

Hospital Financing Study for Georgia

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Partnerships
for Health
Reform

PHR



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Mission

The Partnerships for Health Reform (PHR) Project seeks to improve people's health in low- and middle-income countries by supporting health sector reforms that ensure equitable access to efficient, sustainable, quality health care services. In partnership with local stakeholders, PHR promotes an integrated approach to health reform and builds capacity in the following key areas:

- > better informed and more participatory policy processes in health sector reform;*
- > more equitable and sustainable health financing systems;*
- > improved incentives within health systems to encourage agents to use and deliver efficient and quality health services; and*
- > enhanced organization and management of health care systems and institutions to support specific health sector reforms.*

PHR advances knowledge and methodologies to develop, implement, and monitor health reforms and their impact, and promotes the exchange of information on critical health reform issues.

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Abstract

A variety of payment methods are used for financing hospital care in the country of Georgia: fee for service, per diem, and a variation of diagnosis-related groups, the latter method being the dominant one. During the past three years of health reform, major difficulties in the macro-financing of the health system, a decreased ability of the population to pay for health services, shortcomings in payment methods, and the inability of hospital managers to adjust to the new reality have all posed serious threats to the financial sustainability of the hospital sector.

In order to determine the extent of the problems in hospital financing, data on the financial performance of 34 hospitals nationwide were collected, based on a standardized questionnaire. Patient surveys, focus group discussions with hospital administrators, and interviews with leading policymakers were also employed.

The results of the study have provided a description of: (1) the existing hospital financing system; (2) the efficiency of financial management within hospitals; (3) the real costs per unit of hospital care for the hospital itself, the patients, and third-party payers; (4) the total financial requirements of hospitals; and (5) patient satisfaction with hospital care.

The main finding of this study is that the actual financing rates and amounts are significantly below cost. The resulting under-reimbursement, while hurting all the hospitals and production inputs, is also distributed unevenly by region, facility level, and kind of hospital-based activity. A more in-depth study of the survey data will aim to specify the distortionary effects that severe underfinancing exerts on the structure and productivity of the national hospital sector.

Policy recommendations have been developed regarding the improvement of hospital finance management and the refinement of reimbursement mechanisms for inpatient care that ultimately leads to increased efficiency and the long-term sustainability of hospitals.

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Acronyms

ACP	Average Collection Period
AHA	American Hospital Association
AIDS	Acquired Immune Deficiency Syndrome
ALOS	Average Length of Stay
ART	Accounts Receivable Turnover
ATO	Asset Turnover Ratio
CRR	Cost Recovery Rate
FTE	Full Time Employment
GEL	Georgian Lari
GIPO	Georgian Institute of Public Opinion
ICU	Intensive Care Unit
MHF	Municipal Health Funds
MOH	Ministry of Health
NOM	Net Operating Margin
OR	Operating Room
PCC	Patient Care Center
PHR	Partnership for Health Reform
PSU	Primary Sampling Units
PSU	Primary Sampling Units
ROA	Return on Assets
RVU	Relative Value Units
SAR	Small Applied Research
SE	Standard Error
SMIC	State Medical Insurance Company
St.D.	Standard Deviation
TCUHS	Total Cost of Unit Health Services
TB	Tuberculosis
TFR	Total Financial Requirement

Exchange Rate

1GEL = US\$ 0.77 in 1997.

Foreword

Part of the mission of the Partnerships for Health Reform Project (PHR) is to advance “knowledge and methodologies to develop, implement, and monitor health reforms and their impact.” This goal is addressed not only through PHR’s technical assistance work but also through its Applied Research program, designed to complement and support technical assistance activities. The main objective of the Applied Research program is to prepare and implement an agenda of research that will advance the knowledge about health sector reform at the global and individual country levels.

An important component of PHR’s applied research is the Small Applied Research (SAR) program. SAR grants are awarded, on a competitive basis, to developing-country research institutions, individuals, and non-profit organizations to study policy-relevant issues in the realm of health sector reform. The SAR program has twin objectives: to provide data and analyses relevant to policy concerns in the researcher’s own country, and to help strengthen the health policy research capacity of developing country organizations. While PHR provides technical advice and support to the SAR grantees, the content and conclusions in the final research reports are the responsibility of the grantees. They do not necessarily reflect the views of USAID or PHR.

A total of 16 small research grants have been awarded to researchers throughout the developing world. Topics studied include health financing strategies, the role of the private sector in health care delivery, and the efficiency of public health facilities.

SAR grant recipients are encouraged to disseminate the findings of their work locally. In addition, final reports of the SAR research studies are available from the PHR Resource Center and via the PHR website. A summary of the findings of each study are also disseminated through the PHR “in brief” series.

Small Applied Research Grants

Dr. Joseph K. Konde-Lule (Institute of Public Health, Makerere University). “User Fees in Government Health Units in Uganda: Implementation, Impact and Scope”.

Dr. R. Neil Soderlund (University of Witswatersrand). “The Design of a Low Cost Insurance Package”.

Pedro Francke (Independent). “Targeting Public Health Expenditures in Peru: Evaluation of Ministry of Health Services and Procedures and Proposal of a Targeting System”.

Alfred Obuobi (School of Public Health, University of Ghana). “Assessing the Contribution of Private Health Care Providers to Public Health Care Delivery in the Greater Accra Region”.

V.R. Muraleedharan (Indian Institute of Technology, Department of Humanities and Social Sciences). “Competition, Incentives and the Structure of Private Hospital Markets in Urban India: A Study of Madras”.

Dr. George Gotsadze (Curatio International Foundation). “Developing Recommendations for Policy and Regulatory Decisions for Hospital Care Financing in Georgia”.

Dr. Aldrie Henry-Lee (The University of West Indies, Institute of Social and Economic Research). “Protecting the Poor, High Risk and Medically Indigent under Health Insurance: A Case Study of Jamaica”.

Dr. Maria C.G. Bautista (The Institute for Development Policy and Management Research Foundation, Inc.). “Local Governments’ Health Financing Initiatives: Evaluation, Synthesis and Prospects for the National Health Insurance Program in the Philippines”.

Oliver Mudyarabikwa (University of Zimbabwe). “Regulation and Incentive Setting for Participation of Private-for-Profit Health Care Providers in Zimbabwe”.

Easha Ramachandran (Institute of Policy Studies, Health Policy Programme). “Operating Efficiency in Public Sector Health Facilities in Sri Lanka: Measurement and Institutional Determinants of Performance”.

Dr. M. Mahmud Khan (Public Health Sciences Division, Center for Health and Population Research). “Costing the Integrated Management of Childhood Illnesses (IMCI) Module: A Case Study in Bangladesh”.

Dr. Arlette Beltran Barco (Universidad Del Pacifico). “Determinants of Women’s Health Services Usage and Its Importance in Policy Design: The Peruvian Case”.

Frederick Mwesigye (Makerere University, Makerere Institute of Social Research). “Priority Service Provision Under Decentralization: A Case Study of Maternal and Child Health Care in Uganda”.

Dr. Gaspar K. Munishi (Faculty of Arts and Social Sciences, University of Dar Es Salaam). “The Growth of the Private Health Sector and Challenges to Quality of Health Care Delivery in Tanzania”.

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Executive Summary

Introduction

In 1995, the government of Georgia initiated a radical reform of its rapidly deteriorating health system. The reform envisioned transformations of a centrally budgeted and administered health care system into a form of social insurance system, with substantial changes in the roles and responsibilities of the central and local governments, medical providers and patients in the financing and delivery of the medical services. This fundamental change has been impelled by a variety of social and economic forces—the growing sensitivity to the high and rising health care costs of individual purchasers, the need to ensure better access to affordable hospital care for a substantial portion of general population, and the results of a variety of “natural experiments” implemented by the government of Georgia in order to finance hospital care for the nation. During the past three years of health reform, significant achievements were made in the restructuring of the financing and delivery of health services and inpatient care. However, major difficulties in the following areas posed a serious threat to financial sustainability of the hospital sector: (1) the macro-financing of the health system; (2) excessive health care infrastructure and the excess of medical personnel inherited from the Soviet period, (3) the decreased ability of the population to pay for health services, (4) shortcomings in payment methods, and (5) the inability of hospital managers to adjust to the new competitive environment.

