

Review

Strategies for financial sustainability of immunization programs: A review of the strategies from 50 national immunization program financial sustainability plans[☆]

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ARTICLE INFO

Article history:

Received 23 May 2008

Received in revised form 6 October 2008

Accepted 9 October 2008

Available online 26 October 2008

Keywords:

Financial sustainability

GAVI Alliance

Immunization financing

National immunization programs

ABSTRACT

Financial sustainability plans (FSPs) were developed by over 50 of the world's poorest countries receiving funding support from the Global Alliance for Vaccines and Immunization (GAVI) to introduce new and underused vaccines, injection safety and immunization service support between 2000 and 2006. These plans were analysed with respect to the strategies selected to promote financial sustainability, allowing classification of FSP strategies in three areas: (1) mobilizing additional resources, (2) increasing the reliability of resources, and (3) improving program efficiency. Despite some country successes and the magnitude of planned financial sustainability strategies, huge funding gaps remain for these countries due to the initial underlying assumptions of the GAVI and financial sustainability plan model.

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[☆] This paper is the third document in a series of papers describing the work of the Financing Task Force (FTF) in the first five years of the GAVI Alliance. The first and second papers in the series are focused on the FTF as a model of collaboration within GAVI and on a review of country data in attaining financial sustainability in immunization programs. A larger document on which these three papers are based will be available at the WHO Immunization Financing website (<http://www.who.int/immunization.financing/en/>).

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1. Introduction

1.1. GAVI Phase 1

The Global Alliance for vaccines and Immunization (GAVI) was launched in 2000 to provide access to new and underutilized vaccines for the world's 75 poorest countries, partly in recognition of the critical need for investments in these countries. One of GAVI's aims was the accelerated introduction of newer cost-effective vaccines for the achievement of the Millennium Development Goal (MDG) 4 [1]. By the end of its Phase 1, in 2006, GAVI had allocated US\$ 1.5 billion for direct support to over 70 of the world's poorest countries, provided in the form of assistance for new vaccines (hepatitis B, *Haemophilus influenzae* type b, or yellow fever), commodity assistance for safe injection technologies; or grants to strengthen immunization service delivery. Because GAVI assistance was designed to be one-time, catalytic funding, the expectation was that governments and their development partners would assume greater responsibility for the recurrent costs of new vaccines and supplies, in order to make a full transition away from GAVI funding by the end of the grant period, 5–10 years.⁶

The GAVI Phase 1 model assumed that vaccine prices would decline and that countries and partners would significantly increase their allocations to health and immunization such that when GAVI support ended, the improved program would be financially sustainable. These expectations were not fulfilled. Prices of combination vaccines⁷ did not decline, but increased. The initial 5-year-support-period was too brief a time to allow the market to react to increased demand and too short a time frame to permit countries and partners to ramp up to meet increased costs. Although many countries did increase their allocations to health and immunization, these allocations were not sufficient to meet the increased costs of the expanded and improved immunization

programs. As a result, most of the countries that introduced new vaccines in the first few years of GAVI Phase 1 were not able to absorb the full costs of the new combination vaccines when support ended in 2006.

1.2. Financial sustainability of GAVI support

In its first phase of support, GAVI sought to address the question of financial sustainability systematically, by requiring all countries receiving GAVI support for new vaccines to indicate in their applications how they planned to finance the added recurrent cost in the future and to commit themselves to preparing a detailed FSP. Because the initial term of GAVI support was five years, midway through the funding period (approximately two and a half years after the first funds or products were received), countries had to plan how they would manage the transition and finance the costs of immunization services with new vaccines after the end of the GAVI commitment through the development of FSPs.

The FSP is a document that assesses the key financing challenges facing the national immunization program, and describes the government's approach to mobilizing and effectively using financial resources to support medium- and long-term program objectives. The FSPs were intended as a starting point for moving countries along a trajectory of greater financial sustainability of their immunization program in view of the time-limited nature of new vaccine introduction support by GAVI. Countries were required to develop their FSPs according to the GAVI Guidelines for preparing a financial sustainability plan [2] and in line with GAVI's definition of financial sustainability (see below).

GAVI defines financial sustainability as “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 in terms of access, utilization, quality, safety, and equity” [3].

For countries, the FSP was expected to be a key instrument for governments in planning for the financial health of the immunization program – and in advocating among national and development partners to support planned and agreed program expansion and improvement. The FSPs can serve as an information and advocacy tool, an opportunity to develop sound strategies, and a planning tool to measure progress towards financial sustainability. For GAVI,

⁶ The GAVI Alliance provided support for immunization services, the acquisition of new and underused vaccines and injection safety in the form of multi-year grants. Support was awarded for the equivalent of 5 years of needs for the first two areas and for 3 years for injection safety. Countries had the option of phasing out GAVI support for new vaccines over a maximum of 10 years.

⁷ Combination vaccines are vaccines against hepatitis B and *Haemophilus influenzae* type b in combination with diphtheria and tetanus toxoids and pertussis vaccine.

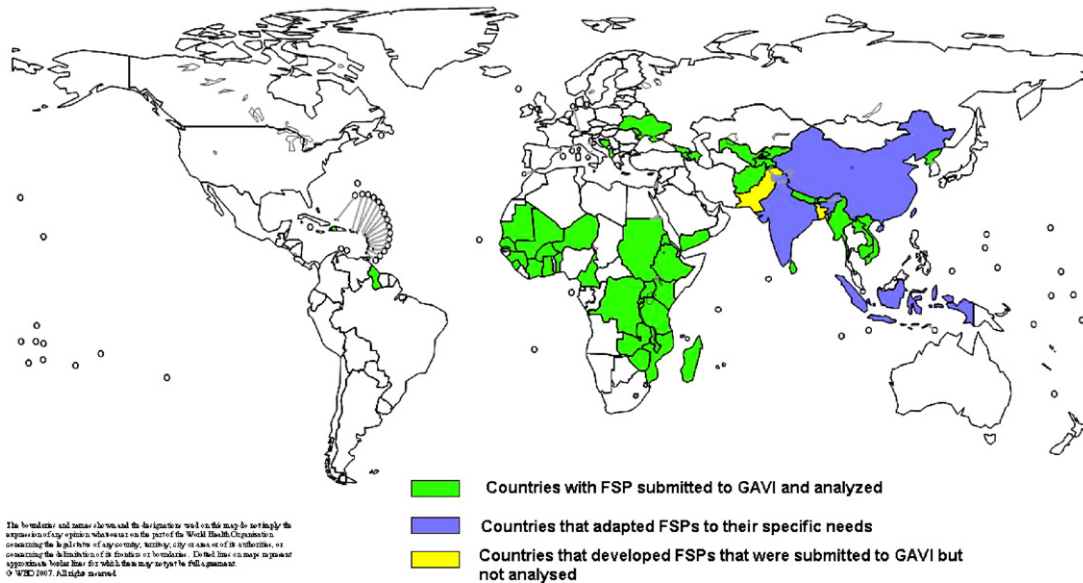


Fig. 1. Geographic distribution of countries with developed financial sustainability plans.

