Financial sustainability planning for immunization services in Cambodia

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The expanded programme of immunization was established in Cambodia in 1986. In 2002, 67% of eligible children were immunized, despite significant health sector and macro-economic financial constraints. A financial sustainability planning process for immunization was introduced in 2002, in order to mobilize national and international resources in support of the achievement of child health objectives. The aim of this paper is to outline this process, describe its early impact as an advocacy tool and recommend additional strategies for mobilizing additional resources for health. The methods of financial sustainability planning are described, including the advocacy strategies that were applied. Analysis of financial sustainability planning results indicates rising programme costs associated with new vaccine introduction and new technologies. Despite this, the national programme has demonstrated important early successes in using financial sustainability planning to advocate for increased mobilization of national and international sources of funding for immunization. The national immunization programme nevertheless faces formidable system and financial challenges in the coming years associated with rising costs, potentially diminishing sources of international assistance, and the developing role of sub-national authorities in programme management and financing.

Key words: immunization, EPI, Cambodia, financial sustainability

Introduction

Cambodia (population 13 million) has confronted significant development challenges since the end of the civil war and sponsoring of general elections by the United Nations in 1993. Following the devastation of the 1975–79 Khmer Rouge Government, the country has proceeded steadily along a pathway of social and economic reconstruction. The Royal Government of Cambodia hopes to achieve economic growth of 6–7% by the end of 2005, and the average income per head of population is expected to be US$320 (Council for Social Development 2003). Despite progress made, Cambodia still experiences significant poverty alleviation problems, with 36% of the population living below the poverty line of US$0.46 per day.

Poor health is one of the major causes of poverty in Cambodia. High treatment costs contribute to poor health and high investment in private sector expenditure impacts on overall health costs. Although public health expenditure was estimated to be US$6.3 per capita in 1998 (Ministry of Health 2002a), in the same year research studies demonstrated that up to US$27 per household was being expended per annum on private health care costs (National Institute of Public Health 2003). A Ministry of Health (MOH) Medium Term Expenditure Framework established that 67% of the total national health budget (US$98.2 million) was funded externally in 2001 (Ministry of Health 2002c). In 2002, National Immunization Program (NIP) costs were calculated to be US$4.7 million per annum (National Immunization Program 2002), which is 3.06% of all government public health sector costs. This percentage is projected to increase to 6% by 2006 (National Immunization Program 2004).

The health sector has responded positively to these development challenges by expanding health infrastructure to rural areas during the last decade through implementation of a ‘Health Coverage Plan’. This has established a network of national health programmes, Provincial Health Departments (n = 24), Operational Health Districts (n = 76) and Health Centres (n = 934) (Ministry of Health 2002b). A key national health programme, the NIP is responsible for immunization of children against seven vaccine preventable diseases. In 2002, 67% of target children were vaccinated against diphtheria, tetanus and pertussis vaccine (equivalent to 275 000 out of a total infant cohort of 411 000). Similar coverage rates were achieved for tuberculosis (77%), measles (64%) and polio vaccines (67%).
A significant degree of resource support for childhood immunization in Cambodia is provided by the Global Alliance for Vaccines and Immunization (GAVI) in partnership with the Vaccine Fund (GAVI 2004a). The mission of the Vaccine Fund and GAVI is to protect the children in the world’s 74 poorest countries from vaccine-preventable diseases. GAVI was established in 2000 and the partners include developing and developed countries, vaccine manufacturers, non-governmental organizations, UNICEF, the World Health Organization (WHO), the Bill & Melinda Gates Foundation, and the World Bank. Specific priorities include a sustainable increase of immunization coverage and acceleration of the development and introduction of new vaccines for and in developing countries. Hepatitis B vaccine (Hep B) is one of the newer vaccines that is being introduced in Cambodia with the assistance of GAVI and the Vaccine Fund (GAVI 2004b).

