



Abt Associates Inc.

**Analysis of
International
Mechanisms
Supporting
Immunization
Programs: The Pan
American Health
Organization Revolving
Fund**

No. 1 in Series of 4

**CVP at PATH Project
GAVI Task Force on
Financing**

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Prepared for
The Bill & Melinda Gates Children's
Vaccine Program at PATH
4 Nickerson Street
Seattle, WA 98119

Prepared by
Daniel Maceira, PhD

with
Whitney Schott
Sonia Bumbak, MA
Gisela García
Jhana McGaugh, MA

Abt Associates Inc.
Suite 600
4800 Montgomery Lane
Bethesda, MD 20814-5341

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Acronyms

ARIVAS	Appui au Renforcement de l'Indépendance Vaccinale en Afrique Sahélienne
BCG	Bacille of Calmette and Guérin Vaccine (against tuberculosis)
CIDA	Canadian International Development Agency
CVP	Children's Vaccine Program
DT	Diphtheria Toxoid vaccine
DTP	Diphtheria, Tetanus and Pertussis vaccine
EPI	Expanded Program on Immunization
EU	European Union
GAVI	Global Alliance for Vaccines and Immunizations
GNP	Gross National Product
Hib	Haemophilus Influenzae Type B vaccine
HVP	Division of Vaccines and Immunization
IMR	Infant Mortality Rate
LAC	Latin America and Caribbean
MMR	Mumps, Measles and Rubella
OPV	Oral Polio Vaccine
PAHO	Pan-American Health Organization
PAI	<i>Programa Ampliado de Inmunizaciones</i> (Extended Program on Immunizations)
PATH	Program for Appropriate Technology in Health
TAG	Technical Advisory Group
TFF	Task Force on Financing
TT	Tetanus Toxoid vaccine

UNICEF	United Nations International Children’s Fund
USAID	United States Agency for International Development
VII	Vaccine Independence Initiative
WHO	World Health Organization

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Executive Summary

Introduction

This is a study, which examines the Pan-American Health Organization (PAHO) Revolving Fund. The analysis has been undertaken in response to a request from the Bill & Melinda Gates Child Vaccine Program (CVP) at the Program for Appropriate Technology in Health (PATH) to supply updated, important information to the Global Alliance for Vaccines and Immunizations (GAVI) Task Force on Financing (TFF). The TFF has identified this and three other studies as important to providing information to assist GAVI in its decision making processes concerning determining how to provide continued and improved assistance to lower-income countries' immunization programs.

In all, four studies have been commissioned to examine three international mechanisms that are among the largest and most influential in the world today – the PAHO Revolving Fund, UNICEF's Vaccine Independence Initiative (VII) and the European Union's Appui au Renforcement de l'Indépendance Vaccinale en Afrique Sahélienne (ARIVAS).¹ In addition to documenting the underlying organizational structures and principles of these mechanisms, the studies also examine trends in usage, evaluate their performance from multiple perspectives, summarize future strategies, explore the lessons learned from their experiences supporting immunization programs, and offer recommendations for further improvement. A fourth report in the series, a synthesis report, integrates the information from the three studies and highlights cross-cutting lessons learned and recommendations.

This is Report No. 1 in the series of four, which focuses on the PAHO Revolving Fund. It is anticipated that the results of this analysis will be used by the global community to address both the complex issues associated with the implementation and future directions of sustainable immunization programs, as well as to further strengthen financing systems and approaches.

Summary of Conclusions and Lessons Learned

Structure and Procedures

The PAHO Revolving Fund is a bulk purchasing system that consolidates demand for vaccines and related supplies for the Latin American and Caribbean (LAC) region. PAHO's negotiation of contracts with vaccine producers leads to lower prices and ensures a smooth flow of WHO-approved vaccines to country immunization programs. Countries are allowed to pay in local currency (in most cases) and are required to reimburse the Fund within 60 days of receipt of shipment. In conjunction with the Fund, the Vaccine Division at PAHO provides technical assistance with immunization strategies, cost-effectiveness, logistics, and financing.

¹ *Support for the Strengthening of Vaccine Independence in Sahelian Africa*

Usage and Price Trends

The number of user countries has increased over time, and nearly all countries in the region currently utilize the Fund for most vaccine and related purchases. Prices have increased overall, but the last five years have seen decreases in price due to an increased number of countries participating in the Fund as well as additional suppliers bidding for contracts with PAHO.

Performance

From PAHO's perspective, the activities of the Vaccine Division have strengthened immunization programs throughout the region and have fulfilled the objective of ensuring a constant flow of quality vaccines. With savings on vaccine costs and time, countries are able to invest in other aspects of their immunization programs. PAHO claims as its accomplishments the high coverage rates in the region and the eradication or elimination of a number of vaccine-preventable diseases.

The countries using the PAHO Fund view it as an important source of quality vaccines at low prices. Given its success in negotiating lower prices, they see an opportunity for the Fund to extend its services and offer other vaccine-related supplies through the bulk-purchasing system. In addition, The Fund could further decrease prices by increasing the number of countries participating and the number of suppliers competing for vaccine tenders. Countries also suggest that PAHO increase logistical coordination among participating parties.

Vaccine producers view the Fund as an important point of entry into the LAC market where there is a demand not just for the basic EPI package, but also new and combination vaccines. However, suppliers would prefer to negotiate directly with some of the more populous countries in order to set prices more favorable to the pharmaceutical companies. They also see the Fund as a barrier to supplier-strategies of price discrimination among developing countries.

Low-income LAC countries with poor health indicators have relatively high coverage rates, and the region seems to have been able to protect their immunization programs from the political and economic instability that has stormed through the region in recent decades. While it is difficult to distinguish the exact role of the Fund in maintaining high coverage rates, it is likely that the Fund has been important to the strength of these programs. Additional quantitative research could shed light on the extent of the Fund's role in improving immunization coverage rates by isolating the influence of various political and economic phenomena.

Future Prospects

It is likely that the Fund will continue to play an important role in the introduction of lower-priced new and combination vaccines in the LAC region and in strengthening immunization programs and strategies. Drawing from its past experiences, PAHO can improve the functioning of the Fund by communicating more effectively with involved parties, considering the extension of the vaccine supplies it purchases, and implementing plans for emergency response to vaccine shortages. As the Fund will permanently be replenished, it offers a sustainable benefit to immunization programs in Latin America and the Caribbean.

Summary of Recommendations

The findings of this analysis lead to two types of recommendations for PAHO concerning the Revolving Fund: (1) those addressing the functioning or performance of the Fund and (2) those involving strategic direction for PAHO through the Fund or related to the Fund.

PAHO can improve the functioning and performance of the Fund by (i) making administrative procedures and scheduling of deliveries of vaccines and supplies more efficient, (ii) considering more flexibility in the scheduling of delivery dates and in the types of supplies available, (iii) implementing a feedback mechanism to respond more effectively to country needs, and (iv) providing information to countries about the amount of the transaction fee invested in the Fund's endowment.

The Fund should also consider ways to increase its endowment, so that large countries need not purchase in advance and so that newer vaccines may also be purchased. So that countries facing difficult macroeconomic environments can still ensure a smooth flow of vaccines, PAHO should consider seeking assistance from the donor community to facilitate payment in local currency. PAHO should also develop a strategy to deal with vaccine shortages in the region, such as setting up an emergency fund or stock.

In addition, PAHO should be prepared to provide technical assistance for the introduction of new vaccines as they become available, so that bulk purchases for these vaccines can allow for lower prices. In the purchase of vaccines, PAHO should continue to negotiate a single price for all countries.

Finally, PAHO should work with UNICEF's Supply Division and GAVI to commission a study of how best to address the world vaccine market strategically. This would include items such as: how to stimulate more competition, whether and how to stimulate more production in lower- and middle-income countries, lowering barriers to entry, intellectual property rights, stimulating research into vaccines that address the needs of lower-income countries, and the pros and cons of long-term contracts.

1. Introduction

This is a study that examines the Pan-American Health Association (PAHO) Revolving Fund. The Global Alliance for Vaccines and Immunizations (GAVI) Task Force on Financing (TFF) commissioned the study with the aim of informing efforts of the international community to assist immunization programs. Established in 1999, GAVI's mission is to fulfil the right of every child to be protected against vaccine-preventable diseases of public health concern. It also serves as a mechanism for coordinating and revitalizing immunization programs at international, regional and national levels.² The TFF, chaired by the World Bank and USAID, identified the desirability of examining three international mechanisms, among the largest and most influential initiatives supporting immunization programs, as one of their top priorities.

Responding to the TFF, the Bill & Melinda Gates Children's Vaccine Program (CVP) at the Program for Appropriate Technology in Health (PATH) requested that Abt Associates execute these studies in order to supply updated, critical information to GAVI, CVP and other international assistance agencies of the global immunization community. Abt Associates conducted analyses of three mechanisms, the PAHO Revolving Fund, UNICEF's Vaccine Independence Initiative (VII), and the European Union's Appui au Renforcement de l'Indépendance Vaccinale en Afrique Sahélienne (ARIVAS). The studies are tasked with clarifying what these international mechanisms are best suited to do and to draw lessons from their experiences both in their core function in assisting countries to finance vaccines and supplies, and in their additional roles supporting procurement efforts and strengthening program management. The principal objectives of these analyses are to:

- > Document the underlying structures, principles, methods, and procedures of the mechanism;
- > Examine trends in usage;
- > Evaluate the mechanism's performance from the perspectives of the mechanism implementors, users and suppliers and document their recommendations;
- > Document lessons learned from the experiences of the mechanisms concerning what problems they resolve and what concerns remain for lower- and middle-income countries in the area of financing immunization programs;
- > Summarize future strategies; and
- > Draw conclusions and suggest recommendations for potential future roles for these mechanisms.

A final synthesis paper which compares and contrasts these mechanisms, explores their commonalities and synergies, identifies global lessons learned, and offers cross-cutting conclusions and recommendations on how financing mechanisms may further contribute to global immunization financing efforts has also been conducted. In all, four reports result

² www.VaccineAlliance.org.

from these analyses.³

The information from this group of reports will be useful to inform decisions on how to allocate and administer resources to assist with vaccine financing, procurement, and overall strengthening of immunization programs.

This report represents the first in the series, focusing on the strategies for financing and procurement of inputs for immunization programs under the PAHO Revolving Fund. The task of this analysis is to clarify what the Revolving Fund intends to do and what it actually accomplishes. It documents the way in which the Fund operates and draws lessons from the Fund's experiences in addressing needs for vaccines, supplies and technical support. Long-term sustainability concerns related to usage of this mechanism are also explored, as are the concerns and recommendations of participating member countries. It is expected that this report will furnish information for analysts, stakeholders, and decision-makers regarding the issues associated with the implementation and future directions of the PAHO Fund in supporting immunization programs.

PAHO has offered assistance with the procurement of vaccines and strengthening of program management, in addition to the Revolving Fund's function as a broker for vaccine purchases. Taking into account the points of view of Fund managers, user-countries and non-user-countries, this report offers a comprehensive analysis of the Fund.

After outlining the methodology used for data collection and analysis, the report continues with a description of the PAHO Revolving Fund, including its basic purpose, history, and organizational structure, and with an evaluation of its performance and future strategies. Following these sections, the paper shifts its focus to the perceptions of those who manage the Fund, as well as the perceptions of representatives from countries that are eligible to participate in the program. These sections highlight user country recommendations as well as future prospects and challenges as envisioned by management. The views of vaccine producers who supply the vaccines are then introduced. Conclusions, lessons learned and recommendations are presented in the final sections of the report.

To review a complete terms of reference for this and the other three reports of the series, please refer to *Annex A*.