Table 1

Regional Breakdown of the 50 FSPs analysed.

WHO Region	Countries	Total Countries	Regional Share
Africa (AFR)	Benin, Burkina Faso, Burundi, Cameroon, Congo DR, Comoros, Côte d'Ivoire, Eritrea, Ethiopia, Gambia, Guinea, Ghana, Kenya, Lesotho, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Rwanda, Senegal, Sierra Leone, United Republic of Tanzania, Uganda, Zambia, Zimbabwe	27	54%
Americas (AMR)	Guyana, Haiti	2	4%
Eastern Mediterranean (EMR)	Afghanistan, Sudan, Yemen	3	6%
Europe (EUR)	Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Georgia, Kyrgyzstan, Moldova, Tajikistan, Ukraine, Uzbekistan	10	20%
South-East Asia (SEAR)	Bhutan, Korea DPR, Myanmar, Nepal, Sri Lanka	5	10%
Western Pacific (WPR)	Cambodia, Lao PDR, Vietnam	3	6%
Total		50	100%

the use of the FSP was intended to (1) ensure that every country receiving GAVI support knows what it needs to do to make progress towards financial sustainability and (2) generate cost data and an understanding of the financial commitments to immunization by national governments and their partners to monitor its “catalytic” approach.

The FSPs were required for submission to the GAVI Secretariat for review by the Independent Review Committee (IRC). By 2006, a total of 56 countries (Fig. 1) had prepared FSPs. The following comparative analysis is based on the financial sustainability strategies of the FSPs of 50 GAVI eligible countries (Table 1) that were received and reviewed by the GAVI IRC in the period 2002–2005.

This paper is the third in a series of papers describing the work of the Financing Task Force (FTF), [4] in the first 5 years of the GAVI Alliance. The first paper captures the experiences of the GAVI FTF and its work on financial sustainability [5], the second paper analyses financial sustainability through the immunization expenditure and financing data collected during the FSP development process [6], this third and final paper reviews the strategies adopted by countries aiming to achieve financial sustainability strategies across the 50 countries.⁸

1.3. Financial sustainability strategies

Guidelines were developed by the GAVI FTF to assist countries during the FSP preparation process. They provide detailed information about the required elements of the FSP and recommendations for their content and format. According to the FSP Guidelines, the required elements should include the following information:

- Impact of country and health system context on:
 - Immunization program costs
 - Financing and financial management.
- Future resource requirements and program financing/gap analysis.
- Sustainable financing strategy, sections and indicators.
- Stakeholder comments.

In Section 3 of the FSP, countries were expected to present their strategies for achieving greater financial sustainability, based on

⁸ The 50 countries are: Afghanistan, Albania, Armenia, Azerbaijan, Benin, Bhutan, Bosnia and Herzegovina, Burkina Faso, Burundi, Cambodia, Cameroon, Comoros,

Côte d'Ivoire, Democratic People's Republic of Korea, Democratic Republic of the Congo, Eritrea, Ethiopia, Gambia, Georgia, Ghana, Guinea, Guyana, Haiti, Kenya, Kyrgyzstan, Lao People's Democratic Republic, Lesotho, Madagascar, Malawi, Mali, Mauritania, Mozambique, Myanmar, Nepal, Niger, Republic of Moldova, Rwanda, Senegal, Sierra Leone, Sri Lanka, Sudan, Tajikistan, Uganda, Ukraine, United Republic of Tanzania, Uzbekistan, Viet Nam, Yemen, Zambia, Zimbabwe.

the previous analysis of resource requirements, available financing, and financing gaps. This section would also include a description of short- to medium-term actions to be taken by the government and its partners. For greater simplicity, countries were encouraged to think about three broad classes of FSP strategies, including those aimed at:

- (1) mobilizing additional resources from national and external sources;
- (2) improving program efficiency to minimize additional resources needed; and
- (3) increasing the reliability funding.

Once the strategies were identified, countries were expected to select indicators to monitor and evaluate progress, and set targets for the indicators.

2. Methods

This paper is based on a retrospective review of three sustainable financing strategy, actions and indicators, Section 3 in the FSPs of 50 countries conducted by the authors. In this section, countries present their proposed strategies for moving towards financial sustainability, based on the impact of the country and health system context on immunization program costs, financing and financial management; program characteristics, objectives and strategies; current expenditures and financing; future resource requirements and program financing; and along with short- to medium-term actions to be taken by the government and its partners. Countries were expected to select relevant and realistic FSP strategies tailored to their country context, resource requirements, available financing, and financing gaps.

For each FSP, strategies were classified into one of three broad categories: (1) mobilizing additional resources from national and external sources, (2) those that aim to improve program efficiency, and (3) those that would increase the reliability of funding. Mobilizing additional resources was defined as obtaining additional resources from domestic and external sources. Increasing reliability of financing is related to reducing volatility and improving the predictability of financial flows. Improving efficiency pertains to providing adequate high quality services for lower cost.

In formulating their strategies, countries were expected to choose the variations that were feasible and addressed the FSP challenges in their context. Once the strategies were identified, countries were expected to select indicators to monitor and evaluate progress, and set targets for the indicators. In addition to the review of strategies, this paper also assessed the indicators that were proposed by countries to measure progress in implementation of strategies.

Subsequently, the individually reported strategies within the main categories were consolidated by the authors into major strategies and sub-strategies. The classification of the indicators was not broken down any further, but kept at the level of the first three main categories.

