Health economics for health workers involved in malaria control programmes

Basic concepts, tools and application

Learner’s Guide

World Health Organization
HIV/AIDS, Tuberculosis and Malaria
Roll Back Malaria

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Trial Edition
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Overview of the module

Objectives of the training

To provide participants with basic knowledge and skills in Health Economics such that they can use these to increase and improve resource allocation for and within malaria control programmes.

Course outline

Day 1
Session 1  Introduction to course
Session 2  Overview of health economics
Session 3  Funding for malaria work
  - Government planning and budgeting
  - Developments in Government planning and budgeting
  - International funding – projects
  - Newer types of donor support – SWAPs and budget support
  - Household funding

Day 2
Session 4  Costing for programme planning and management
Session 5  Economic evaluation approaches
  - Cost Effectiveness
  - Cost Benefit
  - Affordability and sustainability

Day 3
Session 6  Economics of malaria
Session 7  Will economic arguments always work?
Session 8  Making the case for malaria

Post-course test, evaluation and closing

Target audience

Public sector health practitioners with responsibility for malaria control programmes at national, regional and district levels
  - Medical doctors/officers
  - Public health experts
  - Environmental health practitioners

Assessment of participants

A formal pre- and post-test questionnaire.
Introduction

The objective of this session is to introduce participants to the course objectives, content, methods, tutor and assessment.

No previous knowledge of formal Health Economics is assumed.

Objectives of the training

Provide participants with basic knowledge and skills in Health Economics such that they can use these to increase and improve resource allocation for and within malaria control programmes. This may be through better use of available resources and through understanding processes for allocation to the malaria and related activities.

Methods

- Didactic teaching
- Discussion
- Group work and group presentations

Assessment of the course

- Student feedback – written and oral
- Test pre and post course

Pre-test

12 questions.
The test is reproduced at the end of this document.
Overview of health economics

Learning Objectives

By the end of this unit you will be able to:

- Explain to colleagues what economics is about
- Explain how an understanding of economics could assist a manager improve programme performance

What is economics?

If a person needs a pen s/he may walk into a stationery shop to buy one. S/he makes a number of decisions before s/he finally walks off with a pen:

- What will it be 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 and these are under her/his control. If s/he has a lot of money s/he may buy an expensive one or several pens; if the money is limited s/he will make more strict choice. S/he may decide not to buy what is available and go to another shop.

If more and more people go to the shop to buy pens, the business person may decide it is worthwhile to invest his money in pens and will therefore supply more pens to match their needs. If there are no restrictions to investment, the business person would invest in commodities and services that would bring him income and customers would buy those they like and can afford. If this process of supply and purchase of commodities (as if in a market) were to continue over time a pattern of distribution of the various commodities and incomes generated would emerge with some having more than others.

Economics helps us to study how society uses its resources to produce needed commodities and services and distributes them among different groups. Such economic knowledge is especially important in the situation where we as programme managers want to get more of the available resources. Another key role of economics is to assist us in deciding whether the available resources are being used in the best way possible. Are we doing the right things? And are we doing them right (efficiently)?

In the above example of pens, distribution of commodities is left to the interaction between the businessmen or private entrepreneur and the customer with no (or little) government intervention; this is the basis of capitalism and the market system.
Now if the person in the above example 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 s/he decided to go to the clinic you quickly realise that it is complicated for him/her to decide what services to buy to get back her/his health. There are questions of whether to have laboratory examinations and interpretation of its results, which type of drug to buy (chloroquine, SP or Artesunate) and their side-effects, 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, whether or not to return for follow up, etc. Many of these decisions are difficult to make because individuals have limited information about the condition and what is the most appropriate treatment. They are not knowledgeable buyers (as they are with pens).

It is also true that if you left “the sale of health” to be decided by the market as in the above example on pens, certain components will not be profitable to businessmen 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 (or other conditions such as HIV/AIDS or tuberculosis) 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 getting involved in the provision of health services in a way that they will not get involved in for example the market for pens or bicycles. It has also led to development of an economics sub-theme of health economics.

Just as individuals have to make choices about what health services and products to use, there are several levels of choice for Government, and 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 are making decisions too, nationally and internationally on how much to allocate for health in a country and which programmes to support
- Once the health budget is agreed, the MOH (or local government) has to decide how much to allocate to programmes or districts and which intervention packages to provide (how much for malaria, for obstetric care or immunisations)
- District level decides about where to have clinics or outreach, how much managerial time and leadership to devote to malaria etc.

[We will come back to these issues tomorrow]

To help managers influence these decisions in their favour it is important to understand the way these decisions are made and the intentions behind or incentives for the interventions and actions of government, donors and agencies in the health sector.

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

**Discussion:**

- Why do most governments give a large proportion of their budget to the Education and Health sectors?
- What is the intention behind exemption from fee payment by pregnant woman?
- Why is health education (IEC/BCC) provided free to the beneficiary in most countries?
- Why do private health care providers focus almost exclusively on curative services?

**Health economics**
Health economics is the application of economic theories and techniques to decisions on health including preventive and curative health care. 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).

**A2 Discussion**

People have argued that health care/services is usually a matter of life and death and should be provided at any cost on the basis of need and not on the basis of ability to pay. Do you agree?

Would the same arguments hold for individual users as well as the community or are there different arguments for each level?

The methods of determining the better of two or more interventions is described as economic evaluation of which the most relevant is cost-effectiveness analysis [this will be discussed in more detail tomorrow].

Economics also contributes in analysing the use of resources and helps to identify ways to be more efficient.

Over the next two days we shall examine some of the methods used in evaluating the cost effectiveness of health interventions improving the health of populations and the processes for making decisions on how much resources to allocate to particular programmes such as malaria.

**A3 Discussion**

How is economics relevant to your daily working life?

The class will draw up a list together.
Learning Unit 2
Funding for malaria work

Learning Objectives

By the end of this unit you will be able to:

- Participants to be clear about the sources of funding for malaria work
- How decisions are made on use of these funds
- How they could seek to influence how funds are deployed

A4 List the sources of money for malaria control in your country.
For each of the sources (and where applicable), do you know the person who is responsible for distributing the funds? Do you ever meet with them?

where do funds for malaria work come from?

In this session we will look at where funds come from for malaria work, and how decisions are made on the 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
- Private spending, e.g. out of pocket spending on drugs and bed nets.
- (less) NGOs (non-governmental organisations) and religious organisations.

We will talk about:

a) planning and budgeting within Government
b) developments in planning and budgeting
c) support from donors – projects
d) newer types of donor support – SWAp and budget support
e) private expenditure and how to influence it

We will introduce some of the current jargon, which should be familiar by the end of today. This includes PRSP, MTEF and SWAp.

a) Planning and budgeting in the Government
A5 Exercise

All of you have some experience in planning and budgeting of programmes. There are however many pitfalls in the planning process and sometimes plans fail or are ignored. The purpose of the exercise is to examine and articulate why planning and budgeting at district level does not always produce the desired results.

