of whether to have laboratory examinations and interpretation of their results, which type of drug to buy, whether the severity allows time to change clinics if she cannot afford the charges of the first clinic, what to do to prevent future attacks etc. Many of these decisions are difficult to make because she has limited information about the condition and what is the most appropriate treatment. She is not a knowledgeable buyer (as she was for pens).

Moreover, if you left “the sale of health” to be decided by the market (as for pens) certain components will not be profitable to businesses and would not be produced; for example, it would be difficult to persuade individuals to pay for insecticide spraying of a whole town (“why should I pay, I will leave my neighbour to pay”). This would result in malaria continuing to be a problem for society. Government therefore steps in to help by providing those services that are important but will not easily sell.

These are only two of several reasons that set health apart from other commodities and services and lead to Government involvement in the health sector. It has also led to the development of the economics sub-theme of **health economics**.
Health

Just as individuals have to make choices about what health services and products to use, there are several levels of choice for Government. Health economics helps with making these decisions:

- Government has to decide how much to spend on health, as part of national budgeting.
- Government policy also considers who to spend it on – e.g. paying for fee exemptions for pregnant women, whether to allocate more to poorer districts.
- Donors make decisions, nationally and internationally, on how much to allocate for health in a country and which programmes to support.
- The Ministry of Health (or local government) has to decide how much to allocate to programmes or districts and which interventions to provide.
- Districts decide where to have clinics or outreach, how much managerial time and leadership to devote to malaria etc.

These issues are expanded upon in the rest of this module.

Health economics is the application of economic theories and techniques to decisions on health. The focus is on how to make the best use of limited resources, in the face of scarcity of resources (which faces all countries, rich or poor).

You may want to re-visit A1 now.
(How is economics relevant to your daily working life? What kinds of economics work do you do?)
(Note: this discussion can be made more focussed by having some relevant data available. Assuming you know the nationalities of learners in advance, bring along data on the percentage of GNP which is spent by government, and what percentage of government expenditure is spent on health and education. You can make this into a guessing game. Do participants know what these percentages are, approximately? One source of such data is the World Bank’s annual World Development Report.)

Discussion:
- Why do most governments give a relatively large proportion of their budget to the Education and Health sectors?
- Pregnant women are sometimes exempted from fees. Why?
- Why is health education (IEC/BCC) generally provided at no cost to the "recipient"?
- Why does the private sector overwhelmingly concentrate on curative work?

Key points to bring out:
*In the market approach those who have money can buy services, those who cannot afford services cannot buy them. While this may not matter for buying pens, societies typically decide that it is not acceptable for health care. This is partly a matter of equity - we do not want the poor to suffer; and partly self-interest - we all benefit from control of communicable diseases. We therefore want everyone else to be immunised, to reduce mosquito-breeding places, to know the importance of hand washing etc. So we prefer Government to subsidise or provide the services free, rather than hoping people will make the choice themselves and will be able to pay for it.*

Within this general desire to be involved with health, governments need to prioritise. Pregnant women are often identified as a priority – because of their particular needs and vulnerabilities, and because the health of two people is at stake (mother and baby).

*People do not always see the value of buying certain goods or services – for example, things linked to prevention. So health education can be a good investment for government if it causes people to behave more efficiently.*

*The above explains why the private sector is generally not involved with prevention. Also, curative medicine has the potential to be very highly profitable.*
Discussion

People argue that health care is often about life and death and should be provided at any cost on the basis of need. Do you (as a manager of health services) agree?

Think of:
- a pregnant woman with severe malaria
- a man of 65 years old needing HAART (highly active anti-retroviral treatment for HIV/AIDS)
- a child needing renal dialysis
- everyone in the town where this training course is taking place.

*This discussion is likely to be heated and must be carefully managed. The point is that prioritisation/rationing is inevitable, and can happen either explicitly or covertly.*

Key points to bring out:
Objectives of health programmes are usually stated in terms of reducing morbidity and mortality. But some of the ways to reduce mortality are very expensive. In situations of limited resources, some hard decisions have to be made to select services that save most lives or reduce disease most. Individual needs may have to be sacrificed for the greater good, though this is rarely stated explicitly. We need to have some (largely) objective way of comparing need amongst individuals – economic evaluation tackles this question.

End of Learning Unit 1

Very briefly summarise the contents of the Learning Unit.
Repeat the Learning Objectives given at the beginning of the Unit and take any remaining questions.
Learning Unit 2

Where does the money come from? - funding for malaria work

Learning objectives for Unit 2

By the end of this unit, learners should know the major sources of funds for malaria work, and their relative magnitudes. They should understand broadly how relevant institutions (government, international organisations, households) work and hence how best to access funds.

A5
Start the session by asking participants to list the sources of money for malaria in their country.
For each of the sources, do they know the person who is responsible for distributing the funds? Do they ever meet with them?
Make a list on the flipchart. Then ask each individual learner to estimate what percentage of total spending comes from each source. Compare this with the Tanzanian information given below.

Key points to bring out:
Must include household expenditure, government, international support and NGOs. Religious bodies can be seen as NGOs. Many learners are likely to under-estimate the relative importance of household expenditure.

Introduction – where do funds for malaria work come from?

This Learning Unit looks at where funds come from for malaria work, and how decisions are made on funding levels. The main sources of funding for malaria work and the associated inputs (e.g. staff salaries) are:

- **Government** funds, channelled through the health sector and through local Government
- **Donor** funds, through projects, programmes, supplies in kind, support to NGOs or contributions to Government’s budget
- Household expenditure, e.g. out of pocket spending on drugs and ITNs.
- **NGOs** (non-governmental organisations) and religious organisations.

Specifically, this Unit explores the following topics – and explains what the various jargon and acronyms mean!

I. Government planning and budgeting
II. Recent developments in planning and budgeting – MTEFs and PRSPs
III. International support and how it is changing – projects, SWAps, budget support, GFATM and drug donations
IV. Household expenditure and how to influence it. (Household expenditure can also be called “private” or “out-of-pocket”).

The following data from Tanzania\(^1\) is one example of sources of funds. Try to find out if similar information is available for your country. Do you think the percentages would be very different from the Tanzanian information?

**Exhibit 1  National health expenditures, Tanzania, 1998**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health expenditures as % GDP*</td>
<td>2.7%</td>
</tr>
<tr>
<td>Government health exp. as % GDP</td>
<td>0.7%</td>
</tr>
<tr>
<td>Health expenditures per capita</td>
<td>$5.5</td>
</tr>
<tr>
<td>Government health exp. per capita</td>
<td>$1.4</td>
</tr>
</tbody>
</table>

* GDP means Gross Domestic Product. This is the value of goods and services produced by labour and property located in a country.

\(^1\) Malaria Expenditure Analysis, Tanzania Case Study, by Jowett et al. Full reference in “recommended reading” at the end of this Learning Unit.
Exhibit 2

Total malaria expenditures in Tanzania, 1998/9, US$

$64,580,000 (39% total health expenditures; 1.1% GDP)

Per capita: $2.14

of which,  Tanzania Govt.  $0.40 (17%)

   Donors        $0.23 (11%)

   Households    $1.51 (71%)

Note in particular the very high percentage of total GDP that is spent on malaria and the huge proportion of funds which comes from households.

Other information which is of interest about individual countries includes:

- What percentage of GDP is government expenditure?
- What percentage of government expenditure is on health? This is of particular interest because it is one of the indicators for monitoring implementation of the Abuja Declaration of 2000.²

I Government planning and budgeting

Discussion.
There are many pitfalls in the planning process and sometimes plans fail or are ignored. The purpose of the exercise is for learners to explore why planning and budgeting do not always produce the desired results.

Plan the groups in advance – depending on numbers, there could be one or more groups of people who work at district, regional/provincial and national level.

The questions are intended to initiate discussions; other points may be raised. Make this point very clear – otherwise groups will plough through the questions one at a time. Ask groups to read all the questions first and discuss around the topic. Each group should feed back. This exercise can easily take 45 minutes.

End the session by summarising:

- Any lessons for districts/regions/provinces on how to make their planning and budgets more useful and effective?
- Any lessons for the central level on how they can make district planning and budgeting more useful?

**Districts:**
- What plans and budgets do you produce?
- Do you get guidance on how many resources you are likely to have or what you are expected to achieve? If so, from whom?
- If not, how do you decide how much activity and resources to plan for? Do you ask for too much, knowing it will be cut?
- What are the relative roles of your line ministry (Ministry if Health) and the local government office (this may be called the District Administration Office, the Office of the District Chief Executive or similar)?
- What happens to the plans and budgets you participate in producing? Who actually submits the plans? To whom?
- Do you think you are listened to? Do you get feedback? If not, why not?
- Does your budget allocation relate to your plan? Is the budget actually released in time and in the right quantities?
- Is there a line item specifically for malaria? Does this matter?
- If the malaria budget is subsumed in a broader item such as “communicable diseases” or “primary health care”, what can you do to safeguard the malaria part?
- What value do you find in planning and budgeting?

**National level and regions/provinces:**
- What are the relative roles of your line ministry (Ministry if Health) and the Ministry of Local Government office?
- What are your reactions to the plans and budgets produced by districts? Quality? Realistic in terms of funding needs?
Do you respond to districts? In what ways?
What are the frustrations the national level has in dealing with the districts?
What competing interests are there for available resources? How are these dealt with?
Is there a line item specifically for malaria? Does this matter?
If the malaria budget is subsumed in a broader item such as “communicable diseases” or “primary health care”, what can you do to safeguard the malaria part?
Are districts aware of the practical aspects of accessing funds for their plans? Are they seeing the right persons?
Do you provide practical advice and assistance to the districts to ensure plans are realistic?
Does the national level get good information from the Ministry of Finance about what levels of money might be available and how the budget will be decided?

Key points to bring out:
Successful budgeting depends on a cycle of good communication – districts need to know the context in which they are working and competing for funds. In many countries, decentralisation has meant an enhanced role for local government. Does everyone appreciate this and its implications? – managers need to have good contacts with staff in local government and a good understanding of how they work.
Many learners may express frustration with the budget process and the resulting “games” which occur – for example always asking for too much money, knowing that it will automatically be cut. Whilst these games may be rational in a particular situation, it is important to understand the wider context. Many malaria workers express frustration that malaria is often subsumed into larger budget line items such as “communicable diseases” or even “primary health care”. There are arguments in favour of separate budget lines – but learners should also think about how they might informally “ring-fence” some money for malaria at the local level, even if this does not appear in the formal budget.

Note to tutors:
It can help to develop a non-technical example to illustrate your points. For example, how did learners decide how much money to leave with their families when they came away on this course? Or how would a parent with 4 daughters going off to boarding school decide how much money they each need for a term? Would the parents start by asking the girls how much they each needed, or perhaps tell the girls that they can have up to (say) $40 each and ask them to justify it? These are different ways of starting off the budget cycle.

A budget is a translation of our planned activities and resources into monetary terms. The plan defines how our objectives are to be met; the budget shows money needed to implement the plan in terms of staff, accommodation, equipment, drugs etc. A government budget is a document which states how
much money will be allocated to various ministries, programmes, districts etc. in a year (or 3 or 5 years).

While district or programme managers are mainly concerned with preparing their own budgets, it is essential that successful managers understand the budgeting process of the larger system in which they work. (“It is no good asking your brother for money if your grandmother controls the family purse.”)

Only in this way can managers direct their efforts to influencing the appropriate stages in the budget chain.

The diagram below sets out a typical cycle for public expenditure management – i.e. planning and budgeting.  

The Budget Process
(Public Expenditure Management Cycle)

Policy Review
- Outcome Evaluation
- Annual Review and Policy Update

Reporting & Audit
- Auditor General
- Public Accounts Committee
- Parliament

Strategic Planning
- Fiscal Targets (3 year)
- Policy Targets
- Resource Framework
- Expenditure Priorities

Accounting & Monitoring
- Monthly & Quarterly Reports (Expenditures and Outputs)
- Half Year Review

Budget Preparation
- Revenue Targets
- Financing Plan
- Ministerial Allocations

Budget Execution
- Release of funds
- Programme Implementation
Points to note about this diagram include:

- It describes an ideal
- Note how much of the activity happens beyond the Ministry of Health
- Budgeting is of course highly political
- If there is good communication, individuals know what their job is within the highly complex larger budget cycle.

Within this general cycle, there are variations. For example:

- Some countries are very decentralised (e.g. Uganda); others are very centralised.
- Many budgets are not linked to activities - rather they are based on inputs such as staff, travel and transport; and drugs. Some budgeting processes make an effort to link the budgets to specific plans and activities. Likewise, some budgets are linked to past performance (financial or technical) and some are not.

In thinking about how decisions are made on how much to allocate for malaria-related activities, there are various key steps:

- how much is available for public expenditure as a whole? (depends on economy, tax collection, debts)
- how much of this should go for health? (depends on a judgement on how well health makes its case and is seen to perform; other competing priorities; how much donors will cover)
- within health, how much for malaria or for inputs that help with the delivery of malaria services (e.g. vehicle maintenance, IEC, staff)?
- At district level, how much for malaria and related inputs?

The decision on annual budgets for sectors is a multi-stage process, with negotiations between line ministries and the Ministry of Finance. A typical process is:

a) resource projections prepared by the Ministry of Finance (MoF) and approved by Cabinet
b) budget guidelines prepared by MoF giving sector expenditure limits and assumptions (e.g. on public sector pay)
c) line ministries present estimates/budget proposals and negotiate on these
d) budget prepared by MOF
e) submission to Cabinet
f) submission to Parliament for approval
g) ministries finalise their sector budgets.

We want to influence this process and make sure malaria gets into the budget process at the right stage and in the right form.
A7
This exercise can be done in pairs and then discussed in plenary. For the final questions in the last row of the table, learners could be asked to tell the group if they felt their partner had anything particularly interesting to say.

Complete the table to identify who make the decisions on each of these:

<table>
<thead>
<tr>
<th>Allocation decision</th>
<th>Who makes the decision in your system?</th>
</tr>
</thead>
<tbody>
<tr>
<td>How much for public spending?</td>
<td></td>
</tr>
<tr>
<td>How much public spending is for health?</td>
<td></td>
</tr>
<tr>
<td>How much national health budget is for malaria related spending?</td>
<td></td>
</tr>
<tr>
<td>How much of district budget is for malaria related spending? (health sector and beyond)</td>
<td></td>
</tr>
<tr>
<td>Are there further steps? (e.g. getting funds released)</td>
<td></td>
</tr>
</tbody>
</table>

Do you know the people listed above? Do you have professional contact with them? Do you feel you (or your boss) should have more contact with them? How else might you influence and get involved with the annual budget process?

Key points to come out:
Learners need to be aware of the roles of local government, ministries of finance, and government accountants (Office of the Controller and Accountant-General, or similar).

There is much that can be far from perfect in the budget process – for example, budgets are often linked to inputs rather than activities and there is often not good information about how much money a programme is likely to receive, meaning that time is wasted on developing over-ambitious plans and budgets. Whilst no one individual in a malaria programme can solve these systemic problems, it is worthwhile for managers to understand the issues and communicate at the appropriate time with the relevant people.

Even when a budget has been formally approved, this is not the same as actually receiving the funds. Care should be taken when looking at budget information to check whether this is a budget for the future, approved funds, or actual expenditure. The three amounts can be very different – see the table below.
Budget, Approved and Actual expenditure for Anan District 2001 (in currency units)

<table>
<thead>
<tr>
<th>Item of expenditure (A)</th>
<th>Budget (B)</th>
<th>Approved (C) (% of B)</th>
<th>Actual (D) (% of B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff salaries and other allowances</td>
<td>10,000,000</td>
<td>10,000,000 (100%)</td>
<td>10,000,000 (100%)</td>
</tr>
<tr>
<td>Drugs</td>
<td>3,000,000</td>
<td>2,500,000 (84%)</td>
<td>1,500,000 (50%)</td>
</tr>
<tr>
<td>Transport maintenance &amp; cost</td>
<td>1,000,000</td>
<td>900,000 (90%)</td>
<td>100,000 (10%)</td>
</tr>
<tr>
<td>Equipment and supplies</td>
<td>1,000,000</td>
<td>600,000 (60%)</td>
<td>400,000 (40%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15,000,000</strong></td>
<td><strong>14,000,000 (84%)</strong></td>
<td><strong>12,000,000 (75%)</strong></td>
</tr>
</tbody>
</table>

Column B shows the funds you budgeted for. Column C is the sum approved by the Ministry of Finance or Health. Column D is what you actually receive.