In order to determine the extent of the problems in hospital financing and the delivery of inpatient services and to propose possible short-term and long-term solutions for the existing problems, Curatio International Foundation, with the technical assistance of Abt Associates Inc., conducted this study of hospital financing in Georgia.

The goal of the study was to provide policy recommendations to stakeholders for the improvement of the financing of the hospital sector and financial management within the hospitals in Georgia. In order to achieve this goal, the following objectives were proposed for the study:

Analyze existing financing schemes and payment methods in hospitals, resource bases, cost allocations, internal flow of funds, and produced output in the facilities;

Determine the hospitals’ ability to recover the costs of hospital services on a sustainable basis;

Identify weaknesses and inefficiencies of macro- and micro-level financing mechanisms;

Determine the critical factors causing weaknesses and problems;

Propose solutions tailored to the specifics of the country, based on local and international experiences.

In order to achieve the above mentioned objectives, a methodology was designed to collect data on (1) organizational structure, (2) ownership status, (3) clinical profile, (4) capital and human resources, (5) clinical capacity, (6) performance and utilization, (7) operational and financial indicators, and (8) the cost structure of the hospitals.

Methodology

The methodology employed in this study is based on the internationally accepted principles of management accounting and cost-finding, custom-tailored to the current realities of the hospital sector in Georgia. American Hospital Association definitions and terminology are widely used throughout the study, since they reflect an internally consistent set of rules and procedures established in the hospital sector of the United States and are widely transferable to other country settings. A variety of research tools were used for the purposes of the study: (1) an onsite assessment and mail survey of selected hospitals nationwide, (2) a survey of patients discharged from hospitals, and (3) focus group discussions with local policymakers, hospital managers and financial accountants. The field assessment and mail surveys were conducted on 41 hospitals throughout Georgia (representing 14.2% of the total number of inpatient facilities and 30.5% of the national hospital bed capacity). The sample bias included underrepresentation or overrepresentation of certain types of hospitals (by their clinical profile or bed size). Four hundred and four patients discharged from 16 of the 41 hospitals were interviewed through the patient survey. The questionnaire for the hospital survey allowed the collection of data on general characteristics, organizational structure, capital assets, human resources, expenditures, and the clinical outcomes of the hospitals. A specially designed database and software application were used to process the collected information, develop a master internal structure for the hospitals, conduct resource flow and cost-finding analyses, identify the final unit costs for produced outputs and to determine key operational and financial indicators for the hospitals. The questionnaire for the patient survey focused on identifying the costs borne by patients for hospital services, their attitudes towards and awareness of different aspects of hospital care, and the overall level of satisfaction with hospital services.

Results

Chapter 3 presents the detailed findings of the hospital and patient surveys. Descriptive statistics, revenue sources, expenditure line items, performance and utilization ratios, input to output ratios, cost structure and cost recovery, and key financial indicators for the hospitals are depicted for separate hospitals that are grouped by their clinical profile (type) and bed size. Average figures for the entire sample and for the hospital groups are calculated. Specific attention is given both to the identification of the final unit costs for hospital services (per hospital bed, per patient discharge and per patient day) and to cost recovery rates for the hospitals.

The patient survey findings present descriptive statistics for the patient sample, level of patient awareness of official costs of services, and overall satisfaction with hospital care. A significant part of the patient survey results is dedicated to the presentation and discussion of the explicit and implicit costs associated with hospital care that are borne by the patients.

Finally, the attempt is made to calculate the total production costs of hospital services based on the final costs incurred both by hospitals and patients.

Summary of Findings and Recommendations

Chapter 4 discusses the major findings obtained through the study and, based on these findings, elaborates policy recommendations. Noteworthy findings of the study include:

The hospitals studied operate at very low efficiency levels, with very low occupancy rates (approximately 31%) and excessive staffing, demonstrated by the ratio of 1.5 physicians per occupied bed.

Most of the hospitals employ salary equalization policies (despite the recommendations of the Ministry of Health), which significantly increase the share of fixed costs, perpetuate the oversupply of medical personnel and result in unreasonably low payroll levels for medical personnel.

Hospitals are generally charging in excess of officially reported costs. Due to low collection rates, cost recovery rates for the hospitals are below those officially reported (87.6% is the sample average). At the same time, officially reported costs comprise only a minor portion of the actual total costs of hospital services, as a significant portion of capital consumption costs are not reported and labor and supply costs are artificially lowered.

Low official reimbursement rates and patients' unawareness of official hospital charges create an environment conducive to the shifting of a major part of real hospital costs to the patients, resulting in a high level of unofficial (or illegal) payments extracted from the patients by the medical personnel.

The main policy recommendations derived from the study findings are the following.

On the macro level, in order to improve *hospital financing*:

Implement the wide-scale optimization of the hospital network in Georgia by reducing the excess bed capacity by 45% to 50% and decreasing staffing levels by 40% to 45%. Vacated hospital buildings should be either sold or leased out, and the proceeds reinvested in the health sector. The study findings and adjusted database could be used to evaluate the organizational and financial efficiency patterns of hospitals in decision making regarding the liquidation, privatization or continuing public support of inpatient facilities under consideration.

Gradually adjust reimbursement rates according to the real total costs of hospital services. In order to make this price increase more feasible from the perspective of affordability, this process should proceed in conjunction with the optimization of the hospital sector. In this way, increasing the reimbursement rates only twofold would most likely help to largely solve the problem of unofficial, illegal payments and ensure the long-term financial sustainability of the hospital sector.

Increase public awareness of government programs providing free or subsidized inpatient care through a social marketing campaign, patient "hot lines," the posting of price lists in hospitals, the dissemination of patient information leaflets, and the perfection of payment procedures in hospitals.

Consider using the software application and hospital database developed by this study for the monitoring and analysis of the national hospital network.

On the micro level, to improve *hospital finance management*:

Adopt new resource and cost accounting standards, mandated for all inpatient facilities. These standards could be an elaboration of the methodology of this study.

Introduce management accounting and product line management in the hospitals, based on this study's methodology and the adjusted software application.

1. Introduction

1.1 Background

The health care reform initiated by the government of Georgia in mid-1995 was incited by the deep crisis in the health care system experienced after the dissolution of the Soviet Union, followed by major economic breakdown, civil unrest and armed conflict. Since restoring its independence in 1991, the Republic of Georgia has faced major political turmoil, civil war, ethnic conflict and dramatic economic collapse. As a result of these events, an inevitable and severe deterioration of the federally financed social security and health care systems has occurred. The federal government became virtually unable to further support the centrally regulated and financed health care delivery system.

An extreme deficit of medical supplies and pharmaceuticals struck the system. Patients seeking medical assistance in the nation's hospitals were expected to bring their own drugs and medical supplies, available only through the black market at prices unaffordable for most Georgians. Moreover, due to disruptions in the energy sector and the subsequent total lack of power supply and heating in the hospitals, conditions for patient stays became unbearable. The degree of distortion of the supply of electricity was so severe, especially during the winter, that there were anecdotal reports of deaths induced by sudden cuts of energy in the midst of surgical operations (Joint Experts Group, 1996).

All these factors determined a dramatic decrease in demand for hospital care in these under-supplied, unequipped, unheated, and dark facilities. Unable to pay increasing treatment and pharmaceutical costs, impoverished people postponed their contact with the traditional medical profession, turning instead to self-treatment and dubious alternative caregivers, sometime with fatal consequences. Annual admissions to hospitals and total inpatient days decreased dramatically. Average bed occupancy rates throughout the country dropped to as low as 10% to 15%.

The deterioration of hospital inpatient care, the declining quantity and quality of primary care, the total failure of the medical system during the years 1992-1993 to perform basic preventive public health measures (including immunization), the overall lack of basic nutrition, the erratic water and energy supplies, and the declining quality of water, all contributed to the worsening of the population's general health status. Due to the absence of the most important health statistics and the complete unreliability of the existing data, it is impossible to fully describe the degree of this decline. However, increased infant mortality (21 per 1000 live births) and maternal mortality rates (24 per 10,000 live births) (United Nations Development Fund, 1996), the increased morbidity and mortality rates for tuberculosis, and the diphtheria epidemic are convincing evidence of this process.