At the mid point of the 5-year GAVI funding cycle, countries are expected to submit a ‘Financial Sustainability Plan’ (GAVI Financing Task Force 2003a, 2004). The aim of this Plan is to improve prospects for reliable and sufficient long-term financing by: (1) serving as a source of information that can be used for sector management and planning, (2) generating a clear picture of the financing situation and challenges, (3) developing relevant strategies and actions that are likely to lead to financial sustainability, and (4) serving as an advocacy tool for use with national and international health and development agencies. In 2002, Cambodia was a member of the first group of 13 countries to successfully develop an FSP.

In 2003, technical assistance was provided to the NIP through the Financing Task Force of GAVI, the Children’s Vaccine Program (CVP) at the Program for Appropriate Technology in Health (PATH), and the University of Melbourne (UOM), in order to update the 2002 Financial Sustainability Plan (FSP) and further mainstream it into national management and planning processes.

This paper outlines the process of financial sustainability planning for national programme management in Cambodia. It also describes and discusses the early impact of the planning process as an advocacy tool for the mobilization of additional resources for health.

Methods

Development of financial sustainability planning tools

The tools used for the FSP in Cambodia were developed by the Financing Task Force of GAVI and consisted of two excel spreadsheets, the Cost Projection Tool and the Finance Projection and Gap Analysis Tool (GAVI Financing Task Force 2003b).

The FSP Cost Projection Tool consists of 26 inter-related worksheets for estimating annual resource requirements for the years 2004 to 2013. This tool assists determination of future resource requirements such as recurrent costs (e.g. vaccines and injection supplies, advocacy, communication and training) and capital costs (e.g. vehicles and cold chain equipment). Costing of vaccines and equipment is based on a combination of expected coverage rates, vaccine wastage rates and cost analysis using standard costs from the UNICEF Supply Division in Copenhagen, Denmark. The costing tool generates analysis of financial indicators including immunization ‘cost per child’ and immunization ‘cost per capita’. Cost per child indicators are calculated by division of the child (age <1) population denominator by the total programme cost numerator, and cost per capita indicators are calculated by division of the total population denominator by the total programme costs numerator.

In the FSP Financing Projection and Gap Analysis Tool, linked spreadsheets allow ready analysis of the funding gap in graphic form. In terms of risk assessment, funding is considered ‘secure’ if commitment has been made in writing. Funding is considered ‘probable’ based on historical trends or on discussion with donors.

Sources of financial data and data entry

The Finance and Administration Unit staff of the NIP consulted with programme managers in areas such as campaigns, training and logistics in order to obtain accurate assessment of programme costs. They then entered the data into the respective software tools with technical assistance from international partners. Data were cross-referenced with costings in the National Immunization Plan 2004-2006 (National Immunization Program 2003b) and vaccine forecasting data from UNICEF and the Logistics Unit of the NIP. International agencies were also consulted about cost and finance projections and provided input on their own financial commitments.

Draft findings were presented to both the Technical Working Group of the NIP, which consists of the senior management team of the NIP and representatives from the three major advisory organizations: WHO, UNICEF and CVP/PATH/UOM. This forum was a vehicle for critique of the update, entry of additional data and recommendations for advocacy approaches at a higher level.

Use of the FSP for advocacy

Subsequently, the projected resource needs and financial gap analysis were presented to senior managers of the MOH, Ministry of Finance, non-government organizations and bilateral and multilateral agencies in their capacity as members of the Immunization Coordination Sub-Committee (ICSC). Figure 1 provides an overview of the consultation process. Joint signatories to the FSP
included the Ministers of Health and Finance, and representatives of leading donor agencies.

Results

The FSP outlines current and forecast financial expenditures on immunization with projections extending to 2009 (National Immunization Program 2002). It includes six key areas for action:

1. Increase national government financial contribution to immunization services;
2. Increase provincial level expenditures for immunization services;
3. Increase donor funding for immunization;
4. Increase reliability of funding for immunization at all times;
5. Reduce vaccine wastage; and
6. Improve efficiency of outreach sessions.

