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# Projected Resource Requirements for Vaccine Preventable Disease Prevention And Control Activities in Georgia

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*December 2005*

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Prepared by:

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## **Mission**

*Partners for Health Reformplus is USAID's flagship project for health policy and health system strengthening in developing and transitional countries. The five-year project (2000-2005) builds on the predecessor Partnerships for Health Reform Project, continuing PHR's focus on health policy, financing, and organization, with new emphasis on community participation, infectious disease surveillance, and information systems that support the management and delivery of appropriate health services. PHRplus will focus on the following results:*

- ▲ *Implementation of appropriate health system reform.*
- ▲ *Generation of new financing for health care, as well as more effective use of existing funds.*
- ▲ *Design and implementation of health information systems for disease surveillance.*
- ▲ *Delivery of quality services by health workers.*
- ▲ *Availability and appropriate use of health commodities.*

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# Abstract

With the support of the USAID/Caucasus Mission, the Partners for Health Reform *plus* (PHR *plus*) project and the Government of Georgia have been carrying out collaborative activities that focus on strengthening two major components of the Communicable Disease Prevention and Control Program: the vaccine preventable disease (VPD) immunization management information system (MIS) and the surveillance of VPDs. The purpose of the study is to project the resource requirements and financing of the reformed VPD prevention and control activities for 2006 and 2007 and to identify whether there is a resulting funding gap. Having reliable information on the resource requirements of the recently reformed system is important in order to ensure that adequate and reliable financing is available to achieve the intended objectives of VPD immunization and surveillance activities. The results of this analysis also suggest that, in both 2006 and 2007, the levels of secure and probable funding needed to finance the recently reformed VPD prevention and control activities properly and fully are expected to be far below the total projected resource requirements. In 2006, the financing gap is largely attributable to insufficient financing for surveillance activities, while in 2007, the year in which Georgia is expected to purchase selected vaccines at open market prices, the gap is largely attributable to vaccine purchases and needed surveillance activities.



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# Acronyms

<b>BCG</b>	Bacillus, Calmette and Guerin Vaccine
<b>CPH</b>	Center for Public Health
<b>DPH</b>	Department of Public Health
<b>DPT</b>	Diphtheria, Pertussis and Tetanus vaccine
<b>DT</b>	Diphtheria and Tetanus Toxoid combination
<b>FSP</b>	Financial Sustainability Plans
<b>GAVI</b>	Global Alliance for Vaccine and Immunization
<b>IEC</b>	Information, Education, and Communication
<b>MIS</b>	Management Information System
<b>MLHSA</b>	Ministry of Labor, Health and Social Affairs
<b>MMR</b>	Measles, Mumps and Rubella vaccine
<b>NCDC</b>	National Center for Disease Control
<b>OPV5</b>	Oral Polio Vaccine (dose 5)
<b>PHR<i>plus</i></b>	Partners for Health Reform <i>plus</i> Project
<b>Td</b>	Tetanus and Diphtheria Toxoid
<b>USAID</b>	United States Agency for International Development
<b>VPD</b>	Vaccine Preventable Disease



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# Executive Summary

With the support of the USAID/Caucasus Mission, the Partners for Health Reform *plus* (PHR *plus*) project and the Government of Georgia have been carrying out collaborative activities over the past three years that focus on strengthening two major components of the Communicable Disease Prevention and Control Program: the vaccine preventable disease (VPD) immunization management information system (MIS) and the surveillance of VPDs. It is expected that these changes and improvements to the immunization MIS and VPD surveillance system have begun to have a substantially positive influence on the management of prevention and control efforts.

In order to inform government decision makers responsible for making budget allocations to VPD prevention and control activities, this study was undertaken to project the resource requirements and financing of the reformed VPD prevention and control activities for 2006 and 2007 and to identify whether there is a resulting funding gap. Having reliable information on the resource requirements of the recently reformed system is important in order to ensure that adequate and reliable financing is available to achieve the intended objectives of VPD immunization and surveillance activities. In addition, the study provides estimates of the costs of developing and scaling up the immunization MIS and the improved VPD surveillance system to the rest of the country. Hopefully, this information will be of use in other countries where similar reforms are under consideration.

The framework used to estimate the resource requirements of Georgia's VPD prevention and control system builds on The Global Alliance for Vaccine and Immunization's (GAVI) National Immunization Program Costing, Financing and Gap Analysis Tool (GAVI 2004). The tool is intended for use by national governments receiving GAVI assistance in order to develop estimates of past spending on and financing of national immunization programs and projections of the resource requirements and potential sources of financing for the program during the period of GAVI assistance and for three years beyond. These cost estimates and projections are then used to prepare Financial Sustainability Plans (FSP), which assess the key financing challenges for a country's national immunization program and describe how its government and external partners use financial resources to support medium- and long-term program objectives. The Government of Georgia has already developed an FSP as part of its requirement to GAVI (Government of Georgia 2005). However, it should be noted that the FSP emphasizes immunization activities and excludes some important surveillance cost categories. A wide variety of additional data sources were used to generate the projections of resource requirements presented in this report, including records from the National Center for Disease Control and the PHR *plus* project, and surveys of rayonal and regional health offices and health care facilities in Imereti, the region where both the immunization MIS and surveillance reforms had been implemented.