Small groups of participants which mix some from district or implementing level and the others from provincial/national programme or policy level will tell each partner how they are involved in planning and budgeting. The questions are intended to initiate discussions; other points may be raised.

The district group will present views on:

- What plans and budgets do they produce?
- Do they get guidance on how much resources they are likely to have or what they are expected to achieve?
- If not how do they decide how much activity and resources to plan for? Do they ask for too much, knowing it will be cut?
- What happens to the plans and budgets they participate in producing? Who actually submits the plans? To whom?
- Do they think they are listened to? Do they get feedback? If not, why not?
- Does their budget allocation relate to their plan? Is the budget actually released in time?
- What value do they find in planning and budgeting?

The national level programme/policy group will present views on:

- Their reactions about the planning process of districts;
- View on the plans that reach them - their quality and are they realistic in terms of funding needs?
- Do they respond to the districts? In what ways?
- What are the frustrations the policy level has in dealing with the districts?
- What competing interests are there for available resources? How are these dealt with?
- Are districts aware of the practical aspects of accessing funds for their plans? Are they seeing the right persons?
- Do they 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?

Each group will give feedback. The group as a whole will then consider:

- Any lessons for districts 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?

The Government Planning and Budgeting Cycle
Talk:

A budget is a translation of our planned activities and resources into cash 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, supplies, drugs etc. While a district or programme manager is mainly concerned with preparing a good budget for our plans, it is essential that the successful manager in a resource-constrained environment understands the budgeting process of the larger system in which s/he works. (It is no good asking your brother for money if your grandmother controls the family purse). Only in this way can the manager direct her/his efforts influencing those stages in the budget chain that are amenable to influence, and work up realistic plans.

**Government planning and budgeting cycle**

The diagram sets out a typical cycle for public expenditure management (source M Foster, 2003).
The Budget Process

(Public Expenditure Management Cycle)

- Policy Review
  - Outcome Evaluation
  - Annual Review and Policy Update

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

- Budget Preparation
  - Revenue Targets
  - Financing Plan
  - Ministerial Allocations

- Budget Execution
  - Release of funds
  - Programme Implementation

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

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

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

- how much is there available for public expenditure as a whole (depends on economy, tax collection, debts to pay)
- 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 delivery of malaria services (e.g. vehicle maintenance, IEC, staff)?
- At district level, how much for malaria and related inputs?

A6 Please 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 our 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 health budget is for malaria related spending</td>
<td></td>
</tr>
<tr>
<td>How much of district budget is for malaria related spending</td>
<td></td>
</tr>
<tr>
<td>Are there further steps? (e.g. getting funds released)</td>
<td></td>
</tr>
</tbody>
</table>
Continue talk:

Typically the decision on the annual budget for the sector is a multi stage process with negotiation between line ministries and the Ministry of Finance. A typical process is:

a) resource projections prepared by 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 Discussion – how can we influence and get involved in the annual budget process?  
Do you find the budgeting process frustrating? If yes, why?

Recent developments in planning and budgeting processes

In this section we want to look at what is changing in planning and budgeting and how this provides opportunities for influence. Two major initiatives are discussed here:

a) Medium Term Expenditure Frameworks (MTEFs)  
b) Poverty Reduction Strategy Papers (PRSPs)

A8 What do you already know about MTEFs and PRSPs?  
Are there MTEFs and PRSPs in your countries? How involved have you been with them?

a) Medium Term Expenditure Frameworks (MTEFs)

The budgeting process we have just been discussing 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 or contract in services. But over three years it is easier to show how resource allocation is planned to change. This led to the idea of an MTEF.

MTEF is a three-year rolling plan that set out what government wishes to achieve, the costs, and how it proposes to finance them from both domestic and external sources. Many countries now use it 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.

The advantages of MTEF are expected to be:
- Clearly outlines what is expected to be achieved by each sector
- Links sector objectives, policies and programmes to the availability of resources
- Allows visible shifts in expenditure in the direction of priorities and enable 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 therefore activities can be scheduled over years against know ceilings
• Links financing with performance
• 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 MOF
• Allows opportunities for other stakeholders to discuss major budget decisions
• Improves quality of budgets and staff understanding and capacity, thereby creating greater confidence and ownership in the budget process
• Promotes greater intersectoral collaboration between MOF and MOH
• Provides information to improve coordination and as the basis for negotiations with donors.

MTEFs are useful for sector and programme managers - to see what funding is likely to be available and to show 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”).

A9 Discussion point: What are the likely constraints facing implementation of an MTEF approach?

b) Poverty Reduction Strategy Papers (PRSPs)

PRSPs were introduced as a requirement for countries seeking debt relief under the Highly Indebted Poor Countries Initiative (HIPC) and then extended as a requirement for some types of World Bank (IDA) and IMF support. However the original idea came from a Poverty Eradication Action Plan prepared by the Government of Uganda. Many other countries had economic development plans or poverty reduction plans already, or three-year or five-year plans.

Key features of PRSPs:

They should be:
- country driven and owned
- results oriented
- comprehensive
- based on poverty analysis
- involve participation by key stakeholders
- with a medium to long term perspective

Not all previous countries’ plans meet all of these criteria, especially the intention for broad ownership and consultation on strategy (it is not meant to be a technical document prepared by a few civil servants).

In order to speed up debt relief, countries were allowed to produce an Interim PRSP (known as I-PRSP) first and then spend longer preparing the full PRSP.
Does the PRSP cover health? How does it affect the health budget?

The PRSPs cover the poverty situation in the country and strategies to deal with it for all sectors. It also includes broad budget allocations usually for 3 years and how progress will be monitored. The amount on health is necessarily limited within this. However

- there are usually statements on health priorities including which are important issues for the poor; there is scope for malaria to be mentioned here;
- there are usually key indicators that are agreed for monitoring progress. It may be possible to include an indicator related to malaria here. This would be helpful in ensuring continuing attention to malaria during implementation.

**A10 Discussion:** Has anyone seen or been involved with the PRSP here? If so can you describe how it worked and how the malaria community was able to get involved? If not, discuss possible routes of influence.

**A11 Discussion in plenary:** 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
- involving participation by stakeholders.
- with a medium to long-term perspective?

What would you need to do to meet the criteria?

**How will the PRSP be used?**

Many of the donors are seeing the PRS as a key step in their support to a country. Funding will be provided to the Government budget linked to implementing the PRSP. Therefore getting into the PRSP should help with accessing funds from the Government.

In particular the PRSP has to be agreed before debt relief is completed. The thinking is to make sure that the money released by debt relief is well used. Because the funding bodies are very concerned with poverty reduction and achieving the Millennium Development Goals (MDGs), they typically encourage an increase in allocation to the social sectors especially education and health. Thus there is a good opportunity to get more resources for health during the development stage of the PRSP. (The MDGs are explained in the box below.)