Resource needs and gaps in the NIP, 2003–2008

FSP projections indicate a rise in costs from US$4.7 million in 2002 to US$7.15 million in 2004. This is largely attributable to the introduction of new technologies as Cambodia is in the process of installing gas-powered refrigerators in all health centres and districts. The introduction of a combined DPT-Hepatitis B vaccine to 100% of districts by the end of 2005 will also lead to a substantially increased financial commitment. The unit price of traditional DPT vaccine is US$0.08 per dose, whereas the combined DPT-Hep B vaccine costs approximately US$0.95 per dose (GAVI Financing Task Force 2003b). In 2002, total vaccine costs for DPT vaccine were estimated to be US$144 618. With expansion to 100% of districts, the costs of combined DPT-Hep B rise to US$1.4 million if anticipated reductions in price do not materialize. Recurrent costs are mainly attributable to vaccine costs (39%) and personnel costs (27%). In 2004, the budgetary requirements for the NIP are projected to be US$7.15 million. This rise in programme costs is consistent with international findings. A review of the FSPs in 22 countries has indicated that resources for immunization programmes have increased by 47% from US$98 million in the period before GAVI resources commenced to US$144 million in the year after these resources were made available (GAVI Board 2004).

If 80% of the target population were reached in 2004 (n = 287 184), expenditure per fully immunized child (excluding campaign costs) would be US$20. An analysis of the FSPs of three countries (Lao PDR, Kenya and Mali) indicates that the cost per fully immunized child can vary from US$20 to US$30 per child, with the main determinants of cost variation being population density, mode of delivery (fixed facility or mobile services) and introduction of more costly new vaccines (Kaddar et al. 2004). Table 1 provides a list of key FSP indicators from updated FSP data in 2004.

The increasing costs of the programme are being matched by increased national and international investment in immunization services in Cambodia. In 2001, the MOH spent US$65 248 for vaccine procurement. In 2002, the Ministry of Finance and MOH spent US$47 803. In 2003, the MOH disbursed US$206 000 for vaccines using the UNICEF procurement mechanism. In 2004, the MOH approved US$450 000 for vaccine and immunization supplies. The government planned contribution in 2003 amounted to 36.7% of the overall budget requirement for all programme costs (excluding supplementary immunization campaigns) and contributions are rising due to inflation (5%) and additional investment in cold chain, and information, education and communication activities.

However, there is a large fall off in financial support for the NIP after 2005, as is evident in Figure 2. The end of the 5-year commitment from GAVI will be a major challenge as the national programme is still dependent on two major external sources of finance (Government of Japan and GAVI who mainly provide support through vaccine supply and new technology).

Table 1. Selected macro-economic and programme cost indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expenditure on health as % of GDP</td>
<td>11.8%</td>
</tr>
<tr>
<td>Average expenditure per capita on health per year</td>
<td>US$27</td>
</tr>
<tr>
<td>Cost per capita for immunization</td>
<td>US$0.40</td>
</tr>
<tr>
<td>Cost per child for DPT-HepB</td>
<td>US$20</td>
</tr>
<tr>
<td>Expenditure on NIP as % of GDP</td>
<td>0.16%</td>
</tr>
<tr>
<td>Expenditure on NIP as % of total health expenditure</td>
<td>1.39%</td>
</tr>
<tr>
<td>% of government health expenditure on NIP</td>
<td>36.70%</td>
</tr>
<tr>
<td>% of cost of vaccine funded by government</td>
<td>25.00%</td>
</tr>
</tbody>
</table>


The impact of the FSP on programme planning and advocacy

The FSP has been designed not only as a financial planning tool, but also for improving linkages between...
health and financial planners and for advocacy, with
the primary aim of mobilizing additional resources and
ensuring sustainability of an improved immunization
programme.