The results of the analysis suggests that the total resource requirements for VPD prevention and control activities are projected to be 5.42 million GEL in 2006 and 8.44 million GEL in 2007. The substantial difference between the projected resources in 2006 and 2007 can be largely explained by differences in the projected vaccination costs, which increase from 0.56 million GEL in 2006 (10.3 percent of total resource requirements) to 3.47 million GEL in 2007 (41.2 percent of total resource requirements). Beginning in 2007, Georgia will purchase selected vaccines at prices higher than those

offered through the bulk procurement systems established by UNICEF, including vaccines for Hepatitis B, the MMR vaccine or the replacement of the MMR vaccine with mono doses, and other traditional vaccines. The projection of the resources needed for vaccines in 2007 is based on the scenario that Hepatitis B and MMR vaccines will be purchased at open market rates, but that other traditional vaccines will continue to be available at reduced prices. Other scenarios of vaccination procurement practices would alter the projected costs.

The results of this analysis also suggest that, in both 2006 and 2007, the levels of secure and probable funding needed to finance the recently reformed VPD prevention and control activities properly and fully are expected to be far below the total projected resource requirements. In 2006, the financing gap is largely attributable to insufficient financing for surveillance activities, while in 2007, the year in which Georgia is expected to purchase selected vaccines at open market prices, the gap is attributable to vaccine purchases and needed surveillance activities, among other reasons.

While government decision makers in Georgia are already well aware of the need for additional financing to pay for vaccine purchases in 2007 and beyond (Government of Georgia, 2005), the resource gap for VPD surveillance activities identified in this report also deserves attention. Surveillance is an essential function of Georgia's disease prevention and control program, and involves: Center for Public Health communication with facility staff via phone, travel to carry out routine monitoring activities and verification of potential outbreaks on site, collection and transport of laboratory specimens, and analysis of data and implementation of prevention and control measures. In the current system, personnel costs of outbreak investigation are financed by both federal and municipal budgets. However, neither the central nor the local government is adequately financing the non-personnel costs that are necessary for proper outbreak investigation, which include travel, communication, and supplies. A potential impact of the current system is that epidemiologists may lack the incentive to investigate outbreaks. If cases are not properly investigated, this problem could potentially result in a breakdown of the prevention and control system. Without additional commitments by the Government of Georgia and international banks and agencies, it is likely that many important functions of the prevention and control program, particularly routine surveillance activities and outbreak investigations, will not be sufficiently funded, thereby threatening the health of Georgia's population.

# 1. Introduction

With the support of the USAID/Caucasus Mission, the Partners for Health Reform *plus* (PHR*plus*) project and the Government of Georgia have been carrying out collaborative activities over the past three years that focus on strengthening two major components of the Communicable Disease Prevention and Control Program: the vaccine preventable disease (VPD) immunization management information system (MIS) and the surveillance of VPDs. It is expected that these changes and improvements to the immunization MIS and VPD surveillance system have begun to have a substantially positive influence on the management of prevention and control efforts by accomplishing the following:

- ▲ Quickly and efficiently detect, confirm, and respond to cases and outbreaks of VPD
- ▲ Significantly increase the number of fully and correctly immunized children
- ▲ Rationalize the use of program resources to reduce operational costs

Eight VPDs, most of which are targeted for elimination or considerable reduction as outlined in the National Health Policy, are targeted with the interventions: diphtheria, poliomyelitis, measles, mumps, rubella, pertussis, tetanus, and hepatitis B. The immunization MIS and VPD surveillance reforms were scaled up nationally in 2003 and 2004/2005 respectively.

In order to inform government decision makers responsible for making budget allocations to VPD prevention and control activities, this study was undertaken to project the resource requirements and financing of the reformed VPD prevention and control activities for 2006 and 2007 and to identify whether there is a resulting funding gap. Having reliable information on the resource requirements of the recently reformed system is important in order to ensure that adequate and reliable financing is available to achieve the intended objectives of VPD immunization and surveillance activities.<sup>1</sup> In addition, the study provides estimates of the costs of developing and scaling up the immunization MIS and the improved VPD surveillance system to the rest of the country. Hopefully, this information will be of use in other countries where similar reforms are under consideration.

The rest of the paper is organized in the following way. After this introduction, section 2 provides an overview of VPD prevention and control activities in Georgia, including a description of the objectives of the VPD component of the Communicable Disease Prevention and Control Program, recent reforms to the program, and roles and responsibilities. Section 3 describes the data and methods used to develop the projections of resource requirements. Section 4 presents the resource projections by cost categories for both 2006 and 2007. Section 5 presents the costs to the U.S. government of developing, piloting, and scaling up the reforms. Finally, the last section provides a

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<sup>1</sup> In 2003, PHR*plus* carried out a baseline analysis of the costs of infectious disease prevention and control activities to identify current financing mechanisms and the fixed and variable costs of the pre-intervention VPD prevention and control program (McFarland 2004).

summary of the main findings and the implications on the financial sustainability of VPD prevention and control activities.