Reasons for cuts include inadequate government funds to meet its budget obligations (leading to a general cut for all ministries), or cuts by the Ministry of Health because someone thinks the budget is inflated or because of a change in priorities. It is important to understand why your budget is being changed, so that you can follow it up and try to rectify the situation. Having good budget and expenditure information will help you to make the case for replacing the reduced funds.

II Recent developments in planning and budgeting – MTEFs and PRSPs

This section looks at new developments in planning and budgeting and the opportunities for influence. Two major initiatives are discussed here:

a) Medium Term Expenditure Frameworks (MTEFs)

b) Poverty Reduction Strategy Papers (PRSPs).

a) Medium Term Expenditure Frameworks (MTEFs)

Start by finding out what learners already know. Are there MTEFs in their countries? What do they know about them?

The budgeting process we have just discussed is an annual process, resulting in the annual budget allocation for each budget holder. It is difficult to shift resources very much from one year to another – staff are in post and need to be paid; contracts may be signed to purchase goods. Over three years it is easier to show how resource allocation can be planned to change. This led to the idea of a Medium Term Expenditure Framework, or MTEF.
An MTEF is a three-year rolling plan that sets out what government wishes to achieve, the costs, and how it proposes to finance them from both domestic and external sources. ("Rolling" means that as one year finishes, another year is added to the two remaining years, so that planning is always done for the 3 next years.) Many countries now use the MTEF as the primary budget instrument. It is used to allocate resources to strategic priorities and to ensure that the allocations are consistent with overall fiscal objectives (i.e. that government can afford them without damaging the overall economy).

In malaria, changing a national drug protocol is a good example of the potential value of a rolling plan and budget. It may be decided to roll out use of the new drug, and to ensure that all stocks of the old drug are used up first. This could well take more than a year to implement – and the budget for drugs will look very different from year to year. A rolling budget helps managers to think through these issues in good time.

The advantages of MTEF are expected to be:

- Links sector objectives, policies and programmes to the availability of resources.
- Allows visible shifts in expenditure in the direction of priorities and enables distortions in the pattern of expenditure to be addressed.
- Makes funding more predictable through forecast of future resources; level of allowable spending is known ahead, so activities can be scheduled over years against known ceilings.
- Links financing with performance; clearly outlines what is expected to be achieved by each sector.
- Links budget to actual priority activities; not just incremental increase to a recurrent budget. (Traditionally, many budgets have been made by just changing each line item and programme budget by the same percentage as the overall change in money available. This ignores the fact that priorities change and some programmes offer better value for money than others.)
- Avoids unrealistic budget bids and arbitrary cuts by the Ministry of Finance.
- Allows opportunities for other stakeholders to discuss major budget decisions (e.g. civil society involvement; better discussions in parliament).
- Improves the quality of budgets and staff understanding and capacity, thereby creating greater confidence and ownership in the budget process.
- Promotes greater intersectoral collaboration between the Ministries of Finance and Health.
• Provides information that can be the basis for negotiations with donors; gives potential for better donor co-ordination.

MTEFs are useful for sector and programme managers – they can see what funding is likely to be available and whether policy statements are being backed by resource allocation. This can provide ammunition for making the case for funding (“you say primary health care is the priority but the share of resources for hospitals is going up”). This is important for malaria, where vague statements about the importance of malaria control are often not backed up by appropriate resource allocation.

Obviously not all countries have MTEFs. If yours does not, you still need to understand the way in which public expenditure planning works. The lack of an MTEF probably means that there is considerable uncertainty about possible medium-term spending plans.

b) Poverty Reduction Strategy Papers (PRSPs)

Start by finding out what learners already know. Are there PRSPs in their countries? What do they know about them?

Poverty Reduction Strategy Papers are documents which describe the nature and causes of poverty in a country, and identify priority activities to improve the situation.

Whilst PRSPs are multisectoral, health generally (but not invariably) features strongly. A PRSP will usually identify health priorities which are particularly important for the poor. These priorities are linked to broad budget allocations, usually for 3 years. PRSPs also describe how progress of the priority activities will be monitored. This entails identifying key indicators.

In general, PRSPs are expected to meet six criteria. They should be:

- country-driven and –owned
- results-oriented
- comprehensive
- based on poverty analysis
- participatory (involving key stakeholders – i.e. not merely a technical document prepared by a few civil servants)
- based on a medium- to long-term perspective.

From what was learnt in the previous section, it should be obvious that PRSPs are ideally linked to a MTEF. This enables a clear connection between plans and budgets.

PRSPs are currently a central part of international development thinking. Inspired by Uganda’s Poverty Eradication Action Plan and other country initiatives, PRSPs were introduced as a requirement for countries seeking debt relief under the Highly Indebted Poor Countries Initiative (HIPC). The PRSP has to be agreed before debt relief is completed – the idea is to ensure
that money released by debt relief is well used. From there, PRSPs have become a requirement for some types of World Bank (IDA) and IMF support.

Now many donors see the PRSP as central to their support to a country – having an acceptable PRSP therefore has significant resource implications, often especially for education and health.

Another crucial part of this web of international development thinking is the Millennium Development Goals (MDGs). These are described in the box called Exhibit 3, below.

PRSPs offer a genuine opportunity for malaria to receive more attention and more funds. To do this, malaria managers need to:

- be able to describe the links between malaria and poverty. Are poor people more likely to get malaria? Do the financial and other effects of malaria make or keep people poor? Exhibit 4 describes the thinking on malaria and poverty in the 2002 Evaluation of Roll Back Malaria.

- clearly describe their priority activities and associated costs.

- Be able to suggest relevant, usable indicators than can measure performance. The Roll Back Malaria Framework for Monitoring Progress and the Abuja Declaration offer practical examples of indicators – for full details see under “Recommended reading” at the end of this Learning Unit.

- Get their timing right. Research suggests that whilst PRSPs provide a real opportunity to get more resource for health, this is only true in the development stage of the PRSP. The shift in resources tends to happen at the start of the PRSP but not continue into later years. So lobbying about the importance of malaria is most effective at the time that the PRSP is being developed.

A PRSP that specifies priority malaria activities and how they will be monitored has the potential to attract significant resources to malaria control. The “Recommended reading” section at the end of this Learning Unit gives a website address to access numerous background papers describing PRSPs, as well as access to actual country PRSPs.
A8
Do your malaria plans meet with the criteria listed above for PRSPs, i.e.
- country-driven and -owned
- results-oriented
- comprehensive
- based on poverty analysis (Make sure you have read Exhibit 4)
- participatory
- based on a medium- to long-term perspective?
What would you need to do to meet the criteria?

Key points to come out:
Malaria workers need to know how to operate in the wider government and development contexts. More and more, plans are expected to:
- specify expected results, and how they will be measured
- think beyond one single sector
- show how the poorest in society will benefit
- involve others in the development of the plans.
A sense of perspective needs to be kept – clearly districts cannot spend inordinate amounts of time on planning for malaria. But district plans should include the basics of targets and monitoring and should at the very least ensure that local government representatives (or equivalent) are kept informed.
There should be some discussion of what indicators work well. Are the Millennium Development Goals, targets and indicators helpful?
Exhibit 3  The Millennium Development Goals

In September 2000 the member states of the United Nations unanimously adopted the Millennium Declaration. Following consultations among international agencies - including the World Bank, the IMF and the specialized agencies of the United Nations - the UN General Assembly recognized the Millennium Development Goals as part of the road map for implementing the Millennium Declaration.

Achieving the MDGs by 2015 will require more focus on development outcomes and less on inputs. The goals establish yardsticks for measuring results, not just for developing countries but also for rich countries that help to fund development programs and for the multilateral institutions that help countries implement them. The first seven goals are mutually reinforcing and are directed at reducing poverty in all its forms. The last goal- global partnership for development - is about the means to achieve the first seven. Many of the poorest countries will need additional assistance and must look to the rich countries to provide it.

There are 8 Millennium Development Goals.

1. Eradicate extreme poverty and hunger.
2. Achieve universal primary education.
3. Promote gender equality and empower women.
4. Reduce child mortality
5. Improve maternal health.
7. Ensure environmental sustainability.
8. Develop a global partnership for development.

For goal 6, the specific target for malaria is:

“Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases”.

The related indicators are:

- prevalence and death rates associated with malaria
- % population in malaria-risk areas using effective malaria prevention and treatment.

For more information, including on progress towards achieving the goals, see www.un.org/millenniumgoals
Exhibit 4  A Pro-Poor Health Systems Approach

“…..one of the major achievements of RBM (Roll Back Malaria) in the first three years has been the development of a consensus around a set of priority interventions in malaria control and prevention. The strategy has been to target high-risk populations, and reduce overall rates of morbidity and mortality. However, little is actually known about the ability of such a strategy to target effectively the very poor. This is a problem, since a key rationale which justifies stepped up spending on malaria control activities is its ability to have an impact on poverty reduction, and the attainment of the Millennium Development Goals.

In fact, given the unusually tight correlation that exists between malaria and poverty, it is likely that a focus on high-risk groups is at least a viable first approximation of a poverty-oriented strategy. Nonetheless, there is evidence that resources dedicated to malaria control are not always equitably distributed. For example, in parts of rural Tanzania the children from the richest fifth of the population are twice as likely to receive appropriate anti-malarial treatment than those from the poorest fifth of the population. The same situation is likely to be seen elsewhere, and is likely to worsen in countries which are transitioning to more expensive combination therapies. Similarly, a focus on private sector solutions to net distribution may easily result in greater coverage for the general population but not for the very poor. More information is clearly needed, and RBM should be at the forefront of these investigations.

RBM should also be at the forefront of operational research to study optimal ways of designing programmes that disproportionately benefit the poor. For example, in The Gambia a targeted bednet programme benefited poor children more than wealthy children, lowering their rates of parasitaemia from 63 percent to 40 percent, compared to 35 percent to 31 percent. Lessons learned from these and other studies should be shared widely among countries and more broadly within the Partnership.”

III  International support and how it is changing – projects, SWAps, budget support, GFATM and drug donations

At the very beginning of this Learning Unit, figures were given on per capita spending on malaria in Tanzania. 17% of the money came from the Tanzanian government, 11% from donors and 71% from households. This section of the module looks at donors – i.e. external (international) funds from development agencies. It covers five main types of support:

a) projects  
b) sector wide approaches (SWAps)  
c) budget support  
d) the Global Fund to Fight AIDS, TB and Malaria  
e) drug donations.

There are other types of support, which are not analysed here. These include scholarships and training; technical consultants; and advice from multilaterals such as WHO.

There are 3 main types of donor:

- multilateral, i.e. international. (e.g. the UN)
- bilateral, i.e. from one nation. (e.g. DFID, USAID, DANIDA – these are respectively from the UK, US and Denmark)
- NGO – non-governmental organisations, including religious bodies.

It is predominantly bilaterals and multilaterals which are involved in sector wide approaches and budget support.

a) Projects

Projects and programmes are the traditional approach for donors and lending agencies to provide support. They typically have a clear plan for what activities or inputs will be funded, with requirements for how funds are managed and reported on separately from Government systems.

A9
Work in small groups. One group can present its findings, with others adding points missed.  
Before beginning, check that all learners know what a project is – if necessary, give an example.

What are the advantages and drawbacks of projects from the viewpoint of the country and the staff involved in service delivery?
### Key points:

<table>
<thead>
<tr>
<th>Advantages of projects</th>
<th>Drawbacks or risks of projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Funds are clearly allocated to malaria control.</td>
<td>There may be delays in getting full project approval.</td>
</tr>
<tr>
<td>Per diems or allowances may be provided.</td>
<td>Donors may concentrate on some districts or interventions, leaving out other important places or services - e.g. HIV/AIDS may get lots of funds, but none for malaria.</td>
</tr>
<tr>
<td>The centre can influence or control district work.</td>
<td>When the project ends there may be a gap or activities may end. This is the problem of sustainability.</td>
</tr>
<tr>
<td>Often good systems for reporting on progress.</td>
<td>Usually they do not address fundamental issues such as low salaries.</td>
</tr>
<tr>
<td>{For the donor, they can see where their money has gone, e.g. they can ensure that the poorest areas are targeted.}</td>
<td>Different projects may be poorly coordinated, duplicate efforts or lead to inefficiency (e.g. car only for EPI).</td>
</tr>
<tr>
<td></td>
<td>Separate plans, project reviews, reports etc. can be a burden for national staff.</td>
</tr>
<tr>
<td></td>
<td>Resources absorbed in paying for project offices etc.</td>
</tr>
</tbody>
</table>

The disadvantages of projects are widely recognised – particularly the lack of overall co-ordination and limited sustainability. Moreover, to make a lasting difference it is important to have agreement and commitment on policies, not just individual project activities. This has led to thinking about other ways of providing donor support. The term used for these different ways of passing funds from donor to recipient is “aid instruments”.

The Overseas Development Institute has produced a two-page summary on the choice of aid instruments – see “Recommended reading” at the end of this Learning Unit for the full reference.

### b) Sector Wide Approaches

Begin by establishing what the participants already know.

SWAps emerged as awareness grew of the drawbacks of the project approach. The sector-wide approach is a planning and financing process that
evolved largely within the health sector in the 1990s, in response to criticism of un-coordinated and competing project support by donors. It shifts attention from the planning and management of projects, to the overall policy, institutional, and financial framework within which health services are provided. A simplified definition of an ideal sector-wide approach is: Government, donors and NGOs agree on one health plan and one budget and way of measuring performance.

Whilst SWAPs vary, key features of a SWAp usually include:

- Government leadership
- agreement on sector policy and strategy
- agreement on the broad plan and budget allocation in the sector
- all significant funding for the sector supports this agreed programme
- a commitment to move towards an increasing use of Government systems for management and spending of funds, with efforts to strengthen those systems
- shared planning and reporting arrangements.

Most SWAPs include some “pool funding” - funds are handed over to Government to spend in line with the agreed plan for the sector. This gives Government more control over the resources. However in practice a lot of money still tends to come in the form of funds earmarked for particular activities, commodities, or projects. (“Earmarked” funds are money allocated for a particular use – e.g. money raised from taxing cigarettes is earmarked for spending on anti-smoking education in some countries.)

Whilst important, how the funding is organised is only one part of a SWAp – the key idea is agreement on the overall plan and budget, rather than just how the money is channelled. Many SWAps feature a move towards joint missions to plan and review progress – this is significant, because it should enable more co-ordinated and less time-consuming planning and implementation.

Potential advantages of SWAPs include:

- Increases predictability of government and donor funding
- Places government squarely as sector leader, guided by agreed policy and planned with knowledge of available resources
- Identifies priorities across the whole sector so resource allocation can reflect these
- Reduces transaction costs (arguably, at least for Government)\(^4\)

\(^4\) Transaction costs mean the costs of doing (or transacting) business – in this case, government spends a lot of time and money on working separately with a number of donors.
• Allows resources and interventions to be allocated equitably, avoiding geographic disparities

• Increases transparency of resource use and improves accountability

• Builds up Government systems rather than setting up parallel systems

• Less scope for external partners to ‘do their own thing’.

Obviously there are risks for the government in joining a SWAP. The crucial question is whether the advantages outweigh the problems. Risks include:

• Government may feel that donors want to get too involved in policy decisions.

• Donors might cut off funding if they feel Government has not kept to the agreed plans.

• The transition to a SWAp can be difficult. For example, there can be breaks in supply if procurement arrangements have to change.

SWAps should mean that Government and donors concentrate on the most important issues facing the health sector. This can lead to difficult negotiations. For example:

• In Ghana, Government wanted to build a big new referral hospital. The donors argued that this was not in the plan and that the costs of running the hospital would take up too much of the recurrent budget, when the agreed priority was district primary services.

• In Bangladesh, there was an argument when a new Government was elected and decide to stop some of the reforms it inherited. But these reforms were in the sector plan; donors said they would withhold pooled funding if the reforms were dropped.