Improving linkages

The development of an FSP has resulted in closer linkage
between programme planning and financial planning.
Programme planners use the FSP to cross-check pro-
gramme plans. Financial planners utilize the 2004–2006
national programme plan in order to make realistic
financial estimates that can be included in the FSP and
annual financial plans.

There is also better integration between programme and
sector-wide planning. For example, in June 2003 the NIP
met to develop an immunization programme plan based
on the six key areas in the health sector plan. Financing
is one of these key areas (Ministry of Health 2003). The
objectives of the FSP 2002 were reviewed and adapted in
this meeting, and thereafter included within the NIP Plan.

Advocacy for increased resources for immunization

The impact of the FSP on national investment in
immunization was demonstrated by increased government
commitment to purchasing of vaccines in 2003, when the
allocation for vaccine procurement was increased from
US$150,000 in 2002 to US$450,000 in 2004. A commit-
ment has also been made to increase investment in vaccine
procurement to US$500,000 in 2005.

Longer term GAVI support (up to 8 years) has also
been negotiated, allowing a smooth transition to other
funding sources. Negotiations with bilateral donors
will be required in order to identify alternative sources
of international finance in coming years. UNICEF
supports national finance advocacy through a Vaccine
Independence Initiative (UNICEF 2000). Figure 3 demon-
strates the positive impact of FSP advocacy on narrowing
the financial gap between projected resource needs and
projected sources of finance (when compared with
Figure 2).

Reliability and efficiency of funding at
the sub-national level

The NIP is in the process of establishing regional
monitoring and management teams to support the
introduction of a system of improved primary-level
immunization performance known as ‘coverage improve-
ment planning’ (Soeung et al. 2004). The financial
monitoring system and report format encourages super-
visors to investigate the flow of funds and to report
aggregated data to the MOH.

Similarly, the NIP is attempting to increase the reliability
and efficiency of sub-national funding through advocacy
to the Department of Finance (MOH) and Ministry
of Finance in relation to funding for outreach health
services. Disbursal for recurrent expenditure (especially
health outreach funds) was poor in 2004, due to
circumstances outside the control of the health sector.
These relate primarily to a lack of cash flow between the
Ministry of Finance and the MOH. Improved advocacy
tools and an analysis of health outreach costs and benefits
are being used for negotiations to ‘secure’ funding in 2005.

Additional efficiency measures have been undertaken in
the area of vaccine policy. Cambodia now applies the
‘multi dose vial policy’, which permits health workers
to continue using an opened multi-dose vaccine vial for

Figure 2. Projection of NIP financing showing secure and probable financing (US$) by source, and the funding gap, for
2003–2010; this projection was conducted in 2003, before introduction of the FSP advocacy process (source: National Immunization
Program 2004)
a specified time under specific programme conditions. As well, a vaccine wastage study is being undertaken to inform vaccine policy so that vaccine stock wastage rates are gradually reduced from the current level of 50%.

Discussion

The strengths of financial sustainability planning

The development of an FSP has had a positive impact on NIP management and planning in Cambodia. Additional resources have been mobilized for vaccine procurement and the concise presentation of financial information about the immunization programme (particularly the analysis of financial gaps) has stimulated support for improved co-ordination of national and international finance for immunization. The process has required transparency and accountability in financial management from both government and international agencies, and there has been increased motivation for multilateral and bilateral donors to declare the level and type of future resource commitment to the NIP. Closer links have been established between financial, immunization and health sector programme planning. This has led to the development of a National Immunization Program Plan for the period 2004–06 (National Immunization Program 2003b). For the first time, the plan is fully costed, and includes commitments of national government and international donors to the financing of implementation of national programme goals.