Although the commitment of severely underpaid local medical personnel and significant international humanitarian assistance with essential medicines, vaccines, food, and fuel prevented the complete collapse of the health care system, the need for a sustainable, long-term treatment for the eroding system was obvious.

Acknowledging this urgent need, in August 1995 the Ministry of Health (MOH) designed and officially launched ambitious health care reform initiatives. Worked out in cooperation with the World Bank, which provided the US\$ 20 million long-term credit for structural reorientation, the central objective of the reform package is “to improve the health of the entire population through the design and implementation of a primary care-based system which emphasizes health promotion, disease prevention, and health protection” (Ministry of Health, 1994, p.2).

The reform initiatives envisioned a transformation of the national health services system into a form of social insurance system, with substantial changes in the roles and responsibilities of the central and local governments. It was intended that the state would maintain its influence on the future health system through strong regulatory, financing, and licensing mechanisms while moving away from the actual provision of health care.

The main objectives of the health care system reform are listed in Figure 1-1. The objectives are impressive, and practically none can be objected to, but the way the objectives are implemented in reality is a subject of a separate discussion.

Figure 1-1. Main Characteristics of the Health Care Reform in Georgia

NEW HEALTH CARE SYSTEM'S CRITERIA:	
Chapter I.	be in accordance with the strategic direction of country's economic development;
Chapter II.	balance demand and supply of the required material and human resources;
Chapter III.	make system controllable and aimed at the rational utilization of resources.
MAJOR DIRECTIONS OF THE REORIENTATION OF THE SYSTEM:	
Chapter IV.	creation of a legal basis for the new health care system;
Chapter V.	decentralization of the health care system management;
Chapter VI.	innovation of financial and economic foundations of the health care system, transformation to program based financing;
Chapter VII.	priority importance of primary care;
Chapter VIII.	reform of the sanitary-epidemiological service;
Chapter IX.	transition to the principles of health insurance;
Chapter X.	social security of health care employees;
Chapter XI.	reform of the drug policy;
Chapter XII.	support of privatization process;
Chapter XIII.	accreditation and licensing of the medical institutions and personnel;
Chapter XIV.	reform of medical education;
Chapter XV.	reform of medical science;
Chapter XVI.	reform of the health information service.

Source: Ministry of Health, 1994, pp.7-9.

1.1.1 Macro-financing of the Health Care System

Under the Soviet order, the health care system in Georgia could be defined as a form of national health services, financed exclusively through the central budget. Since 1995, a reorientation towards the social insurance model of health financing has taken place. There are two principal sources for financing public programs in health care: central (federal) and local (municipal). In order to finance

the federal programs, a payroll-based, obligatory health premium was introduced. Employers and employees in the formal sector contribute 3% and 1% of the payroll, respectively. These funds are accumulated in the State Medical Insurance Company (SMIC), a quasi-governmental entity independent from the Ministry of Health and responsible for the execution, monitoring, and financing of the federal programs. The SMIC also receives direct transfers from the federal budget (approximately 40% of the SMIC's total budget) to cover the difference between the revenues collected through the payroll tax and the SMIC's expenditures. Conceptually, direct transfers from the federal budget (general taxation) are intended to cover the federal programs in health for those not employed in the formal sector (the unemployed, self-employed, pensioners, etc.). Municipal programs in 1997 were financed through 65 municipal health funds (MHF),¹ where earmarked funds from local governments were accumulated. Local governments are required to allocate at least 2.5 GEL (1GEL=US\$ 0.77 in 1997) per capita of the local population for transfers to respective regional funds. Local authorities are responsible for determining the scope of the municipal programs and volume of health services for inclusion in these programs.

The federal and municipal programs for 1997 are presented in Table 1-1. The actual structure, number, and composition of the programs selected by the Ministry of Health for inclusion in the “basic package” has become the subject of an intense, continuing debate among health professionals throughout the country. The implications and cost-benefit analysis underlying the decisions regarding the allocation of funds among these programs were based more on politics than on “medical need” or economic efficiency. Since the introduction of the basic package in 1995, when the package comprised nine federal and five obligatory municipal programs, the number of federal programs in the package has gradually expanded to 28 (the number of municipal programs remains at five). This expansion occurred without an adequate increase in available financing. Moreover, the consolidated health budget was increasing only on paper—the funds actually allocated to all public programs (both federal and municipal) in health remained almost the same in 1997 and 1998, at about 65 million GEL (approximately US\$ 50 million), which is only 13 GEL (US\$ 10) per capita.

1.1.2 Reimbursement to Health Providers

During Soviet times, medical services were officially free of charge, but in reality were accompanied by a well-developed system, accepted by both patients and doctors, of “unofficial” under-the-table payments. All practicing doctors were associated with either hospitals or outpatient polyclinics. The most distinguished physicians were allowed to have a limited private practice and officially charge private patients for office and home consultations. This type of physician income was heavily taxed.

As a whole, the system remained “flexible,” since medical professionals received their official salary as a basic income source (though due to ideological reasons, their salary was on average lower than that of workers and peasants) and patients were never refused care due to their inability to pay. In some cases, reimbursement to hospital staff was made by returning favors or through various kinds of gifts.

¹ Since 1998, 65 municipal funds were merged into 12 regional funds.

Table 1-1. Federal and Municipal Programs

Programs	Financed by	Executed by
Immunization Prevention of Infectious Diseases Health Promotion Prevention of Sexually Transmitted Diseases Prevention of AIDS Epi Surveillance Safe Blood Screening	Central Budget Transfers (approximately 14% of Consolidated Health Budget)	Department of Public Health
Treatment of Psychiatric Patients Treatment of TB Patients Prenatal Care and Delivery Treatment of Children under 2 years Program for Vulnerable Population Treatment of Oncologic Patients Treatment of Infectious Diseases Renal Dialysis Pediatric Cardiac surgery	1. Obligatory Medical Insurance Premium "3%+1%" (approximately 60% of SMIC budget) 2. Central Budget Transfers (app. 40% of SMIC budget) In total, 40% of Consolidated Health Budget	State Medical Insurance Company (SMIC)
Additional Medical Care for Highlanders Treatment of Orphans Program for Catastrophic Events and Natural Disasters Rehabilitation of Medical Institutions Surgical Treatment of Ischemic Heart Disease and Organs Transplantation State Sanitary Surveillance Provision of Selected Chronic Patients with Pharmaceuticals Medical Science and Education Management of Reforms	Central Budget (approximately 21% of Consolidated Health Budget)	Ministry of Health
Provision of Forensic Expertise Outpatient Care for Population Critical Care for Population Provision of Painkillers for Oncologic Patients Program for Preparation of Adolescents for Compulsory Medical Service Operation of Ambulance Administration and Governance	Local (Municipal) Budgets (25% of Consolidated Health Budget)	65 Municipal Funds

The intended shift from central budgeting to performance-based, diagnosis-related payment is one of the main innovations of the reforms. The state declared that it guarantees the entire population a “basic package” of health services through the allocation of funds from federal and municipal

programs directly to health care providers. Provider services that were contracted² for these programs formerly were entirely state-owned and administered; currently providers—medical institutions, hospitals, and polyclinics—are state-owned but managerially independent. The publicly financed “basic package” includes (1) basic public health measures, such as immunization, sanitary, and epidemiological services; (2) limited primary care services provided in the polyclinics and reimbursed on a capitation basis; (3) various inpatient services provided in hospitals, which are typically reimbursed on a case-by-case basis according to the preliminary approved rates, so-called “Federal and Municipal Standards.” In 1997, two federal programs (inpatient care for psychiatric and tuberculosis [TB] patients) were using a different reimbursement method, namely per diem, for the long-term hospitals that were enrolled in those programs.

There is no co-payment for patients eligible for treatment through federal programs—in other words, they are not supposed to pay anything for hospital services. In municipal programs, the patient co-payment varies across municipalities, from 15% to 50% of the standard price (e.g., in Tbilisi the co-payment rate for municipal programs in 1997 was 40%).

All other medical services not included in the “basic package” are reimbursed by patients, their families, or any other third-party payer (private insurance companies, patient’s employer, etc.). The user fees for these services are also charged according to the preliminary approved rates, so-called “Internal Standards.”