Exhibit 5, below, outlines the history of the health SWAp in Ghana.

Full details of a paper entitled “Addressing malaria sector-wide: improving co-ordination and management of external support” are given in “Recommended reading” at the end of this Learning Unit.
Exhibit 5  Case study – the health sector SWAp in Ghana

Context in which SWAp developed in Ghana: The sector-wide approach evolved as a direct result of dissatisfaction with the dominant role of donors in general, and vertical programmes in particular. In the early 1990s a policy decision was made to move from vertical programmes towards the integrated management of health resources. This led to the re-structuring of the Ministry of Health and the transformation of its planning unit into an upgraded policy, planning, monitoring and evaluation (PPME) directorate with an external aid coordination unit.

In 1995, a Medium Term Health Strategy (MTHS) that set the direction and framework for the health sector was drafted. This was then translated into a five-year programme of work (POW).

In 2002, the second 5 Year POW started. By this time the Ministry of Health had been re-structured to create a Ghana Health Service for public sector health service delivery and a smaller Ministry of Health for policy direction, monitoring and regulation of the health sector as a whole.

The POW is financed by the Government of Ghana, fees and about 14 development partners. Currently donor funds reach service delivery points through three main channels:

- the Health Fund (in some countries this is called the “Basket Fund”). This is pooled donor funds, controlled by the Ministry of Health with some degree of discretion and flexibility.
- pooled, earmarked funds. Some donor money is earmarked for specific programmes, but channelled through the Ministry of Health.
- direct earmarked funds. This money is earmarked and wholly controlled by the donor.

The target of the Ministry of Health and its development partners is to channel 90% of all donor funds through the Health Fund by 2006. By 2001 it was estimated at 37%, with a clear upward trend.
If at all possible, tutors should find a recent example of a SWAp review which they can use as background information for this Activity.

Discussion:
If the health sector in your country had a SWAp, what would be the implications for malaria control?

To give an idea of the kind of issues that are discussed by Government and donors, a recent review of a health SWAp programme of work in an African country raised the following issues:

- Funding for malaria had increased since an external review 2 years previously had highlighted the lack of increase in funds for malaria. But there was still a need for advocacy - malaria was the nation’s main cause of death, but did not receive funding that matched this.
- There was continuing poor co-ordination between activities funded through various mechanisms – the Global Fund, Roll Back Malaria, a bilateral ITN project and the SWAp pool.
- Activity should concentrate on vector control, and not just on ITNs and drugs.
- The only SWAp monitoring indicator was under 5 case fatality rate of malaria. No regional malaria programme in the country produced credible data for this indicator. (In contrast, EPI and TB had good information about “their” indicators.) It was recommended that the malaria programme should have 2 or 3 more indicators, and that these should be realistically measurable.

**Key points to come out in discussion:**
*Important to get malaria plans reflected in the sector policy and strategy and in annual plans and budgets. This means working with the Ministry of Health planning department (or similar) when the plans are being agreed. The technical content of plans should be compared with what is known internationally about best practice.*
*In general, malaria managers need to be very engaged in sector-wide discussions. They also need to sit together with the various funders to improve co-ordination.*
*Important to have realistic malaria performance indicators in the list of key indicators for SWAp monitoring.*
*A SWAp is potentially a marvellous opportunity for malaria to get more funding and more attention.*

c) **Budget support**

A SWAp brings together activities across the sector and allows Government, with its partners, to allocate resources in a more holistic way (rather than driven by donor interests and projects). A SWAp does not help Government address wider issues, such as the fact that civil service salaries are
unreasonably low. Nor does it give Government control over how much goes to one sector compared to another (e.g. education versus health).

General budget support is an aid instrument that aims to get round these problems by providing funding into the Government budget as a whole. The Government is responsible for allocating among sectors and between personnel and other types of spending.

Donors are only willing to give budget support if they have confidence in how Government will use the funds. PRSPs and their related budgets are often used as a tool to demonstrate a Government’s competence. Budget support may come with conditions on issues such as procurement, or an agreement to improve financial management systems.

What are the implications of budget support for malaria staff? With budget support, more of the funding is managed and controlled by Government through its normal planning and budgeting cycle. So malaria managers need to:

- ensure that those preparing the Ministry of Health (or local government) budget have the information and arguments for allocating resources to malaria
- make sure that malaria is mentioned in the PRSP text and indicators
- have the skills to make the case for malaria funds to the Ministry of Finance.

This Learning Unit has so far looked at various aid instruments. In practice there tends to be a mix of aid instruments used. Some donors continue to support projects. Some give some funds in budget support and other funds in programme support. Whilst there has been a trend towards putting money in ‘at the top’ in budget support and SWAPs, there has also been growth in another category of aid instruments - the Global Health Initiatives. The Global Fund to Fight AIDS, TB and Malaria is one such Initiative.

d) The Global Fund to Fight AIDS, TB and Malaria (GFATM)

This section will quickly get out of date. Tutors should source recent information from the Global Fund website.

This session could easily be expanded, if relevant to a particular group of participants. One idea is to download a country application from the website, and ask learners to read and critique it.

Start the session by finding out what direct experience learners have had with GFATM. Draw on this experience as much as possible.

The Global Fund to Fight AIDS, TB and Malaria (GFATM, or the Global Fund) was established January 2002 – it worked very fast and in October 2003 announced its third round of grants. Countries apply to GFATM using a
standard application process, which is assessed by an Independent Review Panel. The application should be developed in a participatory way through a Country Co-ordination Mechanism. Countries themselves decide the relative importance they attach in the application to the 3 diseases. Applicants have to demonstrate sufficient institutional capacity – for example in procurement – to be able to implement the proposed activities.

GFATM and grant recipients agree on indicators and milestones, which should cover:

- disease mitigation
- financial management
- proposal/programme implementation.

Results will then be reported using these indicators. The hope is that the main focus of indicators can move from outcome and coverage to impact. Outcome and coverage (e.g. quantity of ITNs distributed; number of patients treated according to national protocol) are easier to measure than impact, but tell you less than impact measures about the total burden of the disease. Impact measures assess whether interventions are actually effective and what is happening to overall incidence and prevalence.

In the first two rounds (i.e. up until mid 2003), GFATM had disbursed more than US$113 million to 53 countries. It had also committed US$1.5 billion over the subsequent two years to 154 programmes in 93 countries. (Commitments are amounts of money pledged, but not yet distributed.)

GFATM grants so far are broken down as follows:

- 59% HIV/AIDS
- 21% malaria
- 20% TB

and

- 62% sub-Saharan Africa
- 13% East Asia/Pacific
- 11% Latin America and Caribbean
- 7% Europe/Central Asia
- 7% South Asia, Middle East, North Africa.

Clearly GFATM is a great opportunity for those concerned about malaria to bid for additional resources to finance malaria control. Unlike SWAps and budget support, the GFATM is in some ways like a project mechanism, in that funds are earmarked for a specific programme.
Discussion: What do you think the advantages and disadvantages of GFATM are? How does the Global Fund relate to SWAps, budget support and PRSPs?

Key points:
Essentially this is a disease-specific versus integrated funding debate. Whilst there can be good liaison between the different ways of working, there are underlying tensions. The integrated approach tends to work slowly, starting from the whole and proceeding to specifics. GFATM asks countries to work fast, and according to a narrower brief.

The size and importance of the Global Fund reinforces the fact that proposal-writing is a core skill for malaria managers. Before writing a proposal, it is important to do your research and find out what the potential funder is looking for. General points include:

- A realistic, costed, comprehensible plan is always appreciated.
- Do the funders want a poverty focus?
- Look beyond the Ministry of Health – what is the role of households, local councils etc.?
- Suggest indicators which can credibly be used to monitor progress.
- What can you say about sustainability?

The Global Fund’s website (www.theglobalfund.org) is an excellent resource for improving your skills in proposal-writing, as it includes copies of actual country applications, plus detailed guidelines for applicants. A summary of one application is given in Exhibit 6.
Exhibit 6  Summary of Malawi Malaria Application to the Global Fund (Round 2)

Population 11,000,000.
GDP per capita of US$ 170.
65% of the population is poor.
Malawi is in the process of finalizing the Poverty Reduction Strategy Paper as part of the HIPC Process.
The entire population is at risk of malaria; about 4 million cases/year, the disease accounts for 18% of all hospital deaths and 40% of outpatient visits.
The Ministry of Health contribution to poverty reduction in Malawi is the Essential Health Care Package, which focuses on common illness affecting the poor. SWAP adopted, malaria is one of the major conditions in the package.

The expected results of the five-year proposal are:
(a) scale up insecticide treated nets
(b) increase access to prompt treatment within 24 hours by children under 5 years from 41% to 70%
(c) increase access to IPT [intermittent presumptive treatment] by pregnant women from 37% to 65%.

Five sub-components have been identified:
- ITNs
- case management and IPT
- integrated disease surveillance and response and operational research
- Information, Education and Communication
- capacity building.

Source: www.theglobalfund.org, Malawi Application, Executive Summary.

e) Drug donations

Pharmaceutical companies (and other organisations) sometimes offer drug donations to a country. These certainly have the potential to be very beneficial – but you need to be sure that the advantages outweigh costs and disadvantages.

A12

Discussion: A large multinational pharmaceutical is proposing to provide a drug for treating malaria free of charge to your country. What issues do you need to think about to judge whether or not to accept this donation?

Suggestions of key questions to consider are given below. The overall point is that learners need to think through the benefits of the donation; the associated costs, and whether or not this will skew priorities; and the implications for the market as a whole (i.e. the availability and cost of the drug in the public and private sectors).
• Are the drugs being offered completely free of charge? What does this include? – import taxes? storage or distribution costs?
• Could there be support for activities related to the drug – e.g. training or help with an information system?
• Are there any conditions attached to the donation? (Some may be entirely reasonable, such as an obligation to report all severe adverse reactions.)
• What are the reporting requirements? For example, is detailed information required on the distribution and/or use of the drugs?
• What are the channels for storage and distribution? Is the National Medical Stores used?
• Usually it is not allowed for donated drugs to be sold to patients. Does this contravene any user fee policy or drug revolving scheme?
• Assuming the donated drugs are branded, does this adversely affect any policy about generics?
• How complicated is the drug to store and administer? Is it clinically complex? Will it take up significant amounts of staff time?
• Was the problem for which this drug will be used already a priority before the drug was donated? Does the free drug mean that other resources (e.g. staff time, transport) are skewed towards something that would not otherwise have been a priority?
• Does the drug have a market value – i.e. is it likely to be sold, rather than given to patients through the proper channels?
• Will the donation affect the private market for this or a similar drug?
• Is the drug a tried and tested one, or not? Has it been in widespread use for a number of years? How effective is it? Are adverse reactions a problem?
• How long is the donation for? What happens when the donation period is over? (sustainability)

IV Household expenditure and how to influence it

At the very beginning of this Learning Unit, figures were given on per capita spending on malaria in Tanzania. A massive 71% of the money came from households. Obviously it is much harder for someone working for government or an NGO to influence what is done with money spent by households. But the sheer size of household expenditure should show how important this is.

The term “household” is used here. “Private” or “out-of-pocket” expenditure are alternative terms. Household expenditure includes formal payments and informal “under-the-counter” ones.

A13 Exercise: Rough estimates of household expenditure.

5 Other donations can be given in kind – for example, a drug company may sponsor a meeting. The same types of questions arise – what are the benefits, associated costs and conditions?
Give learners 10 minutes to work through the following questions.

How much does a family spend on an episode of malaria on average? ... (a) (include e.g. drugs, diagnosis, travel costs, fees)

How many episodes in a typical family per year? ....... (b)

Thus, annual family spending on malaria treatment = ....... (c = a x b)

How much of the population is affected by malaria? ....... (p)

How many families/households is this? ....... (n = p/family size)

Total household spending = ..... (c x n)

Household spending per capita = ..... 

Compare to Government/donor spending, if known.

Encourage people from the same country to compare answers and to analyse why their answers differ. However this discussion should happen outside the formal classroom, as it may be of little interest to people from other countries.

Should we add other aspects of private costs, e.g. income lost during illness? (The key point here is that it depends why the information is being collected; and the information is difficult and expensive to collect.)

For the exercise as a whole, by its very nature, the tutor cannot identify right and wrong answers. The point is to encourage learners to think about this money.

After the exercise, encourage learners to find out what is known about household expenditure. Household surveys such as Living Standards Measurement Studies are a good place to start.

A14
Discussion is groups of 4-6.

How might we influence household spending? In other words, how can we help households to spend an appropriate amount of money on things which are effective, rather than wasting their money on ineffective interventions?

Groups may find this question difficult at first. To start them off, it can be helpful to list what households buy – insecticides, bednets, drugs etc. Key points include:

- **Education** on areas such as appropriate drugs and doses; care of the acutely ill child; preventive measures such as ITNs and prophylaxis.
  Appropriately target education - specific groups might include mothers, grandmothers, shopkeepers and drug peddlers.
- **Subsidies** (and/or tax exemptions) to reduce prices.
- **Quality assurance** of drugs and their sellers (both public and private sector). This can involves working with the Medicines Board, or equivalent.
- **Social marketing**, branding etc. Developing and marketing distinctive goods such as ITNs or attractively and helpfully packaged drugs.
- **Encourage community involvement** about quality of care, priority setting, financial accountability etc.
- **Develop innovative financing schemes** to help people to pay for items such as ITNs. For example, a fishing co-operative allowed fishermen to spread payments over time, with a small amount being deducted from payments for their catches.

To bring these points together, explain the concept of “influencing demand”. Relate this back to the introductory talk about supply and demand.

Chapter 6 of The Africa Malaria Report discussed household expenditure – see below for full reference.

**Recommended reading**

Includes indicators to monitor the plan of action.

This website has numerous background papers describing PRSPs, as well as access to actual country PRSPs.


Pearson, M. (2002). *The role and value of MTEFs in the health sector*. [www.eldis.org/static/DOC10300.htm](http://www.eldis.org/static/DOC10300.htm) If you want to read in significantly more detail about MTEFs.


End of Learning Unit 2

Summarise the contents of this Learning Unit, perhaps again using the Tanzanian data as a reference. Repeat the Learning Objectives given at the beginning of the Unit and take any remaining questions.
Learning Unit 3

Costs

Learning objectives for Unit 3
By the end of this unit, learners should appreciate the various uses of costing information, and the different ways of looking at costs.

A15

This exercise should be done quickly in pairs – allow no more than 5 minutes.

How would you calculate how much it costs to treat one 10-year old child with the standard treatment regimen for uncomplicated malaria?

What are the difficulties in calculating the cost? Do you think it is important to know this cost? Why or why not?

Make a list of items that can be included – staff time, buildings, maintenance, laboratory items etc. Establish first whether you are looking at costs to the government, or total costs. For pragmatic reasons, it is much more common to only calculate costs to the government. Precisely which costs to include depends on the reason for the exercise, and how detailed it needs to be. The point is that costing can quickly become complicated – it is important to concentrate on the major costs items and not waste time on very detailed work about tiny amounts of money.

Introduce the idea that a good manager always has a reasonable idea of how much the various activities in his/her programme cost.

Why measure costs?

There are several reasons for looking at costs - the way we estimate costs needs to reflect the reason.

The first and most obvious use of cost information is for routine budgeting. We need to estimate the costs required in order to secure funds. Costs are based on the different resources needed to achieve the plans.

A second important reason for costing is to develop plans and strategies for scaling up or expanding activities. For example, a country may want to apply to the Global Fund to expand a successful pilot project to a whole region. Or a PRSP may be committed to expanding coverage to certain unserved groups – how much would it cost the malaria programme to reach these groups?
A third use of costing is to look into the **efficiency of services**. (In economics, efficiency means value-for-money, or achieving a given standard of service at the lowest possible cost.) Costing can be useful to compare what it costs to run services in different districts - e.g. costs per ITN distributed; cost of drugs per case. If there are differences, start to find out why - there may be good reasons (e.g. high transport costs in remote areas), or bad reasons (like unnecessarily high prices paid for drugs).

Cost information helps managers think whether a programme is **affordable** and **sustainable**. **Sustainability** refers to whether you will be able to continue with a programme (i.e. sustain it) after particular funding ends. What resources are available now and in the future – how does that compare with current and future costs?