Research suggests that this is not sustained – the shift in resources tends to happen at the start of the PRSP but not continue into later years. So timing is key for the health sector and the malaria lobby to get its message though during PRSP development.

The MTEF and the PRSP should link together, with the MTEF showing how the PRSP strategies will be reflected in sector budgets.
The Millennium Development Goals

The Millennium Development Goals commit the international community to an expanded vision of development, one that vigorously promotes human development as the key to sustaining social and economic progress in all countries, and recognizes the importance of creating a global partnership for development. The goals have been commonly accepted as a framework for measuring development progress.

Many of the targets of the MDGs were first set out by international conferences and summits held in the 1990s. They were later compiled and became known as the International Development Goals. (For a review of progress on the International Development Goals see www.paris21.org/betterworld.) 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, the OECD, and the specialized agencies of the United Nations, the 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, to effectively measure national progress towards meeting the MDGs, and to engage even more closely with our partners in helping governments improve human development. 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. Countries that are poor and heavily indebted will need further help in reducing their debt burdens. And all countries will benefit if trade barriers are lowered, allowing a freer exchange of goods and services.

For the poorest countries many of the goals seem far out of reach. Even in better-off countries there may be regions or groups that lag behind. Countries need to set their own strategies and work, together with the global partners, to ensure that poor people are included in the benefits of development.

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.**
6. **Combat HIV/AIDS, malaria and other diseases.** (The specific target for malaria is “Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases”.)
7. **Ensure environmental sustainability.**
8. **Develop a global partnership for development.**
International support and how it is changing

The previous section talked about how Government controlled funds are planned and budgeted. Now we move on to talk about external (international) funds from development agencies. We will talk about three main types of support:

a) projects  
b) sector wide approaches  
c) budget support.

There are 3 types of donor:
- multilateral, i.e. international – e.g. the UN  
- bilateral, i.e. from one nation (e.g. DFID, USAID, DANIDA)  
- NGO – non-governmental organisations, including religious bodies.

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

There are other types of support too which we will not focus on here (e.g. supplies in kind, scholarships and training, technical consultants, advice from WHO).

a) Projects

Projects and programmes are the traditional approach for donors and lending agencies to provide support, and you will probably all have experience of them. 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.

A12 Group exercise – What are the advantages and drawbacks of projects from the viewpoint of the country and the staff involved in service delivery?

Please fill in the following table for typical projects and programme support you have experienced:

<table>
<thead>
<tr>
<th>Advantages of projects</th>
<th>Drawbacks or risks of projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3 etc.</td>
<td>3 etc.</td>
</tr>
</tbody>
</table>

Donors recognise the problems and the fact that there can often be duplication of efforts and limited sustainability of projects. Research shows too that to make a lasting difference it is important to have agreement and commitment on policies, not just agreement on individual project activities. Therefore there has been much attention on other ways of providing donor support. The term used for these different ways of passing funds from donor to recipient is “aid instruments”.
b) Sector Wide Approaches

A13 What do you already know about the sector-wide approach (SWAp)?

Talk and discussion:

One approach to deal with the drawbacks of the project approach is known as the sector wide approach (SWAp or SWAP). Sector-wide approach is a planning and financing process that evolved largely within the health sector in the early to mid 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.

While there is not a totally standard definition of a SWAP, 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 a increasing use of Government systems for management and spending of funds, with efforts to strengthen those systems
- shared planning and reporting arrangements.

Most of the SWAPs include some “pool funding”, that is where 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 much of the money still tends to come in the form of funds earmarked (labelled) for particular activities or commodities, or projects. But usually there is a move towards joint missions to plan and review progress.

SWAp in practice: Ghana Case

Context in which SWAp developed in Ghana: 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 toward integrated management of health resources. This led to the restructuring 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 guiding health sector development within the country’s long term “Vision 2020” was drafted. This was translated into the first five-year programme of work (POW).

In 2002 the Second 5 Year POW started. By this time the Ministry of Health had been restructured 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 programme of work is financed by Government of Ghana, User-Fees, and about 14 development partners. Currently donor funds reach service delivery points through three main
channels; the Health Fund (HF)\(^1\), Pooled Earmarked Fund, and Direct Earmarked Funds\(^2\). The target of MOH and its development partners is to channel 90% of all donor funds through the common health fund by 2006. By 2001 it was estimated at 37%, with a clear upward trend.

**Advantages of SWAPs**

These 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)
- 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’

There are risks for the government in joining a SWAP and where they have been tried there have been some problems (but may not be worse than the problems from numerous projects?):

- they may feel donors want to get too involved in policy decisions
- the risk that donors will cut off funding if they feel Government has not kept to the agreed plans
- the transition has been tricky, especially where procurement arrangements change and there are often delays getting new procurement systems working well.

Examples of problems are

- in Ghana, where the Minister of Health wanted to build a big referral hospital, while the donors argued that this was not in the plan and the costs of running the hospital would take up too much of the recurrent budget when the agreed priority was district level primary services.
- In Bangladesh, there was an argument when a new Government was elected and decide to stop some of the reforms that the previous Government had started. Yet these reforms were in the sector plan and donors said they would withhold pooled funding if the reforms were dropped.

**A14 Discussion:** If we move to a SWAp, what are the implications for getting resources for malaria related activities?

c) **Budget support**

\(^1\) This is also known as the Basket Fund in some countries.
\(^2\) The Health Fund refers only to pooled donor funds made available for health sector programmes and controlled by MOH with some degree of discretion and flexibility. Some donor funds are earmarked for specific donor programmes but channelled through MOH (Pooled earmarked funds) and some are earmarked but wholly controlled by the donor (Direct earmarked funds)
The benefit of a SWAp is that it 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). However a SWAp does not help Government with addressing 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.

General budget support is another 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 between sectors and between personnel and other types of spending.

The donors are only willing to give budget support in this way if they have some confidence in how Government will use the funds. The current main mechanism is the PRSP and related budget to set out how funds will be used. There may also be conditions or constraints on issues like procurement and work on improving financial systems.

We need again to ask the question of what are the implications for us as malaria staff. With budget support, more of the funding is managed and controlled by Government through its normal planning and budgeting cycle. So we need to go back to influencing that:

- making sure those preparing the MOH (or local government budget) have the information and the arguments for putting in resources for malaria when preparing the budget
- making sure malaria is reflected at least slightly in the PRSP text and indicators
- being ready to help make the case to MOF.

We have talked about different 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. And whilst there has been a trend towards putting money in ‘at the top’ in budget support and SWAps, in parallel there has been growth in other category of aid instruments - the Global Health Initiatives, particularly the Global Fund to Fight AIDS, TB and Malaria (GFATM).