Each medical service was assigned a standard price based on the “average level of health services” (Ministry of Health, 1994, p. 15). This standard price depends on the quantity of physician services provided (doctor’s consultations), diagnostic tests, the cost of “required” pharmaceuticals and other treatments, and some indirect costs that depend on the average number of inpatient days for each category.

This reimbursement mechanism closely resembles the prospective payment system based on diagnosis-related groups (“DRGs”) of the U.S. Medicare system. The crucial differences are the inadequate reflection of case severity, resource intensity, and the absence of a relative cost-based pricing system in Georgia. For the classical case-mix method, Georgian standards based on nosological codes are too aggregated. Prices for the service items included in diagnostic groups are based on dubious judgment values and subsequently give ground to allegations from the provider side that some services are severely underpriced. Similarly, the SMIC administration and Ministry of Health claim that some services are relatively overpriced.

² Contractual relations between SMIC and medical providers were introduced as an attempt to clearly delineate the roles and responsibilities of the contracting parties. The medical providers for contracting were supposed to be selected on a competitive basis according to qualification, competence and quality of services, thereby encouraging competition in quality, and in certain cases in the price of health services provided. At the same time, it would serve as an effective tool to optimize the oversupplied sector of medical institutions in Georgia. However, due to political reasons, no selective contracting was conducted during the last two years and almost all providers are presently contracted.

1.2 Scope of Work and Objectives

1.2.1 Logical Frame—Program Matrix

The goal of this study was to come up with practical (and to some extent conceptual) recommendations.

TO STAKEHOLDERS	ABOUT/REGARDING
Ministry of Health	Improving the financing of hospitals on macro-level
Local authorities	
Professional associations	Improving/re-engineering financial management ³ within hospitals
Hospitals/institutions	

The recommendations were derived from the *analysis of* and *conclusions about*:

ANALYSIS OF	CONCLUSIONS ABOUT
Health care financing (sector-wide)	Purchaser gets desired product in exchange for money spent on inpatient care
Total financial requirements (TFR) of hospitals ⁴	Hospitals' ability to meet TFR

For the analysis, *information* was obtained and *measured*:

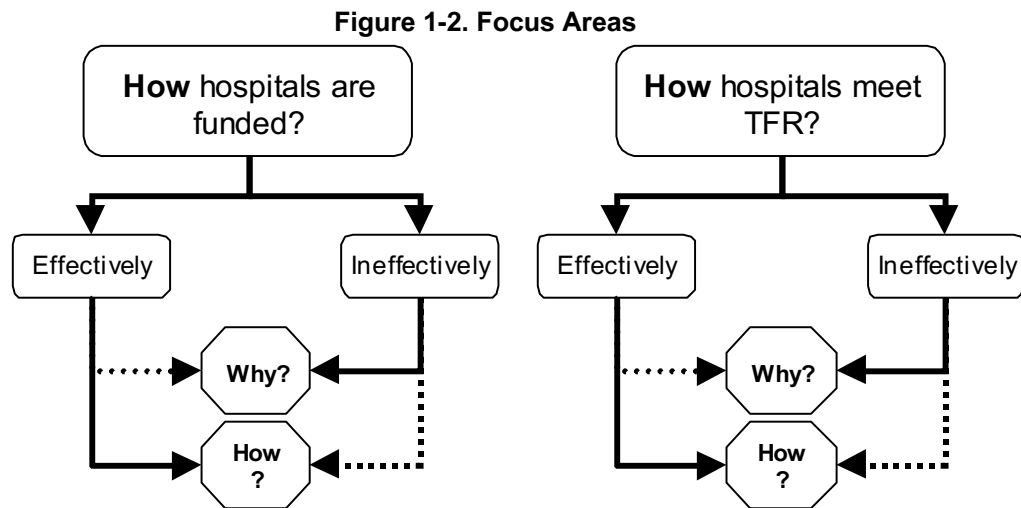
INFORMATION ABOUT	INDICES	METHODS
What is purchased? What is paid? How is it paid?	Funds allocated/incurred/spent Volume (output units) indices	Combined Analysis
What is the performance/production of a hospital (input/output)?	Performance-utilization ratios Input-to-output ratios Key indicator ratios	Operational- Activity Analysis
What the are the health care costs of a hospital (inputs)?	Costs of doing business Costs of staying in business Costs of changing business Costs of attracting/holding capital	Cost Analysis/ Finding
How are financial management functions carried out (process)?	Financial status Risk exposure Financial activity Profitability	Financial Analysis

³ From now on, "financial management" refers to managerial accounting and managerial financing.

⁴ Total Financial Requirements defined by the American Hospital Association (1979):

"Financial requirements, as differentiated from accounting costs, are defined as those resources that are not only necessary to meet current operating needs, but also sufficient to permit replacement of the facilities when appropriate and to allow for changing community health, patient, education and research needs, as well as all other needs necessary to the institutional provision of health are service that must be recognized and supported by all purchasers of care."

The cause-effect relationship between these three matrices is presented schematically in Figure 1-2, “Focus Areas,” below and in Figure 1-3, “Program Matrix,” in Section 1.3.2.2.



1.2.2 Indicators

The study proposed a set of indicators for the measurement of hospital and micro-level financing and operation. Attempts were made to:

demonstrate *the rationale* behind the selection/regrouping;

select and regroup proposed/existing indicators in accordance with the program matrix.

The following indicators were proposed:

1. A hospital's general profile
 - 1.1. Years in operation
 - 1.2. Ownership
 - 1.3. Teaching status
 - 1.4. Designated service area in sq. km.
 - 1.5. Resident population, including a category by age/sex
2. Fixed assets
 - 2.1. Building space
 - 2.2. Book and replacement value
 - 2.3. Equipment availability and total value by key type
3. Staffing by
 - 3.1. Paraclinical and clinical department

- 3.2. Outpatient by personnel category
- 3.3. Physician
- 3.4. Mid-level
- 3.5. Ancillary
- 3.6. Non-medical
- 4. Clinical capacity, volume and utilization
 - 4.1. By clinical department
 - 4.2. Number of beds by design and reported
 - 4.3. Admissions
 - 4.4. Patient days
 - 4.5. Surgeries
 - 4.6. Deliveries
 - 4.7. Mortality
 - 4.8. Surgical and/or
 - 4.9. Maternal
- 5. Clinical capacity, volume and utilization by
 - 5.1. Paraclinical department
 - 5.2. Staff and
 - 5.3. Number of diagnostic services by relevant kind and referral department
 - 5.4. X-rays
 - 5.5. Ultrasound
 - 5.6. Lab tests, etc
- 6. Clinical capacity, volume and utilization in the outpatient department
 - 6.1. Number of doctor/patient encounters, by type (office, outreach) and attending doctor (general practitioners, specialists, dentists)
 - 6.2. Number of nurse/patient encounters, including by type (office, outreach)
- 7. Costs by cost category and source of reimbursement
 - 7.1. Incurred
 - 7.2. Financed

1.3 Selection and Regrouping of Indicators According to Program Matrix

The survey set out to obtain information for determining the following indicators of hospital performance.

1.3.1 Operational Indicators

1.3.1.1 Performance-utilization Ratios

These indicators provide information about specific activities/performance (e.g., inventory management), capacity utilization and outputs.

1. Performance Indicators

1.1. Inventory dollar value per

1.1.1. Occupied bed

1.1.2. Admission

2. Capacity Utilization

2.1. Occupancy Rate

2.1.1. Aggregated

2.1.2. By specialty

2.1.3. By department

2.2. Average Length of Stay (ALOS)

2.2.1. Aggregated

2.2.2. By specialty

2.2.3. By department

3. Medical Outputs⁵

3.1. Patient Days

3.1.1. Aggregated, and

3.1.2. By specialty (Surgery, General Medicine, Cardiology, etc.) or

3.1.3. By department

3.2. Specific Outputs

3.2.1. Lab tests per admission

3.2.2. X-ray per admission

3.2.3. Surgery per admission

⁵ Generally, two denominators (measurement units) are used: patient day and admission; we can use both or select one as a major measurement unit for output/volume indicators (in order to avoid redundancy). For simplicity purposes, only one denominator, admission, is used in the document.[DG].