A final use of cost information is for deciding on **how best to allocate resources**, by looking at costs and results of different activities or interventions. The comparison of costs and effectiveness is discussed more in the next Learning Unit, which looks at cost-effectiveness and cost-benefit analysis.

**Sources of information on costs**

Financial records are the obvious source of information on costs. But calculating costs is not a matter of merely looking at the financial books. In order to list and measure all the inputs which are used in an activity (think of treating the child in A15, above), you will have to talk to people and observe actual practice in order to understand what resources are used during the treatment.

Good costing is largely a matter of common sense – concentrate on the large, expensive items and always bear in mind why/for whom you are calculating the costs.

**Ways of thinking about costing – financial and opportunity costs**

In budgeting, the costs calculated are the **financial costs** required to acquire the resources. Normally the budget only looks at those costs we pay for (e.g. from public funds) and the prices we pay (e.g. for travel). This may not be the same as the full cost because, for example, the patient may pay for some of the resources (e.g. extra payments to staff).

But financial costs are not the only approach to costing. Another way is to think in terms of **opportunity costs**.
Your Regional Health Education Unit (HEU) has been asked to spend 80% of its time on HIV/AIDS work. What work might the HEU not be able to do as it increases its work on HIV/AIDS?

Discuss in plenary. The point is that staff and other resources (e.g. printing machines, mobile cinemas) cannot be used to do two things at once – if staff are working on HIV/AIDS, they cannot also be spending more time on malaria work, EPI or whatever other priorities they have. This is the opportunity cost of the HIV/AIDS priority.

Resources are scarce. If we use them for one thing, we cannot at the same time use them for something else. This is opportunity cost. For example, a district health team has a limited travel budget. The tyres of its only vehicle are dangerously worn out, so it decides to replace all 4 tyres. This is expensive and has a high opportunity cost in terms of the fuel it cannot now afford to buy and hence the journeys it is unable to make.

Thinking in terms of opportunity cost is very relevant to health care decisions. Suppose taking a nurse to do malaria work at field level means that no one is left in the health unit to run the antenatal clinic. If there are no pregnant women coming for antenatal care, then nothing is lost (no opportunity cost). If pregnant women come and are disappointed, there is an opportunity cost to taking the staff away. In this case there was not a money cost to deploying the nurse differently (since she was already being paid), but there was an opportunity cost (antenatal care missed, time wasted by patients).

It is not just the use of staff time which has an opportunity cost – it applies to anything which is in short supply, such as vehicles, money or even something as mundane as storage space.

Manager X says: “I’m definitely going to the 2-day meeting in the capital city because all my travel and subsistence expenses are going to be refunded.”

Manager Y says: “My priority at the moment is to visit all the clinics in my district before the end of the month. I’m not convinced that the 2-day meeting in the capital city is relevant to my work.”

Which manager is thinking in terms of opportunity costs? Are the financial costs of the meeting different to the two managers?

Answer. Y is thinking in terms of opportunity costs, even though the financial costs are the same to X and Y. Y comes to a different – and probably better – decision than X, because he has thought beyond financial costs.
Issues related to costs

Costing raises various practical and technical issues. Different types of costs are needed for different purposes. Some of the issues are discussed here.

a) Capital costs generate recurrent costs

Costs can be classified as capital or recurrent.

**Capital Costs** are the costs of items with a life of more than one year such as buildings, vehicles and equipment.

**Recurrent Costs** are running costs or operating costs, which are incurred each year. Recurrent costs include salaries, drugs, maintenance of vehicles, fuel and electricity.

When you buy a vehicle (capital cost) you will need to maintain and operate it (recurrent costs of fuel, parts, etc). You may be donated a vehicle (at no cost to your programme), but it has high fuel consumption and its spare parts are expensive and difficult to find on the local market. The programme has to pay these recurrent costs regularly for the whole life of the vehicle. It is important to think carefully about the recurrent cost implications of capital expenditure (or capital donations).

For a household, the issue is the same. An ITN is a capital expenditure, as it will be used for more than one year. Re-treating it with insecticide is a recurrent cost.

b) Different sources are willing to pay for different types of cost

In practice different sources of funding pay for different types of cost. Governments place priority on the payment of salaries in the event of shortfall; maintenance costs tend to be one of the lowest priorities. Donors generally do not pay for government salaries but will pay capital costs like vehicles, computers, buildings, and “development costs” such as training. Communities may be willing to provide labour and contributions for capital items like land and clinics, but may not keep up with promises to pay volunteer workers. Many households may be willing to pay all or most of the cost of an ITN.

An understanding of these preferences for different types of cost is useful for the manager who wished to target his/her efforts in accessing funds for the programme.

c) Costs do not increase in a regular way

The cost of an activity obviously depends on its scale. The unit cost also varies with scale. (Unit cost means the cost of a single output - e.g. the cost
per patient seen; the cost per ITN distributed.) This is important for looking at
the efficiency of services and the costs of expansion.

Unit costs vary partly because some costs are fixed and some are variable.

**Fixed Costs** do not vary with the quantity of output in the short run (one year). Examples are rent, and some salaries. These stay the same, however busy a facility is.

**Variable Costs** vary with the level of output. Drug supplies and vaccines are examples of variable costs. The more patients, the higher the costs of drugs and vaccines.

Consider a health facility which wants to increase the number of patients seen per day. What are the cost implications?

The fixed costs (pay, fuel, rent, cleaning) are $450 per month; the variable cost per patient for drugs, cotton wool, registration forms etc. averages $2.50.

To see two patients per day, costs per month $ 450 + $150 = $600. The cost per patient is $10.

(2 patients per day x 30 days = 60 patients x $2.50 = $150 variable cost).

If the number of patients goes up to 10 per day, the fixed costs stay at $450. Variable costs go up to $750 (10 patients x 30 days x $2.50). This totals $1200. The cost per patient goes down to $4.

In this example, total costs have gone up but per patient costs have gone down. The busier facility is being more efficiently used.

This reduction in unit cost demonstrates the economic concept of ‘economies of scale’. Economies of scale operate in the procurement of supplies such as drugs - bulk buying is normally much cheaper. For example your supplier may offer:

- Packets of 100 tablets for 5,000 – cost per tablet = 50
- Packets of 500 tablets for 15,000 – cost per tablet = 30

This is an economy of scale.

Sometimes economies of scale operate; sometimes they do not – it depends on circumstances. For example, expanding a service to a remote population may increase unit costs.

d) Should shared costs be included?

**Shared Costs** relate to facilities, staff, equipment etc. that are shared among several programmes. If we need to analyse costs of one of the several programmes which share the resources, we need to decide whether it is useful to include a proportion of these shared costs, or whether to focus only
on the non-shared costs. If we are assessing cost-effectiveness, we would need to consider shared costs; if we are doing a budget for a malaria-specific project, then we might not. We need to include shared costs in the cost-effectiveness analysis because otherwise we would under-estimate the costs of alternatives which benefited from a lot of shared resources.

e) Marginal costs

Marginal cost is a measure of the resources associated with increasing output slightly. It is an important concept because many decisions in health care are concerned not with providing versus not providing a particular service, but with providing a little more. In this context, it is the marginal (i.e. additional, or incremental) cost that is relevant. This should not be confused with average costs.

For example: If there is already an outreach team going to a village by car to offer immunisations and Vitamin A, another staff member could go along to talk about malaria prevention. The marginal cost would be the cost of the extra staff member (which might involve a per diem or similar), but the vehicle fuel and social mobilisation costs are already incurred. Thus the marginal cost of adding on this preventive work is just the staff time. (The opportunity cost may be more significant in this case – what the person would have done if s/he had not gone to the village.)

f) Taxes and tariffs

Taxes and tariffs can be used by governments to change the costs of items. Exhibit 7 shows how this is relevant to malaria.
The cost of ITNs is a barrier to their widespread use. As one element in reducing prices, the Abuja Declaration committed governments to “reduce or waive taxes and tariffs for nets and materials, insecticides, antimalarial drugs and other recommended goods and services that are needed for malaria control strategies”. Eighteen countries in Africa have now reduced or eliminated taxes and tariffs. Time-limited changes in tax or tariff regimes can be introduced through informal agreements between health and finance ministries, but more permanent arrangements normally require national legislation.

Most countries apply the “Harmonized Commodity Description and Coding System” to classify products introduced by the World Customs Office. Nets are currently classified as textiles and customs offices can be reluctant to give exemption for the whole range of products covered by the code. Some countries also subscribe to regional agreements on tariffs and taxation rates, which can influence the adoption of policy change. For example, the West African Economic and Monetary Union requires all of its eight member states to adhere to the Common External Tariff Resolution, which stipulates fixed rates for import duty of 20% and for value-added tax (VAT) of 18%. Clearly, changes in national policy would be greatly facilitated by changes to international agreements.

Adapted from “The Africa Malaria Report 2003”, WHO/UNICEF. The country profiles at the end of the report give details of tariffs on ITNs for individual African countries.
You are meeting with colleagues to discuss an application you are writing for funds from a large bilateral donor. The objective of the application is to get funds to increase the number of pregnant women receiving prophylaxis.

You are discussing how to present the budget.

- One colleague says that the cost of increasing ante-natal prophylaxis would be virtually zero, as women could be advised to buy the drugs themselves.

- Another colleague says that the cost is the number of extra women multiplied by $1, which is the cost of the drugs.

- A third colleague says the figure should be $2 per women, as you need to include some money for the nurses’ time.

- Finally, someone thinks that the budget should be much larger. If more women are to receive prophylaxis, they need to come to ante-natal clinics in the first place. So you need to budget for general improvements – smarter buildings, more senior nurses and new equipment.

Why are there so many different views?

How do you decide what costs to put in your budget?

Key points: the different views are because of different understandings of the context – in terms of local policies about service delivery and what the donor might fund. Many bilaterals would be against selling the prophylaxis and would not fund staff salaries. The last viewpoint may be the most sensible, if this is seen as an opportunity to significantly scale up the service. You would need to liaise with colleagues doing ante-natal work to prepare the budget.

Costing malaria plans and identifying funding gaps

GAVI - the Global Alliance for Vaccines and Immunisations – asks countries to write Financial Sustainability Plans (FSPs) for their immunisation programme. The FSP looks at the longer-term costs and funding of the immunisation programme under different assumptions. The Plans encourage countries to think about how they will fund immunisations at the end of the period when they receive (often substantial) financial support from GAVI. In other words, the FSPs address the issue of sustainability.
FSPs are proving a valuable tool for national immunisation managers. Malaria programmes should also consider drawing up FSPs.  

Writing an FSP involves answering a series of questions:

1. What are the programme policies and plans? What interventions are required and what coverage targets are there?

2. What will it cost to implement the plans for the next 5 or 8 years? (Estimate the costs for each year to meet the various targets.)

3. What funding can be expected from various sources?
   - Discuss with Government likely commitment from Government and budgets
   - Review with partners funding they are willing to provide and look at trends
   - Because levels of Government and donor funding are uncertain in the future, some funds are certain and some are less certain.

4. What is the funding gap and what can be done about it?
   - estimate the gap between expected funds and expected spending
   - develop a strategy on what to do about it

There are several complementary approaches to tackle the funding gap:
   - increase funding
   - make services more efficient so costs go down without cutting activity
   - better financial management
   - balance by cutting back the plans and targets.

The Executive Summary of Kenya’s 2002 FSP for immunisation is given in Annexe 1. This shows the information and issues which are contained in such a document. (The full version, plus many other country examples, are available from the website address given at the end of the Annexe.)

Note that the Kenyan immunisation FSP identifies three approaches to tackling the funding gap between estimated future costs and available funds:

1. *Mobilize adequate resources*

   Strategies to increase the amount of money available include:
   - advocacy at the inter-ministerial level, as well as with local authorities, corporate bodies and individuals
   - including more stakeholders in immunisation planning, in an effort to solicit their support
   - discussions with development partners

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6 Information about malaria similar to that found in FSPs is in Roll Back Malaria’s 2001 document “Country strategies and resource requirements”. See end of the Learning Unit for full reference.
- ensuring that the Ministry of Health reviews immunisation’s priority ranking in the essential health package.

2. Increase reliability of resources

3. Increase efficient use of resources

Strategies to be more efficient include:
- negotiations about a more flexible operation of donor funds
- improving accountability, transparency, reporting and feedback
- reducing wastage (of syringes, vaccines etc.)

Discussion in small groups.

Would FSPs be helpful for malaria? What strategies might you identify to fill a possible funding gap?

Key points expected: This kind of plan would be useful. It is probably easier to do for immunisations than for malaria, because malaria control is both more complex and more integrated, at least at the district level. People who have done immunisation FSPs generally have found it a useful exercise – they know and understand costs and financial flows, they meet colleagues in the Ministry of Finance and they are more confident in presenting plans and budgets. Having a good FSP helps to give the impression that a malaria programme is well organised and highly professional.

Strategies for increasing funding include advocacy to senior decision makers; talking to donors; and a good bid to GFATM.

Strategies to improve the reliability of resource include stronger financial management (such as getting funds released more regularly through the year) and better communications with people and organisations who provide funds to the programme.

Strategies for improving efficiency or reducing waste include bulk purchase of drugs or ITNs and better stock management.

It may also be wise to re-visit the plan and abandon some proposed activities or lower the targets.

Recommended reading

Goodman, C et al. “Economic Analysis of Malaria Control in Sub-Saharan Africa”, 2000. Global Forum for Health Research. E-mail info@globalforumhealth.org for information about how to access this book, or see www.globalforumhealth.org (publications). Copies can be downloaded in PDF format (chapter by chapter), or you can send for a free copy. This book has detailed information about the costs of various malaria interventions.


End of Learning Unit 3

Summarise the contents of this Learning Unit. Repeat the Learning Objectives given at the beginning of the Unit and take any remaining questions.
Learning Unit 4

Economic Evaluation Approaches – Cost-effectiveness analysis etc.

Learning objectives for Unit 4

By the end of this unit, learners should:

- understand what economic evaluation is, concentrating on cost-effectiveness analysis
- know in broad terms what cost-benefit analysis is
- know what the numbers in cost-effectiveness analysis mean, and what they do and do not tell you in terms of policy implications
- be aware of the main findings in economic evaluation (especially cost-effectiveness analysis) about malaria.

The objective is not for learners to be able to perform their own cost-effectiveness analysis or similar by the end of this Unit – the idea is that they should be “intelligent consumers” of such analyses.

This session looks at economic approaches to identifying the best way to use limited resources. Two approaches are described here – cost-effectiveness analysis and cost-benefit analysis. These are two examples of economic evaluation, which is also known as economic appraisal.

Cost Effectiveness Analysis

Cost-effectiveness analysis is the most common technique to assess whether particular health interventions are worth doing, compared to other possible interventions. Examples of statements related to cost-effectiveness include:

- Basic EPI vaccinations are highly cost-effective at only $25 per life year saved.

- The essential package of services consists of highly cost-effective interventions (likewise, Essential Drug Lists).

- Hepatitis B vaccine is estimated in high prevalence countries at $219 per discounted life year saved.

Cost-effectiveness basically compares the costs of providing an intervention with the effectiveness. We have already talked about costs, which we can measure in money terms. The other side is measuring effectiveness – i.e. the impact or benefits of the intervention in health terms. Sometimes the phrase
“value-for-money” is used in the context of cost-effectiveness, referring to the value (effectiveness; health benefit) compared to the money spent (costs).

Here an example to illustrate cost-effectiveness.

You introduce spraying in a village. The village has 100 families. Before the spraying, the average family had 4 cases of malaria per year. After spraying, families only get malaria on average 3 cases per year. Your impact (effect) is that you have reduced the number of malaria cases by 100 (1 per family). Assume 5% (so 5) of these cases would have died.

The next stage is to bring the costs into the picture, and compare the costs of the spraying with the deaths avoided (or lives saved). Spraying costs $450 and the number of lives saved is 5. So the cost per life saved is $450/5 = $90.

This figure is not very useful on its own. It becomes useful when we compare it with other options we have for tackling malaria or other health problems. Suppose an alternative is to provide ITNs for each family.