Comparisons are made across WHO regions: African (AFR), Eastern Mediterranean (EMR), Americas (AMR), European (EUR), South-East Asian (SEAR), and Western Pacific (WPR). Table 1 below shows the allocation of country FSPs included in the review by WHO region.

3. Limitations

There were several limitations to the analysis of strategies and indicators. First, the FSP review found that not all proposed strate-

gies could be easily aggregated and sorted into categories. In cases where strategies could be allocated to more than one category, a decision rule was developed in order to allocate it to a primary category.

Second, there were several limitations to the analysis of indicators. Most notable was the absence of indicators or weak identification of indicators in country FSPs. Eight out of the total 50 countries did not propose any outcome indicators. Among these, in five cases, no indicators were provided at all, and in three cases the indicators were process oriented. Many of the indicators selected by countries to measure the outcome of FSP strategies were process indicators, rather than those directly related to outcomes. As a result, the analysis excluded all of the process indicators. The low relevance of indicators to measuring the outcome of the strategies constituted another problem and led to the exclusion of all the process-indicators. The high proportion of process indicators can be traced back to the partly misleading examples presented in Annex 3 of the FSP Guidelines [7] that countries were using as a mode to develop their own indicators.

Third, the small sample sizes by region limits the authors from generalizing regional information from this review.

4. Results

The results of the analysis of 50 FSPs analysed are grouped into three major categories of strategy: (1) mobilizing additional resources, (2) increasing the reliability of financing, and (3) improving program efficiency. Mobilizing resources is defined as obtaining additional resources from domestic and external sources. Increasing the reliability of financing is related to reducing volatility and improving the predictability of financial flows. Improving efficiency pertains to providing adequate high quality services for lower cost.

4.1. Mobilizing additional resources

Of the 50 countries analysed, 49 indicated the need to mobilize additional sources of financing [8] from both national and external sources of funding⁹ as a key strategy towards financial sustainability. The most commonly cited sources of additional funding were from donors (98% of countries in the sample, excluding Ukraine), government (94%) and the private sector (56%). Explicit advocacy strategies (44%), household contributions/cost recovery strategies (20%) as well as innovative strategies (6%) were mentioned with a clearly lower frequency (See Table 2).

4.1.1. Donor financing

All of the 49 countries proposing to achieve financial sustainability through the mobilization of additional resources plan to leverage additional financing primarily from donors (current and new). Eighty-eight percent of all countries in the sample propose increasing financing from current donors, 68% from new donors, and 36% would like to apply for additional financing from GAVI. Raising additional funding from current donors was an explicit strategy for most regions, except for countries in EUR and AMR, where only five of the overall 10 EUR and one of the overall two AMR countries focused on this strategy. The strategy of pursuing new donors for the immunization program was most prevalent among countries in SEAR and AFR (4/5 countries and 21/27 coun-

⁹ External sources of financing for immunization services include public sources – project grants from bilateral or multilateral agencies, grant portion of development loans, budget support, debt relief proceeds, and SWAPs; and private sources – GAVI Vaccine fund, project grants for philanthropic institutions and contributions (often in-kind) from vaccine manufactures.

Table 2
Regional breakdown of strategies for mobilizing additional resources.

Region	AFR	AMR	EMR	EUR	SEAR	WPR	Total
Total countries	27	2	3	10	5	3	50
Mobilizing additional resources	27 (100%)	2 (100%)	3 (100%)	9 (90%)	5 (100%)	3 (100%)	49 (98%)
1. Government: Increasing allocation from the government	27 (100%)	2 (100%)	3 (100%)	8 (80%)	4 (80%)	3 (100%)	47 (94%)
1.1. National	15 (56%)	2 (100%)	1 (33%)	2 (20%)	3 (60%)	2 (67%)	25 (50%)
1.1.1. HIPC/PRSP	11 (41%)	1 (50%)	0 (0%)	1 (10%)	0 (0%)	1 (33%)	14 (28%)
1.1.2. SWAp	4 (15%)	0 (0%)	0 (0%)	0 (0%)	1 (20%)	0 (0%)	5 (10%)
1.1.3. Lending	1 (4%)	1 (50%)	0 (0%)	0 (0%)	1 (20%)	0 (0%)	3 (6%)
1.1.4. National Health Insurance/Fund	2 (7%)	0 (0%)	0 (0%)	0 (0%)	1 (20%)	0 (0%)	3 (6%)
1.2. Sub-national: Increasing allocation from sub-national	13 (48%)	1 (50%)	2 (67%)	3 (30%)	2 (40%)	2 (67%)	23 (46%)
2. Household: Household contributions	5 (19%)	0 (0%)	1 (33%)	2 (20%)	1 (20%)	1 (33%)	10 (20%)
2.1. Mutual insurance	3 (11%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (33%)	4 (8%)
2.2. User fees	5 (19%)	0 (0%)	1 (33%)	2 (20%)	1 (20%)	1 (33%)	10 (20%)
3. Private: Private sector	20 (74%)	2 (100%)	2 (67%)	1 (10%)	3 (60%)	0 (0%)	28 (56%)
3.1. NGOs	8 (30%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	8 (16%)
3.2. Business sector	8 (30%)	0 (0%)	0 (0%)	0 (0%)	1 (20%)	0 (0%)	9 (18%)
3.3. Private health sector	2 (7%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2 (4%)
4. Donors	27 (100%)	2 (100%)	3 (100%)	9 (90%)	5 (100%)	3 (100%)	49 (98%)
4.1. Increasing funding from current donors	27 (100%)	1 (50%)	3 (100%)	5 (50%)	5 (100%)	3 (100%)	44 (88%)
4.2. Increasing funding from new donors	21 (78%)	1 (50%)	2 (67%)	4 (40%)	4 (80%)	2 (67%)	34 (68%)
4.3. Additional request of funds from GAVI	10 (37%)	0 (0%)	2 (67%)	1 (10%)	3 (60%)	2 (67%)	18 (36%)
5. Advocacy: Advocacy activities to increase funding	14 (52%)	1 (50%)	2 (67%)	2 (20%)	2 (40%)	1 (33%)	22 (44%)
6. Innovation: Innovative strategies	0 (0%)	1 (50%)	0 (0%)	1 (10%)	0 (0%)	1 (33%)	3 (6%)

tries, respectively). GAVI as an additional source of funding was identified in 10/27 countries in AFR, 3/5 in SEAR, 1/3 country each in WPR and EMR, and 1/10 countries in EUR.