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

Many of you will have heard of the Global Fund to Fight AIDS, TB and Malaria and may have been involved in applying for funds. In this case the original donors (e.g. rich country Governments) have pledged money to the Global Fund to be used for the three specified diseases. The GFATM then decides how much will go to each country and disease, based on country applications.

The GFATM is more like a project mechanism in that the funds are earmarked for a specific programme. It has its own special arrangements however.

- Countries have to apply for the funds using a standard application process.
- Countries can choose what they want to use the funds for.
- The application is expected to be agreed with a group of stakeholders known as the Country Coordination Mechanism (CCM).
- The proposals are assessed by an Independent Review Panel.
- A Local Financial Agent is appointed to oversee implementation.
- Future funding will depend on performance in the first two years.
Clearly this is a great opportunity for those concerned about malaria to bid for additional resources to finance malaria control.

**A15** Discussion: what are your experiences of GFATM? What do you think the advantages and disadvantages are? How does the Global Fund relate to SWAps, budget support and PRSPs?

**Household Funding**

We have looked at Government funding sources and how to influence these, especially in the context of PRSPs; we then moved on to discuss donor funding and changing aid instruments. The last source of funding is private funds.

Do we know how much is spent on malaria from the private sector?

**A16** Discussion/exercise: Can we make a rough estimate?

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)

So annual family spending on malaria treatment = …… (c = a x b)

How much of the population is affected? …… (p)

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

Total private spending = ….. (c x n)

Compare to Government/donor spending = …

Should we add other aspects of private costs, e.g. income lost during illness?

Given that it is a significant figure, what can we do to influence that spending?

**A17** Discussion: what are the options for influencing private spending – make a list.

**Summary on how malaria is funded**

By Government – through the budget, health or local government
- keys to influencing this – influencing the PRSP, influencing the budget

By Donors – through projects, SWAps, budget support, GFATM
- keys for influencing this vary

By Private payments – families and employers
- keys for influencing this: IEC, subsidies
Learning Unit 3

Costing for programme planning and management

Learning Objectives

By the end of this unit you will be able to:

- Discuss the uses (and importance) of costing and different ways of looking at costs
- Discuss use of costing information to develop a financing plan and strategies if there is a funding gap

A18 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?

Why Examine Costs?

There are several different reasons for looking at costs, and the way we estimate costs does need to reflect the reason.

The first and most obvious is for routine budgeting. We need to estimate the costs required in order to secure funds and hence the resources needed for our plans to be implemented. Costing for budgets is something most people have experience of. Normally you calculate the different resources needed to achieve your plans. Note that some of the resources will be shared across several programmes, rather than specific to malaria.

A second important reason for costing is to develop plans and strategies for scaling up or expanding activities. For example, preparing an application to the GFATM where you want to increase the scale of a successful pilot project to a whole region. Or if the PRSP is committed to expanding coverage to certain un-served groups, we need to be able to cost what will be required to reach these groups. Then we can look at whether it is affordable and sustainable.

A third use 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 will be discussed more in the next session (cost effectiveness and cost benefit). The issue is efficiency in terms of whether we are doing the right things.

A fourth use of costing is to look into the efficiency of services. It can be useful to compare for example, what it costs to run services in different districts (e.g. costs per bed net distributed; cost of drugs per case). If there are differences it will be a starting point to find out why (there may be
good reasons e.g. high transport costs in remote areas, or bad reasons like high prices paid for drugs). Costing is needed to look at efficiency in terms whether we are doing things right.

Finally as a manager, we need to know what resources are available and what more is available for current and future health care activities. We need to understand if costs are changing over time and why. Keeping track of costs is good management.

**Approaches to costing**

**Financial cost**

In budgeting the costs calculated are the financial cost 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. tips to staff).

**Opportunity Cost**

**A19 Practical exercise**

List of district activities or needs each costing about $100

- a. Pay staff travel allowance owed from previous quarter or two
- b. Buy antimalaria drugs for health centres
- c. Replace 4 worn out tyres for the only district vehicle
- d. Organise one-day workshop to explain RBM to health team and prepare an action plan

Each need is important but the available funds – about $100 - can pay for only one of these. Which one would you choose?

**Start talk on Opportunity Cost**

Given that resources are scarce, if we choose to use them for one particular way, there is an opportunity foregone for using these resources in some other way. This is what economists call the ‘opportunity cost’. For most of us, cost means a sum of money. But in Health Economics, cost has a different meaning. Every time resources are used for one health care programme, the opportunity to use those resources in another programme is forgone or is sacrificed. In other words, a sacrifice is made every time resources are used in one particular way and this sacrifice is called the opportunity cost and it refers to the value of the benefit foregone. In the example above, paying for staff allowance means you have lost the opportunity to treat the sick patients. The opportunity cost of paying staff allowance is a number of untreated patients; or a vehicle with worn out tyres (and the risk of an accident).

The opportunity cost of using a resource in a particular health service or mode of care is thus not the money cost or price of the resource, but is the benefit forgone by losing its best alternative use. The cost of a resource or service must be assessed in terms of what is given up. It means weighing up of benefits obtained against benefits foregone.
The adoption of opportunity cost in health care has many implications.

1. We cannot measure the opportunity cost of using a particular resource, without knowing the alternative uses open to us
2. If foregone benefits are more than obtained benefits, then we would know that the resources are not being deployed efficiently
3. Measuring costs as opportunity cost ensures that resources are used in the best possible way

This seems very theoretical but it is important to think about opportunity cost in practice. For example, suppose taking a nurse off 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).

**Costing the malaria programme and looking at its funding**

One worthwhile exercise is looking at the longer-term costs and funding of the malaria programme under different assumptions. A similar exercise is being carried out by some countries to assess the financial sustainability of their immunisation programmes. The have prepared Financial Sustainability Plans (FSP) to consider the funding prospects for their programme for the next five years or so, in the period when some of their external funding (from the Vaccine Fund) is expected to end.

To do this they go through a series of steps:

1. What are the programme policies and plans?
   - which interventions are required and what coverage targets do we have
2. What will it cost to implement those plans for the next 5 or 8 years?
   - Estimate the costs for each year to meet the various targets
3. What funding can we expect to receive 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 we do about it?
   - estimate the gap between expected funds and expected spending
   - develop a strategy on what to do about it

There are several 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
A20 Discussion in small groups: Would this kind of medium term plan be helpful for malaria? Do you have one already?

If you expect a funding gap, what are the strategies you might come up with to fill the gap?

Some of the issues related to costs

There are different categories of costs and we need different types of costs for different purposes. Some of the issues are discussed here.

a) Different sources are willing to pay for different types of cost:
In practice different sources of funding pay for different types of cost. Government intends to pay for all budget expenditure but in practice will place priority on payment of salaries in the event of shortfall; maintenance cost tends to get the lowest priority. Donors on the other hand will not pay for salaries but are quite happy to pay for capital costs like vehicles, computers, buildings, and for “development costs” like training. Communities may be willing to provide labour and contributions for capital costs 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 a bednet. 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.

b) Capital costs generate recurrent costs
Costs can be classified in terms of whether they are capital or recurrent:

- **Capital Costs.** Capital costs are the costs of items with a life of more than one year such as buildings, vehicles and equipment.
- **Recurrent Costs.** This term refers to the running costs or operating costs, which are incurred each year. They include items such as personnel salaries, drug supplies, maintenance of vehicles, fuel and electricity.