³ In addition to this report three other papers have been drafted: The Analysis of Three International Mechanisms Supporting Immunization Programs: the Vaccine Independence Initiative (Report No. 2); the ARIVAS Initiative (Report No. 3); and the Synthesis Report on the Analysis of Three International Mechanisms Supporting Immunization Programs (Report No. 4).

2. Methodology

This report is the product of many data collection phases. The first phase was devoted to a desk study to obtain basic information about the Revolving Fund for the past 10 years through a review of existing literature, complemented by interviews (in-person and telephone) and electronic communication. Published and unpublished technical reports, strategic plans, evaluations, and various reports from the WHO and PAHO were consulted.

In the second phase, visits to the Fund's headquarters and related institutions were made in order to conduct interviews and gather more in-depth information about how the Fund functions from the perspective of the Fund's management. The purpose of this phase of research was to: (1) fill in gaps from the desk study relative to the basic purpose, structure, and performance of the mechanisms, including a more in-depth look into management perspectives; (2) analyze the performance of the mechanisms from the point of view of vaccine producers; and (3) review the performance of the Fund from the point of view of vaccine producers.

Next, questionnaires were sent out to key individuals, usually national immunization program directors or managers, throughout the region. The questionnaires were administered in collaboration with local Abt staff members and consultants in at least three user and three eligible but non-user countries. This survey focused on collecting data related to funding sources associated with the purchase of vaccines and supplies, vaccination coverage rates, reasons for choosing to use the Fund, external factors in support of and/or hindering use of the Fund, savings realized from use of the Fund, and opinions and recommendations. Twenty-seven countries of the LAC region were surveyed,⁴ and initial responses were received from six. In the instances where responses were not received, information was gathered by extensive follow-up in person and by email, telephone and fax. This led to the completion of a total of 21 surveys - responses were received from all non-user countries and eighteen user countries. Visits were made to two populous countries, one a user country (Brazil) and the other a non-user (Argentina). One smaller user country (Guatemala) was also visited. A list of the 21 countries can be found in *Table 6* and data from country responses are further discussed in *Section 5* of this report.

In interpreting the results from the survey, it is important to keep in mind several constraints and limitations of the available data. First, the countries that responded are not necessarily representative of all eligible countries. Second, current immunization program managers who were interviewed had varying periods of experience with the Fund. This may have had some bearing on their knowledge regarding the use of the Fund in their countries. Lastly, respondents were not guaranteed anonymity for their responses. For some, this may have influenced how they completed the questionnaire as they may have wished to maintain good relations with those institutions currently supporting their immunization programs.

⁴ While all LAC countries are eligible to use the fund, this study surveyed only countries with a significant population level. Some islands with small populations that utilize the fund were not surveyed.

3. Description of the PAHO Revolving Fund

3.1 Purpose

The primary purpose of the PAHO Revolving Fund as defined in 1977⁵ is to provide member countries participating in the Fund with a smooth and constant flow of quality vaccines and related supplies for their immunization programs. The Fund's mandate is to provide countries in the Americas with a procurement mechanism for the purchase of vaccines, syringes, needles, and cold-chain equipment. With the assistance of the Fund, countries should be enabled to plan their immunization activities and procure required vaccines and related supplies in an orderly and continuous manner. The overall guiding principles and objectives of the PAHO Revolving Fund have remained the same to the present.

The main feature of the PAHO Revolving Fund is its vaccine procurement mechanism. The procurement system is known as a "bulk purchasing system." This method relies on standard principles of public purchasing through maximizing competition and consolidating purchases. Countries make their orders, then pay the Fund, following receipt of the vaccines. The bulk-procurement system consolidates individual country orders and, often, adds a supplemental amount. The large size of the order allows producers to spread fixed costs over a larger amount of production, thereby enabling them to offer PAHO lower unit prices. Prices paid for vaccines through the PAHO Revolving Fund have decreased on average over the last five years.

However, the PAHO Revolving Fund is just one part of a comprehensive "package" of services offered by Vaccine Division of PAHO which includes, among other features:

- > Epidemiological studies of burden of disease;
- > Evaluations of cold-chain requirements;
- > Cost-effectiveness evaluations for the introduction of new vaccines;
- > Information bulletins;
- > Bimonthly newsletters;
- > Dissemination of articles and papers;
- > A free software package for epidemiological surveillance; and
- > Meetings with PAHO's Technical Advisory Group (TAG).

⁵ This purpose was defined by the XXV Direct Council Meeting of the Pan-American Health Organization, together with the XXIX Regional Committee of the World Health Organization, which took place in Washington, D.C. between September and October of 1977. The 31-page document summarizing the meeting specifically defines the program objectives, reviews the general, regional and country level policies for the Expanded Program of Immunization, and defines program costs and proposed funding sources.

Participation in the PAHO Revolving Fund is not a requirement for countries to receive the technical assistance package provided by the Vaccine Division; countries can choose the items that they consider relevant to the development of their immunization strategies. In all cases, the Vaccine Division maintains close contact with each country's immunization program and provides advice on immunization strategies.

3.2 History

The PAHO Revolving Fund was authorized in December 1977 by the Directing Council of the Pan-American Health Organization, the regional office of the World Health Organization (WHO), comprised of Ministers of Health of member countries. In 1978 it was capitalized with US\$1 million from PAHO to facilitate the procurement of critical materials for national immunization programs. The purpose of this endowment was to facilitate the purchase of vaccines and syringes by the small and poor countries of the region.

The Revolving Fund began operations in 1979 with a total of US \$2.6 million in orders placed for 19 countries, holding contracts for DPT, OPV, measles, TT, DT and BCG vaccines, plus syringes. By 1998, an additional US \$10 million of capital had been injected into the Fund from a variety of sources (see *Table 1*). A total of US \$47 million in vaccine orders were placed for 34 countries in that year. By 1998, the PAHO fund was purchasing DPT, OPV, measles, TT, BCG, MMR, Hepatitis-B, Hib, and DPT/Hepatitis-B/Hib (pentavalent) vaccines plus syringes.

Table 1: Sources of Capital for the Revolving Fund (1998)

Source	Amount Contributed (US\$)
PAHO	7,413,490
The United States	1,686,000
The Netherlands	500,000
UNICEF	500,000
Chile	11,253
Panama	5,000
Mexico	4,000
Cayman Islands	1,500
East Leo Club, Port-of-Spain (Trinidad and Tobago)	1,400
Others	1,308
Barbados	1,000
Cuba	1,000
Bahamas	500
Belize	500
Dominica	500
TOTAL	10,127,451
Source: PAHO	

PAHO's financial contribution to the Fund has included two 1-million-dollar contributions—one upon its creation and the other later on. In addition, the 3 percent fee received by the Fund for each procurement operation is used for capitalization of the Fund.⁶

When the Fund began operations, many member countries received a portion of their vaccines free from UNICEF, but they gradually increased their own financial contribution. Most countries now pay for 100 percent of their vaccine supplies, although several use funds from donor projects to finance some of these costs.

3.3 How it Works

3.3.1 Organizational Structure and Core Services

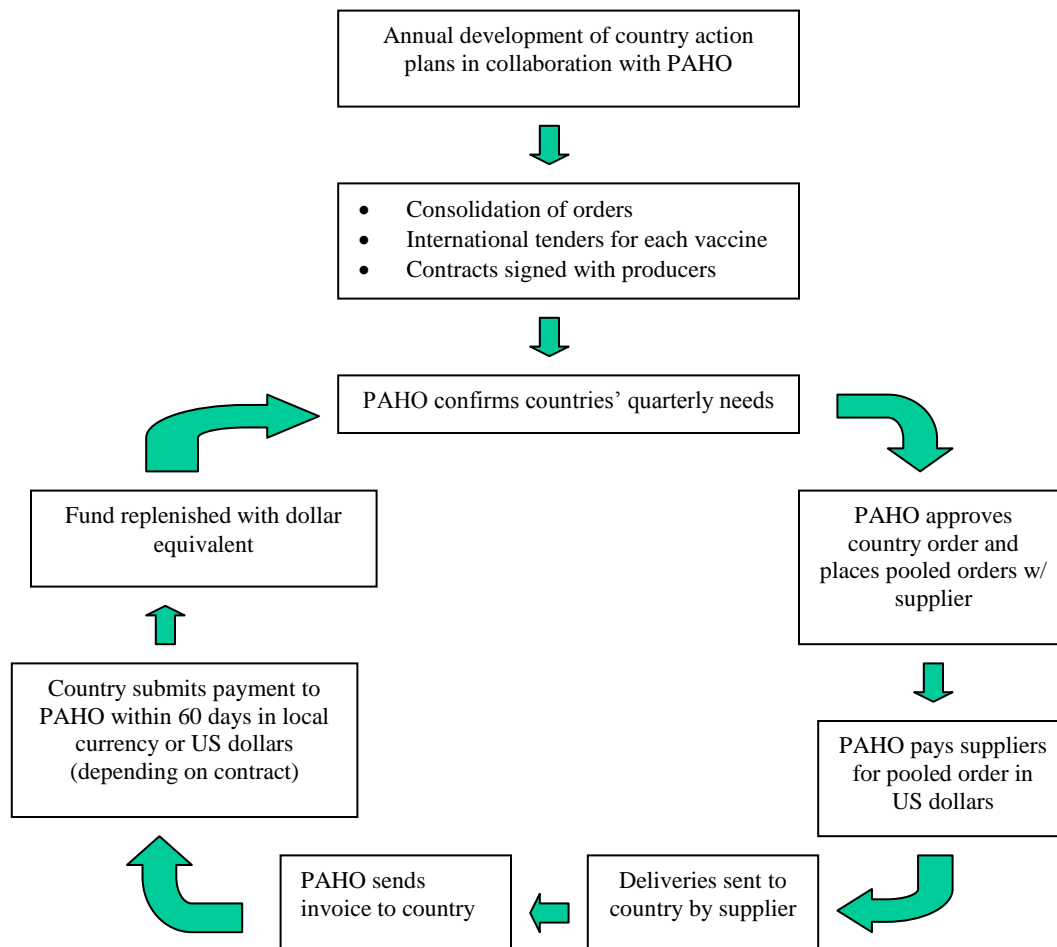
The PAHO Revolving Fund is an example of a “bulk-procurement system” where PAHO consolidates participating member countries’ vaccine program requirements and issues tenders for them. The system is optional and flexible. Countries choose to use the system when it is to their advantage to do so and may use other methods to obtain vaccines when other systems offer advantages. Such flexibility means that the total order may not always be maximized, as countries move in and out of the system. Because the system is optional, all of PAHO’s recommendations concerning vaccine use are made on a technical basis, leaving countries the option of implementing the recommendations or not, depending on individual preferences.

PAHO decides which products are available through the Fund and retains authority to limit the quantities to be ordered through it. In this way, PAHO reduces waste (doses delivered but not used or that become outdated) and has encouraged forward planning and development of infrastructure in participating countries. In addition, the Fund ensures that countries receive vaccines that meet PAHO/WHO quality standards and establishes contracts with suppliers that permit urgent orders to be placed and delivered on short notice.

The Fund operates on an annual cycle (see *Figure 1*). Vaccine requirements for the year, broken down by quarter, are established by the Ministry of Health of each participating country during the third quarter of the year and submitted to PAHO in Washington, DC. PAHO consolidates the annual requirements and puts the bids to international tender. Suppliers are informed of the required quantities and quarterly delivery dates. Following the receipt of bids, PAHO selects among suppliers that meet the WHO quality specifications, the lowest price for each vaccine, taking into account transportation costs and the supplier’s ability to deliver on time. In some cases, more than one supplier is selected to ensure the economic viability of a broad range of geographically dispersed suppliers and to give the Fund added security of supply in the event of production difficulties. Orders are placed to meet quarterly requirements and deliveries scheduled by the countries. PAHO then monitors the orders, expedites delivery, arranges freight-forwarding services if needed, and provides shipping advice together with flight details.