4.1.2. Government financing

Government financing was the second source identified by countries for mobilizing additional resources in the sample. It is further categorized into two groups of sub-strategies: (1) national level and (2) sub-national. National level sub-strategies that are proposed include strategies for leveraging additional financing for immunization through debt-relief for Heavily Indebted Poor Countries (HIPC) [9], Poverty Reduction Strategy Papers (PRSPs) [10], Sector Wide Approaches (SWAps) [11], lending, and National Health Insurance/Fund. Debt relief through HIPC was the most often cited source (28% of the sample, or 14 countries). Forty-one percent in AFR ($n = 11$) identified additional government financing as a strategy for achieving financial sustainability. Twenty-three countries (46% of the sample) considered sub-national government financing important for leveraging additional resources for immunization. These included monetary, physical and other resources for immunization programs financed by regional authorities, local authorities, and local communities.

4.1.3. Private sector

Leveraging resources from the private sector constitutes another major strategy to mobilize additional financing for immunization. Private sector sources were cited by 28 countries (56% of the sample). When further specified, they included all kinds of contributions from non-governmental organizations, the business sector, and the private health sector.

4.1.4. Cost recovery or household contributions and other strategies

An additional identified in the sample of FSPs is the use of household contributions to leverage more resources for immunization. Household contributions included a range of financing strategies based on resources at the household level. These cover community-

based health insurance (8% of the sample), and user fee strategies (20% of the sample). Five AFR countries, two EUR countries, and one country each in EMR, SEAR, and WPR proposed to introduce user fees [12]. This finding is interesting in that the GAVI Alliance has a policy against relying on users fees to finance immunization programs because of the global public goods and externalities aspects of vaccinations.

The interest in mutual insurance was not as high as in user fees and has been proposed only by three AFR countries and one WPR country (proposed always in addition to user fees).

In terms of other financing strategies, three countries¹⁰ plan to leverage additional resources for immunization through innovative financing mechanisms including tax levies on luxury goods and on products harmful to health such as alcohol and tobacco.

4.1.5. Advocacy

Nearly every activity identified for mobilizing additional immunization resources is associated with some type of advocacy. In the analysis, it was decided to include only instances when countries spell out a clearly and exclusively advocacy oriented activity (directed by the government or expected from partners. state the intention to use the FSP as one of the main advocacy tools, and/or underline the activity of Inter-agency Coordinating Committee (ICC) and the need of its extension in order to increase resources. Twenty-two countries (44% of the sample) mentioned at least one advocacy strategy related to the use of the FSP as an advocacy tool for leveraging additional resources for the immunization program through ICC partners and the broader donor community.

4.1.6. Indicators for monitoring resource mobilization performance

The indicators proposed most frequently to measure progress in the mobilization of additional resources are listed below.

¹⁰ These countries are: Vietnam, Tajikistan and Haiti.

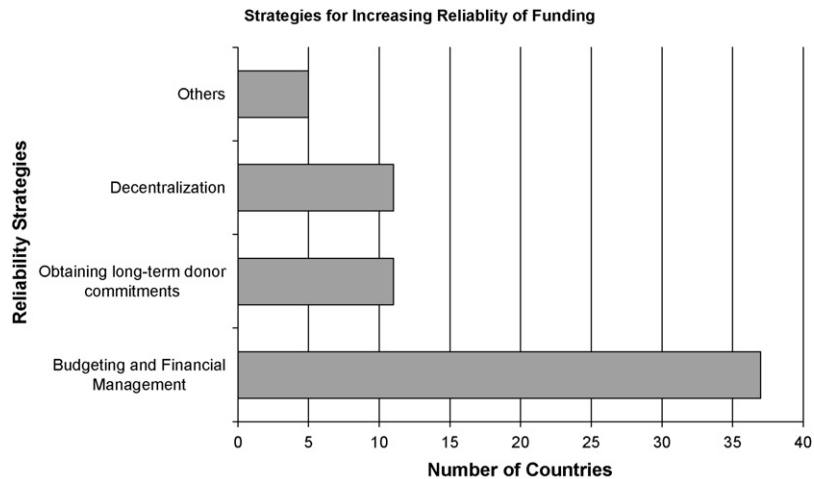


Fig. 2. Strategies for increasing reliability of funding.

4.2. Total amount of financing

- Total government expenditure on the immunization program,
- total government expenditure on health,
- total expenditure of the communities on the program,
- total expenditures of external partners on the immunization program,
- total expenditures of the private sector on the immunization program,
- total expenditures from HIPC budget on the immunization program, and
- total expenditures from HIPC budget on health.

4.3. Proportion of total health and immunization financing

- Proportion of the health budget allocated to the immunization program,
- proportion of the national and sub national government budget allocated to health,
- proportion of the national and sub national budget allocated to the immunization program,
- proportion of the HIPC budget allocated to the health sector,
- proportion of health sector's HIPC budget allocated to the immunization program,
- proportion of the partners' budget allocated to the immunization program, and
- proportion of contributions received from the community.

4.4. Proportional increase in immunization financing

- Percent increase in share of national and sub national health budget earmarked for the immunization program,
- percent increase in share of the national budget earmarked to health,
- percent increase in share of the health budget earmarked to the immunization program,
- percent increase in share of HIPC funds earmarked for the immunization program,
- percent increase in share of the HIPC funds earmarked to health,
- percent increase in share of community fund's contribution to the immunization program,
- percent increase in share of private sector contributions to the immunization program, and

- percent increase in share of donors contributions to the immunization program.

4.5. Increasing reliability of funding

Of the 50 countries included in this analysis, 41 countries (82% of the sample), identified some strategies to address the problem of the volatility of funding for immunization. This category appeared to be either the most neglected, or the least understood by countries. Improved budgeting and financial management of the immunization program was identified in 37 countries (74% of the sample). Obtaining long-term commitments from donors and decentralizing financial flows were identified in 11 countries (each 22% of the sample). Fig. 2 summarizes this information.