For example 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 (and therefore at no cost to your programme) but it has a high fuel consumption and its spare parts are very expensive and difficult to find on the local market (the recurrent cost your programme has to pay for monthly for the whole life of the vehicle). Therefore think carefully about the recurrent cost implication of capital expenditure.

c) Costs do not increase in a regular way
The cost of an activity depends on its scale. This seems obvious; what is less obvious is that the unit cost also varies with scale. By unit cost we mean the cost of a single output e.g. the cost per patient seen; the cost per bed net distributed. This is important for looking at the efficiency of services and the costs of scaling up.

This is partly because there are some costs that can be classified as fixed and some that are variable:

- **Fixed Costs:** These are costs which do not vary with the quantity of output in the short run (one year). Example: rent, equipment lease payments, some wages and salaries. These stay the same e.g. however busy the facility is.

- **Variable Costs:** are costs which vary with the level of output. Drug supplies and vaccines are examples of variable costs.
For example, suppose we have a health facility and we want them to increase numbers of patients seen per day, we may want to look at the cost implications of this. Suppose they have fixed costs (pay, fuel, rent, cleaning) of $450 per month and the variable cost per patient for drugs, cotton wool, registration forms etc averages $2.50. If they see two patients per day then the cost per month is $ 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 then the fixed costs stay at $450 while variable go up to $750 (10 pts x 30 days x $2.50) = $1200 total. Hence the cost per patient goes down to $4.

Thus total costs have gone up but per patient costs have gone down, indicating it is more efficient use of the facility.

This relates to the economic concept of ‘economies of scale’. Another aspect is in procurement of supplies such as drugs. Bulk buying is normally much cheaper. You know this from your own shopping. 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

A21 Discussion point – could you buy more in bulk?
Who does procurement? Are the funds released in large enough amounts?

Costs do not always go down as coverage rises or scale increases, for example if you are seeking to reach remote groups, costs may actually rise.

d) Another issue is whether to look at shared costs

Shared Costs relate to facilities, staff and equipment which are shared between several programmes. When we need to analyse costs of one of the several programmes which share the staff / equipment, we need to decide whether it is useful to include a share of these shared costs, or whether to focus only on the non-shared costs. For example, if we are assessing cost effectiveness we would need to consider shared costs; if we are doing a budget for malaria specific project then we would not.

e) Another important concept is Marginal Cost

This is a measure of the resources associated with increasing output slightly. The importance of the concept lies in the fact that many decisions in health care are concerned not with providing or not providing a particular service but with providing a little more. In this context, it is the marginal (i.e. additional) cost that is relevant. This must not be mixed with average costs.

Here is an example of this: If there is already an outreach team going to a village by car to offer immunisations and Vitamin A, we might consider the marginal cost of taking along another staff member to talk about malaria prevention. The marginal cost would be the cost of the extra staff member (which might have an opportunity cost as discussed above and perhaps a per diem would be paid), 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.
f) Budgeted are not the same as Actual funds
You may have a good plan which you have costed properly so that it has a realistic budget, but may fail to get all of what you asked for. This common phenomenon is presented in the table below.

**Table: 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)</th>
<th>Actual (D)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(% of B)</td>
<td>(% of B)</td>
</tr>
<tr>
<td>Staff salaries and other allowances</td>
<td>10,000,000</td>
<td>10,000,000</td>
<td>10,000,000</td>
</tr>
<tr>
<td>Drugs</td>
<td>3,000,000</td>
<td>2,500,000</td>
<td>1,500,000</td>
</tr>
<tr>
<td>Transport maintenance &amp; cost</td>
<td>1,000,000</td>
<td>900,000</td>
<td>100,000</td>
</tr>
<tr>
<td>Equipment and supplies</td>
<td>1,000,000</td>
<td>600,000</td>
<td>400,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>15,000,000</td>
<td><strong>14,000,000</strong></td>
<td><strong>12,000,000</strong></td>
</tr>
</tbody>
</table>

The funds that you actually receive and use is often far less than you budgeted for (Column B) or what was approved by MOH or Finance (Column C). A principal reason for this is inadequate government funds to meet its budget obligations leading to a general cut for all ministries, or cut by MOH because someone of headquarters thinks the budget is inflated or because of a change in its priorities. Unfortunately you are will not be told why the cut has happened but it is important to understand what is happening so that you can direct your efforts for redress at the right point in the chain.

Having good cost information will also help you to make the case for replacing the reduced funds.
A22 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?

A23 Are you convinced about the importance of knowing and understanding costs? Why or why not?
Learning Unit 4

Economic Evaluation approaches

Learning Objectives

By the end of this unit you will be able to:

- To understand the idea of cost effectiveness analysis and how to apply figures if they see them (but not to carry out detailed CE work themselves)
- Acquire an understanding of cost benefit as the other main economic assessment tool, and the importance of other forms of appraisal — affordability and sustainability
- Acquire an awareness of the main findings about cost-effectiveness in malaria control

This session looks at economic approaches to identifying the best way to use limited resources. There are two discussed here: Cost Effectiveness analysis and Cost Benefit Analysis. We then go on to consider two other factors for consideration: Affordability and Sustainability.

Cost Effectiveness

Cost effectiveness is the technique used most commonly to assess whether particular health interventions are worth doing, compared to other possible interventions. You may have seen comments along the following lines:

- Basic EPI vaccinations are highly cost effective at only $25 per life year saved
- if bed net coverage is low then the cost per DALY averted is in the range from $19 to $85
- the essential package of services consists of cost effective interventions
- 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.

Let’s take a simple example to illustrate the cost effectiveness idea:
You introduce spraying in a village. The village has 100 families. Before the spraying, families had 4 cases of malaria per year. After spraying, families only get malaria on average 3 cases per year. Your impact is that you have reduced the number of malaria cases by 100 (1 per family). Let’s 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). Say spraying cost $450 while the number of lives saved worked out at 5, then the cost per life saved would be $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 the alternative we are considering in that village is to provide bed nets for each family.

We would need a similar calculation of the costs and impact of providing the bed net. Say we give two nets per family at a cost of $4 each net. Total cost is $800 for all 100 families. Now the impact – let’s assume they would have had 4 cases of malaria without the nets (as before). If all have two nets, assume two of these cases of malaria will be avoided. Then we can assess the impact on 100 families to be 2 x 100 = 200 cases avoided. Say 5% would have died again = 10. Hence we can calculate the cost per life saved again and compare.