GAVI defines financial sustainability as the following: ‘Although self-sufficiency is the ultimate goal, in the nearer term sustainable financing is the ability of a country to mobilize and efficiently use domestic and supplementary external resources on a reliable basis to achieve current and future target levels of immunization performance’ (GAVI Financing Task Force 2003a). By this definition, Cambodia has been successful in recent years in achieving programme objectives, with numbers immunized with DPT3 increasing from 275 000 in 2002 to 306 000 in 2004. There has also been decreased reported incidence of vaccine preventable diseases, successful introduction of new vaccine and cold chain technologies, and increasing capacity to finance a budget that has increased from US$2.8 million in 1998 (Schwartz and Loevinsohn 1999) to US$7.15 million in 2004. Although Cambodia is classified as a low-income country, and financial self reliance remains an ‘ultimate goal’, in the medium term, the aim is to mobilize sufficient resources both nationally and internationally in order to achieve programme objectives.

The following sections outline the limitations of financial sustainability planning, and recommend ways forward for building upon the FSP process in the context of this qualified definition of financial sustainability.

The limitations of sustainability planning

FSP advocacy efforts have been limited by the following factors: (a) the inability to reconcile planned with actual expenditures; (b) a lack of a sub-national analysis of health financing in a decentralized health system environment; (c) insufficient links between financial planning and health programme planning; (d) and finally a lack of health economic data on the benefits as well as the costs of immunization services. Each of these limitations are discussed below, and, based on these findings, recommendations are made for improvements to the FSP process.

Recommendations for improvements in financial sustainability planning

Planned and actual expenditures need to be aligned

One of the major challenges that the NIP faces is to reach rural populations in over 13 000 villages across Cambodia. About 21% of people in the poorest quintile have to travel...
more than 5 km to reach a health clinic (Council for Social Development 2003). Public health worker salaries are equivalent to about US$58 per month, and up to 80% of vaccinations are delivered through outreach services from health centres, with associated costs for fuel, ice and per diems (Ministry of Health 2002c). This heavy dependence on recurrent cash expenditures exposes the programme to a significant risk of failure if finances fail to flow to the periphery of the health system. In 2003, sector-wide budget failures resulted in sharp decreases in social sector spending and the cash dependent outreach system was the main financial casualty.

The FSP process does not capture this information as it only gathers data on planned expenditures, and has no mechanism for balancing planned with actual expenditures. Lack of financial flow to basic rural health services has been identified as one of the five major system barriers to improved immunization performance in developing countries globally (McKinsey and Company 2003).

**FSP needs to be extended to the sub-national level**

Since the establishment of the Health Coverage Plan in 1996 (Ministry of Health 2002b), the health system has become more oriented to a decentralized system of health management. Provincial Health Departments and Operational Health Districts have assumed responsibility for the integration of national programmes into sector-wide health management approaches. Additionally, provinces now manage up to 53% of the total health budget (Ministry of Health 2002c). Political decentralization is also underway, with provincial Governors and elected commune councils taking on increased responsibilities in the areas of development planning and financial management (Ministry of Planning 2001).

The FSP currently provides a central level perspective on resource management and mobilization. Although finance is mobilized centrally, services are delivered at the periphery of the system and finances are managed sub-nationally. Consequently, some aspects of financial sustainability are determined sub-nationally. Given the pace of decentralization reform, advocacy would be enhanced if provincial Governors and Health Directors were targeted as key agents in resource management and community mobilization to improve rural health services, including immunization (Men et al. 2005).

Costs for village health outreach services *should* be the same across the country because there is a clear policy framework for implementation of immunization programmes at the sub-national level (Ministry of Health 2002d). However, this is not the case, and highlights the limitations of setting national financing standards from a central level perspective. To address this, the NIP recently conducted micro-planning exercises across the country in partnership with Operational Districts and Provincial Health Departments. Analysis of un-immunized clusters of populations indicated that the major factors associated with un-immunized status were socioeconomic in origin. These factors included distance from health facility, ethnic status, poverty and low education (National Immunization Program 2003a; Soeung et al. 2004). The costs associated with reaching these populations will vary with location, and will require a more realistic local area assessment of needs and costs.