4.5.1. Budgeting and financial management

Countries appeared to consider budgeting and financial management as their key strategies to increasing the reliability of funding. This strategy included proposals to create budget lines for vaccines/immunization and ensure greater protection of these funds within budgets; integrate an immunization line item in Medium-Term Expenditure Frameworks (MTEFs) [13]; ensure compliance with the budgetary procedures so as to guarantee that funds are available on a timely basis and can be used rapidly; and improve funds disbursement and cash flow management. Strategies to improve reliability were identified in countries in all regions; however, only two out of five sample countries in SEAR, six out of 10 in EUR, and two out of three countries each in EMR and WPR identified at least one of the strategies pertaining to improved budgeting and financial management.

4.5.2. Longer-term donor commitments

Obtaining long-term commitments from donors did not seem to be perceived as an important strategy by the countries. In order to capture more strategies, a very soft definition of this category was adopted. Thus, related strategies include countries attempts to improving dialogue with donors in order to increase confidence and trust, with the intent of increasing the probability of obtaining resources in the future, or just to rely on the countries' good relations with the donors being confident of their uninterrupted financial support, despite donor short term commitments.

Table 3
Regional breakdown of strategies for improving efficiency of service.

Region	AFR	AMR	EMR	EUR	SEAR	WPR	Total
Total countries	27	2	3	10	5	3	50
Improving efficiency of program	27 (100%)	2 (100%)	3 (100%)	10 (100%)	5 (100%)	3 (100%)	50 (100%)
1. Reducing wastage: Reducing vaccine wastage	26 (96%)	2 (100%)	3 (100%)	6 (60%)	5 (100%)	3 (100%)	45 (90%)
1.1. Social mobilization	2 (7%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (33%)	3 (6%)
1.2. Multi-dose open vial policy	11 (41%)	0 (0%)	0 (0%)	1 (10%)	4 (80%)	2 (67%)	18 (36%)
1.3. Cold chain management and training	4 (15%)	0 (0%)	0 (0%)	2 (20%)	1 (20%)	1 (33%)	8 (16%)
1.4. Supervision and monitoring	5 (19%)	0 (0%)	1 (33%)	1 (10%)	0 (0%)	0 (0%)	7 (14%)
1.5. Vaccine/logistics/stock/information management and training	8 (30%)	0 (0%)	1 (33%)	3 (30%)	1 (20%)	0 (0%)	13 (26%)
1.6. Optimal vial sizes	2 (7%)	1 (50%)	1 (33%)	1 (10%)	2 (40%)	0 (0%)	7 (14%)
1.7. Optimized vaccine combinations	1 (4%)	0 (0%)	0 (0%)	3 (30%)	1 (20%)	1 (33%)	6 (12%)
1.8. Integration with other programs	1 (4%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (2%)
1.9. Improved service delivery	1 (4%)	0 (0%)	0 (0%)	0 (0%)	2 (40%)	0 (0%)	3 (6%)
2. New antigens: Reviewing rationale for inclusion of antigens	3 (11%)	0 (0%)	0 (0%)	4 (40%)	1 (20%)	0 (0%)	8 (16%)
3. Cold chain: Cold chain maintenance	14 (52%)	1 (50%)	3 (100%)	4 (40%)	3 (60%)	2 (67%)	27 (54%)
4. Procurement: Strengthening vaccines procurement	10 (37%)	1 (50%)	0 (0%)	6 (60%)	3 (60%)	0 (0%)	20 (40%)
5. Delivery/coverage: Service delivery/Coverage improvements	19 (70%)	0 (0%)	2 (67%)	0 (0%)	4 (80%)	2 (67%)	27 (54%)
6. Drop-out: Reducing drop-out rates	14 (52%)	0 (0%)	1 (33%)	0 (0%)	1 (20%)	1 (33%)	17 (34%)
6.1. Social mobilization	6 (22%)	0 (0%)	0 (0%)	0 (0%)	1 (20%)	0 (0%)	7 (14%)
6.2. Improvements in service delivery	6 (22%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	6 (12%)
6.3. Reduction of missed opportunities	5 (19%)	0 (0%)	0 (0%)	0 (0%)	1 (20%)	0 (0%)	6 (12%)
6.4. Active search	2 (7%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2 (4%)
6.5. Improved vaccine stock management	4 (15%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	4 (8%)
7. Social mobilization: Improving social mobilization	15 (56%)	0 (0%)	2 (67%)	4 (40%)	3 (60%)	2 (67%)	26 (52%)
8. Management: Improving management and planning	25 (93%)	2 (100%)	2 (67%)	10 (100%)	5 (100%)	3 (100%)	47 (94%)
8.1. Improving monitoring/ supervision	18 (67%)	2 (100%)	1 (33%)	6 (60%)	4 (80%)	2 (67%)	33 (66%)
8.2. Human resources management and training	23 (85%)	2 (100%)	1 (33%)	8 (80%)	4 (80%)	3 (100%)	41 (82%)
8.3. Controlled introduction of new vaccines	4 (15%)	0 (0%)	0 (0%)	1 (10%)	0 (0%)	0 (0%)	5 (10%)
9. Integration: Integration with other programs	7 (26%)	2 (100%)	1 (33%)	1 (10%)	1 (20%)	1 (33%)	13 (26%)

Long-term donor commitments were identified primarily in AFR countries.¹¹

4.5.3. Decentralization

Decentralization as a strategy to increase the reliability of funding is defined either as decentralization of financial management to allow quicker disbursement of funds to local authorities, or as devolving responsibilities for financing certain immunization items to local levels. Seven countries in AFR and two countries each in the EUR and EMR are proposing this type of strategies.

4.5.4. Indicators for monitoring reliability of funding

Twenty out of the total 50 countries did not provide any indicators for measuring reliability of funding; 13 countries did not provide any indicators at all, and seven countries provided inappropriate indicators (process indicators only). Fig. 2 summarizes the information.

The most frequently mentioned indicators to measure reliability of funding are listed below:

- absorption rate of funds allocated to the immunization program,
- time lag between request for funds and actual disbursement,
- time lag for vaccine procurement,
- implementation ratio of projected national funding,
- implementation ratio of projected external funding,

- mean number of years of government and donor commitments,
- share of actual domestic expenditure on recurrent costs of immunization program over recurrent amount budgeted/allocated,
- share of actual domestic expenditure on capital costs of the immunization program over the amount budgeted for capital costs, and
- proportion of program costs funded by government.