So 10 lives saved while the cost is $800, so cost per life saved is 800/10 = $80. Thus we find (with these illustrative figures, not correct data) that
- cost per life saved for spraying is $90
- cost per life saved for net distribution is $80
Since the cost per life saved is lower, we can say the nets option is more cost effective and therefore a better choice.

In this simplified example we have only looked at impact for one year and only measured effects in terms of deaths avoided or lives saved. However 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 is Disability Adjusted Life Years (DALY) saved/averted.

Let’s look at the DALY concept:
The basic idea of lives saved is simple. We have seen how to estimate how many deaths were averted by the treatment or prevention (or whatever).

However this 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 led to the idea of calculating life years saved.

However this only looks at mortality and does not take into account morbidity and disability. Again society would place 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 or averts attacks of malaria, 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. Hence the measure was amended to allow for the level of disability and morbidity – and called Disability-Adjusted Life Years (or DALY). (Another measure is known as Quality Adjusted Life Years, which is a similar concept).

There is one more important concept in DALYs and cost effectiveness which is to take into account the timing of costs and benefits. Since the future is uncertain, the benefits in the future count for less than the benefits this year. This idea of “discounting” the future means that a life year saved this year is worth more than one we think will be saved in five years time.

Some of the cost effectiveness studies use different measures, such as life years saved (not discounted or not adjusted for disability). What is most important is to make sure you compare like with like. You cannot compare a cost per life year with a cost per discounted DALY.
Economic Evaluation approaches

Learning Unit 4

Applying the DALY to our simple example we would need to calculate the DALYs from:

- Number of deaths averted – we need to know the average age of those who would have died to turn this into life years saved
- Number of other cases of malaria avoided, each of which has a cost in terms of disability of several days per case with fever (quite apart from the financial costs when unable to work during illness and for treatment).

We do not need to go into the technicalities of calculating DALYs to see how the idea works.

There are some important features to notice about cost effectiveness as a method of assessing which is the best use of resources:

a) 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 so it cannot implement the bed nets plan even if it is more cost effective. But it may still be more cost-effective to buy some nets rather than to spray.

b) Even if something is cost effective you may only need a limited amount of it – e.g. immunisation with basic EPI vaccines is one of the most cost effective interventions; you want to cover as many children as possible but then stop and allocate resources elsewhere.

c) The cost effectiveness will vary with the conditions and the target group concerned. For example, look at the bed nets proposal again. In the district discussed, each family faced malaria 4 times a year and then use of bed nets reduced it by half. Suppose there is a second district with much lower incidence of malaria. In this area, each family usually gets malaria once a year. Having bed nets reduces incidence by half. Thus we are avoiding 50 cases per year, or 2 to 3 deaths. But the nets will still cost us $800. Thus the cost per death avoided is 800/2-3 = $267 to $320. This shows it is much less attractive to use the net strategy in the low prevalence district.

How can you use cost effectiveness analysis in practice?

One way of using cost effectiveness is to support your case for increased investment in malaria. If you can show the figures that investment in malaria is much lower cost per life saved or per DALY than another intervention, then this will help support your case for more resources.

A24 Exercise

Your district council has $9,000 to spend. They are 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?
A second important use of cost effectiveness information is in deciding your strategy for malaria control. Research studies have assessed the cost effectiveness of malaria related interventions. Some of the key findings are:

- The use of insecticide-treated nets to prevent malaria in children is most cost-effective in poorer countries. It becomes an attractive option in higher-income countries if nets are already in widespread use.

- Insecticide spraying of homes would be a cost-effective option for reducing infant mortality in poorer countries.

- Preventative drug treatment for children is a highly attractive strategy, although there are concerns about drug resistance, reduced levels of immunity and compliance.

- Preventative treatment with either chloroquine or sulfadoxine pyrimethamine (SP) during first pregnancies is highly cost-effective, even where drug resistance is high.

- Other cost-effective strategies include measures to increase patient compliance with medication and improved availability of alternative drug treatments in resistant cases.

**A25 Exercise**

Do you agree that these findings apply for your country/district situation? How do the strategies you are following at present relate to these findings? Does it make you think should change priorities or add new interventions?

Prepare a short talk to give your District Medical Officer or head of department about your conclusions, explaining what is meant by cost effectiveness and what you conclude from the evidence for malaria.

**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 comparison between the costs of the intervention and the value of the benefits. It also allows for comparison with other interventions which are not related to health or saving lives.

As before you need to define the costs and then define and cost the benefits. A simplified example again: What are the costs and benefits for you in deciding to buy bed nets which reduce the number of malaria episodes for yourself and the family?

**A26 Complete the table below.**

<table>
<thead>
<tr>
<th>Annual costs</th>
<th>Annual benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of buying the nets or retreating them</td>
<td>Savings on medical care</td>
</tr>
<tr>
<td></td>
<td>Extra income earned because family members were not off sick with malaria</td>
</tr>
<tr>
<td>Total costs</td>
<td>Total benefit</td>
</tr>
</tbody>
</table>
Note this analysis is simplified because we are not taking into account timing (the nets will last several years) nor health benefits themselves, e.g. reduced risk of cerebral malaria.

If costs are greater than benefit you may decide not to bother, or that the benefits we have missed in our simple calculation still make it worth doing.

In practice it is difficult to value health benefits in money terms, (there is not a market price for health outcomes) and it is therefore much more common to use cost effectiveness than cost benefit analysis in health.

**Affordability and sustainability**

Costing was useful for identifying resource requirements. Cost effectiveness analysis helps to decide which are the right things to do with the resources available. Two other key issues in economic assessment of plans and programmes are affordability and sustainability. The potential funders of plans will look at both.

**Affordability** is the idea of what you can afford. There may be an excellent and cost effective strategy but you cannot afford it with the resources available. You know this constraint on a personal level. At a national level it is more difficult to assess (against so many competing uses for the funds).

For example, suppose a malaria vaccine is developed, and it is shown to be reasonably cost effective (though let us assume it is less cost effective than existing preventive measures). What price would you consider affordable for national implementation? How would you make a decision on this?

**Sustainability** relates to whether you will be able to continue with the programme after particular funding and support ends. This may involve external as well as internal funding to sustain the support.
The economics of malaria

Learning Objectives

By the end of this unit you will be able to:

- To explain the economic cost of malaria
- Assess arguments about how much to invest in malaria control.

Reading provided:
Extracts from Professor Jeffrey Sachs’ arguments in favour of high investment in malaria control for the Abuja Conference, 2000. See Annexe 1.

A27 Read Annexe 1 before coming for the session. What are the key issues raised? Do you find similar situations in your country? Do you find the arguments convincing? What might people from other fields (e.g. surgeons or teachers) say?

Key points of Economics of Malaria

The burden of malaria is great: Over 1 million people die each year of the disease in SSA. It is the leading cause by a wide margin of disease in Africa.