We need a similar calculation of the costs and effectiveness of providing ITNs. We give two ITNs per family at a cost of $4 each net. The total cost is $800 for all 100 families. The village would have had 4 cases of malaria without the ITNs, as before. If all the families have two nets, assume two cases of malaria per family will be avoided. So the impact is 2 x 100 families = 200 cases avoided. If 5% would have died again, this is 10 deaths. We can calculate the cost per life saved again and compare. 10 lives saved at a cost of $800 – this means the cost per life saved is 800/10 = $80.

In summary:
- the cost per life saved for spraying is $90
- the cost per life saved for ITN distribution is $80.

The ITNs option is more cost-effective and a better choice – because the cost per life saved is lower. (Obviously this is a simplified illustration, not real-life data.)

Note that cost-effective is not the same as “cheap”. Spraying was cheaper in the example above, but ITNs were more cost-effective.
A20
Do this exercise in pairs, and then discuss as a group.

Rank the following interventions in order of cost-effectiveness, with the most cost-effective first. If you had $2 million to spend on any combination of the interventions below, how would you spend it? Note that the data is imaginary – it is about a hypothetical disease “X”, not malaria.

**Controlling Disease “X”**

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Cost</th>
<th>Lives saved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug treatment</td>
<td>$1.2 million ($1,200,000)</td>
<td>200</td>
</tr>
<tr>
<td>Drug prophylaxis</td>
<td>$6 million</td>
<td>500</td>
</tr>
<tr>
<td>Prophylaxis: pregnant women and under-5s</td>
<td>$2 million</td>
<td>200</td>
</tr>
<tr>
<td>Childhood immunisation</td>
<td>$1.2 million</td>
<td>300</td>
</tr>
<tr>
<td>Treat water</td>
<td>$8 million</td>
<td>250</td>
</tr>
<tr>
<td>Health education</td>
<td>$1 million</td>
<td>200</td>
</tr>
</tbody>
</table>

**Answers**

Costs per life saved are respectively $6,000; $12,000; $10,000; $4,000; $32,000 and $5,000. So childhood immunisation is the most cost-effective, and water treatment the least. Based on the information given, and assuming that the interventions work independently of each other, the most cost-effective use of $2 million would be $1.2 million for childhood immunisations and $800,000 on health education. Learners can quite legitimately point out that they really need more
In the simplified village example of malaria (above, before Activity 20) we looked at impact for one year and only measured effects in terms of deaths avoided (or lives saved). This is a rather limited measure of the impact on health. Over time economists have tried to come up with better measures that can be used across different health issues. Having a common measure means we can compare, say malaria cases averted with road accident deaths averted. We can also compare morbidity (illness) and mortality (death). One common measure that allows such comparisons is the **Disability Adjusted Life Year (DALY)**.  

The DALY concept can be broken down into its component parts. The basic idea of **lives saved** is simple. We saw above how to estimate how many deaths are averted by various interventions.

“Life saved” does not take into account how much longer the person lives. Society would usually put more value on saving a life so the person lives an extra 20 years, rather than someone who lives just three more months (e.g. after cancer treatment). This idea led to the idea of calculating **life years saved**.

“Life years saved” only looks at mortality, not morbidity and disability. Again society places more value on someone living a healthy life, rather than in pain or spending time unable to work. Also, if an intervention shortens the time spent ill, it may not save a life but it is a benefit we want to measure. This led to the idea of adjusting for disability and illness - **Disability-Adjusted Life Years** (or DALY). DALYs are life-years weighted to reflect how many years are spent ill or disabled.

DALYs and cost-effectiveness analysis take into account the timing of costs and benefits. Since the future is uncertain, benefits far in the future count for less than benefits this year. This idea of “**discounting**” the future means that a life year saved this year is worth more than one that will be saved in five years’ time. Whilst discounting calculations can appear rather complicated, it is important to understand the concept – discounting is done to value benefits which occur soon higher than benefits further in the future.

Different cost-effectiveness studies use different measures, such as life years saved (not discounted, or not adjusted for disability). It is important to make sure you compare like with like. You cannot compare a cost per life-year with a cost per discounted DALY.

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There is a similar measure called the Quality Adjusted Life Years (QALY).
Applying DALYs to our simple village example we would need to calculate the DALYs associated with:

- deaths averted – we need to know the average age of those who would have died to turn this into life years saved
- non-fatal cases of malaria avoided, each of which has a (disability) cost in terms of several days with fever.\(^8\)

We do not need to go into the technicalities of calculating DALYs to see how the idea works. The calculations will be affected by how disabling malaria morbidity is judged to be – i.e. by what factor we “adjust” (or weight) the life-years saved.

Cost-effectiveness analysis has several possible uses. One is to support the case for increased investment in malaria. If you can show that investment in malaria costs less per life saved (or per DALY) than another intervention, then this supports the case for more resources.

A second important use of cost effectiveness information is in deciding your strategy for malaria control. What are the most cost-effective interventions?

Both of these uses are discussed in more detail below, after looking briefly at cost-benefit analysis.

A21
Exercise. Request one group to present its findings and ask others to comment.

Suppose your district council has $9,000 to spend. It is thinking about two ways of spending the funds:
- building a road barrier to reduce accidents at an accident hot-spot. Last year 16 people died in accidents there.
- subsidising prophylaxis for pregnant women in the town.

$9,000 will pay for the barrier – it is then hoped that there will be no accidents. $9,000 will double coverage from 30% to 60% of the 2,000 pregnant women per year. Assume that the prophylaxis prevents death in 1% of the pregnant women.

How would you use cost effectiveness analysis to help the councillors decide which is the best use of the resources?

**Answer:**

\(\text{Measures such as DALYs are particularly useful for diseases such as malaria, where morbidity and mortality are both extremely important. Malaria control measures generally aim to reduce both mortality and morbidity, so it is useful to be able to combine these effects in one measure.}\)
Ensure that learners have done the right calculations – the tendency is for learners to ignore the number of additional women who will be treated with the $9,000. $9,000 buys increased coverage of 30% - i.e. 600 women. Prophylaxis for 600 women would mean saving 6 lives (1%). This is less than the 16 people who died in the accident hot-spot last year.

As for Activity 20, learners can legitimately point out that more information is needed – for example, how many years would the road barrier last and how frequent are such accidents – was last year typical? The road barrier is a capital cost, whereas the prophylaxis is a recurrent one.

Cost benefit analysis

Cost benefit analysis is similar in concept to cost-effectiveness analysis. The difference is that it values the benefits in money terms, rather than DALYs etc. This allows a direct comparison between the costs of the intervention and the value of the benefits to see which is higher. It also allows for comparison with other interventions which are not related to health or saving lives.

In practice it is difficult to value health benefits in money terms - there is not a market price for health outcomes. (Activity 22 illustrates this point.) Because of this, cost-benefit analysis is often based on controversial assumptions. It is therefore much more common to use cost-effectiveness than cost-benefit analysis in health.

A22
Exercise to illustrate cost-benefit analysis. Ask each person to think about how they would go about completing the table below and discuss with their neighbour.

The table below asks the costs and benefits to you of buying ITNs which reduce the number of malaria episodes for you and your family. How would you go about filling in the table? The point is not to come up with exact numbers – it is to think about how you would fill in the table, and whether or not this is a meaningful exercise.

<table>
<thead>
<tr>
<th>Annual costs of ITN</th>
<th>Annual benefits in monetary terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchase of ITN</td>
<td>$…..</td>
</tr>
<tr>
<td>Re-treatment</td>
<td>$…..</td>
</tr>
<tr>
<td>Anything else?</td>
<td>$…..</td>
</tr>
</tbody>
</table>

| Total cost | $….. | Total benefit $….. |
Key issues:

The main point is that some of the benefits can be quantified, but others cannot. For example, how would you quantify in monetary terms the reduced risk of cerebral malaria? The benefits are more than simply the direct medical costs.

Despite the practical difficulties, cost-benefit analysis should not be dismissed completely. It is at the very least a useful way of thinking – for example if you can show that the benefits are greater than the costs, this suggests that it is well worth while buying ITNs.

Economic evaluation and malaria

The “Economic Analysis of Malaria Control in Sub-Saharan Africa” is a crucial reference for this part of the module. It is strongly advised that all learners have a copy of this book.

Learners should be asked to read Section 7.1 in advance: Comparison of cost-effectiveness of malaria control strategies. The whole of Chapter 7 is reproduced in Annexe 2. The tutor should go through section 7.1 with the class, explaining the difficult parts and highlighting key conclusions. Make sure that the term CER (cost-effectiveness ratio) is understood. CER means the “answer” to a cost-effectiveness analysis, i.e. the ratio of costs to effect. In Annexe 2 the relevant ratio is generally cost per DALY averted.

The key conclusions are summarised below. They are all illustrated in Figure 7.1, which should be discussed at length. The figure relates to a range of interventions in a very low-income country with high transmission.

- All the malaria interventions are a good buy for low-income countries – all cost less than $150 per DALY. The text makes rough comparisons with cost-effectiveness ratios (CERs: in practice, cost per DALY) for other health interventions, although the methodology used may not be strictly comparable. For example, the cost-effectiveness of measles vaccination is between $2 and $17 per DALY averted, onchocerciasis vector control between $120 and $230, and the medical management of hypertension greater than $2,000.

- For childhood preventive interventions, the level of existing infrastructure is a crucial factor in determining the most cost-effective strategy. (Relate this back to shared and capital costs: if facilities and trained personnel already exist, expanding the service obviously costs much less than if they are not in place.) ITNs are a highly attractive use of resources if net coverage is already high, and chemoprophylaxis for children is highly cost-effective if a village health worker network already exists. Under these conditions, the

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9 “Economic Analysis of Malaria Control in Sub-Saharan Africa” by Catherine Goodman et al, 2000. Global Forum for Health Research. E-mail info@globalforumhealth.org for information about how to access this book, or see www.globalforumhealth.org (publications). Copies can be downloaded in PDF format (chapter by chapter), or you can send for a free copy.
cost-effectiveness of both interventions falls in a similar range to measles vaccination – i.e. it provides excellent value-for-money. If this baseline infrastructure is not in place, the costs of the two interventions are significantly increased, although the CERs probably remain under $150 – i.e. they are still a good investment.

- The choice between **childhood preventive interventions** is not clear-cut because there is considerable overlap in the CER ranges – in other words, which intervention is most cost-effective depends on exactly what assumptions are used. If two spraying rounds are required a year, the cost per DALY averted for residual spraying is in the same broad range as that for “Nets and Insecticide Treatment”. If only one spraying round is required, the cost per DALY of residual spraying is clearly much less. In practice, therefore, country-specific information is needed.

- Malaria prevention in first **pregnancies** is also highly cost-effective, assuming ante-natal care coverage exists and that an increase in birth weight leads to a reduction in neonatal mortality. SP (sulfadoxine-pyrimethamine) intermittent treatment is likely to be more cost-effective than chloroquine chemoprophylaxis due to lower costs, higher compliance and lower drug resistance.

- **Case management** (improving compliance with the first line drug, and improving the accessibility of the second and third line drugs) is the most cost-effective of all interventions, with CERs clearly below $10. However the authors point out that this is based on limited data, and not all case management interventions could be included.

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**A23**

This exercise can be done in a variety of formats, with individuals, pairs or larger groups presenting. For a shorter exercise, only do the discussion, without preparing the talk.

Discussion: Do you agree with the bullet points above about the cost-effectiveness of various malaria interventions? Do these findings apply to your country/district? How do the strategies you are following at present relate to these findings? Does it make you think you should change priorities or add new interventions?

Prepare a short talk to give your District Medical Officer (or other Head of Department) about your conclusions, explaining what is meant by cost-effectiveness and what you conclude from the evidence for malaria.

Pairs can present to each other - e.g. group 1 to group 2 and reverse, while group 3 presents to group 4.

*Key point: learners will obviously not agree in entirety with the broad points about cost-effective interventions. But the burden of proof should be on demonstrating why their district/country is different. The general arguments*
Advantages and limitations of economic evaluation

In a world with scarce resources, economic evaluation is an important tool.

- It can bring transparency to the costs and benefits of public sector systems, which are sometimes difficult to separate out and analyse.

- It compares the benefits derived from an intervention with the costs; in the light of costs, benefits may not seem so great (or small) as at first glance. (Note that politicians may tend not to mention costs and benefits at the same time.)

- It can help policy-makers and programme managers compare alternative courses of action in an objective way.

- It can help policy-makers and programme managers to question the wisdom of extending a programme - even if the existing programme is successful, the marginal costs of expansion may be high.

- It can help to make the case for hitherto under-valued interventions which represent good value for money.

However, economic evaluation has important limitations – three are discussed here.

1. Just because something is cost-effective, it does not mean you can afford it. In the example above, maybe the village does not have $800 to spend, even though ITNs are the more cost-effective option. It may still be more cost-effective to buy some ITNs, rather than to spray.

2. Cost-effectiveness depends on particular circumstances – for example, the target group or disease prevalence. In the village example, each family faced malaria 4 times a year, which was halved by using ITNs. A different district may have a much lower incidence of malaria. In this district, each family usually gets malaria once a year. ITNs reduce incidence by half – i.e. 50 cases are avoided per year, or 2 to 3 deaths. But the ITNs still cost $800. Here the cost per death avoided is 800/2-3 = $267 to $320. It is much less attractive to use ITNs in the low prevalence district.

Because cost-effectiveness studies tend to be based on extremely detailed reference to a particular intervention and its context and time, generalising from a particular evaluation is dangerous. For example, the standard of existing health care provision on which a programme must build will vary widely from country to country; so will the cost of labour. These different costs will greatly affect the outcome of the evaluation. This
may mean that whilst it is more cost-effective to focus on treatment in country A, it is better to concentrate on preventive actions in country B - despite the fact that the two countries have similar health problems.

Section 7.1 of Goodman et al. (see Annexe 2) gives many examples of the dangers of generalising. Whilst any cost-effectiveness depends on particular individual circumstances, there are certain common influences. In malaria these include the length of the transmission season; drug and ITN prices; compliance with drug regimens and net re-treatments, drug and insecticide resistance; and the level of existing infrastructure. This means, for example, that transferring cost-effectiveness findings about ITNs from a country with expensive ITNs to a country with access to relatively cheap ITNs is likely to be misleading.

3. Economic evaluation examines the (economic) efficiency of interventions in comparison with each other. Its aim is to help the policy-maker to identify the most cost-effective health care. It may not be fair, or acceptable to society, to discontinue all inefficient services - but economic evaluation makes no allowance for such concerns about equity.

For example, economics may conclude that the most cost-effective services are primary care for people in urban areas. But this does not mean that the rural population can be ignored. It may be particularly costly to reach vulnerable groups living in remote areas - but on equity grounds society usually decides that it is important to try to reach them, even if they cost more to assist.

Goodman et al. give an example of the potential conflict between efficiency and equity in the last paragraph of Section 7.1 – see Annexe 2. The level of existing infrastructure significantly affects the cost-effectiveness for ITNs, chemoprophylaxis for children and prevention in pregnancy. Obviously it is cheaper to expand services in areas where, for example, there is good ante-natal coverage, a network of VHWs, or high net use. But if resource allocation were based only on this analysis, better-off regions and households would benefit most.

Applying cost-effectiveness analysis from one situation to another is complex – circumstances differ, equity may be relevant, and affordability may be a problem. Given these limitations, policy makers do not and should not make decisions on the basis of economic evaluations alone. Advice on other factors must also input to the decision-making process. Concentrating only on the efficiency findings which result from economic evaluations can result in misguided decisions. But, just as importantly, to ignore economic evaluations is to disregard important and relevant information. If one intervention can buy you more good health than other interventions, that is a very strong argument indeed for spending money on the cost-effective intervention.

10 In economics, efficiency means value-for-money, or achieving a given standard of service at the lowest possible cost.
The following example illustrates the many facets of decision-making. A policy-maker is informed that a cost-benefit analysis indicated a rural hospital should be closed. The hospital is using too many resources and has few patients - the money would be more productively used on health projects in the capital. However, a survey has shown that the population is proud of the health system and particularly of its good coverage of the whole country; the population believe that rural hospitals should stay open and are willing to pay slightly more in taxes or fees to facilitate this. Unless the policy-maker knows this survey result, he or she may decide to close the hospital. Closure would be the decision indicated by economic evaluation; but it could be misguided, as:

a) it would be inequitable
b) it would be contrary to the wishes of the population
c) it would be unnecessary, as the population had declared themselves to be willing to pay the extra cost.