**FSP should be integrated with national programme planning**

One of the major limitations of financial sustainability planning is that international donors are restricted from making long-term financial commitments to immunization financing. In these circumstances, it is difficult for planners to make realistic assessment of the risks associated with financing resource gaps at 5 to 10 year intervals. In contrast to a stand-alone FSP, national programme plans are linked administratively to country health sector planning processes, annual budget cycles and medium-term expenditure frameworks of the Ministries of Planning and Finance. By integrating financial sustainability processes with health programme and sector planning processes, the national programme will be positioned more strongly to mobilize resources for planning implementation (a similar conclusion is reached by Kaddar et al. 2004). This is due to the fact that the programme plan not only identifies costs and resource gaps (FSP), but also provides a more comprehensive analysis of objectives and targets within a realistic timeframe (3 years).

**Advocacy should be broadened from a financing to a health economics perspective**

Currently, the FSP focuses on costs of providing comprehensive immunization services. Advocacy with Ministries of Finance, Planning and Health would be strengthened if cost/benefit analysis data were also available. In the 1970s, vaccine preventable disease accounted for 23% of the under-five burden of disease globally. This had been reduced to 10% by the 1990s due to the effects of immunization programmes (World Bank 1993). Immunization has demonstrated that it is a low risk, high impact investment that is cost-effective. Based on current cost estimates in the FSP, the cost per capita per year is US$0.40, which contrasts with a mean of US$0.39 per capita for immunization in a study of the FSPs of 22 countries (GAVI Board 2004). The assessment of the cost of a fully immunized child at US$20 per child lacks advocacy impact unless balanced against an assessment of costs averted due to prevented disability or hospitalizations. Cost indicators do not demonstrate the positive economic impacts associated with health interventions such as immunization that have been identified by recent studies (Bloom et al. 2005). This highlights the opportunity for health planners to balance their assessment of programme costs and resource gaps with thorough benefits analysis, in order to maximize the advocacy impact of programme plans with resource allocation decision-makers in Ministries of Planning and Finance.
Conclusions

Financial sustainability planning for immunization in Cambodia has demonstrated some important early successes. More resources are being mobilized for health, and there is improved co-ordination of finance, particularly in reference to strengthening links between financial planning and programme planning. The use of the FSP as a programme management tool has increased the capacity of the NIP to negotiate more long-term and hence reliable financing, while at the same time alerting the national government and international health agencies to the need for addressing significant financial gaps in the coming years, particularly in relation to procurement costs for new vaccine introduction and the funding of basic health services. Despite these successes, the national programme still faces formidable financial challenges in the coming years that will require strengthened management, planning and advocacy approaches. Of particular note is the requirement to address the issues of decentralization, macro-economic analysis and links between financial planning and programme planning. This will position the MOH to more effectively address the major goal of financial sustainability planning – which is to mobilize national and international resources more efficiently and effectively in order to achieve programme goals of improved service coverage and equity.

References


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Vaccine Program. The Head of the Finance Unit at the NIP (Ms Hang Sony) coordinated data entry.

Biographies

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Jim E Maynard, MBBS, was one of the chief architects of the Gates Children’s Vaccine Program (CVP) at the Program for Appropriate Technology in Health (PATH). In the early 1980s, as director of the Hepatitis Division at the Centers for Disease Control and Prevention, USA, Dr Maynard was the first to propose that Hepatitis B vaccine be included as one of the routine vaccines delivered by the World Health Organization’s expanded programme on immunization. Later he was a founder of the International Task Force on Hepatitis B Immunization, which played a key role in the global acceptance of that vaccine. Dr Maynard is an internationally renowned scientist and public health expert, and the recipient of a number of international awards in public health. He continues to play a key role in the global immunization effort as technical director of the Gates CVP at PATH.

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