1.3.1.2 Input-to-Output Ratios

Indicators of resource consumption relate specific measures of resource use to units of outputs.⁶

4. Labor hours per
 - 4.1. Unit of service (e.g., surgery, x-ray, etc.)
 - 4.2. Unit of output (see 3.1)
5. Supplies (cost of supplies) per
 - 5.1. Unit of service (e.g., surgery, x-ray, etc.)
 - 5.2. Unit of output (see 3.1)
6. Drugs per
 - 6.1. Unit of output

1.3.1.3 Key Indicator Ratios

Indicators not falling into the previous two groups, but important for control (e.g., quality) are:

7. Quality Indicators:
 - 7.1. Death rates.

1.3.2 Cost Indicators

Cost indicators are grouped in different ways depending on the cost category the study needed to find, measure, or analyze.

1.3.2.1 Data and Indicators for Cost-finding

Cost-finding has been defined by the American Hospital Association (AHA) as “the apportionment or allocation of costs of *nonrevenue* production *cost centers* to each other and to the *revenue producing centers* on the basis of statistical data that measures the amount of service rendered by each center to other centers.”

Cost-finding objectives are as follows:

1. To provide full cost information as a basis for establishing rates for services and for assessing the adequacy of existing rates;
2. To provide information in negotiating reimbursement contracts with contracting agencies, and in determining the amount of reimbursable costs;
3. To provide information for hospital associations, governmental agencies and other external agencies;
4. To provide information for use in managerial decision making in areas other than rate setting.

⁶ The same tool is used for cost analysis/finding and thus is described in more detail in later chapters.

In general, the following *steps* were proposed for finding unit costs:

1. Definition of the *final product*;
2. Definition of *cost centers*;
3. Identification of the *full cost* for each *input*;
4. Assignment of *inputs* to cost centers;
5. *Allocation* of all costs to final cost centers;
6. Computation of total and *unit costs* for each final cost center.

As shown above, the cost-finding process (or steps) implied the analysis of two types of data: operational or performance data and financial data.

The survey provided the information necessary to carry out Step 3, Identification of the Full Cost, and Step 6, Computation of the Total and Unit Costs, for each cost center.

1.3.2.2 Regrouping of Costs

Cost-finding and analysis covers a broad range of useful issues related to health care costs and financial management within a hospital. However, for the purposes of the study, it was necessary to:

Regroup costs combining/matching (Table 1-2);

Define the line item costs to be used in Step 3.

Table 1-2. Types of Cost by Category

Category	Cost
Asset Valuation	Cash/Accrual
	Historical/Replacement
Managerial Control	Controllable/Noncontrollable Costs
	Direct/Indirect costs
	Committed/Noncommitted Costs
	Budgeted/Actual Costs
Decision Making	Sunk Costs
	Incremental Costs
	Opportunity Costs
Volume	Fixed Costs
	Semi-fixed Costs
	Variable Costs

Table 1-2 offers different criteria or categories according to which the cost can be grouped. In order to regroup them to match the program matrix, the categories should be ordered in order of priority. The hierarchies of costs by priority are as follows:

Fixed Costs vs. Variable Costs

Direct vs. Indirect Costs

The aforementioned division would be useful at the analysis stage, facilitating the elaboration of practical recommendations targeting both medical and managerial areas within a hospital.

Table 1-3. Costs Regrouped by Hierarchy of Categories and FRT Composites

Cost Category	Fixed Costs	Variable Costs
	Indirect	Direct costs
Costs of doing business	Materials/Supply (price)	Length of stay (ALOS)
	Service Contracts (type, price and length)	Ancillary Services (volume)
	Manpower (salary and quantity)	Drugs (volume)
Costs of staying business	Capital Items	Other Supply/Materials (volume)

Note: Fixed/Variable and Direct/Indirect costs are not accurately placed in the figure, yet the hope is that it provides enough information.

The survey sought to identify the aforementioned costs and conduct cost-finding and financial analyses (see Figure 1-3), as well as a statistical analysis of hospital operations. Also, it aimed to identify problems and offer policy recommendations in order to improve the macro-financing of the hospital sector and financial management within hospitals.

Figure 1-3. Program Matrix

Action/Activity			Output		Impact	
Obtain/Collect	Measuring by	Using	Ability/readiness	Make	Provision of Recommendations	
Information About:	Indices:	Method	To Analyze:	Conclusions About/If:	To Stakeholders:	About/Regarding:
<ul style="list-style-type: none"> What is purchased What is paid How it is paid 	<ul style="list-style-type: none"> Funds allocated /incurred /spent Volume (Output Units) Indices 	Combined Analysis	<ul style="list-style-type: none"> Health Care Financing (Sector-wide) 	<ul style="list-style-type: none"> Payer/Purchaser gets the best value of a health care dollar 	<ul style="list-style-type: none"> MOH 	<ul style="list-style-type: none"> Improving Financing of hospitals on macro-level
<ul style="list-style-type: none"> What is a performance/production of a hospital (input/output) 	<ul style="list-style-type: none"> Performance-utilization ratios Input-to-Output ratios Key Indicator ratios 	Operational-Activity Analysis	<ul style="list-style-type: none"> Total Financial Requirements of hospitals 	<ul style="list-style-type: none"> Hospitals ability to meet TFR 	<ul style="list-style-type: none"> Local Authorities 	
<ul style="list-style-type: none"> What are health care costs of a hospital (inputs) 	<ul style="list-style-type: none"> Costs of doing business Costs of staying in business Costs of changing business Costs of attracting/holding capital 	Cost Analysis/Finding			<ul style="list-style-type: none"> Professional associations 	<ul style="list-style-type: none"> Improving/Reengineering financial management within hospitals
<ul style="list-style-type: none"> How financial Management Functions are carried out (process) 	<ul style="list-style-type: none"> Financial Status Risk Exposure Financial Activity Profitability 	Financial Analysis			<ul style="list-style-type: none"> Hospitals 	

2. Methodology

2.1 Sampling Methodology and Survey Instrument

During the planning stage of the study, the research team decided upon two samples of hospitals, one for onsite assessment and the other for mail surveys. Twenty-six hospitals were selected for onsite assessment (see Table 2-1), in a way that made it possible to capture variations according to the following criteria:

1. Location (representing all geographical regions of Georgia)
2. Profile (type)
 - 2.1. General/multi-profile (e.g., republican, central, city, and rayon⁷ hospitals)
 - 2.2. Specialized (e.g., Oncology Center, Institute of Neurology Clinic)
 - 2.3. Maternity hospitals
 - 2.4. Pediatric hospitals
3. Level
 - 3.1. Secondary
 - 3.2. Tertiary (Institute of Neurology Clinic, Oncology Center)
4. Main sources of financing and types of reimbursement.
 - 4.1. Municipal programs (case-based reimbursement): republican, central, city, and rayon hospitals, children's hospitals
 - 4.2. Federal programs
 - 4.2.1. Case-based: maternity houses, Institute of Neurology Clinic, Oncology Center, and children's hospitals.
 - 4.2.2. Per diem: psychiatric and TB hospitals.
 - 4.3. User charges: All inpatient facilities, excluding psychiatric and TB hospitals.

An additional 40 hospitals were approached for the mail survey; 15 responded. Thus, 41 hospitals, approximately 14% of the 287 registered hospitals in the country, were the primary target of the hospital financing study.

⁷ A rayon is an administrative subdivision of an oblast (similar to a province or state) or a city.

Table 2-1. Hospitals for Onsite Assessment

Location	Medical Facilities	Beds
Batumi (3/616)*		
1	Central Clinical Hospital	226
2	Maternity House	170
3	Children's Clinical Hospital	220
Telavi (2/160)		
4	Rayon Hospital	120
5	Maternity House	40
Rustavi (3/285)		
6	Central Hospital	195
7	Children's Hospital	40
8	Maternity House	50
Zugdidi (2/305)		
9	Republican Clinical Hospital	210
10	Paper Factory Hospital	95
Gori (2/290)		
11	Rayon Hospital	170
12	Children's Hospital	120
Kutaisi (4/1,120)		
13	Hospital # 1	250
14	Maternity # 1	120
15	Children's Hospital # 2	350
15	Kutiri Psychiatric Hospital	400
Tbilisi (11/4,172)		
16	City Hospital # 1	600
17	City Hospital # 4	300
18	City Hospital-Polyclinic # 5	310
19	Maternity House # 1	320
20	Maternity House # 5	320
21	City Psychiatric Hospital	300
22	Medical University Clinic	160
23	Central Republican Hospital	500
24	Republican Children's Hospital	620
25	Institute of Neurology Clinic	127
26	Oncologic Center	615

*Number of hospitals/hospital beds

The primary sampling units (PSU) for the patient survey were 16 of the 41 hospitals in the hospital survey. These facilities represented six of the twelve regions of the country. The list of discharged patients between May and August of 1998 was obtained. From this list, the survey randomly selected 900 discharged patients, on average 50 patients from each hospital. It found quite a few incorrect or incomplete addresses (~10%), and many correct addresses but with no patient residing there (~30%); patients' deaths were registered for approximately 3.5%. In the end, only 404 households were interviewed and 404 completed questionnaires submitted.