The policy maker may decide against the course of action indicated by economic evaluation. Nevertheless, evaluation is a crucial tool in the decision-making process because it clearly shows which public policy decisions are mainly motivated by equity concerns – and how much this is costing.

**Conclusion**

Economic evaluation can be a flexible and credible tool in the formulation of health policy and the management of health programmes. It can provide valuable transparency within public sector systems, allowing us to see what different parts of the system are costing and how that cost relates to their outcomes. It can help policy-makers and programme managers to be more objective and consistent from one decision to another.

However, economic evaluation is not a magic formula which can (or should) remove judgement, responsibility or risk from decisions in planning health care. Other factors, as well as efficiency, must weigh in the decision-making process. The relative importance given to each factor will depend on the context and on the individual politician or manager with whom responsibility finally lies.
Discussion. (Can also be used as a role play.)

You are the adviser to a Minister of Health. There is a recession, and the Finance Ministry is going to cut the Health Ministry’s budget. Some resources will have to be re-allocated. In the capital of your country, communicable disease can spread rapidly in cramped urban conditions, but only 40% of children are inoculated against the main killers. There are two hospitals serving the capital, and one hospital serving the rural area of your country. All of the hospitals have neonatal units.

An economist tells you that the benefits of the neonatal unit in the rural hospital are low relative to its costs, as its use is limited and survival rates are poor. The rural neonatal unit is not cost-effective in comparison to the neonatal units in the urban hospitals. The economist has estimated that inoculating an additional 30% of children at risk of communicable disease in the capital would be much more cost effective (one-fiftieth of the cost per DALY saved) than running the rural neonatal unit.

The economist recommends that the neonatal unit in the rural hospital be closed; infants in need of its services should, if possible, be brought to seek services at the urban hospitals. The money saved should be spent on inoculation programmes in the capital.

However, advisers from other Ministries and consumer lobby groups point out that:

- High per capita costs in rural areas are not unique to the health sector; the same is true of many services – e.g. education, postal services.
- High per capita costs for services in rural areas are not an automatic reason not to provide these services.
- The government is not keen on any policy which may encourage even more people to move to live in the capital.

The Minister of Health is a politician whose power base is drawn from the rural North.

Where would you advise the Minister to make resource cuts?
What do you think the Minister will finally decide to do?
Do similar issues arise in malaria? What are they?

Key points: this is a classic example of the conflict between efficiency and equity. Points to consider include closing one urban hospital, and seeing how costs in the rural hospital might be reduced and/or utilisation increased and/or effectiveness increased.
Recommended reading

In addition to the Goodman et al. book referenced in the chapter, the following may be of interest:


End of Learning Unit 4

| Summarise the contents of this Learning Unit. |
| Repeat the Learning Objectives given at the beginning of the Unit and take any remaining questions. |
Learning Unit 5

Using Economic Arguments

Learning objectives for Unit 5

This unit provides an opportunity for learners to practise putting together what they know about raising money (various sources; how to write a good proposal) and what they know about cost-effective ways to spend the money on malaria control. Learners should be able to make a strong case for increased investment in malaria control.

Annexe 3 is a Roll Back Malaria information sheet from 2002 entitled “Economic costs of malaria”. All learners should read Annexe 3. Then go through the main arguments together – this provides a good recap on the module as a whole.

The paper describes the “malaria growth penalty” – i.e. the idea that malaria hampers overall economic growth in a country.

The direct costs of malaria are high. According to the information sheet, “In some countries with a heavy malaria burden, the disease may account for as much as 40% of public health expenditure, 30% to 50% of inpatient admissions, and up to 50% of outpatient visits.”

Malaria also has indirect costs, including lost productivity or income. Other indirect costs include pain and suffering, and absenteeism from education.

The costs of malaria do not stop there – there are wider spin-offs. For example, entrepreneurs and tourists may both avoid travelling to malarial areas.

So malaria is both a “disease of poverty and a cause of poverty”. In other words, poor people suffer from malaria and poverty can be caused, or made worse, by malaria. Being aware of both relationships is important when making the case that malaria control has an impact on poverty. (Exhibit 4 explored the links between malaria and poverty.)

Malaria is increasingly recognised as a priority by governments and in discussions about poverty reduction and debt relief. Governments can help make household expenditure more efficient by reducing or abolishing taxes on insecticides and mosquito nets.

Private companies can contribute to malaria control – and it can be argued that it is in their interest to do so. For example, the private sector could contribute skills in marketing and public relations to assist in public education and social marketing.
The RBM information sheet provides broad arguments for investing in malaria. The table below – reproduced from “Economic Analysis of Malaria Control in Sub-Saharan Africa” 11 - looks at the annual cost implications of four levels of malaria control in Tanzania. This table should be discussed together as a class. Note in particular the figures on costs as a percentage of the existing (government) health sector budget – put the 64% from Package 4 in perspective by thinking of all the other health activities to be funded in Tanzania, including EPI, HIV/AIDS and all other hospital care.

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Table 7.1. Gross average annual cost implications of packages of malaria control measures in Tanzania (high transmission, very low income country) (1995 US dollars)

<table>
<thead>
<tr>
<th>Package 1</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Antenatal intermittent treatment (primigravidae only, ANC services exist)</td>
<td>$0.2m</td>
</tr>
<tr>
<td>Intervention to improve compliance</td>
<td>$0.5m</td>
</tr>
<tr>
<td>Improving the accessibility of 2nd and 3rd line drugs</td>
<td>$0.3m</td>
</tr>
<tr>
<td><strong>Total cost</strong></td>
<td>$1.6m</td>
</tr>
<tr>
<td><strong>Cost per capita</strong></td>
<td>$0.03</td>
</tr>
<tr>
<td><strong>Cost as % of existing health sector budget</strong></td>
<td>1%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Package 2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Net treatment (deltamethrin, one treatment per year)</td>
<td>$3.1m</td>
</tr>
<tr>
<td>Antenatal intermittent treatment (primigravidae only, ANC services exist)</td>
<td>$0.2m</td>
</tr>
<tr>
<td>Intervention to improve compliance</td>
<td>$0.5m</td>
</tr>
<tr>
<td>Improving the accessibility of 2nd and 3rd line drugs</td>
<td>$0.3m</td>
</tr>
<tr>
<td><strong>Total cost</strong></td>
<td>$4.1m</td>
</tr>
<tr>
<td><strong>Cost per capita</strong></td>
<td>$0.14</td>
</tr>
<tr>
<td><strong>Cost as % of existing health sector budget</strong></td>
<td>4%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Package 3</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Net distribution and treatment (deltamethrin, one treatment per year)</td>
<td>$22.7m</td>
</tr>
<tr>
<td>Antenatal intermittent treatment (primigravidae only, ANC services exist)</td>
<td>$0.2m</td>
</tr>
<tr>
<td>Intervention to improve compliance</td>
<td>$0.5m</td>
</tr>
<tr>
<td>Improving the accessibility of 2nd and 3rd line drugs</td>
<td>$0.3m</td>
</tr>
<tr>
<td><strong>Total cost</strong></td>
<td>$23.7m</td>
</tr>
<tr>
<td><strong>Cost per capita</strong></td>
<td>$0.81</td>
</tr>
<tr>
<td><strong>Cost as % of existing health sector budget</strong></td>
<td>25%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Package 4</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Residual spraying (lambda-cyhalothrin, 2 rounds a year)</td>
<td>$51.2m</td>
</tr>
<tr>
<td>Antenatal intermittent treatment (all pregnant women, ANC services exist)</td>
<td>$0.6m</td>
</tr>
<tr>
<td>Intervention to improve compliance</td>
<td>$0.5m</td>
</tr>
<tr>
<td>Improving the accessibility of 2nd and 3rd line drugs</td>
<td>$0.3m</td>
</tr>
<tr>
<td>Confirmed diagnosis for every suspected case</td>
<td>$7.6m</td>
</tr>
<tr>
<td><strong>Total cost</strong></td>
<td>$60.2m</td>
</tr>
<tr>
<td><strong>Cost per capita</strong></td>
<td>$2.06</td>
</tr>
<tr>
<td><strong>Cost as % of existing health sector budget</strong></td>
<td>64%</td>
</tr>
</tbody>
</table>

Source: Tables 3.12, 4.5 and 5.7.
Exercise: Drawing on your knowledge of economics and other aspects of malaria, develop a presentation on the economic importance of malaria, the case for malaria interventions and arguments for why additional resources should be allocated.

Divide the class up into groups of about 5. Assign different audiences to different groups – for example, one could be preparing a presentation for district counsellors, another to Ministry of Finance staff involved in writing a PRSP. Other audiences could be a group of donor representatives in a country; Cabinet; and a regional health management team. Groups may like to suggest their own audience.

Each group should make a short presentation – certainly no more than 10 minutes.

If possible, invite some interested outsiders to listen to the presentations, along with the other learners. Ask them to comment briefly on each presentation.

Key points: Do the presentations demonstrate that the group has thought about its particular audience and what it will be interested in? Does the presentation talk about appropriate sources of funds? Is the importance of spending on malaria control described in an interesting and relevant way? Is the argument used that malaria spending can offer excellent value-for-money?

There is a good economic case to be made for spending on malaria control and several cost-effective interventions exist. It is up to malaria workers to ensure that the case is made for investing money in malaria control and that the money is spent wisely (i.e. cost-effectively).

Recommended reading

“The Abuja Declaration and Plan of Action 2000” is useful for developing economic arguments, as is much of the work by Professor Jeffrey Sachs. Both can be accessed via the Roll Back Malaria website – www.rbm.who.int

End of Learning Unit 5

Repeat the Learning Objectives given at the beginning of the Unit and take any remaining questions.

Post-course test

The test questions from the 2003 WHO course are given as Annexe 4.
This is the Executive Summary of Kenya’s EPI Financial Sustainability Plan. It shows the kind of information and issues which are included in such a document.

EXECUTIVE SUMMARY


The Global Alliance for Vaccines and Immunization (GAVI) requires all countries seeking its support to prepare a financial sustainability plan (FSP) after the first two years of support. This Plan examines the base year (i.e. pre-GAVI) estimates of national costs of the immunization program, the projected future costs of running the programme and the various options available to improve the financing and sustainability of the programme.

Apart from the support being received through GAVI, there is a wide spectrum of immunization services development needs such as improvement of cold chain, capacity building and social mobilization, that Kenya will need to address on its own funds and, in part, with assistance from development partners.

The Plan links domestic and international funds. It envisages that by the end of the Plan period, the Government of Kenya will, to some extent, put immunization services financing on a sustainable basis.

Scope of the Plan

The FSP assesses the cost and funding of the Kenya Expanded Programme on Immunization and the projected program’s resource needs. The Plan report comprises six main parts:

Country and health system context (Chapter 1)
Financial, Budgeting and Procurement (Chapter 2);
Programme characteristics, objectives and strategies (Chapter 3);
Baseline and current programme costs and financing (Chapter 4);
Future resource requirements and programme financing (Chapter 5);
Sustainable financing strategic plan and indicators (Chapter 6) and

The baseline year is 2000. Projections cover the period 2002-2009. The distinction is maintained between secure funding (how much funding has a very high chance of being made available); probable funding (how much
funding is likely to be available, but not guaranteed in any way) and possible funding (how much funding may be available, but not particularly likely).

Program objectives for expansion and improvement

Kenya targets to immunize 90% of its children aged less than one year against the eight vaccine preventable diseases. These include the traditional six antigens namely: measles, polio, diphtheria, whooping cough (Pertussis), tetanus and tuberculosis. Through the GAVI support, Hepatitis B and Haemophillus Influenza type B vaccinations have been introduced into the Programme (with effect from December 2001).

In order to raise coverage, the programme will endeavour to improve community awareness through intensive social mobilization, motivation of health workers through training and intensified supervision, allocation of funds to enable districts carry out outreach services and distribute supplies and do minor repairs on their available transport. The programme will also look into ways in which locally available support can be mobilized with a view of strengthening it.

Auto-disable syringes were introduced to the Kenya EPI (KEPI) together with the pentavalent vaccines. There are plans to fully introduce Auto-disable syringes for all injectable vaccines within the programme starting from 2003.

The programme will ensure improvement in timeliness and completeness of routine reporting from the districts to 90% with view to identifying weak areas in routine immunization, vaccine management, detection and response to outbreaks vaccine preventable diseases. The issue of wastage will be addressed with the aim of reducing the rate significantly.

Current programme costs and sources of financing

The estimated cost of KEPI was US$ 17.75 million for the year 2000 with vaccines costing $ 3.3 million or 18% of the total programme costs. Personnel emoluments cost $9.1 million (49.2% of the total). Overall, the funds for the immunization programme were mainly from the Government, which contributed 55.7% of the total. Japanese Government, the primary donor, contributed 15.0 % of total cost in 2000.

Routine services increased to $19.2 million in 2001 from $13.4 in 2000 largely on account of introduction of new vaccines, which accounted for 15% of the total costs in 2001. Polio National Immunisation Days costs reduced almost by half ($2.2 million) in 2001 compared to $ 4.1 million in 2000 as not all districts were covered in 2001 (focus was on border districts and large urban districts). Overall, total costs in 2001 increased by 17% from the previous year.

On the whole, the government made a substantial contribution to the national immunization program through purchase of BCG vaccine, yellow fever vaccine, part of the routine polio and measles vaccines and meeting personnel emoluments among others. Donors, on their part, played a very
important role in providing support to KEPI including financing vaccines and cold chain equipment, vehicles, training and social mobilization/communications.

Projected gap in resources during and after the remainder of vaccine fund support
The projection covers the time period 2002-2009 and uses 2000-2001 as the base line years. Projected numbers rely on the assumed expansion and the structural change in the EPI. Specifically, to make these assumptions as explicit as possible, and to allow for a range of possibilities, two cost scenarios have been considered. These are:

Scenario A assuming 90% coverage target;
Scenario B assuming 80% coverage target;

For scenario A, the expenditure on EPI is expected to total $184 million during the 2002-2006 period. Vaccines (traditional 6 antigens - 3.2% of total, new and underused- 39.8%) account for 43% of the total cost. In 2003, the cost of supplemental immunisation activities will decrease as a result of reduced activities.

Under scenario B, the routine EPI vaccines are projected to cost $12.3 million in 2002 increasing to $16.8 by 2006 for a total cost of $146 million for the 2002-2006 period. About 87% of the funds are secured. The gap increases from $1.3 million in 2002 to $24 million by 2009 for a total of $78 million. As in scenario A, the large gap will exist due to lack of committed financing for purchase of vaccines beyond 2006.

Strategic priorities for financing sustainability

Among the many actions Kenya government will take to move towards higher and more stable levels of funding for immunization services, the following stand out as the ones with the highest potential impact:

Mobilize adequate resources

- Increase domestic resources to health through advocacy at inter-ministerial level, local authorities, local corporate and individuals;
- Expand the ICC membership in an effort to solicit their support for the EPI;
- Engage development partners in discussion of resource requirements and seek commitments to cover major funding gaps;
- Create enabling environment so as to attract foreign funding;
- Considering the importance of EPI in the prevention of diseases, the Ministry of Health will review it's priority ranking. Currently, EPI is ranked 5th in the essential health package.