⁶ Funds from the transaction fee are used for capitalization after deductions are made for administrative expenses incurred during the process of solicitation and adjudication of bids, plus other costs associated with the management of the system.

Figure 1: Fund Cycle



After delivery, PAHO bills the country by sending an invoice as soon as the country acknowledges receipt of the vaccines in good condition. The invoice includes the 3 percent service charge applied to the cost of the vaccine. This sum goes into a reserve account to which losses incurred by the Fund, including those from currency transactions, are charged. Amounts in the reserve account of over US \$100,000 are transferred into the working capital.

In order to facilitate the availability of vaccines, the Fund permits countries to use local currency instead of requiring US dollars to reimburse their vaccine purchases. This option is subject to some exceptions related to the instability of the local currency.⁷

Members are required to repay the Fund within 60 days of the billing date and if the country's account is in arrears, no further orders will be dispatched until the debt is cleared. Though some countries have delayed payment occasionally, no country has suspended payment indefinitely. So far, only two countries have been sanctioned due to their suspension of payments: one country was ineligible for further procurement support for two years and another one for seven months, until they paid their invoices to the Fund.

3.3.2 User Profile

Participation in the Revolving Fund is open to those PAHO member countries that meet each of the following criteria:

- > Allocation of a national budget item with a specific line item for the cost of vaccine and syringes;
- > Appointment of a national program manager with the authority to develop and implement the program; and
- > Formulation of a comprehensive and realistic national plan of operations covering at least a 5-year period and conforming to the general policies of the Expanded Program on Immunization (EPI) in the Americas.

All countries that participate in the Revolving Fund (see *Box 1* for a list of users in 1999) can buy any vaccine that is included in its national immunization program, provided that each vaccine is approved by PAHO. No participating country uses fewer than the Expanded Program on Immunization (EPI) "basic package" of six antigens. Where participating countries differ is in how many of the newer vaccines have been incorporated into their national immunization programs.

Countries that decide to make purchases outside of the Revolving Fund do so for several reasons. For example, those with large populations may be able to negotiate equally favorable prices directly with the industry, or a country may

Box 1: Participating countries

All countries in the region have participated in the Fund at one time or another since its inception. In 1999, thirty-two countries used the Fund:

<i>Antigua</i>	<i>Guatemala</i>
<i>Anguilla</i>	<i>Guyana</i>
<i>Bahamas</i>	<i>Honduras</i>
<i>Barbados</i>	<i>Jamaica</i>
<i>Belize</i>	<i>Montserrat</i>
<i>Bolivia</i>	<i>Netherlands Antilles</i>
<i>Brazil</i>	
<i>Cayman Islands</i>	<i>Nicaragua</i>
	<i>Panama</i>
<i>Colombia</i>	<i>Paraguay</i>
<i>Costa Rica</i>	<i>Peru</i>
<i>Cuba</i>	<i>St. Lucia</i>
<i>Dominica</i>	<i>St. Vincent</i>
<i>Dominican</i>	<i>St. Kitts</i>
<i>Republic</i>	<i>Suriname</i>
<i>Ecuador</i>	<i>Turks & Caicos</i>
<i>El Salvador</i>	<i>Trinidad & Tobago</i>
<i>Grenada</i>	

Just four countries did not participate in 1999 (Argentina, Chile, and Venezuela).

⁷ The decision about whether a country is permitted to pay in local currency is made on a discretionary basis. Only in situations of extreme exchange rate volatility are countries required to pay in hard currency. There is no hard and fast rule regarding the level of volatility, but rather eligibility is determined on a case by case basis.

wish to introduce a vaccine which PAHO judges to be premature or otherwise unwise. In these instances, countries make their own arrangements without the benefit of the PAHO Revolving Fund.

Tenders are issued by PAHO for the quantity of vaccines required for a one-year period. Forecasts are consolidated by PAHO, and awards are made to the suppliers with the lowest prices of each vaccine product. As many pre-qualified suppliers as possible are invited to compete from among those certified by WHO. Contracts are awarded based on price and consideration of the estimated cost of freight.

To summarize, in addition to the provision of a smooth and constant flow of vaccines and related supplies for the participating Member Countries' immunization programs, the Revolving Fund offers the following advantages:

- > Purchases made from the Fund are reimbursable in the US dollar equivalent of the member country's currency (in most cases);
- > Vaccine requirements from all participating member countries are consolidated and contracts are established by the PAHO on the basis of these consolidated requirements, thus resulting in more advantageous vaccine prices and improved delivery;
- > Delays in ordering and receiving vaccines are minimized due to the continued presence of readily available funds;
- > Countries are assured of a supply of vaccines that meet WHO quality standards;
- > The Fund serves as a lever for encouraging participating member countries to evaluate their immunization strategies in terms of epidemiology, cost effectiveness, and financial and logistical sustainability; and
- > The Fund can enable the early introduction of newer vaccines.

3.4 Performance

This section examines the Fund's performance in terms of volumes purchased through the Fund and its ability to ensure that quality vaccines are procured, facilitate the introduction of new vaccines, and respond to specific country needs. Also considered in this section are the Fund's role as a financing mechanism and the trend of prices obtained through the Fund over time.

3.4.1 Staffing

The operation and success of the Revolving Fund depends upon the interaction and integration of the three major areas of responsibility (technical, procurement, and financial) that encompass the operational phases (order preparation, ordering, shipping, and reimbursement). An interrelationship has developed in order to allow for an exchange of information that leads to a unification of efforts, thus facilitating the management of operations. As of December 1998, the Division of Vaccines and Immunization (HVP) had nine professionals in Washington, DC and another nine in the field (stationed in member countries) dedicated to the technical assistance functions related to the Fund. Additionally, under the PAHO's Chief of Administration, two

procurement officers and several other staff spend a portion of their time preparing bids, handling contracts, arranging for invoices, doing the accounting, etc. This means that virtually all HVP staff time is dedicated to technical functions, not to handling the procurement and financial operations.

3.4.2 Volumes Purchased and the Importance of the Fund

Table 2 presents the annual nominal spending by the Fund up to projected 1999 spending. Spending increased from \$2.3 million in 1978-1979 to 47.1 million in 1998 (\$85.2 projected in 1999), an average annual rate of more than 17 percent, clearly a rate of growth faster than inflation. The information presented in a *Section 5* of this study shows that fifteen out of the twenty countries considered purchase at least 80 percent of their total vaccine purchases from the Fund.

Table 2: Summary of Financial Operations

Year	Expenditures (in millions of dollars)
1978-79	2.3
1980-81	7.8
1982-83	9.2
1984-85	8.1
1986-87	10.3
1988-89	16.1
1990-91	20.0
1992-93	33.5
1994-95	29.0
1996-97	39.0
1998	47.1
1999 (projected)	85.2
<i>Source: PAHO, 1999</i>	

3.4.3 Introduction of New Vaccines

PAHO's efforts to establish polio surveillance and to improve epidemiological and laboratory work along with vaccine delivery, have laid the groundwork for the introduction of new vaccines. An examination of the quantity of vaccines procured by the Revolving Fund between 1990 and 2000 as shown in *Table 3* clearly demonstrates that the Revolving Fund is increasingly being utilized for the introduction of new vaccines to participating countries.⁸

The Fund uses vaccine manufacturers approved by the WHO. This approval is specific to each antigen. If the WHO has no approved supplier for a particular vaccine, PAHO's technical committee will provide a list of producers that fulfill certain technical requirements in order to permit the Revolving Fund to issue tenders for that vaccine in the open market.⁹

⁸ A complete table of volumes per vaccine by country is found in *Annex B*.

⁹ This has occurred a number of times throughout the history of the fund.

Table 3: Volume of New Vaccines Procured (millions of doses of vaccines by antigen)

YEAR	TT	DT	HEP-B	Hib	DPT + HEP-B + Hib
1990	14.6	-	-	-	-
1991	18.5	-	-	-	-
1992	10.2	4.6	-	-	-
1993	15.9	2.8	-	-	-
1994	17.6	4.2	-	-	-
1995	18.8	3.6	-	-	-
1996	16.1	4.3	0.3	-	-
1997	17.7	5.6	4.0	-	-
1998	12.1	11.8	49.2 ^a	-	-
1999	9.5	30.4	3.6	14.1	8.5
2000*	0.5	24.9	8.0	1.3	5.0
(a) Brazil requested 48 million doses in 1998 (*) Estimated Source: PAHO					

3.4.4 Financing

The PAHO Revolving Fund does not have a financing mechanism per se, nor does it provide anything but very short-term loans. Member countries are required to reimburse the Fund within a 60-day period of receipt of a bill.

Repayment performance of user countries is good. For the most part, problems have been related to delays in the reimbursement of invoice payments. Member countries that are not in good standing are ineligible for participation until they reimburse the Fund. There have been no defaults over the history of the Fund.

In the case that donors assist in the purchase of vaccines, their participation generally is made at the country level rather than the Fund. Assistance is tied to the purchase of vaccines through mechanisms other than the Fund. In some cases, donor participation can cause some difficulty for the management of the Fund when a donor adds funds that allow a country to buy more vaccines than initially ordered.

The 3 percent administrative fee charged by the Fund is used to finance the preparation and adjudication bidding process, as well as to cover differences in exchange rates,¹⁰ in the cases when countries are allowed to pay in local currency.

¹⁰ PAHO bears the risk of exchange rate changes between the time an order is placed and when the recipient country has to pay the bill. According to the immunization program managers surveyed, this exchange protection is regarded as only a minor benefit of participating in the Fund. See *Section 5* for information on the countries' perspective.

3.4.5 Price Trends

One of the most important issues in evaluating the performance of the Fund is that of the price levels obtained by the mechanism in procuring vaccines. *Table 4* shows the trend in vaccine prices per dose attained by the Fund for the main antigens during the period 1990-2000. Three main features can be noted:

- > With the exception of the MMR vaccine, all vaccine prices rose overall during the period under analysis;
- > However, prices have decreased since 1995. This change is marked by the acceptance of India as a WHO certified vaccine supplier. Subsequent to its participation in the bidding process, prices dropped; and
- > In 1997, Brazil started using the Fund. Due to the increase in the size of the orders, there was another reduction in prices.

This information offers two insights into the success of the Fund as a procurement mechanism. First, the incorporation of a new certified producer into the bidding process changed the trend in the vaccine prices. In addition, the incorporation of Brazil into the procurement provided an additional price advantage showing the importance of the bulk system mechanism.

The importance of the Fund's ability to obtain favorable prices is supported by the countries: as discussed in detail in *Section 5*, out of seventeen responses to our survey, thirteen countries considered prices obtained by the Fund as a "very relevant" factor for using it.