## 2. VPD Activities in the Communicable Disease Prevention and Control Program in Georgia

### 2.1 Overview of VPD Prevention and Control Activities

The “Georgian National Health Policy” adopted in 1999 declares the improvement of maternal and child health and the reduction of communicable and socially dangerous diseases among the main priorities for maintaining and improving the health of the population of Georgia over the next decade. Improved coverage of target populations with immunizations and increased effectiveness of epidemiological surveillance are viewed as important strategies to achieve these objectives. The policy links these strategies with the need for improvements in the Georgian Health Information System in order to provide managers, stakeholders, and the public with appropriate information to make correct strategic, tactical, and operational decisions. The specific objectives and strategies of the Communicable Disease Prevention and Control Program with regard to VPDs are listed in Table 1.

**Table 1: Targets and Strategies of the Communicable Disease Prevention and Control Program with Regard to VPDs, 1999-2009**

Disease	Target	Strategies
Poliomyelitis	Elimination of the disease should be certified by 2003	- 95% coverage of eligible population with immunization
Measles	Elimination by 2007 and certification of liquidation by 2010	- Increase effectiveness of epidemiological surveillance - Strengthen laboratory services
Tetanus	Elimination of neonatal tetanus by 2005	- Provision of safe conditions for childbrith - Immunization of pregnant women if necessary
Diphtheria	Incidence < 0.1 per 100,000 population and no mortality by 2006	- 95% coverage of child population with immunization - 85% coverage of adult population by revaccination - Increase effectiveness of epidemiological surveillance
Hepatitis B	Reduction of the number of new cases by 80%	- 95% coverage of infants by immunization - Provision of safe blood and blood products - Provision of safe medical interventions - Public education about individual protection
Mumps, pertussis	Incidence < 0.1 per 100,000 by 2006	- 95% coverage of eligible population with immunization - Increase effectiveness of epidemiological surveillance - Strengthen laboratory services
Congenital rubella	Incidence <0.01 per 1000 live births	- Increase effectiveness of epidemiological surveillance - Begin planned immunization in 2004

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## 2.2 Organizational Structure for VPD Prevention and Control Activities

Effective communicable disease control relies on functioning disease surveillance, which is the systematic and regular collection of information on the occurrence, distribution, and trends of an event on an ongoing basis with sufficient accuracy and completeness to provide the basis for action. A well functioning disease surveillance system therefore provides information for planning, implementation, monitoring, and evaluation of public health programs. It includes case detection and registration, case confirmation, data reporting, data analysis, outbreak investigation, response and preparedness activities, feedback, and communication. Health authorities must also provide appropriate supervision, training, and resources for the surveillance system to operate properly.

VPD prevention and control in Georgia is executed through two main channels: 1) service delivery through outpatient medical programs managed by the State United Social Insurance Fund and 2) the Communicable Disease Prevention and Control Program and the National Immunization Program, housed in the Ministry of Labor, Health and Social Affairs (MLHSA) within the Department of Public Health (DPH). The National Center for Disease Control (NCDC) currently operates with a contractual arrangement with DPH to provide technical and methodological guidance to both programs. Rayon/region-level Centers for Public Health (CPH) sign contracts with DPH to finance their implementation of the programs locally. The NCDC has a number of departments including the Department for Surveillance and Vaccine Preventable Diseases. It is responsible for control of diphtheria, measles, mumps, pertussis, meningitis, hepatitis B, rubella, poliomyelitis, and rabies. There are several epidemiologists in the department and each epidemiologist is responsible for a certain disease or a group of diseases. The structure of the Communicable Disease Prevention and Control Program in Georgia is described in a 2002 PHR*plus* assessment report of July 2002 (PHR*plus* 2002).

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## 2.3 Current Sources of Funding for VPD Prevention and Control

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### 2.3.1 Funding for VPD Surveillance

The primary source of funding for VPD surveillance is the central budget, supplemented by donor funds. An important secondary source is rayon/city municipalities. According to current law,<sup>2</sup> three percent of the total municipal budget should be allocated to public health, sanitary, and other needs. MoLHSA recommends that half (1.5 percent) of this amount be allocated to local public health programs. These funds are used to cover CPH salaries, laboratory services and routine investigation, disease control activities (various communicable diseases, rabies, malaria), and health promotion.

Funding from the central budget through DPH reimburses CPH offices on a contractual basis in the following way.

- ▲ Rayon CPH offices are reimbursed on a monthly basis for immunization monitoring (223.65 GEL), preparation and analysis of epidemiological forms (98.03 GEL), and preparation and analysis of statistical forms (40 GEL).
- ▲ Regional CPH offices are reimbursed monthly for the same activities at a slightly higher amount: immunization monitoring (447.30 GEL), preparation and analysis of epidemiological forms (152.96 GEL), and preparation and analysis of statistical forms (40 GEL).

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<sup>2</sup> Georgia Budget Law, 2005

CPH managers, both at the rayon and regional level have the authority to allocate 40 to 70 percent of these funds to salaries.

The second source of funding is from municipal budgets. The actual funds dispersed to CPH offices from this source vary by rayon due to the fact that the size of the budgets varies. As a result, the mandatory three percent allocated to public health programs significantly differs in absolute terms.