A high rate of incomplete and incorrect addresses might indicate that some hospitals exercise the practice of so-called "dead souls"—registering non-existent cases in order to increase their revenues through the case-based reimbursement. While further investigation of this issue was outside the scope

of the study, it is likely that major third-party payers like the State Medical Insurance Company or municipal health funds need to consider this matter more carefully.

An indicator list was created for standardized data collection and, based on this list, the survey tool and hospital and patient questionnaires were designed. The survey tool received expert analysis. Pilot testing of the hospital survey took place in two facilities. Based on the testing results, necessary changes were incorporated into the survey tool and detailed instructions were developed for completing the mail survey questionnaire. The actual surveys (onsite and mail) commenced in August and September 1998.

The patient survey questionnaire consisted of four modules: (1) General/Demographic data about the patient/household; (2) Preferences/Attitudes; (3) Hospital Care Costs/Payment Process; and (4) Satisfaction with Hospital Care. A pilot survey was done on 110 patients residing and treated in Tbilisi. Several adjustments were made based on the results of the pilot.

Closed questions comprised the majority of the survey instrument. Trained enumerators conducted face-to-face interviews with the respondents. The enumerators did not verify the information collected.

Completed questionnaires were computerized in SPSS for Windows.

2.2 Data Collection and Processing

Trained surveyors visited each of the 26 hospitals receiving onsite assessment. Focus group discussions were organized with hospital administrators, financial officers, hospital statisticians and hospital planners and architects. The data were obtained from financial, statistical, planner and architect offices. Surveyors checked the data for correctness and compared the data to original records. The data was then transferred into the survey tool.

Even though special training was given to surveyors and the survey tool was tested, various problems with data collection were observed in the hospitals during the data collection process. A primary concern was the disorganization of data storage, which made it very hard to withdraw information. In addition, due to a lack of internal communications, data obtained from different sources were not comparable. Finally, recent changes that have taken place in the country have affected the institutional workings of the hospitals. In a number of hospitals, most data related to buildings and major medical equipment are either missing or destroyed.

The completed questionnaires from the onsite and mail surveys were submitted to the Curatio International Foundation, and the data were entered into the “Hospital Survey Tool,” a specially designed application of the Microsoft Access database, for analysis.

2.3 Survey Analyses

2.3.1 Hospital Data Analysis

As noted above, analysis of the hospital survey data was performed by a specially developed Microsoft Access “Hospital Survey Tool.” The hospital cost-finding was conducted according to the process described in the conceptual framework.

Step 1: Definition of the final product

For the purposes of the study, all the departments of the hospitals surveyed were grouped into six major categories:

1. Surgical
2. Intensive Care
3. Medical
4. Dialysis
5. Outpatient
6. “Virtual Ambulatory”

The purpose of this grouping was to allow for the cross-comparison of multiple hospitals with similar caseloads or profiles. Each department was assigned to one of the major categories based on the type of service provided. All departments providing inpatient medical care without any kind of surgical intervention were grouped under the category “Medical.” All departments providing services that included any level of surgery were grouped under the category “Surgical.” “Intensive care” units were identified as a separate category, as they provide high-intensity services with considerable resource consumption, and could be useful as a separate subject for analysis. “Dialysis” departments were also separated, as they provide a highly-specific type of service, and, in Georgia, these departments function as semi-autonomous institutions within the hospital. In addition, it should be noted that there are only seven dialysis departments throughout the country. Thus, the aggregation of this department into one of the other categories might have resulted in unreasonably high costs in respective categories for those hospitals that have dialysis departments. Under the category “Outpatient” are the outpatient polyclinics that a number of hospitals have.

An additional category, “Virtual Ambulatory,” was created to account for the widespread phenomenon that exists in the country, wherein most of the inpatient medical care, diagnostic departments, and their medical staff (mainly physicians) render “unofficial” *outpatient* services of considerable volume. A large number of patients go to hospital-based physicians in order to obtain medical consultations. Physicians see these patients, and frequently order lab tests and other diagnostic services for them that are done in the same hospital. These medical consultations and the payments the physician receives for them are not usually registered. However, lab tests and other diagnostic services associated with them are paid for by the patient separately, and are registered in the respective paraclinical department’s logbook. Thus, the number of diagnostic services and lab tests performed for these patients serve as a proxy for the number of “unofficial” outpatient visits to the hospital-based physicians. Therefore, the study assigned to the “Virtual Ambulatory” category all services performed by the paraclinical departments that are not allocated to specific clinical departments through the cross sales data sheet.

Output units used to define the final product are “patient days” and “admissions” for inpatient categories, “visits” for outpatient departments and “visits” and “tests” for the Virtual Ambulatory category (see Table 2-2).

Table 2-2. Final Product (FY97)

Product	Output Units
Surgical	patient day/admissions
Intensive Care	patient day/admissions
Medical	patient day/admissions
Dialysis	patient day/admissions
Outpatient	visits
Virtual Ambulatory	tests/visits
Inpatient Services	patient day
Outpatient services	visits

Step 2: Definition of *cost centers*

For cost-finding purposes, the organizational structure of the surveyed hospitals is presented as a combination of cost centers. Each cost center produces functionally distinct output and uses identifiable production inputs. Most cost centers coincide with the structural units of the hospitals. Three groups of cost centers are distinguished: Overhead (administrative), Intermediate (paraclinical) and Patient Care (clinical) (see Table 2-3).

Overhead centers provide administrative, technical, and other support services required to ensure the adequate functioning of intermediate and patient care centers and hospitals as a whole. A total of nine overhead cost centers were identified.

Intermediate centers produce laboratory, diagnostic, and other paraclinical services that are essential for the provision of a hospital's final product. A total of 15 were identified in the hospitals.

Patient Care centers are defined as final cost centers that produce a final output. In our methodology, the patient care or clinical departments were aggregated into six major categories,⁸ as described in "Step 1: Definition of the Final Product." Thus a total of six patient care centers were identified. Patient care centers are also defined as final cost centers because they are the final collection points for all costs associated with the provision of hospital services. Services rendered by the final cost centers are the final product for which payers (central and local governments, patients, insurance companies and other third-party payers) reimburse.

Table 2-3. Hospital Cost Centers by Groups

Cost Center Groups	Cost Centers
Patient Care	Surgical, Intensive Care, Medical, Dialysis, Outpatient, Virtual Ambulatory
Intermediate	Lab, Admissions, Pathology/Autopsy, X-ray, Radiology, Blood Bank, Operating Room (OR), Pharmacy, Sterilization, Endoscopy, Ultrasound, Physiotherapy, Hyperbaric Oxygenation
Overhead	Administration, Security, Garage, Financial, Statistical, Maintenance, Dietary/Kitchen, Laundry, Operations/Filing

The distribution of the 30 cost centers was used for all the surveyed hospitals. All other departments were merged into one of the above mentioned cost centers according to their function—for example, biochemistry, immunology, bacteriological, and clinical laboratories were merged into

⁸ The sixth cost center, "Virtual Ambulatory," rather than being a separate structural unit of a hospital, represents an identifiable cluster of specific services requiring specified inputs and producing a distinct type of output.

“lab,” and technical services were merged into “maintenance.” The specifics of the data recorded within most of the surveyed hospitals and the availability of required descriptive and cost information were also taken into account for the definition of cost centers in this analysis.

Step 3: Definition of full costs for each input

The full costs for each input consist of direct costs, indirect costs, and depreciation for each cost center.