Table 4: Price^a per Dose of Selected Vaccines under Contract (in US cents)

Vaccine	1990	1991	1993	1995	1996	1997	1998	1999	2000 (*)
BCG-10	8.0	9.4	11.9	11.9	11.0	10.2	9.5	9.0	9.3
DPT-10	4.3	5.4	7.6	9.7	7.9	7.0	6.5	6.7	7.3
MEASLES-10	7.5	12.0	14.5	13.5	12.5	10.9	10.2	10.7	10.2
MMR-10	89.0	N/A	N/A	72.5	72.0	54.0	49.0	62.7	65.5
POLIO-10	3.5	5.6	8.1	8.4	8.4	7.0	7.7	8.6	8.1
HEPATITIS B-10	N/A	N/A	N/A	N/A	N/A	N/A	82.0	69.0	58.0
Hib-10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	218.0	311.0

Source: PAHO

(*) Projected price

(a) Including shipping costs

3.4.6 Quality Assurance

The purchase of vaccines through the PAHO Revolving Fund is subject to three types of quality control:

- > The first quality control occurs at entry. Only vaccine manufacturers approved by WHO (WHO list of suppliers) are allowed to participate in the PAHO Revolving Fund. If WHO has not approved a laboratory for a certain vaccine, PAHO's technical committee provides a list of producers that fulfill all technical requirements to permit the Revolving Fund to issue tenders. Of the total manufacturers worldwide approved by WHO in 2000, PAHO purchases from 18 (*Box 3.2*). Certification requires the fulfillment of a series of specific laboratory tests and the approval of production

processes. Recently a group of non-traditional manufacturers from India and Indonesia obtained certification from the WHO. No Latin American producers are currently on WHO's list.

- > Throughout the bidding process, PAHO requires the manufacturers to prove the quality of their products, as well as their ability to provide the amount of vaccines committed. This second control is concerned with the sustainability of quality of manufacturers' activities.
- > Once vaccines are delivered, they are subject to technical review under the supervision of the Ministry of Health, and/or the office in charge of the procurement of the antigens and syringes. This quality control at the port of reception allows countries to monitor not only the quality of the vaccines themselves but also the adequacy of transportation and cold chain conditions during delivery.
- > In addition, the Revolving Fund has an advisory group that meets frequently to revise the Fund's strategy, analyze and consider the incorporation of new vaccines and develop guidelines to be distributed throughout the region. The existence of this group can be seen as a dynamic quality control of the PAHO Revolving Fund strategy.

These four quality assurance mechanisms constitute, from the member countries' perspective, an incentive to participate in the PAHO Revolving Fund. According to our survey results (see *Section 5*), the quality of vaccines purchased is ranked as the most important reason for their participation in the Fund.

3.4.7 Flexibility

An additional feature of the Fund's performance for consideration is its ability to deal with specific country needs. First, specific technical assistance is available, which allows immunization authorities to rely on the Vaccines and Immunization Division for advice and support on issues related to management, cold chain development, communication and dissemination strategies, and other areas. Second, the bulk-procurement system is optional and flexible, i.e., countries are able to choose to use the system when they consider it an advantage to do so, and can opt for other methods of procurement when there are better alternatives. However, one criticism raised by user countries is the mismatch between the planning and procurement schedule defined by the Fund and the countries' schedule. The bulk-system offered by the Revolving Fund requires a certain coordination of activities, such as placing the annual order in the third quarter of the previous year and taking deliveries quarterly, to obtain better prices and delivery conditions. These requirements cause some difficulties for Fund participants. An evaluation comparing the gains in effectiveness involved in a more flexible procurement schedule with the costs in higher prices for smaller bulk procurement might be in order.

3.5 Future Prospects

Current priorities of the Vaccines and Immunization Division of the Pan-American Health Organization and the Revolving Fund include improving surveillance and immunization

infrastructure, targeting vaccines to populations most in need, increasing coverage, and systematically introducing vaccines not previously used in all member countries.¹¹

Major issues the Fund faces today are: (1) insufficient capital at certain times of the year to cover all participating countries' needs and (2) the need to increase capitalization to cover new (and more expensive) vaccines. The Fund is also exploring ways to cope more effectively with larger country orders, such as those of Brazil and Mexico, to avoid the need to require payment in advance as their orders exceed the Fund's current capitalization.

Another issue, which is not considered serious today by Fund managers, but that could potentially pose a problem in the future, is the strategy of price discrimination pursued by some suppliers in the last three years. Suppliers have responded to PAHO bids by offering lower prices for poorer countries and much higher prices for richer ones. This strategy on the part of producers seems to be an attempt to break up the market power that PAHO has gained from its bulk purchasing. Currently, all member countries are billed at the same contract prices and so far the Fund has been able to maintain the lowest contract prices for vaccines.

Since the Fund is constantly replenished, there is no concern that funds will be diminished. Therefore, the prospects for sustainability of the Fund appear to be quite positive. Rather than facing a lack of funds, Fund managers will likely have to confront issues of international and/or local producers attempting to break their market power, countries decreasing involvement in the Fund, or logistical glitches in the system.

¹¹ Information for this section was gathered from interviews with Fund managers and staff of the PAHO Division of Vaccines and Immunization.

4. PAHO's Perceptions and Perspectives

PAHO's Vaccines and Immunization Division sees the performance of the Revolving Fund as part of a broader strategy to contribute to an increased and sustained health care status to the region. Its team acknowledges the diversity of resources and health care organization present in the region and the need to reduce the equity gap in health between rich and poor. Immunization activities play an important role in confronting these disparities.

The immunization performance of the LAC region, even in the poorest nations, is relatively strong if in comparison with other nations of the developing world. This success in reaching high and sustained immunization rates is due in part to the array of services and technical assistance provided by the Division of Vaccines and Immunization, including the Revolving Fund. However, these rates could not have been reached were there not a general acknowledgement among the region's authorities and supporting institutions of the value of immunizations.

According to information collected from interviews with key individuals at PAHO, as well as from documents produced by PAHO, the Revolving Fund is part of the overall strategy that has made significant inroads in the area of vaccine-preventable diseases and in strengthening the region's health infrastructure. Accomplishments in the area of immunization over the past 20 years include:

- > Eradication of the indigenous transmission of wild polio virus in 1991;
- > Elimination of neonatal tetanus as public health problem;
- > Continued progress towards the target of measles elimination by the year 2000;
- > Maintenance of high vaccination coverage with all the EPI antigens; and
- > Reduction of morbidity and mortality due to diphtheria and whooping cough.

In recent years, the region of the Americas have reached and maintained vaccination coverage rates at levels near or above 85 percent for all EPI antigens (*Table 5*).¹² Strong results have been achieved across countries of varying incomes and with varying degrees of political and economical stability. These results reflect the high priority placed on immunization programs by the governments, the level of managerial development reached at the operational level, and the use of varied and complementary strategies for vaccination, such as routine vaccination (ongoing and free of charge), campaigns, or other intensive vaccination activities.

¹² A complete table of vaccination coverage rates is found in *Annex D*.

Table 5. Vaccination Coverage for Selected Countries in 1996 (Percent)

Country	DPT3	OPV3	Measles	BCG
Argentina	83	90	100	100
Bolivia	82	82	98	98
Brazil	75	78	77	100
Costa Rica	85	85	87	92
Guatemala	73	73	70	77
Jamaica	92	92	96	98
Mexico	100	95	93	99
Nicaragua	91	99	90	100
Peru	100	100	87	100
Venezuela	57	73	64	89
<i>Source: PAHO</i>				

The extent to which the PAHO Revolving Fund alone, as distinct from the other elements in the PAHO package and from local government efforts, is responsible for these high and sustained levels of immunization in the region is difficult to distinguish. However, two main arguments may be considered in the evaluation of the Fund:

1. Lower income LAC countries with poor health care indicators (infant mortality, life expectancy) have relatively high immunization rates, compared to nations with similar income levels in other regions. Countries like Guatemala, Nicaragua and Bolivia have immunization rates of over 70 percent for the four main vaccines, in some cases reaching rates above 90 percent. This performance in immunization rates reveals a trend across the LAC region that is distinct. Therefore, it appears clear that a regional strategy in immunization has allowed achievements beyond what income levels would predict. PAHO's Division of Vaccines and Immunization played an important role in this process, and within it, the Revolving Fund contributed to the success.
2. Similarly, the political and economic instability that has taken place within the region in recent decades does not seem to have affected immunization rates in the same way that other social and economic indicators were affected. Thus, the sustained improvement of immunization rates shows a regional influence that goes beyond country level circumstances.

Using the prices and stability of the Revolving Fund's procurement apparatus as leverage, PAHO has been able to require participating countries to plan their immunization programs more comprehensively, to improve infrastructure, to share their data and program experiences in regional and sub-regional meetings and to help countries abide by the recommendations of the Technical Advisory Group. The Fund has been instrumental in achieving the high vaccination coverage rates in participating member countries, reducing vaccine costs for countries with both larger and smaller populations. Moreover, the Fund is considered one of the most important means of making immunization a part of routine preventive health care in a region beset with scarcity of health resources.

In short, the specific advantages of the Revolving Fund, according to PAHO are:

- > Reduced cost of vaccines;
- > Introduction of new vaccines;
- > Price stability over time, which has contributed to lower program costs and national financing;
- > Ability to use countries' local currency for payments; and
- > Availability of planned estimates for suppliers to schedule production and delivery, especially for new vaccines and for capital investment.

Additional benefits provided by the Fund are:

- > Countries can obtain their requirements in orderly and continuous manner;
- > The purchases of vaccines are supported by PAHO/WHO quality controls;
- > Countries have the opportunity to send urgent vaccine orders to be delivered on short notice, thanks to established contracts with suppliers; and
- > Availability of new vaccines at a common low price makes their introduction affordable.

5. Eligible Countries' Views of the PAHO Fund

This section explores the advantages and disadvantages of using the PAHO Revolving Fund from the points of view of (1) those countries utilizing the mechanism and (2) those that choose not to. It also outlines their suggestions and recommendations for improving the Fund. Information for this section comes from a survey sent to the countries' immunization programs, later followed up with phone and personal conversations with key officials in the field (as described in the Methodology section). A list of respondent countries is found in *Table 6*.

As all countries in the LAC region are automatically eligible to use the Revolving Fund by virtue of their geographic location, the application process is equitable and transparent. By 1998, the vast majority of respondent countries purchased most of their vaccines and syringes from the PAHO Fund.

Table 6. Survey Responses

Countries Surveyed	Responses	Percentage
27	21	78
Countries that Responded to the Survey		
Central America	Belize, El Salvador, Guatemala, Guyana, Honduras, Nicaragua, Panama	
Caribbean	Barbados, Cuba, Jamaica, Suriname, Trinidad and Tobago	
South America	Argentina, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, Uruguay, Venezuela	

5.1 Financing and Procurement Methods in Latin America and the Caribbean

Responses obtained show that for 1998 (*Annex E*), 14 of the 21 respondent countries used the PAHO Revolving Fund as their sole source of vaccine procurement. In two cases (Brazil and Uruguay), the Revolving Fund is used for over half of procurement (around 55 percent and 83 percent, respectively), while the remainder comes from international producers (in the Uruguayan case), and local producers (in Brazil).

The only exceptions to this picture are Argentina and Chile, where vaccines are purchased internationally, and Colombia and Venezuela, where local and international producers both provide antigens, and Cuba, where local producers and international donors provide antigens.

The provision of syringes, however, shows a more mixed scenario. Eleven countries are entirely supplied through the Fund, while in two cases (Guyana and Jamaica), PAHO's mechanism procures 80 percent of the total, with local or international bids covering the rest. In Argentina and Colombia, syringes are provided through international bids, while in Brazil, Chile and Venezuela, purchases are made from local producers, through a competitive process. Direct purchases are also a part of the picture, via local producers (100 percent of supply in El Salvador), or international suppliers (Suriname).

Immunization programs are largely financed by public funds. In 1998, public expenditures were the main source of financing in all countries consulted, with nearly 100 percent of the immunization program financed by the national budget. Exceptions are Peru, Paraguay, and Cuba, which received three to five percent of their monetary sources through international donations, and Honduras with 18 percent of program costs financed by external aid. Variations in the sources of financing and procurement over the years considered in the study (1995-1998) are detailed in *Annex F*.