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### 2.3.2 Funding for Immunizations

Funds for immunizations come from both the central government and from donors. Vaccines are essential to the effectiveness of VPD prevention and control activities. From 1994 to 2001, UNICEF purchased vaccines with funds from USAID. In 2002, Georgia began contributing government funds for the purchase of vaccines. This was the first step in the Vaccine Development Initiative, which aims to develop financing sustainability of VPD prevention and control activities. The first vaccines purchased with government funds were DT, OPV 5, and Td for the population 5-14 years of age, and mumps for infants. Funds come from the MLHSA through the State Insurance Fund. The government has expressed a commitment to phasing out donor support for routine immunization supplies by 2006 and for routine vaccine commitment by 2007 (Government of Georgia 2005).

As of July 2005, the Government of Georgia purchases 40 percent of vaccines for the population younger than two years of age needed by the immunization program (BCG, DPT, and polio). Certain vaccines – currently hepatitis B vaccine and MMR – are provided through the Global Alliance for Vaccines and Immunizations (GAVI) and the Vishnevskaya-Rostropovich Foundation, respectively. Part of the vaccine supplies, laboratory equipment, specialized laboratory tests, training and vehicles have also been provided by external donors, and are not financed with central budget funds.

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## 2.4 Programmatic Improvements in Immunization Program Management and Surveillance

In 2002, *PHRplus*, in collaboration with the Government of Georgia, and implemented with support by the Curatio International Foundation, started work on reforming the immunization management information system (MIS). A revised system was piloted and tested in the Kacheti region, and in 2003, the MIS was rolled out to the entire country. This MIS model also includes innovations that allow better immunization program management and more rational use of resources at all levels, such as: identification of rayon (district)-specific factors preventing children from being immunized; determination and monitoring of area-specific vaccine utilization/wastage patterns; monitoring of vaccine distribution from existing stores to the point of consumption; up-to-date tracking of vaccine balances in all facilities. The reformed immunization MIS has resulted in improved vaccine wastage rates, fewer stock-outs at the peripheral level, reduction of medical contraindications as a result of careful review of their justification, and more timely follow-up with poorly performing facilities.

As a result of these interventions, providers and public health workers have guidelines for immunization information management and disease surveillance and response, the knowledge and skills to use them, and access to data for program management and surveillance.



## 3. Methodology for Projecting Resource Requirements

PHR*plus*, as part of its operations research on costing, conducted a number of data collection activities to obtain cost estimates at all levels reflecting implementation of immunization and surveillance activities under the reforms first implemented in Imereti. However, because the Government of Georgia was concurrently developing its Financial Sustainability Plan, these data were taken into consideration as well.

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### 3.1 Existing Information on Resource Requirements and Availability

The framework used to estimate the resource requirements of Georgia's VPD prevention and control system builds on The Global Alliance for Vaccine and Immunization's (GAVI) National Immunization Program Costing, Financing and Gap Analysis Tool (GAVI 2004). The tool is intended for use by national governments receiving GAVI assistance in order to develop estimates of past spending on and financing of national immunization programs and projections of the resource requirements and potential sources of financing for the program during the period of GAVI assistance and for three years beyond. These cost estimates and projections are then used to prepare Financial Sustainability Plans (FSP), which assess the key financing challenges for a country's national immunization program and describe how its government and external partners use financial resources to support medium- and long-term program objectives. Additional explanation of the assumptions and methods used in the FSP methodology can be found in GAVI 2004. The Government of Georgia has already developed an FSP as part of its requirement to GAVI (Government of Georgia 2005). However, it should be noted that the FSP for Georgia emphasizes immunization activities and excludes many types of surveillance activities from its cost calculations.

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### 3.2 Data Sources

A wide variety of additional data sources were used to generate the projections of resource requirements presented in this report. Table 2 below presents an overview of the types of data collected at the national, regional, rayonal, and health facility levels by PHR*plus* and Curatio Foundation as part of this costing research. Information on outbreaks, the number of VPD cases, and outbreak investigations came from NCDC records, the Immunization MIS, and a survey of rayonal CPH offices. Data used to calculate personnel, outbreak investigation, and monitoring and evaluation costs came from a review of NCDC records and surveys of CPH offices and health care facilities in Imereti, the region where both the immunization MIS and surveillance reforms had been implemented. Information on vaccines, injection supplies, and cold chain equipment came from a review of UNICEF records and from Georgia's FSP (Government of Georgia 2005). Information on vehicles and transportation came from a review of NCDC records and Georgia's FSP. Information on infrastructure and other capital expenses came from a review of NCDC records and the Georgia FSP. Information on start-up and national scale-up costs came from PHR*plus* records.