In order to calculate the direct and indirect costs, information on the annual operating costs of the surveyed hospitals for the year 1997 was collected using a special report form. In this form, information on all operating expenditures was organized into five major expenditure headings and 40 line items. Most of the expenditure headings used in the report form correspond to the line items in the financial data record forms that hospitals employ for internal financial accounting purposes. In cases where certain expenditure data were not readily available, the hospital accountants compiled the information specifically for this survey.

During the next stage, expenditures were classified into direct and indirect cost categories. *Direct* costs are defined as those which are directly linked to specific departments and spent on resources which are used for the production of the services of those departments. Focus groups comprising hospital managers, chief doctors, and accountants were assembled to discuss the nature of the expenditures classified under various headings. As a result, expenditures under the headings “Payroll” (Chapter I) and all line items, “Pharmaceuticals/Supplies” (Chapter II) and all line items, “Payroll Taxes” (Chapter V “Taxes”), “Food,”⁹ and “Special Dressing” (Chapter IV “Other”) were defined as direct costs.

Indirect costs are defined as costs that do not link directly with the function of specific departments but are spent in order to ensure the overall operation of the entire hospital and all its departments. Expenditures recorded under all other headings and line items not defined as direct costs were classified as indirect costs.

In order to determine the full costs for each cost center, information on capital consumption allowance as an annual depreciation of buildings and other fixed assets was collected during the survey. Available data on the book value and remaining value of the buildings, major and minor medical equipment, and non-medical and other items (furniture and fixtures) were obtained. It should be noted that due to incompleteness and widespread inaccuracies in hospital records regarding the book and remaining values of buildings and fixed assets, significant problems were encountered in obtaining adequate information on annual depreciation. The methodology used to partially offset this problem is discussed in the next section.

Step 4: Assignment of inputs to cost centers

The final step for defining the full cost for the cost centers is the assignment of all inputs, or in this case all expenditure headings and the annual depreciation of fixed assets, to overhead, intermediate, and patient care centers.

Table 2.4 shows the classification of expenditures into direct and indirect costs, and the following section discusses methods used to allocate direct and indirect cost headings.

⁹ Only a few hospitals currently incur costs under this line item. As in most hospitals, food is not provided as part of the hospital service and is the responsibility of the patient.

Table 2-4. Classification of Direct and Indirect Costs

Expenditure Headings	Direct Costs	Indirect Costs
Payroll	+	
Physicians	+	
Middle Medical Staff	+	
Lower Medical Staff	+	
Technical Personnel	+	
Other Personnel	+	
Administration	+	
Pharmaceuticals/Supplies	+	
Lab Supplies	+	
Radioisotopes	+	
X-ray Supplies	+	
Blood/Blood Substitutes	+	
Pharmaceuticals	+	
Other	+	+
Communications		+
Garbage		+
Special Dressing	+	
Cleaning Staff/Supplies		+
Fire Prevention		+
Deratization		+
Electricity		+
Heating		+
Fuel/Oil		+
Oxygen		+
Representative costs		+
Water Supply		+
Education costs		+
Stationary		+
Food	+	
Capital Repair cost		+
Maintenance of Elevators		+
Purchase of Medical Equipment		+
Maintenance of Medical Equipment		+
Minor Repair		+
Laundry		+
Business Trip		+
Taxes	+	+
Payroll Tax @ 33% of payroll	+	
Production Tax @ 1% of revenues		+
Roads Tax @ 1% of revenues		+
Income Tax @ 20 %		+
Property Tax		+
Other State Taxes		+
Tax Fines		+

Direct Costs

Direct cost assignments are discussed in the following sections and summarized in Table 2-5.

Table 2-5. Direct Cost Assignment to Cost Objects (Centers)

Direct Cost Headings	Assignment Method and Statistic	Assigned to
Payroll		
Payroll	Average salary for each category of personnel and number of personnel	All cost centers
Payroll Taxes	33% of payroll	All cost centers
Pharmaceuticals/Supplies		
Pharmaceuticals	Direct allocation according to actual consumption by department.	Patient Care cost centers
	Non-allocated expenditure	Pharmacy cost center
Blood/Blood Substitutes	Direct allocation according to actual consumption by department	Patient Care cost centers
Lab Supplies	RVU ^u weighted number of tests	Patient Care cost centers
X-ray supplies	RVU ^u number of tests	Patient Care cost centers
Radioisotopes	RVU ^u number of tests	Patient Care cost centers
Other		
Oxygen	RVU ^u (a) number of operations (b) patient discharges	Surgical Cost Center Intensive Care cost center
Food	RVU ^u patient days	Patient Care Cost centers
Special Dressing	RVU ^u number of personnel	Patient Care cost centers

Payroll

Information about staff salaries was only available for the hospital as a whole. It was not available by department level or individual. However, it was possible to obtain hospital-wide information on total payroll funds paid to different levels, or categories, of medical personnel, including physicians, middle medical staff, lower medical staff, technical personnel, other personnel, and administrative personnel. In addition, the survey collected information about the number of personnel in each level, for each hospital department. Using these data, the average hospital salary for each category of hospital personnel was calculated by dividing the payroll funds for each category by the total number of personnel in that category. The payroll funds for each department were calculated by multiplying the average salaries by the number of respective personnel assigned to the corresponding department. It should be noted that the health system reform that began in the year 1995 envisioned a shift from fixed salary levels to flexible salary levels tied to individual performance, without any upper limitations. The Ministry of Health gave recommendations to health care providers on how to calculate the salary levels for their employees. These recommendations are directed towards rewarding efficiency and professional competency, so that more qualified specialists have more patients and correspondingly higher incomes.

In reality, as interviews and focus group discussions with senior policymakers and hospital financial managers revealed, very few health providers and even fewer hospitals implemented these recommendations. A process of rationalization of human resources within the hospitals was constrained due to various reasons, including a social sensitivity to this process. In order to ensure at least a minimal salary level for all hospital employees, most hospitals are using salary equalization policies that redistribute salary funds within the department and among departments, e.g., the medical personnel and hospital departments with a higher workload (surgical, intensive care), and subsequently higher revenue levels, are subsidizing the medical personnel and departments with lower workload and revenue levels (internal medicine, cardiology, etc.). As a result, salary levels for each category of medical personnel, with few exemptions, are almost equal within a department and

even across the hospital. Thus, the notion of average hospital salaries for each category of medical personnel used in the current study may yield only *minor* differences between the estimated and real labor costs of departments and the respective cost centers.

Payroll Taxes

The overall rate of payroll tied to taxes in Georgia is 33% (composed of social insurance tax, 27%+1%; medical insurance premium, 3%+1%; and unemployment contribution, 1%). The assignment of this expenditure heading to the cost centers was conducted according to the payroll expenditure heading.

Pharmaceuticals/Supplies

Pharmaceuticals

The survey tool was designed in a way that would collect information about the direct allocations of pharmaceuticals (expressed in prices) to departments. For most of the hospitals, the survey was able to render relatively complete information on this subject. This information was used to assign pharmaceutical expenditure line items to the relevant cost centers. Non-allocated expenditures, or the difference between the total annual pharmaceutical expenditures of the hospital and the sum of all directly allocated pharmaceuticals to departments, were assumed to be the pharmaceutical stock and assigned to the pharmacy paraclinical cost center. These costs were allocated to the final cost centers during the step-down process.

Blood/Blood Substitutes

Expenditures under this line item were allocated in the same way as pharmaceuticals. Non-allocated expenditures if any, were assumed to be the cost of blood and blood substitutes prepared or disbursed for patients of other hospitals that do not have a blood bank. It has been common during the last few years that not all hospitals are able to afford to maintain their own blood bank and families of patients undergoing treatment in such hospitals are required to bring blood and blood substitutes from nearby hospitals or specialized facilities (Blood Transfusions Stations). Such services (the sale of blood supplies to the patients from other hospitals) for hospitals possessing a blood bank could be considered “outpatient” and thus assigned to the cost center “Virtual Ambulatory.”