5.2 User Countries: Principal Reasons for Using the PAHO Fund

Countries realize a number of benefits from using the PAHO Fund for immunization program purchases. Asked to rank several factors as "very important," "relevant" or "irrelevant," at least half of the respondent countries ranked vaccine quality, price, payment terms, reduced costs, and administrative transparency as "very important" (see *Table 7*). Time saved was also held as relatively important, along with technical assistance, which was relevant to very important for twelve countries. Payment in local currency was very important for five countries, but not as important for the rest of the countries. *Annex G* shows the responses for each of the 20 countries that answered the questionnaire.

Table 7. Reasons for Using PAHO Fund

Reason	Very Important	Relevant	Irrelevant
Vaccine quality	16	2	-
Price	14	4	-
Payment terms (i.e., 60 days to pay fund)	12	5	1
Reduced costs	13	5	-
Administrative transparency (country level)	12	5	-
Time saved	10	5	2
Technical assistance	9	4	2
Payment in local currency (not all countries eligible)	5	5	5
Other	2	-	-

5.2.1 Quality Control

Vaccines purchased through the Fund are guaranteed to be of high quality and have reasonable expiration dates, as only WHO approved suppliers participate in the bidding process. Countries often find this quality guarantee preferable even to possible cost savings from using local suppliers that are not certified. Of users that responded to the questionnaire, 76 percent ranked vaccine quality as "very important," and quality control was cited as an important external

factor in support of use of the Fund. Therefore, quality control offered by the Fund for vaccine quality is more than adequate for user countries.

5.2.2 Cost and Price Considerations

In addition to the quality guarantee offered by the Fund, countries also appreciate the low prices attained through the its use. Only one user country did not report having realized savings as a result of using the Fund. The actual amount of savings estimated, however, varies greatly from country to country. While in some cases, savings are estimated at 5 to 10 percent, others estimate savings per vaccine at 60 to 90 percent. It is possible that since countries rely on the Fund to do the bidding process, they are not aware of current market prices for vaccines outside of the Fund, or price comparisons are related to local producer prices or international prices set for small purchases. Though it may be difficult for countries to pinpoint the exact amount of savings, it is clear that the prices they are paying are lower than they would be were they purchasing directly from producers, especially in the case of smaller countries.

Not only are prices lowered when countries purchase through the Fund, but countries also experience reductions in costs due to time saved. Most participating countries agree that procurement procedures are simplified as they can rely on an outside party to seek bids and coordinate purchasing and shipping. This process saves time, reduces costs, and also increases administrative transparency. One country mentioned that the low costs of vaccines have driven down local prices of transport and other vaccine related costs.

Countries vary in their evaluation of the administrative costs of using the Fund. The costs are rated low to medium when compared to costs of transportation and insurance, low when compared to charges of private brokers and compared to the savings in administrative expenses of bidding, etc. Some countries rate the administrative expenses (3 percent fee charged) as high for the country.

5.2.3 Payment Terms

The flexible payment terms allowed by the Fund figure as important to the vast majority of user countries. Most user countries agree that the payment terms are reasonable and that access to short-term (60 days) credit facilitates the purchase of vaccines. Only one country says it has suspended payment, though some state that their payments have been late at times.

In the case of large countries such as Brazil and Mexico, however, the Fund's endowment is not sufficient to support vaccine needs. It is too small to allow PAHO to cover the costs of vaccines purchased by the country from the time the order is presented to the time the country's payment is received. As a result, these larger countries are required to pay in advance, making the process more difficult and eliminating some of the benefits of the Fund.

5.2.4 Other Reasons

Technical assistance and payment in local currency appear to be comparatively less important to user countries, though in several cases, payment in local currency proves very important. However, at least one country that is not able to purchase in local currency would like PAHO to facilitate the process of obtaining hard currency. Countries appreciate the technical assistance provided by the vaccine division at PAHO, though at least one country would like to receive more. It is possible that some countries do not rank these features as very important

because technical assistance is received, in any case, through the Vaccine Division of the Pan-American Health Organization, regardless the use of the Fund.

Box 2: The Brazilian Case

Brazil accounts for approximately one-third of the Latin-American population. Therefore, its immunization strategy has an enormous impact on the region and its participation in the PAHO Revolving Fund increases the Fund's ability to negotiate lower prices for the region.

The Brazilian immunization program covers 26 vaccines, and is financed entirely by the federal government, which purchases all vaccines and syringes and distributes them among states. States are in charge of managing and organizing the vaccination program work plan, based on federal guidelines.

Brazil buys about 75 percent of its vaccines in the local market. This amount represents 45 percent of expenditures on vaccines. The rest of vaccines were procured through international purchases until 1997 when Brazil started to use the Revolving Fund.

Local purchases of vaccines are directly provided by six chemical research institutes (public, private and mixed) which have special agreements with the immunization program.

Advantages - Brazil has enjoyed lower prices in the purchase of some vaccines since it began using the Fund, and has also benefited from the administrative transparency of the bidding process, avoiding costly bidding procedures. These features facilitate immunization program management and have allowed for the inclusion of more vaccines into the immunization program.

Disadvantages - Brazil faces a difficulties as well in its use of the Fund: (a) the difference in time schedules between the country's immunization plan and PAHO's delivery dates, and (b) the need to pay in advance for the purchases channeled through the Fund.

Source: Interviews with key MOH and EPI staff, May 2000, Brazil.

5.3 User Countries: Factors Hindering Use of Fund

5.3.1 Inconvenient Features of the Fund

About half of the user countries report that there are delays in the arrival of vaccines, a factor which creates problems in vaccination programs' time schedules. In addition, several countries state that invoices for each shipment are received either too early or too late, and should be sent instead with the shipment of vaccines. In general terms, several countries consider that coordination between the Fund's and the countries schedules would improve the effectiveness of the regional immunization strategy.

As previously mentioned in the section on payment terms, the need for large countries to pay in advance for vaccine purchases is a limitation of the Fund. The capitalization of the fund is not sufficient to meet their needs. In addition, some countries with high exchange rate volatility are not allowed to pay in local currency.

5.3.2 External Factors

A number of external factors impede the use of the Fund for many countries. These factors fit into three broad categories, including those related to the availability of vaccines, external pressure from producers, and the bureaucratic and macro-economic situation of the country.

Countries mention the limited capacity of the vaccine industry to respond to increased demands in the event of outbreaks of vaccine preventable diseases. Similarly, at times there are supply shortages and needed vaccines are not available. Though it is nearly impossible to predict fluctuations in need for some vaccines, it might be important to design an emergency plan to prevent and handle these types of shortages.

A number of countries mention a constant pressure on the government from both local and international producers not to purchase vaccines through the fund, but to purchase vaccines directly instead. Where local producers offer vaccines with hidden incentives to government officials, the quality of vaccines could be compromised and the country's health status could be negatively effected.

Finally, immunization program directors mentioned difficulties with bureaucratic and administrative government procedures, importers, and challenging macroeconomic situations (such as constant devaluation of local currency and severe debt) as hindrances to their keeping the immunization program running in general and to ensure participation in the PAHO Fund.

5.4 Non-user Countries: Principal Reasons for not Using the Fund

Four main reasons keep countries out of the Revolving Fund: two of them are related to government regulations, and the third is associated to local abilities to negotiate better prices or generate domestic production of vaccines. The fourth reason is the mismatch between the time schedules of the Fund and the countries, as previously discussed.

Some countries are limited by regulatory legislation. In Argentina, the public sector is required by accountability laws to call for bids in order to make all purchases (including vaccines), so direct purchase from the Fund (despite the fact that the Fund conducts its own competitive bidding process) is not permitted. Several officials confirm, however, that substantial monetary and time gains would arise from using the Fund. In addition, the fact that larger countries must pay in advance for vaccine shipments (given the limitations of the Fund's endowment) also limits the participation of more populous nations in the region.

In some other cases, local abilities to develop and to produce vaccines allow domestic procurement for some antigens, such as in Brazil, Colombia, Cuba and Venezuela.

5.5 Country Recommendations

Almost all countries that answered the questionnaire had a number of suggestions for the more efficient and effective functioning of the PAHO Revolving Fund, focusing on logistical issues, market interventions, and the extension of services.

5.5.1 Logistics and Communication

The administrative procedures of delivery and control of antigens should be standardized. First, countries should be provided with more information on producers and on the availability of vaccines. This will prevent immunization programs from receiving the same antigen from different producers and will alert them of any shortages in advance. Second, PAHO should monitor producers to ensure that they are complying with requirements and expected deliveries. Third, there should be improved coordination between the Fund, the labs, and the airlines for effective delivery.¹³

Regarding particularly specific logistical issues, invoices should be included with the shipment, or sent as soon as vaccines are delivered so that payment is made in the same financial period and within the required 60 days. Along the same lines, vaccines from the same supplier should be shipped at the same time, rather than in separate shipments. For planning and budgeting purposes, annual price lists should include a proposed increase in costs in advance so that countries can plan for any increase in prices. In addition, all documents necessary for customs should be prepared in advance.

5.5.2 Market Interventions

In order to decrease vaccine prices and administrative costs, a number of measures could be taken. From the demand side, the number of countries participating in the Fund could be increased in order to drive down prices. Though most of the countries in the LAC region already participate in the Fund, increased capitalization of the Fund would allow for larger countries to increase participation. PAHO might also consider opening discussions with non-user countries to identify barriers to their participation and work to remedy the situation.

Secondly, the number of local suppliers involved in the bidding process should be increased in order to lower prices. However, these new suppliers would still need to meet quality control standards and the approval of WHO.

With respect to administrative costs, PAHO might consider decreasing the fees, even though they are already low, as local producers now offer competitive prices. Fees could also be separated out into costs of vaccines, insurance, service, and transport.

5.5.3 Extending Services

The Fund might consider:

1. Including other vaccine-related items for purchase through the Fund, such as solar equipment;
2. Negotiating more favorable prices with transport and insurance providers (these prices are currently quite high);
3. Procuring vaccines on a quarterly basis;
4. Providing more technical assistance; and

¹³ In some cases, costs have been incurred due to confusion about arrival dates and times of flights.

5. Making smaller doses of vaccines available (e.g., 5-10 instead of 20).

Nearly all countries agree that the Fund will facilitate the incorporation of new vaccines into the vaccination program, mainly due to the more affordable prices attained through the Fund.

6. Producers' Views of the PAHO Fund

In order to provide a complete analysis of the PAHO Revolving Fund from the point of view of vaccine producers, representatives from three major vaccine producers (Aventis, Merck Pharmaceuticals, and SmithKline-Glaxo) were interviewed.¹⁴ Producers perceive PAHO as a powerful and comprehensive agency, as they offer procurement, financing, policy recommendations, technical assistance, and additional support to user countries.

The sale of vaccines to the Revolving Fund offers a number of advantages to vaccine producers. First, the Fund offers a point of entry into the Latin American market as it plays an active role in immunization policy and practices. The fund offers access to a region where there is an opportunity to market new and combination drugs, which are likely to earn more profits. PAHO can act as an engine for the introduction of these vaccines. Also, the addition of Mexico and Brazil into the Fund has broadened the scale and nature of business conducted through PAHO.

At the same time, vaccine producers perceive a number of disadvantages from working with the Fund. Producers feel that the addition of populous countries such as Brazil and Mexico may result in the reduction of the private market in Latin America, which may have a negative impact market activities. Producers would prefer for these large countries to negotiate directly with them for vaccine purchases. Secondly, producers would like to implement a price-tiering strategy to maximize revenues from those countries with the ability to pay more. However, as mentioned previously, PAHO sees this pricing strategy as a threat to the Fund and is opposed to considering price discrimination. Finally, as production is somewhat rigid, producers find it difficult to deal with PAHO because the mechanism does not always adhere to projected vaccine demand.