**Table 2: Comprehensive List of Type of Cost Data Included in the Study\***

Cost Category	Facility level	Rayon level	Regional level	National level
One-time start-up costs				
Personnel	X	X	X	X
Materials development (including guidelines and job aid workbook) and printing costs				X
Training	X	X	X	X
Infrastructure costs (building, equipment, furniture, means of transport)	X	X	X	X
Other supplies and other operating costs		X	X	X
Transportation			X	X
Post-implementation (operating) costs				
Personnel	X	X	X	X
Vaccines and immunoglobulins by antigen	X			X
Training	X	X	X	
Supplies for immunization and offices	X	X	X	X
Laboratory costs			X	X
Infrastructure costs (including building and equipment for administration, laboratories)	X	X	X	X
Transportation		X	X	X
Communication	X	X	X	X

\* Some of the costs, such as start-up costs, are not used in the projections presented in this report, as both the immunization MIS and the disease surveillance components have already been scaled up to national level.

### 3.3 Data Analysis

To calculate the resource requirements of the improved VPD prevention and control activities, we began with a careful review of the assumptions used to calculate the cost estimates and resource requirement projections in the FSP. We then supplemented the projections with VPD surveillance cost categories that were beyond the scope of the FSP, such as outbreak investigations and other surveillance activities. The costing of these additional categories was conducted using 2004 survey information collected in Imereti, the only region that had implemented both of the PHR*plus*-supported reforms (the immunization MIS and the VPD surveillance strengthening activities) when the study was carried out. Key assumptions of this approach are: that the reforms have been adequately funded in Imereti and have been functioning at an acceptable level;<sup>3</sup> that the reforms have been rolled out in a similar way to other parts of the country; and that the responses to the intervention are similar to the responses in Imereti.

The calculations of personnel resource requirements are based on information on wages, benefits, and the percent of time devoted to VPD activities. Information for national-level workers comes from administrative records and interviews with NCDC and Department of Public Health staff,

<sup>3</sup> It should be noted that PHR*plus* ensured adequate funding for investigation and response during the pilot period.

and information for staff at other levels comes from regional, rayonal and facility surveys, as well as on expert opinion.<sup>4</sup>

Our projections of transportation costs are based on survey information collected in Imereti, and consist of routine communication and travel-related costs of supervising and monitoring CPH offices and subordinate health care facilities and of outbreak investigations. Information was collected on the number of trips, average travel distances, the costs of fuel, and food and lodging expenses.

Based on the results of the record reviews and surveys carried out for this study, a number of revisions were made to various line items in the FSP. These revisions are listed in Table 3.

**Table 3: Modifications Made to Georgia FSP Projections of Resource Requirements**

<b>FSP line item</b>	<b>Why modified</b>
Vaccines	No change
Personnel	Projected number of personnel, salaries, and percent of time devoted to immunization and surveillance activities revised to reflect results of survey and record review
Vehicles	Projected number of vehicles needed at the rayon level increased to reflect expert opinion
Cold chain equipment	No change
Building and building overhead	No change
Supplementary immunization activities	No change
IEC/social mobilization	Project number of activities needed increased to reflect expert opinion
Monitoring and disease surveillance, including laboratory investigations	Projected number of region- and rayon-level surveillance activities and supplies needed, unit costs, increased to reflect survey results
Computer equipment	Projected computer equipment needed at the rayon level increased to reflect expert opinion

It is important to clarify what is included in and what is excluded from the projections of resource requirements presented in this report. The focus of the study is on the following prevention and control activities for VPDs: immunization, planning, data compilation, reporting, outbreak investigation (including laboratory tests), organizing responses, epidemic preparedness, meetings, trainings, monitoring, and supervision. Other prevention and control activities, including the treatment of VPD cases, are important components of VPD prevention and control strategies, but are not included here. The cost categories included in the analysis are: vaccines, injection supplies, cold chain equipment, transportation, maintenance and overhead, training, IEC/social mobilization, outreach costs, and buildings. These costs are also divided into recurrent costs and capital costs.

It should also be emphasized that the projections presented in this preliminary report represent resource requirements of VPD prevention and control activities rather than economic costs. The essential difference between the two is related to how capital costs are treated. To project resource requirements, the full purchase costs of new units of capital equipment are included. To estimate or project costs, the value of each piece of capital equipment is spread out over the number of years of

<sup>4</sup> For estimates of facility staff resource requirements, we computed costs based on salary information and percent of time estimates based on data from facilities in Imereti as well as facilities in Adjara region.

use and brought to an annual equivalent. We focus on resource requirements because it is the more relevant approach when considering the amount of financing needed in future years. To generate the financing gap for each year, the projections of the resource requirements are compared to the projections of secure and probable funding levels from the government and international donors.

## 4. Future Resource Requirements

Table 4 presents a summary of the projections of the total resource requirements for Georgia's VPD prevention and control activities for 2006 and 2007. Three types of cost categories are included: routine recurrent costs, routine capital costs, and supplementary immunization activities. The projections consist of the value of the resource requirements needed at the national-, regional-, rayonal-, and health care facility-levels such that VPD prevention and control activities throughout the entire country function as well as in Imereti in 2004, the only region which had implemented both the Immunization MIS and the VPD surveillance reforms at the time the cost data included in this report were collected. Beginning in the fall of 2004, the VPD surveillance reforms were scaled-up to the rest of the country, while the Immunization MIS reforms were scaled-up in 2003.