4.6. Improving efficiency of immunization services

Strategies for improving efficiency of service were manifold and well categorized by the countries. Each sample country proposed at least one strategy to increase the efficiency of the immunization program. According to the countries, most room for improvement was related to (1) management and planning (94% of the sample) and (2) the reduction of vaccine wastage (90%). Other main strategies identified were: review of the rationale for new antigen introduction (16% of the sample), cold chain maintenance (54%), strengthening of vaccine procurement (40%), service delivery/coverage improvement (54%), reduction of drop-out rates (34%), improvement of social mobilization (52%), and integration with other programs (26%).

Table 3 summarizes the information.

4.6.1. Vaccine wastage

Countries included a number of sub-strategies in connection to the general strategy of reducing vaccine wastage. These included: social mobilization; multi-dose open vial policy (ref); cold chain management and training; supervision and monitoring; vaccine, logistics, stock or information management and training; optimal vial sizes; optimized vaccine combinations; integration with other programs; and improved service delivery. Implementation of

¹¹ The Americas, Eastern-Mediterranean, and Western Pacific regions did not propose any strategies corresponding to this category. Only one country each in the European and South-East Asian regions considered this strategy. Whereas, nine countries of the AFR sample (33% of the total AFR sample) decided to propose this strategy.

the opened multi-dose vial policy¹² was one of the most prominent sub-strategies (36% of the sample countries), while general management and training was the second most prominent sub-strategy (26% of the sample countries) identified by countries in the framework of vaccine wastage reduction. Cold chain management and training, supervision and monitoring, optimization of vial sizes, and optimization of vaccine combinations were identified less frequently (each approximately by 14% of the sample countries). Improved service delivery, social mobilization, and integration with other programs were reported in the fewest number of countries (the former two each by six percent of the sample and the latter by 2%).

In some of the above-mentioned sub-strategies countries did not explicitly link with the strategy of reduction of vaccine wastage and considered them as separate self-standing main strategies. These included a combination of program management and service delivery sub-strategies for improved management and planning, cold chain maintenance and vaccine procurement.

4.6.2. Improved management and planning

Consequently, improved management and planning is also a main strategy and not only a subset of the strategy related to reducing vaccine wastage. This strategy (be it as an individual main strategy or as a sub-set of another main strategy) was identified in 94% of countries. This general strategy singled out separately three important sub-strategies: human resources management and training; monitoring and supervision; and controlled introduction of new vaccines. Eighty-two percent of countries recognized improved human resources management and training as an important strategy for improved efficiency of service delivery, followed by strengthened monitoring and supervision, identified by 66% of the sample. Ten percent of countries, mostly in the AFR, intended to look more closely at the management related to the introduction of new vaccines in order to increase the overall efficiency of the system.

4.6.3. Cold chain maintenance

Cold chain maintenance, improved service delivery/increased coverage, and social mobilization (considered as main strategies as well as subsets of strategies) were reported by more than 25 countries (over 50% of half of sample countries) as mechanisms for improved efficiency. The cold chain maintenance category referred to management, monitoring and training in this area. Improved service delivery/increased coverage referred to various delivery modes, such as fixed, mobile, advanced service delivery, the Reach Every District (RED) strategy [14], management of the outreach sessions and others. Social mobilization referred to increasing demand for immunization services from the side of the population and includes educational, information and communication measures that would preferably be accompanied by an increased involvement of local entities.

4.6.4. Vaccine procurement

The strategies relating to strengthening vaccine procurement covered a wide range from more efficient public procurement procedures; more focus on procurement through UNICEF;¹³ procurement at prices not deviating more than 10% from UNICEF prices; lobbying vaccine manufacturers to lower prices; to sup-

port of local vaccine manufacturers which produce at lower prices.

4.6.5. Other efficiency strategies

Countries also included the main strategy of reducing drop-out including the following sub-strategies: social mobilization; improved service delivery; reduction of missed opportunities; and improved vaccine stock management to avoid shortages. The most frequently identified sub-strategy was social mobilization (14% of the sample countries).

Integration with other programs was usually envisioned with the purpose of shifting some of the specific immunization program costs to the shared costs of other programs and benefiting from related costs savings. Some countries also proposed reviewing the rationale for the inclusion of new antigens to ensure that these are cost-effective actions that consequently lower the costs of the program.

4.6.6. Indicators for monitoring efficiency

While countries proposed a wide range of indicators to measure program efficiency, this review identified a few relevant indicators including:

- antigen wastage rate,
- drop-out rate,
- number and proportion of professionals/managers trained,
- percent of populations covered,
- trends of vaccine stock-outs, and
- timeliness of reporting.

4.7. Early country success stories

Of the countries that succeeded in mobilizing additional resources with government funding, HIPC funding and debt relief proceeds were the main sources of additional funding. Of the 50 countries only one, Guyana, managed to fully transition out of GAVI support for the combination Hib vaccine (DTP-HepB-Hib) by 2006. Guyana managed to achieve the timely implementation of its financial sustainability strategies from 0% contribution in 2003, the government allocated funds to cover 20% of total vaccine costs in 2004 and 65% of these costs in 2005. Through increasing government budget allocations with HIPC funds the country managed to fully graduate out of GAVI support by 2006.

Cameroun, Ghana, Mali, Malawi, Rwanda, the United Republic of Tanzania and Zambia all managed to obtain additional resources for their immunizations using HIPC funding to leverage additional government funding for immunization in the same period but not to the required levels for graduating out of GAVI support. In all these cases, HIPC funding was categorized as the main source of additional government funding. Zambia, a SWAp country, managed to use allocative efficiency arguments which resulted in, additional government funds up to 25% and together with the successful inclusion of immunization funding in the current MTEF, increasing the likelihood of reliable financing for immunization services in the medium term.

Cambodia was able to demonstrate the impact of effective advocacy of their FSP which resulted in increased government commitment to purchasing vaccines in 2003 (Fig. 3) with an increase in the vaccine procurement allocation from US\$ 150000 in 2002 to US\$ 450,000 in 2004 [15].