The PAHO market is perceived as quite different from the other major international procurement mechanism, the UNICEF VII Fund. The PAHO Fund requires comparatively less volume and more value per product than UNICEF. However, since producer relationships with PAHO allow for a broader scope of business, including the possible introduction of new and combination vaccines, it is more valuable. In particular, the value of sales, types of vaccine and regional strategies of PAHO appear to offer more opportunities for producers than do those of UNICEF.

Box 3: Approved Vaccine Suppliers

The approved vaccine Suppliers List for year 2000 includes:

Bio Farma (Indonesia)
Chiron S.P.A. (Italy)
Intervax Biologicals Limited (Canada)
Pasteur Merieux Connaught Laboratories Ltd. (Canada)
Korea Green Cross Corporation
LG Chemical Ltd. (Korea)
Medeva (Evans) International (England)
Pasteur Merieux Serums & Vaccines (France)
SmithKline Beecham Biologicals (Belgium)
Chiron Behring (Germany)
CSL Vaccines (Australia)
Japan BCG Laboratory
Tanabe Seiyaku Company, Ltd. (Japan)
Serum Institute of India Ltd. (India)
Statens Serum Institute (Denmark)
Swiss Serum (Switzerland)
Vaccine Institute (Switzerland)
Wyeth-Lederle (USA)

¹⁴ For more information on the vaccine market and producer's perceptions of the Fund, see "Synthesis Report on the Analysis of Three International Mechanisms Supporting Immunization Programs" (2000). Report No. 4 of Series of 4. GAVI Task Force on Financing, CVP at PATH Project.

7. Conclusions and Lessons Learned

The study has identified some achievements that can be replicated as well as various limitations affecting the development of the PAHO Revolving Fund that could be resolved in the short and medium terms. This section first discusses conclusions related to structure and procedures, usage trends, performance, and the future, and then highlights specific lessons learned.

7.1 Structure and Procedures

- > The bulk procurement system offers a continuous and reliable source of funds for the purchase of vaccines, providing an advantage over grants or loans, which run out. With purchases consolidated, competition among suppliers keeps prices and administrative costs low. Delays in ordering and receiving vaccines are minimized due to the constant availability of funds. However, delays in sending invoices slow the process unnecessarily.
- > Donors or other organizations contribute funds directly to the PAHO Revolving Fund rather than to individual countries, thereby reducing administrative bureaucracy.
- > Purchases made from the Fund can be reimbursed in the US dollar equivalent of the member country's currency (as long as the exchange rate is sufficiently stable); thus, most countries do not have to use reserve currencies, such as the dollar. This is particularly beneficial if the country has imposed restrictions on the amount of dollars that may be taken out of the country.
- > Vaccines purchased through the Fund meet WHO quality standards.
- > Countries are encouraged to evaluate their immunization strategies in terms of epidemiology, cost effectiveness, and financial and logistical sustainability.
- > The Fund is not sufficiently capitalized at certain times of the year to cover all countries' vaccine needs. Consequently, when the fund is low, countries are required to pay in advance for their orders and populous countries must frequently pay in advance.
- > As PAHO decides which products are available through the Fund, countries that wish to introduce a vaccine that PAHO judges to be premature make their own arrangements without benefit of the PAHO Revolving Fund.

7.2 Usage Trends

- > Usage of the Fund has increased over time, and now the vast majority of LAC countries purchase most of their vaccines and syringes through the Fund.

7.3 Performance

PAHO's Perspective

PAHO's activities in the Division of Vaccines and Immunization have strengthened the immunization programs throughout the LAC region, with the PAHO Fund ensuring a constant flow of quality vaccines and freeing resources to invest in other health priorities. PAHO claims as its accomplishments the eradication of wild polio in the region, the elimination of neonatal tetanus, progress towards measles elimination, the maintenance of high coverage rates for EPI antigens, and the reduction of morbidity and mortality from diphtheria and whooping cough.

Countries' Perspective

The PAHO Fund guarantees vaccine quality and rapid response to vaccine needs. It's success in this area suggests the possibility for the extension of purchases to other and more varied vaccine-related supplies. Prices could further be decreased through other market interventions to increase competition among suppliers and further consolidate demand.

The Fund suffers from delays in submitting invoices and lacks coordination between involved parties. Communication and logistics should be improved.

Suppliers' Perspective

The PAHO Fund serves as a point of access to the vaccine market in LAC for suppliers, especially for the introduction of new and combination vaccines. However, the Fund threatens suppliers' ability to negotiate directly with countries for prices more favorable to the pharmaceutical companies.

Other Comments

Lower income LAC countries with poor health care indicators (infant mortality, life expectancy and coverage) have achieved relatively high immunization rates, compared to nations with similar income levels in other regions. It is likely that the Fund's role in attaining these coverage rates was important.

The political and economic instability that took place in the region during the last decades did not seem to affect immunization rates in the same way that other social and economic indicators did. Sustained improvement of immunization rates also shows the existence of an overall regional influence beyond the country level.

7.4 Future

- > In order to meet the needs of user countries, the Fund will have to increase capitalization.
- > The Fund can help enable the early introduction of newer vaccines.
- > It is likely that the Fund will continue to play a significant role in improving the performance of immunization programs in the LAC region in the future.
- > While sustainability of resources is not likely to be a concern in the future, Fund

managers will have to confront issues of conflicting interests with producers and/or countries regarding immunization strategies.

7.5 Lessons Learned

Countries using the PAHO Fund view it as an important means of ensuring quality and reducing costs. The hindrances to the use of the Fund and country recommendations for its improvement point to lessons learned that can be considered by PAHO and any other global purchasing mechanism.

Administration. Clear and efficient administrative procedures are essential, and the mechanism should coordinate effectively with all parties involved, including the countries, the producers, and other relevant parties (e.g., transportation providers). While the PAHO Fund seems to have worked out relatively smooth procedures, there still remain a few glitches in the delivery of the vaccines. There should be increased monitoring of shipments and deliveries in order to ensure they arrive in a timely manner.

Extension. Given its success in vaccine provision, the bulk purchasing system may be useful for the low cost purchase of other vaccine-related items, such as cold chain infrastructure or transport services. Similar to the process through which PAHO solicits bids from pharmaceutical companies, a regional or global fund could call for bids for solar-powered cold chain equipment or other items.

Emergency Response. The global community should work together to develop a strategy in order to rapidly respond to outbreaks and epidemics with the appropriate vaccines. The global fund should have an action plan already formulated in order to facilitate the delivery of needed vaccines in times of emergency.

Market Intervention. Any global or regional purchasing mechanism should maximize the number of countries participating in the mechanism in order to maximize gains from economies of scale. It should also maximize the number of suppliers eligible to bid to maximize competition, all in an effort to reduce vaccine prices.

Transparency. In order to confront issues of hidden incentives for governments not to use the fund and to instead directly purchase from local or international producers, a regional or global fund should maximize and emphasize its own administrative transparency. Regional or international conferences with relevant parties should emphasize the benefits of this feature.

Feedback mechanism. It is important that a feedback mechanism be incorporated into a regional or global fund so that Fund managers will have a means to learn what is working and not working for users.

8. Recommendations

The findings of this analysis lead to two types of recommendations for PAHO concerning the Revolving Fund: (1) those addressing the functioning or performance of the Fund and (2) those involving strategic direction for PAHO through the Fund or related to the Fund.

Recommendations on functioning and performance of the Fund:

1. Further tailor administrative procedures and scheduling of deliveries of vaccines and supplies in order to reduce delays and ensure smooth distribution of essential provisions.
2. Consider more flexibility in (1) the presentations of the vaccines offered through the Fund and (2) delivery dates, though carefully evaluating the possible cost in terms of smaller and more fragmented orders and the possible loss of bargaining power with producers.
3. Put in place a regular feedback mechanism, whereby country immunization program managers' problems, concerns, and suggestions about the Fund may be received by PAHO on a regular, systematic basis.
4. Increase transparency of the 3 percent transaction fee by annually informing countries of the total amount of these fees invested in the Fund endowment.

Recommendations on strategic direction for PAHO related to the Fund:

1. Increase the capitalization of the Fund to accommodate and make attractive (eliminate the need for big countries to pay in advance) participation in bulk purchasing by large population countries. This is desirable to give the Fund market leverage to keep prices low.
2. Plan for the need to increase capitalization even more to accommodate the newer and more-costly vaccines that are coming through the research and development pipeline. This will require some long-term forecasting and the collaboration of donors and multilateral organizations.
3. Consider seeking assistance from the donor community to facilitate payment in local currency for countries with volatile exchange rates, as a way to mitigate the impact of poor macroeconomic performance on children's health.
4. Consider setting up an emergency fund or stock to help out in the case of unexpected shortages of vaccines in the region.
5. Prepare to provide complementary technical assistance to Fund participants for the introduction of the new vaccines that are coming on the scene. This will help the countries introduce the vaccines more quickly, while also making bulk purchases larger, sooner, allowing the best prices to be attained.

6. Hold the line on negotiating a single price for bulk procurements for all countries. Find ways other than accepting tiered pricing by providers to help out poorer countries, such as coordinated support by bilateral donors.
7. Work with UNICEF's Supply Division and GAVI to commission a study of how best to address the world vaccine market strategically. This would include items such as: how to stimulate more competition, whether and how to stimulate more production in lower- and middle-income countries, lowering barriers to entry, intellectual property rights, stimulating research into vaccines that address the needs of lower-income countries, and the pros and cons of long-term contracts.

Concluding Remarks

The immunization programs in the Americas have made impressive and sustained gains in the period that the PAHO Revolving Fund has been in existence. The Fund deserves part of the credit for this achievement. It serves an important function in ensuring that quality vaccines can be purchased at low prices by all countries in the region. PAHO complements the Fund by providing valued technical assistance to national immunization programs. There are some relatively small changes the Fund can make to improve its current performance. There are some bigger strategic challenges that it faces in the not-too-distant future, such as the introduction of new vaccines, the need to further increase coverage rates, and the determination of how best to address the world vaccine market with other donors and international organizations.

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Other PAHO documents:

1. List of Immunization Program Directors in Latin America and the Caribbean, by country (name, address, phone number).
2. List of producers of vaccines approved by the World Health Organization, as of November 1998.

3. PAHO's Vaccines supplier list, 2000.
4. List of purchases of vaccines through the PAHO Revolving Fund, by supplier, by vaccine, years 1998 - 2000.
5. List of vaccine orders placed through the PAHO Revolving Fund, by country, by vaccine, years 1998 - 2000.
6. Vaccines procurements in millions of doses, 1979-1999 - Totals, memo.
7. Prices paid through the PAHO Revolving Fund, by vaccine, by year, period 1998-2000.

Annexes

Annex A:	Terms of Reference
Annex B:	Volumes of Vaccines
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Annex A: Terms of Reference

**Analysis of International Financing Mechanisms to Support Vaccine Procurement
GAVI Task Force on Financing
Abt Associates Inc.
Gates/CVP at PATH
December 1999**

INTRODUCTION

These terms of reference are for an analysis of the international financing mechanisms to support immunization programs. The first task of the analysis is to clarify what mechanisms are best suited to do. The existing mechanisms often have added on to their main function of assisting with financing of vaccine purchases additional functions, such as assistance with procurement of vaccines and strengthening of program management. Therefore, the analysis will draw lessons from the experience of the major mechanisms in both their core function to assist with financing vaccines and supplies and in their additional roles. The analysis will be conducted taking into account the points of view of the financing agencies of the mechanisms, the mechanisms' managers, and the users (country immunization programs) of the mechanisms¹⁵. The analysis will include an examination of trends in use of the mechanisms.