Malaria imposes a heavy cost not only on a country’s current income, but also on the rate of its economic growth, and therefore on its level of economic development in the long run.

Traditional analyses have underestimated the short-term cost of malaria, and completely neglected the long term costs.

Malaria interventions should be an important part of poverty alleviation programmes e.g. PRSP.

The patterns and costs of malaria incidence are different in different contexts.

The good news is that many cost-effective malaria interventions are available. The material presented yesterday looked at the findings on which interventions are cost effective. Some of the broader policy lessons arising are:

- 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 percent.

- It is unlikely that low-income countries could afford these costs, so donor funding is required.

- Intermittent drug treatment in pregnancy is very cost-effective and relatively affordable. However, costs will be higher if an antenatal care infrastructure is not in place.
• Measures to improve case management and drug availability require further study and involve a trade-off between providing prompt treatment and slowing the development of drug resistance.

• The level of existing healthcare infrastructure affects the incremental costs of malaria prevention measures.
Learning Unit 6

Will economic arguments always work?

Learning Objectives

By the end of this unit you will be able to:

- To discuss the main strengths and weaknesses of economic evaluation in the health care sector
- To develop a pragmatic attitude to the use and limitations of Health Economics
- To develop a clearer understanding that there are other bases for decision-making in the public sector

You have been introduced to the main categories of economic evaluation used in the health sector. In a world where rationing of resources is here to stay, 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 puts the benefits derived from an intervention into proportion by looking simultaneously at costs; in the light of costs, benefits may not seem so great (or small) as at first glance;

- It can greatly help policy makers and programme managers to assess several possible alternative courses of action against each other 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 may be high;

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

However, economic evaluation has important limitations. One of the key ones is the lack of attention to equity. 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 method of providing a particular kind of health care, or the most efficient allocation of resources between several possible kinds of health care which may be provided. It may not be fair, or acceptable to society, to discontinue all inefficient services; but economic evaluation makes no allowance for such concerns.

For example, on economic grounds you may conclude that the most cost effective services are primary care for people in rural areas. But this does not mean you can ignore the urban population. Also, it may be costly to reach some of the vulnerable groups e.g. those 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. Do you have examples of this?
For this reason, 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.

For example, a policy maker might be informed that a cost-benefit analysis indicated a rural hospital should be closed. The hospital is using too many resources while having few patients and 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 would be misguided, as i) it would be inequitable, ii) it would be contrary to the wishes of the population, iii) it would be unnecessary (as the population had declared themselves to be willing to pay the extra cost). However, even though the policy maker may decide against the course of action indicated by economic evaluation, evaluation is still a crucial tool in the decision-making process because it allows a clear view of which public policy decisions are mainly motivated by equity concerns – and how much this is costing.

Dangers of generalising

Cost effectiveness studies tend to be based on extremely detailed reference to a particular intervention and its context and time. This means that 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.

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; and 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; and the relative importance given to each factor will depend on the context and on the individual politician or manager with whom responsibility finally lies.

References for further reading

**A28 Exercise in small groups**

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 reallocated. 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. Also, 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?
Learning Unit 7

Making the case for malaria

**Learning Objectives**

By the end of this unit you will be able to:

- To encourage practice in using economic concepts appropriately to explain issues to diverse audiences

**Exercise:** Drawing on your knowledge of economics and other aspects of malaria, work in small groups to develop a presentation on the economic importance of malaria, the case for malaria interventions and arguments for why additional resources should be allocated.

Different groups will work up separate presentations for different levels/audiences:
  - to district managers and politicians
  - to Director of MOH communicable disease control section
  - to the Ministry of Finance economists as an input to the PRSP and to influence the next budget cycle.

In conclusion: 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!).

**Post-course test**

**Evaluation form**
Annexe 1

Read the following extracts from a paper by Professor Jeffrey Sachs, (“Executive summary for Economics of Malaria”, Center for Int’l Development, Harvard University and the London School of Hygiene and Tropical Medicine) This was written at the time of the 2000 Abuja conference.

Economic analyses indicate that the burden of malaria is great

Malaria takes an enormous toll on human health and well-being, in tropical regions including Africa south of the Sahara, South and Southeast Asia, Oceania, and parts of the Americas. In many of these regions, the burden has been increasing even further in recent years.

The costs of malaria are also enormous when measured in economic terms. Highly malarious countries are among the very poorest in the world, and typically have very low rates of economic growth; many have experienced outright declines in living standards in the past thirty years. Malaria has played a significant role in the poor economic performance of these countries.

Malaria imposes a heavy cost not only on a country’s current income, but also on its rate of its economic growth, and therefore on its level of economic development in the long run.

The evidence strongly suggests that malaria obstructs overall economic development. Statistical analysis shows that during the period 1965-1990, highly malarious countries suffered a growth penalty of more than one percentage point per year (compared with countries without malaria), even after taking into account the effects of economic policy and other factors that also influence economic growth. The annual loss of growth from malaria is estimated to range as high as 1.3 percentage points per year. If this loss is compounded for fifteen years, the GNP level in the fifteenth year is reduced by nearly a fifth, and the toll continues to mount with time. (see table 1)

These considerations indicate that the cost of malaria is substantially greater than economists have previously estimated. Traditional estimates have looked at some of the short-run costs of malaria without taking into account the longer-term effects of malaria on economic growth and development. Short-run costs— including lost work time, economic losses associated with infant and child mortality and morbidity, and the costs of treatment and prevention— are typically estimated to be higher than one percent of a country’s gross national product.

Traditional analyses have underestimated the short-run costs of malaria.

These estimates, however, neglect many other short-run costs. For instance, very few studies include the economic costs of the pain and suffering associated with the disease. Yet researchers have found that households might be willing to pay several times the direct income loss caused by
malaria in order to avoid it, suggesting that the pain, suffering and uncertainty associated with the disease is very high and should certainly be included among its short-term costs.

Furthermore, these short-run costs are likely to have risen in recent years due to the increasing number and complexity of cases in many countries. Moreover, the spread of drug-resistant malaria is substantially raising the costs of treatment in many cases, as well as the burdens of morbidity and mortality. Children and adults needing blood transfusions due to malaria are too often inadvertently infected with HIV, hepatitis C virus, and other infectious agents which taint the blood supply.

Furthermore, these analyses have completely neglected the long-run costs.

Beyond these high and rising short-run costs, malaria impedes economic growth and long-term development in many ways. Malaria may impede the flows of trade, foreign investment, and commerce, thereby affecting a country’s entire population. Multinational firms choosing the location of foreign investments shun regions with high malaria, as might many potential tourists. Also, the economic effect of malaria on infected individuals may greatly exceed the direct costs of any single episode of the disease. Repeated bouts of malaria tend to hinder a child’s physical and cognitive development, and may reduce a child’s attendance and performance at school. Furthermore, repeated bouts of malaria may expose individuals to chronic malnutrition, anaemia and to increased vulnerability to other diseases.