The results suggest that the total resource requirements for VPD prevention and control activities are projected to be 5.42 million GEL in 2006 and 5.54 million GEL in 2007. The projections are substantially higher than those in the Georgia FSP. For example, in 2006, the projected resources needed are 5.42 million GEL (compared to 2.68 million GEL in the FSP), and in 2007, the projected resources needed are 5.54 million GEL (compared to 5.43 million GEL in 2007). The following factors account for the differences:

- ▲ The projections in Table 4 are based on an analysis that places greater emphasis on the surveillance function of Georgia's VPD prevention and control activities than in the FSP analysis. Among the surveillance functions that were costed were outbreak investigations, laboratory tests, and monitoring and evaluation of subordinate health care facilities and CPH offices with regard to surveillance activities.
- ▲ The projections of the number of personnel needed for VPD prevention and control activities were found to be substantially higher than those of the FSP, a result of the findings of personnel working in rayon CPH offices and health care facilities.
- ▲ The wages and benefits of program personnel were also found to be substantially higher than those of the FSP, a result of the findings from surveys of rayon and health care facility staff and record reviews.

There is a substantial difference between the projected resource requirements in 2007 between the baseline scenario and the alternative scenario. Beginning in 2007, it is expected that Georgia will purchase selected vaccines at open market prices, including vaccines for hepatitis B, the MMR vaccine or the replacement of the MMR vaccine with mono doses, and other traditional vaccines. Under the alternative scenario in Table 4, the projection of the resources needed for vaccines in 2007 is based on the assumption that hepatitis B and MMR vaccines will be purchased at open market prices, but that other traditional vaccines will continue to be available at reduced prices through the bulk procurement systems established by UNICEF. Under the baseline scenario, it is assumed that all vaccines are purchased at reduced UNICEF prices. Of course, other scenarios of vaccination procurement practices other than the two described above would alter the projected resource requirements.

**Table 4: Projections of Resource Requirements for VPD Prevention and Control Activities, by Cost Categories, 2006 and 2007**

Cost Category	2006		2007 Baseline Scenario		2007 Alternative Scenario	
	GEL	% Dist.	GEL	% Dist.	GEL	% Dist.
TOTAL	5,419,806	100.0	5,544,287	100.0	8,438,606	100.0
Routine recurrent costs	4,622,459	85.3	4,993,940	90.1	7,888,259	93.5
Vaccines (routine vaccines only)	557,565	10.3	578,536	10.4	3,472,855	41.2
Injection supplies	81,300	1.5	83,403	1.5	83,403	1.0
Personnel	2,011,760	37.1	2,152,583	38.8	2,152,583	25.5
Transportation (immunization)	247,204	4.6	317,421	5.7	317,421	3.8
Transportation (surveillance)	1,049,759	19.4	1,123,243	20.3	1,123,243	13.3
Maintenance and overhead	252,934	4.7	287,282	5.2	287,282	3.4
Short-term training	108,047	2.0	115,611	2.1	115,611	1.4
IEC/social mobilization	78,936	1.5	84,462	1.5	84,462	1.0
Other outreach costs (excluding per- diems, transport, and ice)	5,342	0.1	5,715	0.1	5,715	0.1
Photocopying/fuel costs for documents and forms	153,970	2.8	164,747	3.0	164,747	2.0
Laboratory tests	75,64	1.4	80,937	1.5	80,937	1.0
Routine capital costs	527,916	9.7	550,347	9.9	550,347	6.5
Vehicles	264,851	4.9	283,391	5.1	283,391	3.4
Cold chain equipment	176,896	3.3	179,065	3.2	179,065	2.1
Building	10,642	0.2	10,855	0.2	10,855	0.1
Computers	75,527	1.4	77,036	1.4	77,036	0.9
Supplemental immunization activities	269,431	5.0	0	0.0	0	0.0

Note: 1 U.S. dollar is equal to 1.96 GEL.

In 2006, routine recurrent costs are projected to account for 85.3 percent of the total resource requirements, while routine capital costs and supplemental immunization activities<sup>5</sup> will account for 9.7 percent and 5.0 percent of the resource requirements, respectively. Personnel is the largest cost category, accounting for 37.1 percent of projected resource requirements in 2006. Table 5, which presents personnel resource requirements by administrative level, shows that health care facility personnel are expected to account for 66.2 percent of personnel costs, followed by regional and rayonal CPH staff (25.4 percent) and national level staff (8.4 percent). These personnel projections are also based on the assumption that no additional staff time is needed in 2006 and 2007. Annex Table 1 provides information on the number of personnel involved in immunization and surveillance activities, and the average percentage of time spent, by administrative level.

<sup>5</sup> Supplemental immunization activities refer to measles, mumps, and rubella campaigns.

**Table 5: Projections of Personnel Resource Requirements for VPD Prevention and Control Activities, by Administrative Level, 2006 and 2007**

Administrative level	2006		2007	
	GEL	% Dist.	GEL	% Dist.
TOTAL	2,011,760	100.00	2,152,583	100.00
National	169,073	8.40	180,908	8.40
Regional/rayonal	510,442	25.37	546,173	25.37
Health care facility	1,332,245	66.22	1,425,502	66.22

Note: 1 U.S. dollar is equal to 1.96 GEL.