The information produced by this analysis is aimed at use by the Global Alliance on Vaccines and Immunization (GAVI), the Gates Children's Vaccine Program (CVP) at PATH, and other international assistance agencies of the global immunization community. They may find the information useful to inform decisions on how to allocate and administer resources to assist with vaccine financing, procurement, and overall strengthening and expansion of immunization programs.

The mechanisms covered in depth by the analysis are: the Pan-American Health Organization (PAHO) Revolving Fund, the Vaccine Independence Initiative (VII), and the European Union (EU) ARIVAS program. Other mechanisms, such as the emergency meningococcal fund, may also be included in the analysis.

The analysis is to be conducted in four phases:

- (1) Review of existing literature to assemble and describe basic information about the mechanisms. This review will identify gaps in information to be filled in the subsequent Phases and issues to be studied in greater depth in the other phases. The terms of reference for Phases 2-4 will be revised following the completion of Phase 1.
- (2) Visits to the mechanisms and related institutions to gather more in-depth information about how the mechanisms function from the perspective of the mechanism management, procurement agencies (where separate from the mechanisms), and, possibly, producers of vaccines.
- (3) Visits to countries to gather information about their perspectives as users of the mechanisms.

¹⁵ The analysis also may address the point of view of vaccine producers, if it is judged desirable to extend the mechanisms' analysis to the vaccine procurement mechanisms associated with each.

(4) Synthesis of the information gathered to compare and contrast the three mechanisms.

TERMS OF REFERENCE FOR PHASE 1:

Objectives: assemble basic information and data about the purpose, history, and performance of the mechanisms from existing published sources to set the stage for more in-depth work in subsequent phases.

Timing: this work is to be performed by November 15, 1999.

Products: short papers summarizing each mechanism, accompanied by tables of data.

Methods: Desk study using existing documents, complemented by phone calls and electronic communication.

Questions: The questions to be addressed in this phase follow below. Where gaps are discovered, more information will be gathered in the second and third phases.

Basic Purpose, Structure, and History:

- Why (what is the mechanism's stated purpose) was the mechanism created?
- When and by whom was the mechanism created?
- What products and services does the mechanism offer? What are "core" mechanism services? What are extras or add-ons?
- What are the highlights of the evolution of the history of the mechanism (especially any changes of concept, purpose, and scope)? Why were changes made in the mechanism? Has the need for the mechanism changed?
- What is the mechanism's organizational structure?
- What donors or other organizations have contributed funds (and how much?) to the mechanism? What, if any, earmarks are there on the contributions?
- How are users of the mechanism evaluated in their use of the mechanism's resources? Are there sanctions for poor performance?
- What are the criteria of eligibility to use the mechanism (including whether potential users ever are rejected)?
- Which countries used the mechanism in 1999?
- What is the size of the mechanism, especially relative to the needs of eligible countries and the world and regional markets for vaccines?
- How are the vaccines financed by the mechanism procured?
- What are the relationships of the mechanism to other mechanisms and to other sources of assistance with immunization programs?

Mechanism Organization and Performance:

- What methods does the mechanism use for: financing of purchases, procurement of vaccines, and repayment of loans?
- What is the range and average size of loans provided?
- What is the repayment performance of user countries?
- What is the annual turnover rate of the mechanism?
- What is the administrative cost of the mechanism relative to the value of the vaccines it purchases annually?
- What criteria and indicators does the mechanism use to self-evaluate its performance?

Future Perspectives:

- What are the current priorities of the mechanism (e.g., geographic, antigens, equity)?
- What issues does the mechanism face today? Does the mechanism see changes in the needs of the countries it serves?
- Does the mechanism have a strategic plan? What are its main elements? How does the mechanism see its future evolution?
- What special features that differentiate it from the other mechanisms studied does the mechanism have?

Data:

Obtain data on the past 10 years for the following:

- Value of the mechanism (expressed in nominal and 1999 US dollars)
- Number of countries using the mechanism
- Turnover rate
- Volumes of vaccines procured (by antigen)
- Prices obtained (by antigen)

TERMS OF REFERENCE FOR PHASE 2:

Objectives: this work is to (1) fill in gaps from Phase 1 relative to the basic purpose, structure, and performance of the mechanisms, including greater depth on the performance of the mechanism from the financier's perspective, (2) analyze the procurement mechanisms used by the mechanisms, and (possibly, if the Whitehead report does not cover these questions adequately) (3) analyze the performance of the mechanisms from vaccine producers' points of view.

Timing: this work is to be performed by February 28, 2000.

Products: chapters for the final report on each mechanism.

Methods: travel to the mechanism headquarters, (possibly) selected vaccine producers, selected contributors to the mechanisms, and procurement agencies to conduct interviews and obtain data from key informants.

Questions: The questions to be addressed in this phase will be refined and made more detailed with the results of Phase 1 in hand. Some of the major questions additional to those asked in Phase 1 are as follows (note some questions may not apply to all of the mechanisms):

Questions for the mechanisms:

- How does the mechanism cope with changes in the needs of the countries served by it, including growth in demand for its funds (e.g., from additional countries wanting to use it, from population growth, and from the adding of vaccines to national programs)?
- Does the mechanism achieve support to countries representing a mix of income levels (does it allow for segmentation or cross-subsidization)?
- Does the system of repayment to the mechanism in local currency work well for the mechanism?
- What demands does the annual cycle pose for the mechanism?
- Is the method of donor contribution to the mechanism appropriate (e.g., are there restrictive earmarks placed on some contributions)?
- Does the mechanism have adequate methods to monitor and evaluate the performance of the user countries' immunization programs?
- What does the mechanism see as its major weaknesses or constraints?
- What lessons does the management of the mechanism draw from its experience that may apply more globally to immunization financing?

Questions for the mechanisms related to the procurement mechanism used:

- Describe the kind of link the mechanism has to the system of procurement.
- What are the advantages and disadvantages of the link the mechanism has to the procurement system?
- Does the mechanism have established rules or guidelines for procurement contract negotiation? What are the key features of the negotiation practice?
- How do the prices obtained for vaccines by the procurement agency used by the mechanism compare with those in the open market (e.g., global market prices c.i.f. and local production prices)?

Questions for vaccine producers (international and local):

- What are the advantages of dealing with the mechanism and linked procurement mechanism?

- What are the disadvantages of dealing with the procurement mechanism?
- How does the size of the purchases financed by the mechanism compare to the total market?
- Does the procurement mechanism linked to the mechanism pay on time?
- Is the procedure to obtain credentials to sell to the mechanism's procurement mechanism appropriate and fair?
- Are the transactions costs of dealing with the mechanism's procurement mechanism reasonable?
- How do the procurement mechanisms compare from the producer's point of view?
- What suggestions might be made to improve the mechanisms' and associated procurement mechanisms' performances?
- Are there lessons from the mechanisms that might be applied more globally?

TERMS OF REFERENCE FOR PHASE 3:

Objectives: this work is to assess the performance of the mechanisms from the user countries' and selected non-user eligible countries' points of view

Timing: this work is to be performed by April 30, 2000.

Products: chapters for the final report on each mechanism.

Methods: travel to three user countries and contact a set of non-user countries electronically to conduct interviews and obtain data from key informants.

Questions: The questions to be addressed in this phase will be refined and made more detailed with the results of Phase 1 in hand. Some of the questions to be asked are the following:

- What are the advantages and disadvantages of using the mechanism?
- Are the funds available through the mechanism sufficient to meet your needs?
- What are the transactions costs that you bear? Are they appropriate?
- How do the prices obtained through the mechanism's procurement mechanism compare to those that could be obtained through the open market?
- Is the quality of the vaccines and other products obtained adequate?
- Is the mechanism responsive to your needs? If not, what needs are not met?
- Is the application process equitable? Are criteria applied in a transparent fashion?
- Are complementary products (e.g. syringes, cold chain equipment) and services (e.g., technical assistance) needed/provided along with the financing for the vaccines?

- Are the terms and periods of repayment appropriate?
- What other suggestions are there for improvement of mechanism performance?
- If a non-user, what are the reasons for non-use?
- Are there lessons from the use/non-use of the mechanism that may be applied more globally to assistance with immunization financing?

TERMS OF REFERENCE FOR PHASE 4:

Objectives: synthesize the information obtained into a report comparing and contrasting the mechanisms and identifying how the lessons learned from the mechanisms may contribute to immunization financing globally.

Timing: this work is to be performed by June 30, 2000.

Products: synthesis report and individual mechanism reports.

Annex B: Volumes of Vaccines Procured 1998-2000

Country	1998	1999	2000 (est.)
Antigua	35,500	57,160	--
Anguilla	4,360	3,500	6,440
Bahamas	86,370	101,300	127,300
Barbados	65,600	73,350	63,100
Belize	100,000	134,440	146,800
Bolivia	15,750,000	15,700,000	8,040,000
Brazil	7,118,4380	35,500,000	72,000,000
Cayman Is.	24,500	19,500	18,050
Colombia	2,200,000	27,000,000	21,376,100
Costa Rica	1,695,000	1,720,000	1,300,000
Cuba	100,000	--	--
Dominica	49,500	53,100	42,100
Dominican Republic	2,825,000	6,700,000	7,450,000
Ecuador	5,050,000	9,850,000	8,290,000
El Salvador	4,947,000	5,028,410	6,917,042
Grenada	29,000	53,000	30,120
Guatemala	16,725,400	30,465,500	12,280,000
Guyana	514,000	443,000	55,000
Haiti	1,018,000	--	--
Honduras	4,348,100	6,627,778	6,647,671
Jamaica	1,164,500	1,364,500	854,000
Mexico	2,548,000	--	3,900,000
Montserrat	9,150	810	1,725
Neth. Antilles	82,500	70,000	55,050
Nicaragua	6,558,100	7,600,000	6,100,000
Panama	1,500,000	3,990,800	3,462,600
Paraguay	5,350,000	6,802,202	3,360,000
Peru	17,443,968	16,612,542	15,570,050
St. Lucia	85,000	103,000	53,300
St. Vincent	77,000	30,000	52,000
St. Kitts	52,750	42,000	47,700
Suriname	252,000	204,000	217,250
Turks & Caicos	2,400	7,380	20,200
Trinidad & Tobago	555,000	580,000	400,500
Uruguay	1,627,000	777,000	1,179,000
Br. Virgin Is.	10,765	13,260	12,450
Total	164,069,843	177,727,532	180,075,548

Source: PAHO Revolving Fund

Annex C: Price^a of Vaccines under Contract, per Dose (in US cents)

Vaccine	1990	1991	1993	1995	1996	1997	1998	1999	2000 (*)
BCG-10	8.0	9.4	11.9	11.9	11.0	10.2	9.5	9.0	9.3
BCG-20	4.1	4.8	7.1	6.5	6.1	5.5	4.5	N/A	N/A
DPT-10	4.3	5.4	7.6	9.7	7.9	7.0	6.5	6.7	7.3
DPT-20	3.0	3.8	5.9	7.5	6.4	5.5	5.0	5.6	5.8
DT(A)-10	3.0	8.0	8.0	8.3	6.7	5.5	4.9	4.3	4.2
DT(A)-20	2.1	2.8	6.5	6.5	5.2	4.5	3.7	3.5	3.2
DT(P)-10	3.0	7.0	8.5	8.0	6.0	6.0	5.0	4.5	4.5
DT(P)-20	2.1	3.7	5.0	5.8	4.5	4.5	3.9	3.9	N/A
MEASLES-1	27.5	54.7	N/A	66.4	65.0	62.0	60.0	68.0	68.0
MEASLES-10	7.5	12.0	14.5	13.5	12.5	10.9	10.2	10.7	10.2
MMR-1	N/A	109.5	N/A	120.0	100.0	90.0	82.0	88.0	92.0
MMR-10	89.0	N/A	N/A	72.5	72.0	54.0	49.0	62.7	65.5
POLIO-10	3.5	5.6	8.1	8.4	8.4	7.0	7.7	8.6	8.1
POLIO-20	3.4	4.1	7.0	7.0	7.0	6.2	6.6	8.0	7.2
TT-10	2.2	3.0	5.0	5.0	4.2	4.0	3.5	3.5	3.5
TT-20	1.8	1.6	3.7	3.6	3.2	2.9	2.4	2.5	N/A
HEPATITIS B-10	N/A	N/A	N/A	N/A	N/A	N/A	82.0	69.0	58.0
YELLOW FEVER- 10	N/A	N/A	N/A	N/A	N/A	N/A	na	58.0	N/A
Hib-10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	218.0	311.0

Source: PAHO.