Increase reliability of resources

- Donor commitments assured
- Establishment of an enabling political and economic environment

**Increase efficient use of resources**

- Create an environment to allow flexible operation of donor funds
- Establish a system of accountability and transparency
- Develop and implement programs to reduce wastage
- Establish proper reporting and feedback
- Management of resources

{The document is signed by the Ministers of Public Health and of Finance/Planning.}

{The full document can be found on the following website: [http://www.vaccinealliance.org/site_repository/resources/fsp_jan03_kenya.doc](http://www.vaccinealliance.org/site_repository/resources/fsp_jan03_kenya.doc)}
## Gap Analysis

### Kenya

#### VF Period 2002-2006

<table>
<thead>
<tr>
<th>Resource Requirements</th>
<th>2002-2006</th>
<th>Annual Avg.</th>
<th>(%)</th>
<th>Explanation</th>
<th>Per Targeted Child</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>$193,295,717</td>
<td>$35,650,714</td>
<td>40%</td>
<td>Resource Requirements</td>
<td>$29.72</td>
</tr>
<tr>
<td>Non-Vaccines ($6)</td>
<td>$73,219,372</td>
<td>$14,642,774</td>
<td>40%</td>
<td>Resource Requirements</td>
<td>$11.67</td>
</tr>
<tr>
<td>Secure Funding (of which)</td>
<td>$151,946,358</td>
<td>$39,257,272</td>
<td>40%</td>
<td>Secure Funding</td>
<td>$24.53</td>
</tr>
<tr>
<td>Government</td>
<td>$60,397,315</td>
<td>$12,077,403</td>
<td>40%</td>
<td>Secure Funding</td>
<td>$9.79</td>
</tr>
<tr>
<td>GAVI-VF</td>
<td>$78,562,547</td>
<td>$15,712,509</td>
<td>50%</td>
<td>Secure Funding</td>
<td>$12.74</td>
</tr>
<tr>
<td>Other Donors</td>
<td>$12,336,498</td>
<td>$2,467,300</td>
<td>8%</td>
<td>Secure Funding</td>
<td>$2.00</td>
</tr>
<tr>
<td>Secure Funding Gap</td>
<td>$32,909,359</td>
<td>$6,401,872</td>
<td>17%</td>
<td>Resource Requirements</td>
<td>$5.19</td>
</tr>
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<td>Non-Secured Funding</td>
<td>$619,756</td>
<td>$123,950</td>
<td>0%</td>
<td>Resource Requirements</td>
<td>$0.10</td>
</tr>
<tr>
<td>Non-Secured Funding Gap</td>
<td>$4,654,498</td>
<td>$930,990</td>
<td>3%</td>
<td>Resource Requirements</td>
<td>$0.75</td>
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<td>Possible Funding</td>
<td>$9,540,222</td>
<td>$1,900,044</td>
<td>1%</td>
<td></td>
<td>$1.56</td>
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<tr>
<td>Gap</td>
<td>$22,961,157</td>
<td>$4,490,927</td>
<td>2%</td>
<td></td>
<td>$3.64</td>
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<tr>
<td>Possible Funding</td>
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<td>0%</td>
<td></td>
<td>$0.23</td>
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#### Post-VF Period 2007-2009

<table>
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<tr>
<th>Resource Requirements</th>
<th>2007-2009</th>
<th>Annual Avg.</th>
<th>(%)</th>
<th>Explanation</th>
<th>Per Targeted Child</th>
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<td>Non-Secured Funding</td>
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#### Total Period 2002-2007

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<th>Resource Requirements</th>
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<th>Annual Avg.</th>
<th>(%)</th>
<th>Explanation</th>
<th>Per Targeted Child</th>
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<td>$32,433,052</td>
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### Secure Funding Gap Scenario

![Chart: Secure Funding Gap Scenario]

- Gap
- Secure Funding
- Other Donors
- GAVI-VF
- Government
Chapter 7 – Policy Implications

The aim of this final chapter is to reflect on the economic evidence available to underpin Roll Back Malaria by:

• bringing the cost-effectiveness results provided in previous chapters together and reflecting on their policy implications

• addressing the question of the cost of packages of malaria control measures

• highlighting implementation issues that need further and urgent consideration, including sources of finance, choice of distribution and provision strategies, and the broader policy environment, including regulation

• documenting key gaps in knowledge that are identified by the cost-effectiveness analyses and the economic impact of malaria review, and that need to be addressed by research.

7.1 Comparison of the cost-effectiveness of malaria control strategies

The cost-effectiveness of each intervention is dependent on many factors, such as the level of drug resistance and the length of the transmission season. This makes it difficult to make simple comparisons between interventions. However, to give a broad indication of relative cost-effectiveness, results are shown in Figure 7.1 for a range of interventions in a very low-income country with high transmission (see Notes to Figure 7.1 for assumptions made for each intervention).

The key message from this analysis is that all the interventions would be considered an attractive use of resources: the range for the cost per DALY {disability-adjusted life-year} averted clearly falls below $150 in each case for very low income countries. It is possible to make rough comparisons with CERs (cost-effectiveness ratios) for other health interventions, although the methodology used may not be strictly comparable. For example, the cost-effectiveness of measles vaccination is between $2 and $17 per DALY averted, onchocerciasis vector control between $120 and $230, and the medical management of hypertension greater than $2,000.

12 “Economic Analysis of Malaria Control in Sub-Saharan Africa” by Catherine Goodman et al, 2000. Global Forum for Health Research. E-mail info@globalforumhealth.org for information about how to access this book, or see www.globalforumhealth.org (publications). Copies can be downloaded in PDF format (chapter by chapter), or you can send for a free copy.)
For the childhood preventive interventions, the level of existing infrastructure is a crucial factor in determining the most cost-effective strategy. ITNs are a highly attractive use of resources if net coverage is already high, and chemoprophylaxis for children is highly cost-effective if a VHW {village health worker} network already exists. Under these conditions the cost-effectiveness of both interventions falls in a similar range to measles vaccination. If this baseline infrastructure is not in place, the costs of the two interventions are significantly increased, although one can still be reasonably certain that the CERs remain under $150.

The choice between childhood preventive interventions is not clear-cut because there is considerable overlap in the CER ranges. If two spraying rounds are required a year, the mean CER for residual spraying is similar to that for “Nets and Insecticide Treatment”, although the range for ITNs is much broader. If only one spraying round is required, the mean CER is significantly lower than for “Nets and Insecticide Treatment”, although considerable overlap remains in the ranges. In practice, therefore, country-specific information on factors such as input prices, likely compliance and capacity to implement would have to be considered in order to select the best strategy. All results for prevention in childhood should also be considered in the light of the potential risk of reduction in acquired immunity, and the impact of insecticide and drug resistance.

Malaria prevention in first pregnancies is also highly cost-effective, assuming ANC {antenatal care} coverage exists and that an increase in birth weight leads to a reduction in neonatal mortality. SP {sulfadoxine-pyrimethamine} intermittent treatment is likely to be more cost-effective than CQ {chloroquine} chemoprophylaxis due to lower costs, higher compliance and lower drug resistance. However, the CQ regimen is still cost-effective, with a CER under $150 up to levels of RII/RIII resistance of 69%. Even using average rather than incremental costs (i.e. including an allowance for ANC overheads), the CQ and SP regimens continue to look cost-effective up to levels of resistance of 40% and 65% respectively in very low income countries.

The case management interventions shown in Figure 7.1 (improving compliance with the first line drug, and improving the accessibility of the second and third line drugs) are the most cost-effective of all, with CERs clearly below $10, under the assumptions used in Figure 7.1. However data on the costs and effects of these interventions are very limited so further investigation is required to validate these results. Results for the other case management interventions are not shown in Figure 7.1. Combination therapies and artesunate suppositories are excluded because so little is known about their effectiveness. The introduction of new diagnostic techniques is not included because only changes in costs were considered, as the impact on health outcomes is not known. The issues involved in changing the first line drug for treatment cannot be summarized in a single CER, as this is a highly complex issue, involving a series of trade-offs between current and future costs and effects. Results are dependent on both empirical factors (for which there are very little data) and subjective factors
relating to the preferences and priorities of policy makers, and their attitudes to risk.

Despite the limitations of the information available, it is clear that many interventions to improve case management are potentially extremely good value for money, and further investigation of cost-effectiveness is urgently required. This should incorporate potential trade-offs between the two objectives of making prompt, effective treatment as accessible as possible, and controlling drug use to reduce the growth rate of resistance.

The cost-effectiveness of the interventions was also compared in the other economic strata. For middle income countries, the results were very similar to very low income countries; the relative cost-effectiveness of the interventions was unchanged, and the CERs in each case were only very slightly higher. For all interventions, the CER ranges fell clearly below $150. In higher income countries, the CERs were significantly higher for all of the prevention interventions, but very similar for the interventions to improve case management, further reinforcing the attractiveness of these strategies. In this economic stratum it was no longer clear that ITNs including net distribution, residual spraying with two rounds a year, or chemoprophylaxis for children when a VHW network must be established were below the $150 cut-off. However, it is plausible that higher ability to pay for health care interventions would mean that a higher CER cut-off was appropriate in these countries.

Cost-effectiveness depends on a range of factors specific to each intervention, but certain common influences can be identified. The length of the transmission season has an important influence on annual costs for spraying and chemoprophylaxis for children, and all interventions are affected by the price of key commodities (such as nets and drugs), and behavioural factors (such as compliance with drug regimens and re-treatment rates for nets). The degree of drug or insecticide resistance has an important impact on all interventions. Local susceptibility of parasites and vectors significantly affects cost-effectiveness, and as resistance will inevitably change over time, constant monitoring is required to identify any changes that would affect relative cost-effectiveness.

The level of existing infrastructure significantly affects incremental costs, and therefore cost-effectiveness for ITNs, chemoprophylaxis for children and prevention in pregnancy. This raises the crucial issue of a potential conflict between efficiency and equity. According to these results it would be more cost-effective to direct resources to areas where, for example, there is good ANC coverage, a network of VHWs exists, or net utilization is already high. However, if resource allocation were based only on this analysis, it would be likely that the better-off regions and households would benefit most. Those potentially excluded would be the poorer, more remote regions, which are currently underserved, and households without nets, or with poor access to health services. It is therefore essential that the cost-effectiveness of interventions is always considered in conjunction with information on the characteristics of those benefiting. Where additional costs are required to
reach those in greatest need, it is appropriate that benefits accruing to those
groups be given greater weight.

7.2 Packages of malaria control measures

In practice, malaria control policy involves the selection of a package of
complementary interventions. The effectiveness of interventions implemented
together is difficult to estimate, as the total effects of combined interventions
may be less than the sum of their incremental effectiveness when
implemented alone. For example, when only chemoprophylaxis was provided
to children in The Gambia there was a dramatic reduction in all cause
mortality, but when chemoprophylaxis was combined with ITNs in another trial,
the addition of chemoprophylaxis had no incremental effect on the reduction
in mortality already achieved with ITNs (2, 3). Similarly, for example, one
would expect that if residual spraying has already taken place, the additional
impact of providing prophylaxis to pregnant women would be reduced, and
that the impact of any preventive intervention on childhood mortality would be
lower if effective treatment services were already in place. In view of the
inadequate understanding of the relationship between transmission and
effectiveness, it has not been possible to make estimates of the combined
effectiveness of a package of control measures.

Whilst incremental effectiveness could be reduced by providing interventions
together, the incremental costs of implementing interventions could also be
lower if resources were shared and therefore used more efficiently. This is
unlikely to be significant for most of the interventions considered here, as the
delivery strategies are fairly separate. It has therefore been assumed that the
cost of a package can be estimated by simply adding together the costs of the
individual interventions. Table 7.1 shows the total gross cost of some possible
packages for a very low income SSA (sub-Saharan Africa) country, such as
Tanzania (potential cost-savings from reduced expenditure on treatment
services, or from a reduction in use of other preventive measures, have not
been included).

Package 1 represents a situation where resources are not available to
undertake a large-scale prevention programme, so the package includes only
intermittent treatment for primigravidae, and two interventions to improve case
management. This gives a modest total annual cost of less than $1 million,
equivalent to only $0.03 per capita or less than 1% of the existing health
sector budget, which appears relatively affordable for most African countries.
High coverage with a childhood prevention strategy can be achieved at
relatively low cost if, for example, net usage is already high. Package 2
includes the same interventions as Package 1 but with the addition of net
treatment, giving a total annual cost of $4 million, $0.14 per capita or
approximately 4% of the existing health sector budget. However, if net usage
is currently low, and no network of VHWs already exists to deliver
chemoprophylaxis to children, the incremental costs of achieving high
coverage with a childhood prevention intervention will be very high. Package
3 includes the Package 1 interventions, plus an ITN programme where nets
are also distributed. The total cost is $23.7 million, equivalent to $0.81 per
capita or a quarter of the current health sector budget. Finally Package 4 shows the cost of a package in perennial transmission providing full coverage with two rounds of residual spraying, intermittent treatment for all pregnant women (rather than only primigravidae), interventions to improve compliance and accessibility of second and third line drugs, and the introduction of dipstick tests for every suspected case. The total cost is over $60 million, which would require an increase in the health sector budget of 64%. This is equivalent to an incremental cost of over $2 per capita.

7.3 Other economic issues in malaria control policy formulation

The analyses presented in this report emphasize that highly cost-effective strategies are available to control malaria. However, key questions of how best to implement these strategies have still to be addressed.

7.3.1 Financing

The cost analysis above indicates certain strategies to be readily affordable within the context of existing public health services, and others to be extremely expensive if high coverage is to be achieved. Cost-effectiveness analysis leaves unanswered the question of who is to pay for the different control interventions. This issue requires an assessment on the one hand of the characteristics of the goods and services required, the willingness of people to pay for them directly, and the extent to which the benefits accrue to those individuals who purchase those goods and services or to others as well. In technical terms, these are questions of the extent of positive externalities and the public good characteristics of interventions. If either of these phenomena are important, relying purely on individuals to make their own consumption decisions will result in a sub-optimal level of demand.

On the other hand, basing the selection of appropriate financing mechanisms solely on the characteristics of the goods and services completely neglects the fundamental problem of accessibility for the great majority of the African population, which is lack of purchasing power. Hence poverty and equity considerations are powerful arguments for a strong public role in financing. However, there is a substantial cost attached to high coverage with a number of the interventions, particularly those focused on prevention of childhood malaria. It is therefore likely that a prominent donor role in financing will be required.

7.3.2 Alternative distribution and provision strategies

In order to undertake the cost-effectiveness analyses, assumptions had to be made on the most appropriate delivery strategies to assess. In reality, very little evidence is available for any of the interventions on the costs and effects of alternative approaches to distribution. Key issues include the extent to which interventions can be integrated into existing activities; and the choice between public, non-governmental organizations (NGOs) and commercial distribution channels. The majority of malaria episodes in Africa are treated through the private sector (4-7). This fact alone means that ways of working
with the private sector must be found, regardless of the relative economic merits of public and private delivery strategies. In the case of preventive interventions, those which require the widespread distribution of goods for use in the home, such as nets and insecticide, are likely to benefit from building on the extensive private sector distribution channels that already exist in Africa. Private distribution is by no means incompatible with public subsidies. However, research is urgently needed on how subsidies for the poorest can be combined with efficient distribution systems whilst ensuring that those who can afford to pay, do so.

7.3.3 Regulation

The analyses presented in this report have focused on intervention-specific strategies. However, there are a number of policies that act at a higher level, which may have an important influence on the cost-effectiveness of malaria control interventions. Regulatory policy is an important example, which affects malaria control activities in a number of ways. In theory, the pharmaceutical market in all countries is regulated to some degree to safeguard consumers. However, such regulations often do not work well or are not enforced: anecdotal evidence indicates that drug quality is a major problem in some countries, although no wide-ranging review is available (8). Regulations also usually exist to control the licensing of both doctors and paramedical staff, and the facilities they practise from. Again, these are often flouted or ignored (9), and typically do not encompass the informal sector (10). Although improvement of the regulatory system is now being identified as a key issue in health sector reform (11), it has yet to be addressed in the context of a major malaria control effort.

7.4 Knowledge gaps

7.4.1 The impact of interventions on health outcomes

Estimation of the effectiveness of all control interventions is severely hampered by the lack of a transmission model of malaria with incidence as an outcome. The relationship between transmission intensity, malaria morbidity and mortality, and the effectiveness of interventions is very poorly understood, so it is not possible to predict effectiveness in different epidemiological zones, and the long-term health impact of preventive interventions is unknown.

This methodological gap is mirrored on the empirical side by the small number of trials that report health outcomes, and the even smaller number which have information on mortality:

- Mortality data for residual spraying is very old and not comprehensive.
- Only one trial of chemoprophylaxis for children has mortality as an outcome.
- No studies on prophylaxis or intermittent treatment in pregnancy have shown a significant effect on infant mortality.
- Very little information is available on the effectiveness of improving the case management of severe or uncomplicated malaria, and the available data generally do not include evidence on health outcomes.
• No information is available on the effectiveness of environmental management, epidemic control or personal protection, so evaluation of these interventions was not feasible.