Following personnel as the largest cost category in 2006 are transportation-associated costs for immunization and surveillance activities (24.0 percent), vaccines (10.3 percent), and new vehicles (4.9 percent). For the transportation costs related to surveillance, the projection includes the costs of travel, food, and cell phone communication, which are projected to be 84 percent, 14 percent, and 2 percent, respectively, of total transportation costs for surveillance. Two-thirds of surveillance transportation costs are projected to be incurred at the rayonal levels and one-third at the regional level. These projections are based on responses provided by CPH rayon staff in Imereti to survey questions on the out-of-pocket expenditures associated with routine surveillance activities and outbreak investigations. As mentioned earlier, the surveillance reform in Imereti included a system that provided reimbursements to CPH staff for out-of-pocket costs for carrying out the types of surveillance costs listed above. This system, which was administered by the regional CPH office in Imereti, is likely to have had an important influence on the magnitude of this resource requirement.

The routine capital cost category includes new vehicles, cold chain equipment, computers, and building expenses necessary for future VPD prevention and control activities. It is projected that 44 new vehicles for rayon CPH office are needed (22 in both 2006 and 2007). The purchase of cold chain equipment includes 150 refrigerators for both 2006 and 2007 and the purchase of computers for regional and rayon CPH offices includes 39 computers for both 2006 and 2007.



## 5. Projected Financing and Resource Gap

The projections of resource requirements presented in the previous section have a number of important implications on the financial sustainability of the reformed VPD prevention and control activities. Table 6 presents the projections of resource requirements, financing levels, and the resulting funding gap for 2006 and 2007. The financial projections presented in this section are derived from those presented in the Georgia FSP report (Government of Georgia, 2005).<sup>6</sup> In the FSP, two types of sources of financing are included: secure and probable. Secure funding refers to the projected financing from both the government and donors that is considered as assured, while probable funding refers to other funding that is not assured, but is likely to be made available.

The results in Table 6 suggest that in both 2006 and 2007, the levels of secure and probable funding needed to finance VPD prevention and control activities properly and fully are expected to be far below the total projected resource requirements. For example, in 2006, the funding gap is projected to be 1.40 million GEL, which is 25.9 percent of total resource requirements. In 2007, the gap is projected to be 1.21 million GEL under the baseline scenario and 4.11 million GEL, which is 21.9 and 48.7 percent of total resource requirements, respectively.

**Table 6: Projected Funding Gap for VPD Prevention and Control Activities, 2006 and 2007**

Indicator	2006	2007 Baseline Scenario	2007 Alternative Scenario
Total secure and probable funding	4,018,565	4,330,678	4,330,678
Total resource requirements	5,419,806	5,544,287	8,438,606
Funding gap	1,401,241	1,213,609	4,107,928

Note: 1 U.S. dollar is equal to 1.96 GEL..

To provide an understanding of which types of resources required additional financing, we decomposed the funding gap by the type of cost category. The results, shown in Table 7, suggest that in 2006, the largest under-funded resource categories are projected to be surveillance-related transportation activities (51.5 percent), vehicles (18.9 percent), cold chain equipment (12.6 percent), computers (5.4 percent) and laboratory tests (5.4 percent). In 2007, the year in which Georgia begins to purchase selected vaccines at open market prices, the largest under-funded resources categories under the alternative scenario are vaccines (70.5 percent), surveillance-related transportation activities (18.8 percent), and vehicles (6.9 percent).

<sup>6</sup> In making the financing projections, we assumed that the government has secure financing available for all projected personnel resource requirements, which explains why the projections in Table 5 are much higher than those reported in the Georgia FSP (i.e., 4.02 million GEL vs. 2.51 million GEL for 1996).

**Table 7: Percent Distribution of Resource Gap for VPD Prevention and Control Activities, by Type of Cost Category, 2006 and 2007**

Type of cost category	2006	2007 Baseline Scenario	2007 Alternative Scenario
	% Dist	% Dist	% Dist
TOTAL	100.0	100.0	100.0
Routine recurrent cost			
Vaccines (routine vaccines only)	0.0	0.0	70.5
Transportation (immunization)	5.8	0.0	0.0
Transportation (surveillance)	51.5	63.6	18.8
Other outreach costs	0.4	0.0	0.0
Laboratory tests	5.4	6.7	2.0
Routine capital cost			
Vehicles	18.9	23.4	6.9
Cold chain equipment	12.6	0.0	0.0
Computers	5.4	6.3	1.9

Note: 1 U.S. dollar is equal to 1.96 GEL.

## 6. Start-up Costs

As described in the introduction, the projected resource requirements presented in this report are for the reformed VPD component of the Communicable Disease Prevention and Control Program. As a result of technical assistance from USAID's PHR*plus* Project, the Government of Georgia introduced the MIS and reformed the way in which VPD surveillance activities are carried out.