(a) Prices include shipping costs.

Annex D: Vaccination Coverage Rates, by Country

Country	DPT3	OPV3	Measles	BCG
Anguilla	100	100	100	100
Antigua	100	100	100	N/A
Argentina	83	90	100	100
Bahamas	85	85	92	N/A
Barbados	85	85	100	N/A
Belize	85	85	80	90
Bermuda	88	89	84	N/A
Bolivia	82	82	98	98
Brazil	75	78	77	100
British Virgin Is.	100	100	100	N/A
Cayman Islands	96	95	89	83
Chile	91	91	93	91
Colombia	96	97	99	100
Costa Rica	85	85	87	92
Cuba	97	95	98	99
Dominica	100	100	100	100
Dominican Rep.	85	81	81	79
Ecuador	87	89	79	100
El Salvador	98	96	96	100
Grenada	80	80	85	N/A
Guatemala	73	73	70	77
Guyana	83	83	91	88
Haiti	N/A	N/A	N/A	N/A
Honduras	93	94	91	100
Jamaica	92	92	96	98
Mexico	100	95	93	99
Montserrat	100	100	100	100
Nicaragua	91	99	90	100
Panama	91	92	90	100
Paraguay	80	81	81	89
Peru	100	100	87	100
St. Kitts & Nevis	100	98	100	N/A
St. Lucia	88	88	95	89
St. Vincent	100	100	100	100
Suriname	80	79	78	N/A
Trinidad & Tob.	89	90	88	N/A
Turks & Caicos	100	100	100	100
Uruguay	89	89	85	98
Venezuela	57	73	64	89

Source: PAHO

Annex E: Sources of Vaccines and Syringes 1995-2000

Country	Source of Vaccine Provision 1995-98							Source of Syringe Provision 1995-1998						
	Percent PAHO Fund	Percent Local Direct	Percent Int'l Direct	Percent Local bids	Percent Int'l Bids	Percent Do-nations	Percent Other	Percent PAHO Fund	Percent Local Direct	Percent Int'l Direct	Percent Local bids	Percent Int'l Bids	Percent Do-nations	Percent Other
Argentina	0	0	0	0	100	0	0	0	0	0	0	100	0	0
Barbados	100	0	0	0	0	0	0	100	0	0	0	0	0	0
Belize	100	0	0	0	0	0	0	100	0	0	0	0	0	0
Brazil	55	0	0	0	45	0	0	0	0	0	100	0	0	0
Chile	0	0	0	0	100	0	0	0	0	0	100	0	0	0
Colombia	0	dtp/bcg, yf 100	0	0	Rest 100	0	0	0	0	0	0	100	0	0
Cuba	0		96	0	0	4	0	100	0	0	0	0	0	0
Ecuador	100	0	0	0	0	0	0	100	0	0	0	0	0	0
El Salvador ¹	100	0	0	0	0	0	0	0	100	0	0	0	0	0
Guatemala	100	0	0	0	0	0	0	100	0	0	0	S/D	S/D	0
Guyana ²	100	0	0	0	0	0	0	80	10	0	10	0	0	0
Honduras	100	0	0	0	0	0	0	100	0	0	0	0	0	0
Jamaica	100	0	0	0	0	0	0	80	0	20	0	0	0	0
Nicaragua ³	100	0	0	0	0	0	0	100	0	0	0	0	0	0
Panama	100	0	0	0	0	0	0	95	0	0	0	0	5	0
Paraguay	95	0	0	0	0	5	0	100	0	0	0	0	0	0
Peru ⁴	100	0	0	0	0	0	0	100	0	0	0	0	0	0
Suriname ⁵	100	0	0	0	0	0	0	0	0	100	0	0	0	0
Trinidad & Tobago	100	0	0	0	0	0	0	0	0	0	0	0	0	0
Uruguay ⁶	83	0	0	0	17	0	0	100	0	0	0	0	0	0
Venezuela	0	tri/tox 100	0	0	Rest 100	0	0	0	0	0	100	0	0	0

¹El Salvador purchased 90% of vaccines through the fund in 1996, with 10% directly purchased from local producers. In the remaining years 100% were purchased through the fund.

²Guyana purchased 100% of syringes for the years 1995-96, and 80% for 1997-98, with 20% purchased with local bids

³Nicaragua purchased 100% with international bids for 1995-96, then shifted purchases to PAHO fund for 40% in 1997 and 100% for 1998.

⁴Peru purchased 90% of vaccines through the fund in 1996, with 5% directly purchased from local producers and 5% from donations. In the remaining years 100% were purchased through the fund. Also, Peru purchased 100% of syringes for all years, with the ex

⁵Suriname purchased 100% of syringes from the fund in 1995-96, and then shifted to 100% to direct international purchases for 1997-98.

⁶Uruguay purchased 86% of vaccines through the fund in 1996-97 and 83% in 1998; the remaining was purchased from international bids.

Annex F: Sources of Financing 1995-2000

Country	Source of Vaccine Financing 1995-1998				
	Percent Public	Percent Private	Percent Loans	Percent Donor	Percent Other
Argentina	100	0	0	0	0
Barbados	100	0	0	0	0
Belize	100	0	0	0	0
Brazil	100	0	0	0	0
Chile	100	0	0	0	0
Colombia	100	0	0	0	0
Cuba	96	0	0	4	0
Ecuador	100	0	0	0	0
El Salvador	100	0	0	0	0
Guatemala	100	0	0	0	0
Guyana	100	0	0	0	0
Honduras ¹	82	0	0	18	0
Jamaica	100	0	0	0	0
Nicaragua ²	100	0	0	0	0
Panama	100	0	0	0	0
Paraguay ³	95	0	0	5	0
Peru ⁴	95	0	0	0	5
Suriname	100	0	0	0	0
Trinidad & Tobago	100	0	0	0	0
Uruguay	100	0	0	0	0
Venezuela	100	0	0	0	0

¹Honduras financed 80% in 1995, and 82% during 1996-98 with public funds, the remaining with donations.

²Nicaragua financed 60% in 1995 with public funds, the remaining with donations.

³Paraguay financed 100% in 1995-96, 99% in 1997, and 95% in 1998 with public funds, the remaining with donations.

⁴Peru financed 81% in 1995, 86% in 1996, 92% in 1997, and 95% in 1998 with public funds, the remaining with donations.

Annex G: Reasons for Using PAHO Revolving Fund, by Country

Country	Reasons for Using PAHO Fund								
	Quality	Price	Payment Terms	Reduced Costs	Transparency	Time Saved	Technical Assistance	Local Currency	Other
Barbados	VI	R	R	VI	R	R	VI	R	Delegate VI
Belize	VI	VI	VI	VI		VI	VI	VI	
Brazil	VI	R	I	R	VI	I	I	I	
Colombia	VI	VI	VI	VI	VI	VI	VI	VI	
Cuba	VI	VI	R	VI	VI	VI	VI		
Ecuador	R	VI	VI	VI	VI	I	R	I	
El Salvador	VI	VI	VI	VI	VI	VI			
Guatemala	R	R	R	R	R			R	
Guyana	VI	R	VI	R	R	R	R	I	
Honduras	VI	VI	VI	VI	VI	VI		VI	
Jamaica	VI	VI	VI	VI	VI	VI	R	VI	VI
Nicaragua	VI	VI	R	VI	VI	R	VI	I	
Panama	VI	VI	VI	VI	VI	VI	VI	VI	
Paraguay	VI	VI	VI	VI	VI	VI	VI	R	
Peru	VI	VI	VI	R	R	R	R	R	
Suriname	VI	VI	VI	VI	VI	VI	VI		VI
Trinidad & Tobago	VI	VI	VI	VI	VI	VI	VI	I	
Uruguay	VI	VI	R	R	R	R	I	R	
Very Important (VI)	16	14	12	13	12	10	9	5	2
Relevant (R)	2	4	5	5	5	5	4	5	0
Irrelevant (I)	0	0	1	0	0	2	2	5	0

Annex H: List of Country Contacts

<i>Argentina</i>	<i>Dra. Isabel Miceli, Jefe, Departamento de Inmunizaciones</i>
<i>Barbados</i>	<i>D. Yearwood, Senior Medical Officer of Health, Ministry of Health and the Environment</i>
<i>Belize</i>	<i>Emiliana Osorio, EPI Manager, Ministry of Health</i>
<i>Chile</i>	<i>Lic. Maria Antonieta Martín, Directora del PAI, Ministerio de Salud</i>
<i>Colombia</i>	<i>Dra. Sonia Rodríguez Buitrago, Profesional Especializado Grupo Prevención, Ministerio de Salud de Colombia</i>
<i>Cuba</i>	<i>Dr. Miguel Angel Galindo, Responsable Nacional de Inmunización, Ministerio de Salud</i>
<i>Ecuador</i>	<i>Dra. Nancy Vasconez G., Jefe, Nacional del PAI</i>
<i>El Salvador</i>	<i>Dra. Elena Chevez, Coordinadora del PAI, Ministerio de Salud Pública y Asistencia Social</i>
<i>Guatemala</i>	<i>Dra. Coralia Cajas, Responsable del Programa Nacional de Inmunizaciones, Ministerio de Salud</i>
<i>Guyana</i>	<i>Dr. Janice Woolford, Head MCH Dept., EPI Manager, Ministry of Health</i>
<i>Honduras</i>	<i>Dra. Ida B. Molina, PAI Honduras, Centro Nacional de Biológicos</i>
<i>Jamaica</i>	<i>Dr. Karen Lewis, Director, Family Health Services</i>
<i>Nicaragua</i>	<i>Dr. Omar Malespín Espinoza, Director Nacional de Inmunizaciones, Ministerio de Salud</i>
<i>Panama</i>	<i>Lic. Nelly Quiroz, Jefe, Programa Ampliado de Inmunizaciones</i>
<i>Paraguay</i>	<i>Dra. Maria Stella Cabral de Bejarano, Encargada del PAI, Dirección General de Epidemiología, Ministerio de Salud Pública y Bienstar Social</i>
<i>Peru</i>	<i>Dr. Fernando Cerna Iparraguire, Director Ejecutivo del PAI, Ministerio de Salud</i>
<i>Suriname</i>	<i>Mr. Sabiran, EPI Manager, Bureau of Public Health</i>
<i>Trinidad and Tobago</i>	<i>Ms. Jean Creese, EPI Coordinator, Ministry of Health</i>
<i>Uruguay</i>	<i>Dr. Sergio Curto, Director División Epidemiología- Director del PAI, Ministerio de Salud Pública</i>
<i>Venezuela</i>	<i>Dra. Adelfa Betancourt de Manrique, Jefe Departamento Enfermedades Preventivas por Vacunas, Ministerio de Sanidad y Asistencia Social</i>