5. Discussion

Mobilizing additional resources for health and immunization programs in particular, has many challenges. First, as economies

¹² The WHO policy states that multi-dose vials of OPV, DTP, TT, DT, hepatitis B, and liquid formulations of Hib vaccines from which one or more doses of vaccine have been removed during an immunization session may be used in subsequent immunization sessions for up to a maximum of 4 weeks.

¹³ UNICEF as procurement agent for GAVI.

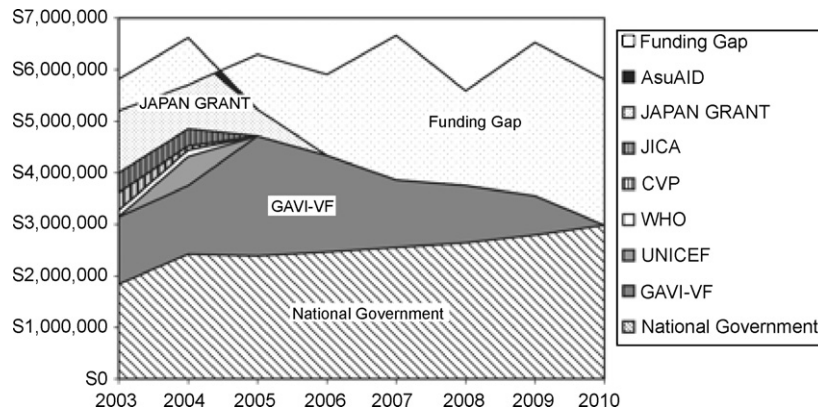


Fig. 3. Example of Cambodia.

grow or contract, the size of the budget allocated to the health sector may benefit or constrict, particularly if a country does not prioritize the health sector. Second, within the national health budget, there are many competing priorities for scarce public health resources. The national immunization program is just one small part of a larger health system that needs to finance hospitals, curative care services, and major public health programs (e.g., Malaria, TB control, HIV/AIDS treatment and prevention). Typically, the immunization program accounts for a smaller fraction of the health system budget in comparison to other preventive and curative programs. With the introduction of new vaccines which are more expensive, the share of resources allocated to immunization will increase, in some cases three to four times [16]. Third, earmarking of budgets for specific health programs may affect the ability of governments to reallocate towards immunization services, as needed. Fourth, changes in overall system organization and financing, such as trends towards deconcentration or decentralization; introduction of SWAPs, or the creation of formal (contractual) relationships between the public and private sectors, can have important implications for the organization and financing of the national immunization program. Finally, donor support for the immunization program is often volatile and unpredictable, with donors often not being able to make commitments beyond 2–3 years in advance. This hampers the ability of governments to plan their overall financing of the program and to anticipate funding gaps and future needs.

Increasing reliability of funding helps to improve the predictability of resources from which to plan and implement immunization activities. With more predictable resources, gaps in financing can be identified and steps taken to plan within constraints or to seek additional sources of funding. Budgeting and financial management processes are fundamental to the question of how much financing will be available for the immunization program because policymakers and program managers need reliable, up-to-date information about a program's financial status for sound planning. Many programs have suffered from slow release of funds at the district level, even when adequate resources have been allocated within national budgets.

In view of vaccine and related injection equipment costs making up between 25% and 55% of recurrent program costs, improving the efficiency of the immunization program and service delivery can result in tremendous cost savings to the program. Improved efficiency is a core financial sustainability strategy for immunization programs given the new costlier combination vaccines and related savings that could be made from for example improved management of vaccine wastage. Additionally, various strategies for improved planning and delivery of immunization services can

lead to increased efficiency of immunization programs and result in further cost savings.

From the analysis we see that countries are planning a combination of different strategies to address the longer term financial sustainability of their immunization programs. Of the three main strategy categories, mobilizing additional resources was the most frequently cited, improving program efficiency the most well understood and improving the reliability of funding the weakest.

All 50 countries (100%) included this strategy in their plans, probably due to the perceived direct impact of this strategy on financial sustainability. Unfortunately, mobilizing donor resources was more frequently cited than increasing government resources. The reason for this preference could potentially be attributed to huge projected funding gaps of countries following the introduction of new vaccines supported by GAVI and the flaws with the GAVI Phase one model. This resulting in the expectation of some of these poorest countries for continued donor funding especially in AFR and SEAR.

Debt relief, greater role of the private sector, and other innovative strategies were described in the FSPs, but few, if any, contained sufficient detail on how countries planned to implement these strategies. It is also interesting that 20% of the countries in the sample proposed mobilizing additional resources through user fees despite GAVI's strong recommendation against the use of user fees for immunization.

Activities and strategies to improve the reliability of funding for immunization were the weakest aspect of the strategic plans for both years. The reasons for this are unknown, but could be related to the limited understanding of those involved in the FSP development regarding approaches that could be taken, or the limited influence immunization staff would have over disbursement of funds from governments and donors.

Efficiency of service delivery was the most well understood area of the strategic plans and the most comprehensively cited strategy with numerous sub-strategies proposed by the countries included in the review. This could be attributed to the familiarity and technical knowledge that immunization staffs have regarding their programs. Identifying strategies to address this aspect of financial sustainability requires more technical and programmatic knowledge; whereas, the other two aspects (resource mobilization and reliability) require a broader understanding of budgeting and finance, or are outside of the regular span of control of immunization program management. It would be a fruitful area of work to develop some type of mechanism for seeing how far and fast countries are implementing strategies in this area, and identifying resources for countries that are lagging behind.

Identifying appropriate indicators including baseline and target values to enable regular monitoring of financial sustainability strategies is one of the required elements of financial sustainability planning. However, from the analysis we see that choosing appropriate indicators for measuring progress in the three main strategy categories seemed to be challenging for most countries. As a result, some countries did not develop any indicators, while others came up with more than 14 indicators per main category. Reasons can be manifold for this situation. It is, however, evident that the FSP guidelines display certain deficiencies. First, the FSP guidelines identify four main categories for the indicators (self-sufficiency, mobilization and use of adequate resources, reliability of resources, and efficient use of resources), while distinguishing only three categories for the strategies, which are in principle the same apart from the additional category of self-sufficiency. Second, the guidelines include in the example of appropriate indicators also process indicators and not exclusively outcome indicators. It should be further discussed whether it is very helpful for the countries to list multiple process indicators instead of focusing on outcome indicators.