In carrying out the reforms, PHR*plus* relied on a wide variety of technical staff and administrative staff members based both in the Washington, D.C. area and in Tbilisi. To assess the start-up costs of these reforms, we investigated the amounts in U.S. dollars that will have been spent by the U.S. government on systems development, regional piloting, and national scale-up during the period 2002 to 2006.<sup>7</sup> The results, provided in Table 8, show that the costs of starting up the immunization MIS is estimated to be \$750,000, while the cost of starting up the VPD surveillance reforms is estimated to be \$1,195,000.

**Table 8: Estimated Start-Up Costs for VPD Prevention & Control Reforms in Georgia, 2002-2006**

Type of Reform	U.S.-based Costs	Georgia-based Costs	Total
Immunization MIS	\$504,000	\$246,109	\$750,109
Systems development	\$327,600	\$10,128	\$337,728
Piloting	\$75,600	\$57,393	\$132,993
Roll-out	\$100,800	\$178,588	\$279,388
VPD surveillance	\$756,000	\$439,114	\$1,195,114
Systems development	\$491,400	\$124,620	\$616,020
Piloting	\$113,400	\$167,745	\$281,145
Roll-out	\$151,200	\$146,749	\$297,948
Grand total	\$1,260,000	\$685,223	\$1,945,223

Note: 1 U.S. dollar is equal to 1.96 GEL.

<sup>7</sup> System development refers to the iterative processes of developing the immunization MIS, surveillance guidelines for rayon and health facility staff, and job aids. Piloting includes training and oversight of regional, rayonal, and health facility staff, oversight and supervision, and operations research. National scale-up refers to the process of introducing the reforms throughout the entire country. All start-up processes involved country stakeholders at multiple levels.



## 7. Conclusions

In order to inform government decision makers responsible for making budget allocations to VPD prevention and control activities in Georgia, the study was undertaken to project the resource requirements and financing of the reformed VPD prevention and control activities for 2006 and 2007 and to identify whether there is a resulting funding gap. The results of this analysis suggest that, in both 2006 and 2007, the levels of secure and probable funding needed to finance the recently reformed VPD prevention and control activities properly and fully are expected to be far below the total projected resource requirements. In 2006, the financing gap is largely attributable to insufficient financing for surveillance activities, while in 2007, the year in which Georgia is expected to purchase selected vaccines at open market prices, the gap is attributable to vaccine purchases and needed surveillance activities, among other reasons.

While government decision makers in Georgia are already well aware of the need for additional financing to pay for vaccine purchases in 2007 and beyond (Government of Georgia, 2005), the resource gap for VPD surveillance activities identified in this report also deserves attention. Surveillance is an essential function of Georgia's disease prevention and control program, and involves: CPH communicating with facility staff via phone, traveling to carry out routine monitoring activities and verifying potential outbreaks on site, collecting and transporting laboratory specimens, and analyzing data and implementing prevention and control measures. In the current system, personnel costs of outbreak investigation are financed by both federal and municipal budgets. However, neither the central nor the local government is adequately financing the non-personnel costs that are necessary for proper outbreak investigation, which include travel, communication, and supplies. As mentioned earlier, the experience of the surveillance reform in Imereti was used as the basis of the projections of resource requirements. A key component of the Imereti intervention was a system that provided reimbursements to CPH staff for out-of-pocket costs for carrying out the types of surveillance costs listed above. This system, which was administered by regional CPH office in Imereti, is likely to have had an important influence on the magnitude of the resource requirements for surveillance. However, without such a mechanism to finance outbreak investigations, epidemiologists may lack the incentive to investigate outbreaks. If cases are not properly investigated, this problem could potentially result in a breakdown of the prevention and control system. Without additional commitments by the Government of Georgia and international banks and agencies, it is likely that many important functions of the prevention and control program, particularly routine surveillance activities and outbreak investigations, will not be sufficiently funded, thereby threatening the health of Georgia's population.

The report also presents the costs of developing, piloting, and scaling up the immunization and surveillance reforms. The cost of the Georgia experience should not necessarily be used by decision makers in other countries to predict the costs of similar reforms. Several factors can affect the reform process, and as a result, the start-up costs of infectious disease surveillance and response-strengthening activities. These include the local cost structure, the political commitment at the central level, the presence of a "champion" moving the process forward or an office representing the position of a technical agency in the country, the nature of the reforms and their potential impact on the interests of various stakeholders, the technical capacity of country counterparts and their willingness to cooperate and seek solutions, and the ability and willingness of those responsible for designing the

reforms to ensure local ownership of the proposed changes.<sup>8</sup> Decision makers in other countries considering similar reforms as those introduced in Georgia are urged to systematically investigate how these types of factors might influence the costs of the reform process.

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<sup>8</sup> Personal communication with Anton Luchitsky, August 16, 2005.

# Annex. Personnel Involved in VPD Immunization and Surveillance Activities

**Table A-1: Number of Personnel Involved in VPD Immunization and Surveillance Activities, by Administrative Level**

<b>Staff Level</b>	<b>Number</b>	<b>Average % of time spent on immunization and surveillance</b>
National Staff	215	35.0%
Regional Staff	120	47.8%
District Staff	528	59.1%
Facility Staff	9,303	13.5%

Source: Record reviews of NCDC documents, personal communications with NCDC and DPH staff, and surveys of CPH offices and health facilities



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