Malaria may have adverse demographic consequences as well. Malaria substantially raises the chances of infant and child mortality. Households respond to this increased risk by having more children, thereby increasing the overall rate of population growth. In addition, the investments which parents of many children can afford to make in the well-being of each child is limited—so that average levels of health care and education per child tend to be reduced. Moreover, mothers of large numbers of children are less able to participate in the formal labor force, thereby also reducing the household income.

Malaria interventions should be an important part of poverty alleviation.

Individual households in malarious regions do not escape the risk of malaria infection simply by being relatively well off. In surveys of households from 22 countries in Africa, no correlation could be found between the incidence of childhood fever in households and their relative wealth. Malaria is not a simple consequence of poverty. The wealth of the household, however, does play a substantial role in determining whether a child receives treatment for fever and influences the kind of treatment. Poor families very often lack the resources to obtain proper treatment of the disease even in complicated and life-threatening cases. Poverty alleviation strategies should therefore recognize the importance of effective antimalaria interventions, since the poor by themselves are unable to escape the burdens of the disease.

The burden of malaria is very high and rising. Short-term costs alone are likely to result in economic losses of several percent of GDP in a single year. Moreover, malaria hinders long-term economic growth, so that the burden of the disease increases over time as countries are deprived of the rise in living standards that they would experience if not for malaria.
Economic analyses indicate that the burden of malaria is great. There are important differences in malaria across regions and countries. The patterns and costs of malaria incidence are highly place-specific.

No single biological, economic or political reason can be adduced for the observed patterns and trends in malaria transmission. No single intervention, therefore, is appropriate in all contexts. Interventions should be adapted to specific local ecological, epidemiological, economic, and social conditions. Even the goals of malaria interventions should be place-specific.

The effects of human behaviour on malaria are similarly place-specific. Anthropogenic changes such as deforestation, road-construction and agricultural development often increase the intensity of malaria transmission. But the specific effects of such ecological disturbances vary from place to place, due to geographical diversity in the biology of the mosquitoes that transmit the disease.

Any drug therapy strategy should be designed to minimize the threat of resistant parasites. Specific strategies, however, must be tailored to the patient, the community and the region in which they are employed. The selection of drugs and treatment protocols must be based on reliable clinical and epidemiological assessments of efficacy.

Therefore, the patterns of incidence of malaria, and the costs associated with it, are different in different contexts. No magic bullet can be applied universally.

Many cost-effective malaria interventions are available

A commitment must be made to track status and trends in malaria more closely.

There is a dire lack of extensive and comparable data about malaria. For example, there is inadequate information available on the status and trends in incidence and prevalence, epidemic outbreaks, clinical epidemiology, and interactions with other conditions (including for example other diseases, nutrition, and growth). The absence of this information is very costly to advocacy, policy design and implementation, epidemic preparedness, and resource allocation. A commitment must be made to ongoing, sustainable collection of these data in order to replace the existing gross extrapolations, widely varying estimates, and missing information.

Interventions against malaria can have synergistic beneficial effects. Research is essential for designing programs which provide increasing returns to scale.

Economic analysis can provide support for targeted interventions designed to produce additive or synergistic beneficial effects even beyond their direct impact on human well-being. As first shown a century ago, for example, where important ports or centers of economic activity are malarious the economic burden of disease tends to be particularly high; interventions which target such
locations are likely to improve economic conditions directly, in addition to improving individual well-being.

Similarly, malaria infection can aggravate underlying micronutrient deficiencies in children; interventions aimed at such malnutrition are likely to improve the nutrition and decrease the impact of malaria on children.

_Malaria requires a commitment to applied as well as basic research as much as it does to a broad implementation of existing intervention methods._

.........

_It is important not to forget that the primary objective is improving human well-being._

**Development of new intervention methods, however, should not occur at the expense of new and innovative uses of existing technology.** Ethical issues in clinical research and development must be acknowledged in any policy that is adopted, and ethical guidelines must be strictly enforced.

**Therefore, new technologies can provide important avenues for mitigating the burden of malaria, provided that appropriate markets can be created for these technologies.**

An increase of $1 billion per year, sustained for many years, is clearly justified in economic terms.

The amount of $1 billion per year, heavily concentrated in Sub-Saharan Africa, is appropriate based even on traditional assessments of the burden of malaria which do not take the economic growth penalty into account. Such traditional assessments suggest that malaria’s economic costs are likely to exceed one percent of GDP and could well be several times higher than that. Since Sub-Saharan Africa’s GDP is around $300 billion, and since malaria affects nearly the entire region, the short-term benefits of malaria control can reasonably be estimated at greater than $3 billion per year. Thus, interventions costing $1 billion per year which substantially reduce the disease burden are justified.

The case for the large increase in expenditures is further strengthened by taking into account the sustained growth penalty associated with malaria, which greatly multiplies the true economic burden of the disease. Taking into account the growth effects of malaria, the benefits of controlling the disease are in the dozens of billions of dollars per year after a few years of malaria control. These benefits would exceed the costs by a widening margin over time, as the program supports a sustained increase in economic growth with cumulative benefits to the level of national income.

............... 

_The benefits of committing substantial new economic resources to malaria will greatly exceed the costs. Furthermore, the benefits will be greatest when the new resources are deployed in an integrated and multifaceted program of anti-malaria interventions, enhanced surveillance, and greatly intensified research and training programs._
Table 1. Loss from the economic growth penalty of malaria endemicity in 31 African countries, 1980-1995

<table>
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<tr>
<th>Country</th>
<th>Aggregate loss (millions of PPP-adjusted 1987 $)</th>
<th>Per person loss (PPP-adjusted 1987 $)</th>
<th>As a fraction of actual 1995 income</th>
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<td>Botswana</td>
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</table>

**Total**                  | **73 638**                                         | **185**                              | **10%**                           |

Based on results in John Luke Gallup and Jeffrey D. Sachs, "The Economic Burden of Malaria" in Economics of Malaria (forthcoming). Please note that these figures are reported in purchasing power parity (PPP) adjusted dollars held constant at 1987 prices. This corrects for the effects of price inflation, as well as the fact that in Africa, non-traded goods and services (for example, health services or land) are cheaper relative to internationally traded goods than they are in the United States. In order to convert these units into current US dollar terms, it would be necessary to divide by a factor of about 3, then multiply by the rate of price inflation between 1987 and 1995.

Figure 1. Loss associated with the malaria growth penalty, compared to traditionally estimated static effects, in 31 African countries, 1980-1995
Based on results in John Luke Gallup and Jeffrey D. Sachs, "The Economic Burden of Malaria" and Pia Malaney, "Microeconomic Approaches to Evaluating the Burden of Malaria" in Economics of Malaria (forthcoming)

Figure 2. Hypothetical benefits of sustained malaria intervention, incorporating only the short-run benefits, and improved economic growth