Finally, despite some of the country successes and the magnitude of planned financial sustainability strategies, huge funding gaps remain for these countries due to the initial underlying assumptions of the GAVI and financial sustainability plan model.

6. Conclusions

This review of FSP strategies has found that countries appropriately identified a wide range of strategies to mobilize additional resources, improve the reliability of existing resources and funding sources, and to increase the efficiency of service delivery. Countries were less well able to identify appropriate indicators for monitoring progress in achieving financial sustainability outcomes.

GAVI as a global health partnership has taken a pioneering role in making financial sustainability a centerpiece of the work of the alliance together with introducing new vaccines and supporting countries' health systems. Evident from the early country success stories, the FSP process has opened the doors for ministries of health to better negotiate with ministries of finance and partners, to use financial information to input into health sector budgets, resulting in additional resources for immunization in some of the countries included in this review. Despite some of the early country successes and financial sustainability planning, funding gaps still remain for many countries due to the volatility of immunization financing and the higher cost of new vaccines. Even if countries were to fully implement all of their identified strategies for financial sustainability, funding gaps will remain and financial sustainability would be far from assured in most cases.

In progressing towards the Global Immunization Vision and Strategy (GIVS) [17] and MDG 2015 goals, countries will need not only to sustain the vaccines introduced with support from GAVI during its first phase, but also to accelerate the introduction of newer life saving vaccines such as those against rotavirus and pneumococcal diseases. This will result in increasing program costs for countries in the medium to long term. Budgetary and fiscal space constraints for absorbing these increasing costs and changing health priorities will lead to increasing competition for health resources. Financial sustainability planning as such needs to become integrated into ongoing national planning and budgeting processes and continuous efforts made by both countries and

their donors, including GAVI in its second phase of support, to ensure longer term sustained funding of enhanced immunization programs and integration of resource needs into national plans and budgets.

Acknowledgements

The authors would like to acknowledge and thank the following individuals for their inputs in supporting the financial sustainability planning work under the auspices of the GAVI Alliance: Mercy Ahun, Amie Batson, Abdallah Bchir, Craig Burgess Alan Brooks, Niyazi Cakmak, Rudolph Chandler, Irtaza Chaudhri, Grace Chee, Anaïs Colombini, Santiago Cornejo, Alan Crouch, Laure Dumolard, Viktor Galayda, Placide Gbedounou, John Grundy, David Gzirishvili, Natasha Hsi, Miloud Kaddar, Humphrey Karamagi, Daniel Kress, Steve Landry, Ruth Levine, Andrei Lobanov, Marty Makinen, Seye M'beye, Anne McArthur, Susan McKinney, William Meaney, Richard Mihigo, Violaine Mitchell, Ezzeddine Mohsni, Prosper Nyandagazi, Dan Osei, Dragoslav Popovic, Ivone Rizzo, Bryn Sakagawa, Moustapha Sakho, Alexis Satoulou, Veronica Walford, Michel Zaffran, and Yves Zeegers-Joudan.

References

- [1] Veneman AM. Achieving millennium development goal 4. *Lancet* 2006; 23(368(9541)):1044–7.
- [2] GAVI. Guidelines for Preparing a National Immunization Programme Financial Sustainability Plan. Geneva: GAVI; 2004. Available at: http://www.who.int/immunization_financing/tools/en/ [accessed in April 2008].
- [3] GAVI. Definition of Financial Sustainability. Available at: http://www.who.int/immunization_financing/tools/en/ [accessed in April 2008].
- [4] GAVI. The Financing Task Force. Available at: <http://www.gavialliance.org/about/governance/taskteams/index.php?thetype=former> [accessed in April 2008].
- [5] Milstien JB, Kamara L, Lydon P, Mitchell V, Landry SA. The GAVI Financing Task Force: One Model of Partner Collaboration. *Vaccine* (submitted for publication).
- [6] Lydon P, Levine R, Makinen M, Brenzel L, Mitchell V, Milstien JB, Kamara L, Landry S. New Vaccines in the poorest countries – what did we learn from the GAVI experience with financial sustainability? *Vaccine* (submitted for publication).
- [7] GAVI. Guidelines for preparing a National Immunization Program Financial Sustainability Plan, Annex 3. Available at: http://www.who.int/immunization_financing/tools/en/ [accessed in April 2008].
- [8] Levine R, England S, Mitchell V. Immunization Financing Options: resources for policymakers. Geneva: World Bank, GAVI; 2002. Available at http://www.who.int/immunization_financing/options/en/. Web page last accessed in April 2008.
- [9] Heavily Indebted Poor Countries (HIPC) Initiative and Multilateral Debt Relief Initiative (MDRI). Status of Implementation, "IDA/SecM2006-0455 and SM/06/289" (August 23, 2006).
- [10] International Monetary Fund. Poverty Reduction Strategy Papers (PRSP). Available at: <http://www.imf.org/external/np/exr/facts/prsp.htm>. Webpage accessed in April 2008.
- [11] UNFPA (2002b). UNFPA and Sector-Wide Approaches: Available at: <http://www.unfpa.org/exbrd/2002/annualsession/dpfa200206.pdf> [accessed in April 2008].
- [12] WHO. User Fees for Immunization in Developing Countries. Available at <http://www.who.int/vaccines-documents/DocsPDF01/> [accessed in April 2008].
- [13] World Bank. MTEF.siteresources.worldbank.org/INTPEAM/Resources/MTEF-process.doc [accessed in April 2008].
- [14] Vandelaer J, Bilous J, Nshimirimana D. Reaching Every District (RED) approach: a way to improve immunization performance. *Bull World Health Org* 2008;86(3):161–240.
- [15] Sann CS, Grundy J, Maynard J, Brooks A, Boreland M, Sarak D, et al. Financial sustainability planning for immunization services in Cambodia. *Health Policy Plan* 2006;21(4):302–9, doi:10.1093/heapol/czl012.
- [16] Lydon P. Financial Sustainability Plan Analysis: a look across 50 GAVI countries, WHO-IVB Mimeograph 2006. Available at www.who.int/immunization_financing/50_countries/en/ [accessed in April 2008].
- [17] Global Immunization Vision and Strategy 2006–2015. Geneva: WHO and UNICEF; 2005. Available at <http://www.who.int/immunization/givs/en/index.html> [accessed in April 2008].

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