7.4.2 Intervention costs

Analysis is also restricted by the lack of information on costs:

• Although good cost data are available from the ITN trials, information is lacking on the costs of other delivery strategies, such as social marketing.
• Surprisingly, no full costings of residual spraying or of the addition of prophylaxis/intermittent treatment to antenatal care were found.
• Cost information is very limited for interventions to improve case management.
• No cost data are available for environmental management or epidemic control.

7.4.3 The development and impact of drug and insecticide resistance

Analysis of all interventions involving antimalarials is hampered by the state of knowledge on drug resistance:

• Information is limited on current levels of parasitological resistance and clinical failure, and the relationship between the two.
• Hardly any data are available on growth rates of resistance over time, or on the factors that are associated with this growth. There is no model with which to predict the impact of proposed strategies to reduce resistance growth, such as combination therapies or the use of confirmed diagnosis in treatment decisions.
• There is a similar lack of information on the development and impact of vector resistance to insecticides.

7.5 Recommendations for further research on the economics of malaria

7.5.1 Research on the economic benefits of malaria control

Systematic studies of the potential benefits of malaria control are required, disaggregated by region and population group. The analysis needs to incorporate:

• the specific nature of the disease burden from malaria
• a detailed characterisation of the local economy
• the coping strategies of households and their potential costs
• the effect of malaria on the productive environment and production possibilities and incentives of households.

7.5.2 Collection of information on the costs of interventions
Where possible, effectiveness trials should be accompanied by rigorous costings, and comparable data should also be collected on costs in operational settings. In particular, it is a high priority to collect information on:

- the costs of alternative delivery strategies for ITNs
- simple interventions to improve case management
- interventions to improve the management of severe malaria.

**7.5.3 Operational research on delivery strategies**

Research is needed on ongoing projects and programmes to draw out transferable lessons on the effectiveness, efficiency and equity of different delivery strategies. In particular, information is needed on:

- ways to encourage net ownership to a level where a treatment programme would be feasible
- strategies to increase ITN re-treatment rates
- ways of providing residual spraying services in a manner appropriate to community needs
- affordable ways to improve compliance with chemoprophylaxis and drug treatment.

**7.5.4 Analysis of the actual and potential roles of the public and private sectors**

The remit of malaria control policy should be broadened beyond government services to incorporate the whole health sector, and the interrelationships between public and private components. Market analysis is required to assess the nature of demand and supply for prevention and treatment services, and to consider the ways in which policy can improve the performance of both sectors.

**7.5.5 The adaptation of generalized estimates of cost-effectiveness for use by country-level policy-makers**

Adapting generalized estimates for use at the country level involves the use of local epidemiological and cost data, such as the level of drug resistance and local input prices, and the consideration of specific country conditions, such as the impact of existing infrastructure on incremental costs. It will be necessary to adapt estimates of the cost-effectiveness of individual interventions to devise a package of control measures, and to consider the implications of epidemiological and economic variation within countries. Finally a framework is required for policy development that combines cost-effectiveness data with other relevant information on equity, affordability, managerial capacity and the costs of resource reallocation.

**7.5.6 Generation of comparable estimates of cost-effectiveness**

The widespread use of cost-effectiveness information requires that comparable estimates are available for other health care interventions, so that
the opportunity costs of the resources involved can be clearly understood. This requires the development of a common cost-effectiveness methodology, which is broadly accepted and well disseminated.

7.5.7 Capacity building in health economics

The achievement of these recommendations on the scale required in SSA, with adequate inputs of local knowledge, would severely overstretch the limited existing health economics capacity. Considerable investment is therefore required to develop a cadre of researchers and programme managers with training and experience in economics and epidemiology.

NB Need to insert figure 7.1 and table 7.1. here
References


Malaria affects the health and wealth of nations and individuals alike. In Africa today, malaria is understood to be both a disease of poverty and a cause of poverty. Malaria has significant measurable direct and indirect costs, and has been shown to be a major constraint to economic development. For developing economies this has meant that the gap in prosperity between countries with malaria and countries without malaria has become wider every single year.

Annual economic growth in countries with high malaria transmission has historically been lower than in countries without malaria. Economists believe that malaria is responsible for a ‘growth penalty’ of up to 1.3% per year in some African countries. When compounded over the years, this penalty leads to substantial differences in GDP between countries with and without malaria and severely restrains the economic growth of the entire region.

The direct costs of malaria include a combination of personal and public expenditures on both prevention and treatment of the disease. Personal expenditures include individual or family spending on insecticide-treated nets (ITNs), doctors’ fees, antimalarial drugs, transport to health facilities, support for the patient and sometimes an accompanying family member during hospital stays. Public expenditures include spending by government on maintaining health facilities and health care infrastructure, publicly managed vector control, education and research. In some countries with a heavy malaria burden, the disease may account for as much as 40% of public health expenditure, 30% to 50% of inpatient admissions, and up to 50% of outpatient visits.

The indirect costs of malaria include lost productivity or income associated with illness or death. This might be expressed as the cost of lost workdays or absenteeism from formal employment and the value of unpaid work done in the home by both men and women. In the case of death, the indirect cost includes the discounted future lifetime earnings of those who die.

Malaria has a greater impact on Africa's human resources than simple lost earnings. Although difficult to express in dollar terms, another indirect cost of malaria is the human pain and suffering caused by the disease. Malaria also hampers children's schooling and social development through both absenteeism and permanent neurological and other damage associated with severe episodes of the disease.

The simple presence of malaria in a community or country also hampers individual and national prosperity due to its influence on social and economic decisions. The risk of contracting malaria in endemic areas can deter investment, both internal and external, and affect individual and household decision making in many ways that have a negative impact on economic productivity and growth. Some examples include:

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13 This is a text-only version of an RBM information sheet. The original version is two colour sides of one sheet, with attractive pictures and diagrams. You may want to get copies of the original from RBM.
undeveloped tourist industry due to reluctance of travellers to visit malaria-endemic areas;
undeveloped markets due to traders’ unwillingness to travel to and invest in malarious areas; and
preference by individual farmers/households to plant subsistence crops rather than more labour-intensive cash crops because of malaria’s impact on labour during harvest season.

Conscious of the drain on their economies, governments in Africa are now increasing resources for malaria control, in line with the resolutions made at the Abuja Summit of 2000. Malaria is also becoming an important topic within discussions of poverty reduction and debt relief and malaria control is now seen by many to be an important element of national poverty reduction strategies for malaria-endemic countries.

Countries are also taking steps to assure that out of pocket spending on malaria is money well spent and that ITNs for malaria prevention become more affordable by reducing or abolishing taxes and tariffs on insecticides, mosquito nets and the materials used in their manufacture.

The role of the private sector

Local and international businesses operating in malarious areas are also learning that support for malaria control not only reduces levels of absenteeism and lost productivity, but also boosts labour, community and government relations.

In the long term, increased productivity will encourage market expansion, boost household spending and change consumption patterns. Increased malaria control will work to the benefit of many companies, especially those producing consumer goods or developing local tourist industries.

Some of the ways in which private companies can contribute vital resources and expertise to malaria control include:

- contributing much-needed capital to scale-up current programmes or create new ones;
- assisting in the research and development of new interventions and treatments for malaria;
- providing management and business expertise to stimulate the market for ITNs and antimalarial drugs;
- using their network of distribution channels to carry life-saving medicines and prevention measures to remote communities;
- using their marketing and public relations expertise to assist public education campaigns.

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Tel: +41 22 791 2891 E-mail: rbm@who.int
www.rbm.who.int

Roll Back Malaria is a global partnership initiated by WHO, UNDP, UNICEF and the World Bank in 1998. It seeks to work with governments, other development agencies, NGOs, and private sector companies to reduce the human and socioeconomic costs of malaria.

{Written in 2002}
Health economics for health workers involved in malaria control programmes

PRE-TEST

No: .............................. Name of participant: ...........................................................
Country: ........................................ Date: ......................................................
INSTRUCTIONS

All questions except number 2 have one correct answer. Question Number 2 has two correct answers – you should indicate both.

QUESTIONS

1. Which is the best definition of economics?

   (i) Economics is about buying things as cheaply as possible.

   (ii) Economics is about getting the Gross National Product of a country to grow as quickly as possible, with no reference to whether or not this helps the poorest people.

   (iii) Economics is about how society chooses to use its resources to make goods and services and to distribute them to people.

   (iv) Economics is about measuring how much things cost, so it ignores considerations such as pain and death.

   (v) Economics is about Government Expenditure.

2. A Medium Term Expenditure Framework (MTEF) is a three-year rolling plan that sets out what government wishes to achieve; the costs; and how it proposes to finance the costs from both domestic and external sources. Which of the following statements are true? (choose two answers)

   (i) MTEFs are difficult to write when the incumbent of the Minister of Health post keeps changing.

   (ii) Some countries are very dependent on exporting commodities, which have fluctuating prices – e.g. coffee or cocoa. Changing income from exports makes it harder to write a MTEF.

   (iii) MTEFs are a great help to corrupt governments because they make it difficult to know how much money is planned to be spent in which sectors.

   (iv) It is difficult to make an MTEF work well in a country where the government accounts service does not produce regular and reliable information on how government money is actually spent.

   (v) A country needs to have an MTEF to be a member of the United Nations.
3. Look at the following table. Which statement seems to best explain the information?

<table>
<thead>
<tr>
<th>Year</th>
<th>Primary care (% total government expenditure on health)</th>
<th>Hospital care (% total government expenditure on health)</th>
<th>Other (% total government expenditure on health)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>25</td>
<td>65</td>
<td>10</td>
</tr>
<tr>
<td>1999</td>
<td>28</td>
<td>62</td>
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</tr>
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<td>2000</td>
<td>30</td>
<td>60</td>
<td>10</td>
</tr>
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<td>2001</td>
<td>26</td>
<td>68</td>
<td>6</td>
</tr>
<tr>
<td>2002</td>
<td>24</td>
<td>74</td>
<td>2</td>
</tr>
</tbody>
</table>

i) A new teaching hospital was opened in late 2000.

(ii) “Other” used to include the budget for health education materials. But this was re-classified under “primary care” at the beginning of 2001.

(iii) The government commitment to strengthening primary care is very strong.

(iv) There is a problem with inflation.

(v) There was a small outbreak of polio in 2001.

4. There is a Millennium Development Goal on malaria. This states that the global goal is to:

i) Have doubled by 2015 the incidence of malaria and other major diseases

(ii) Have halved by 2015 the incidence of malaria and other major diseases

(iii) Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases

(iv) Have eradicated malaria by 2015

(v) Have reduced by 25% by 2015 the incidence of malaria and other major diseases.

5. One advantage of a SWAp (sector-wide approach) is that it reduces transaction costs for the government. (A SWAp happens when governments and donors agree on a health plan and how it is to be funded.) In this context, transaction costs are:

(i) The costs of flying repeatedly to Brussels and Washington.

(ii) The costs of meeting district officers to plan services.

(iii) The costs to government in terms of time and money of dealing separately with a large number of donors.

(iv) The costs of buildings.

(v) The amount of money to be spent on health.
6. One statement below is a correct quotation from “The Economics of Malaria Control”, by staff at the London School of Tropical Medicine (2002). Which is the correct quotation?

(i) Around 60% of all malaria episodes in sub-Saharan Africa are initially treated by private providers, mainly through the purchase of drugs from shops and drug peddlers.

(ii) Around 60% of all malaria episodes in sub-Saharan Africa are initially treated by private providers, mainly through the purchase of drugs from shops and drug peddlers. Governments usually subsidise the cost of these treatments.

(iii) Around 99% of all malaria episodes in sub-Saharan Africa are initially treated by private providers, mainly through the purchase of drugs from shops and drug peddlers.

(iv) Most malaria episodes in sub-Saharan Africa are initially treated in the public sector.

(v) Around 6% of all malaria episodes in sub-Saharan Africa are initially treated by private providers, mainly through the purchase of drugs from shops and drug peddlers.

7. Using the following information on cost-effectiveness, decide which one statement below is true. The information is fictitious and does not relate specifically to malaria.

**Cost-effectiveness of treating disease X in Country Y**

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Cost</th>
<th>Number of lives saved per year per cost in middle column</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drugs – treatment</td>
<td>$1.2 million</td>
<td>200</td>
</tr>
<tr>
<td>Drugs - prophylaxis</td>
<td>$6 million</td>
<td>500</td>
</tr>
<tr>
<td>Prophylaxis for pregnant women and children under 5 only</td>
<td>$2 million</td>
<td>200</td>
</tr>
<tr>
<td>Childhood immunisation</td>
<td>$1.2 million</td>
<td>300</td>
</tr>
<tr>
<td>Treatment of water supply</td>
<td>$8 million</td>
<td>250</td>
</tr>
<tr>
<td>Health education</td>
<td>$1 million</td>
<td>200</td>
</tr>
</tbody>
</table>

(i) Drugs – treatment is the most cost-effective intervention.

(ii) Drugs - prophylaxis is the most cost-effective intervention.

(iii) Prophylaxis for pregnant women and children under 5 only is the most cost-effective intervention.

(iv) Childhood immunisation is the most cost-effective intervention.

(v) Health education is the most cost-effective intervention.
8. Again using the table from Question 7, which statement below is true?

(i) Prophylaxis for all and prophylaxis only for pregnant women/children under 5 seem to be the same in terms of cost-effectiveness.

(ii) Drugs – treatment and childhood immunisation cost the same and therefore are equally cost-effective.

(iii) Treatment of water supply is the least cost-effective.

(iv) If a government had only $8 million to spend on dealing with this disease, it would be best to spend all the money on treatment of the water supply.

(v) Health education is the cheapest intervention and therefore the best.

9. Sustainability means the ability to continue to run a programme in years to come. Which situation below is the most likely to be sustainable over 10 years?

(i) a programme in an African country paid for out of the extra money earned from coffee exports because Brazil’s harvest failed due to bad weather

(ii) a 3-year project funded by an NGO which doubles the district budget for that activity

(iii) a programme that relies mostly on government staff selling products to consumers at cost. The consumers are used to paying for the product, and are pleased that government staff are able to sell it at a reasonably low price.

(iv) an activity funded by central government because it is very popular in the year before an election

(v) a new health centre in a very remote area where staff are unwilling to work because there are no extra incentives.

10. An aid instrument is a way of providing donor support – i.e. a means of getting funds from donors to developing countries. Which of the following is not an aid instrument?

(i) budget support to the government

(ii) SWAp – the sector-wide approach

(iii) projects

(iv) user charges

(v) global initiatives such as GFATM, the Global Fund to Fight AIDS, TB and Malaria
11. Buying drugs and bednets in large numbers gives economies of scale. Which of the following is true:

   (i) An example of economies of scale is that 200 bednets cost $2,000 and 2,000 bednets cost $20,000.

   (ii) There are no economies of scale when buying drugs because of the power of the international drug companies.

   (iii) An example of economies of scale is that 200 bednets cost $2,000 and 2,000 bednets cost $15,000.

   (iv) Economies of scale suggest that it is better to buy products at district level than at national level.

   (v) An example of economies of scale is that 200 bednets cost $2,000 and 2,000 bednets cost $25,000.

12. Below is one quotation from a well-respected recent summary of the policy lessons related to the economics of malaria. Which one do you think is the correct quotation? (IDS 2003, Value for money: cost-effective options for malaria control)

   (i) Measures to prevent malaria in childhood are not cost-effective.

   (ii) Measures to prevent malaria in childhood are highly cost-effective, but the financial costs of wide coverage are high and could increase health sector budgets by over 20%.

   (iii) Measures to prevent malaria in childhood are highly cost-effective and African governments should easily be able to afford them.

   (iv) Given the importance of spending money on primary education, government should not be funding measures to prevent malaria in childhood.

   (v) Measures to prevent malaria in childhood are highly cost-effective, but the financial costs of wide coverage are high and could increase health sector budgets by over 200%.
# Health economics for health workers involved in malaria control programmes

## PRE-TEST

## ANSWERS

<table>
<thead>
<tr>
<th>QUESTION</th>
<th>ANSWER</th>
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