Lab Supplies

Expenditures reported under this line item were allocated to the patient care centers according to the statistic of the functional use of lab services by the patient care centers. A number of tests weighed against the average price¹⁰ for each type of lab test performed for the clinical departments by the lab departments (clinical, bacteriological, biochemical, immunology, etc.) merged into the lab cost center, was used as the statistic of functional use. Weighted numbers (Relative Value Units [RVU]) for each type of test were calculated by dividing the average price of the respective test by the average price of clinical laboratory tests. Functional use statistics for lab services, as with all other paraclinical departments, were taken from the section “paraclinical departments’ cross sales.” Figures for these statistics were available for most of the surveyed departments and hospitals. In cases where the “cross sales” figures for certain paraclinical cost centers were not available, the expenditures under these line items were evenly distributed among the clinical departments and merged into the patient care cost centers.

¹⁰ The average recorded price as set by a hospital for each type of lab tests was assumed to reflect a resource intensity (volume of inputs required to produce a product) of these test.

X-ray Supplies

Expenditures under this line item were directly allocated to the X-ray cost center.

Radioisotopes

Expenditures under this line item were directly allocated to the Radiology cost center.

Other Direct

Oxygen

The Operating Room (OR) and the Intensive Care Unit (ICU) are almost the exclusive users of oxygen supplies in Georgian hospitals. Therefore, expenditures under this line item were directly allocated to patient care cost centers (Surgical and Intensive Care). Based on the focus group discussions, it was assumed that the average volume of oxygen consumed per surgical operation is approximately equal to the average volume of oxygen consumed by a patient while in the ICU. Thus, the following functional use statistics were used: (1) the number of operations performed for each department combined with Surgical patient cost center and (2) the number of discharges from the ICUs absorbed by the Intensive Care cost center.

Food

Expenditures under this line item were assigned to the patient cost centers based on data from patient days per clinical department as assignment statistics.

Special Clothing

Expenditures for uniforms of medical personnel were reported under this line item. Special clothing for technical personnel and patient gowns have not been provided by the hospitals since the year 1992. A number of the surveyed hospitals are not even providing any special clothing for their medical personnel. In this case, obtaining special clothing becomes the responsibility of the personnel. Expenditures under this heading were assigned to all clinical departments according to the number of personnel at each department.

Indirect Costs

Expenditure line items under the indirect cost heading were apportioned to each cost center based on the *functional apportionment statistics*. Apportionment statistics used in other studies were reviewed (Shepard et al. 1995) and selected for this study, based on the availability of respective data determined after the pre-test of the survey tool. Upon completion of the survey, the functional apportionment statistic, “space volume in cubic meters,” initially selected to apportion such indirect cost headings as “electricity,” “heating,” “water,” “minor repairs,” was replaced by the statistic, “floor area in square meters.” This change resulted from the fact that, unlike the two hospitals where the survey tool was pre-tested, obtaining data on ceiling height required the calculation of the volume of hospital departments located in those buildings. These figures were unavailable for most of the surveyed hospitals. The data on space by square meters, on the other hand, was almost complete.

During the analysis of survey data, it became clear that part of the required information on the functional apportionment statistic “book value of medical equipment” was missing. The approach used to partially offset the resulting problem is described in the following section.

The apportionment methodology and functional statistics used for the apportionment of indirect cost headings are presented in the Table 2-6.

Table 2-6. Apportionment Statistics for Indirect Cost Centers

Indirect Cost Headings	Apportionment Statistics
Other	
Communications	Number of Personnel
Garbage	Floor Area (sq. meters)
Cleaning Staff/Supplies	Floor Area (sq. meters)
Fire Prevention	Floor Area (sq. meters)
Deratization	Floor Area (sq. meters)
Electricity	Floor Area (sq. meters)
Heating	Floor Area (sq. meters)
Fuel/Oil	Floor Area (sq. meters)
Representative costs	Number of Personnel
Water Supply	Floor Area (sq. meters)
Education costs	Number of Personnel
Stationary	Direct Costs
Capital Repair cost	Floor Area (sq. meters)
Maintenance of Elevators	Number of Personnel
Purchase of Medical Equipment	Direct Costs
Maintenance of Medical Equipment	Book Value of Medical Equipment
Minor Repair	Floor Area (sq. meters)
Laundry	Patient Days
Business Trip	Number of Personnel
Taxes	
Income Tax	Direct Costs
Property Tax	Remaining Value of Capital Assets
Other State Taxes	Direct Costs
Tax Fines	Direct Costs

Capital Consumption Cost

To define full costs for each hospital cost center, the capital consumption costs have been added after assigning direct and indirect costs. The capital consumption costs were estimated based on the straight-line depreciation of the book value of capital assets. Thus, the annual capital consumption cost, or annual depreciation, was calculated by dividing the book value of capital assets by the number of years of service life. In theory, the book value of capital assets in the surveyed hospitals should be close to the replacement values, as the book value of capital assets throughout Georgia was appreciated into the “replacement value” in 1997. The quotation marks are used because of the questionable methodology used to reevaluate the capital assets. In the instructions of the Ministry of Finance of Georgia for revaluation of capital assets, only the deflator factors by which the book value of assets should have been multiplied are indicated. It is unclear how reliably these factors were calculated and whether implications on the asset prices of all the major political, economical and financial changes were incorporated. Attempts to obtain the methodology used to calculate deflation factors were unsuccessful. Further efforts to assess the true replacement value of hospital buildings and major medical equipment by using current prices for construction and equipment were made by the study team, but the following considerations and problems obliged the study team to abandon these efforts for the time being.

1. Construction costs for hospitals in two major cities of Georgia (Tbilisi and Kutaisi) were obtained, but most of the surveyed hospitals are located in different regions of Georgia, where those prices vary significantly.

2. According to the preliminary results of the assessment of the hospital network of Georgia,¹¹ approximately 90% of hospital buildings throughout the country (including the surveyed hospitals) are either beyond repair, or require major rehabilitation. New buildings, or major renovation of existing ones, are needed in the next few years in order to satisfy the basic requirements of Georgian standards for hospital accreditation and to continue to carry out their functions. Capital requirements for the completion of these tasks are significant: merely to upgrade 67 hospitals located in Tbilisi to minimal standards, approximately US \$80 million are needed (Kaiser Permanente International, August 1998, p.24).
3. The inventory of medical equipment installed in the hospitals is incomplete and does not specify the current condition of the equipment, i.e., whether it fulfills its function and whether it is actually used. Most of the major medical equipment is obsolete or depreciated. Though the depreciated equipment was assigned a certain remaining value during the reevaluation of 1997, the assigned values are rather arbitrary and do not really reflect market prices. Moreover, it is difficult to establish current market prices for this equipment because some of it is no longer produced or not even used in the modern hospitals of any other western country.

Therefore, the study team decided not to calculate the capital consumption cost based on the accelerated depreciation method for this study, but rather to use the straight-line depreciation of the reported acquisition cost, or initial book value of capital assets. Complicating the implementation of this approach, however, were additional problems induced by current accounting and reporting practices in hospitals related to the insufficiency of data.

4. Information on initial book value, referred to as the “book value” of different categories of capital assets (major medical equipment, minor medical equipment, non-medical items, furniture, and other assets) installed in hospital departments, was incomplete for about 60% of surveyed hospitals (mostly for those hospitals in the mail survey). Both the book value and the net book value, or the remaining figures for non-medical and other items, were missing or incomplete for paraclinical and clinical departments in 25 hospitals and for the administrative departments in 21 hospitals.
5. For 16 of the 41 hospitals surveyed, information on the year of construction and major renovation of the buildings was missing, and for 12 hospitals, information was incomplete on the remaining values of the buildings.
6. For most of the hospitals, the inventory of medical and other equipment and assets was incomplete. The information on the years of production and purchase for each piece of equipment and its service life was usually not available. In focus groups, hospital accountants revealed that the method they use to depreciate the assets where information on the initial full costs of acquisition and installation and useful service life is missing from hospital records is rather inconsistent (as the instructions issued by the Ministry of Finance are unclear on this matter), particularly after the 1997 reevaluation of capital assets.

¹¹ The assessment of Georgia's hospital network was carried out by the U.S. consulting company Kaiser Permanente International as part of the World Bank technical assistance to the Ministry of Health of Georgia for the optimization and privatization of the hospital sector. The final report and recommendations for these tasks are expected to be released to the public by the end of January 1999.

¹² Each capital asset purchased during the Soviet period, including medical equipment, was accompanied by documentation containing the year of production, service life, and percentage figure by which the book value of the asset should depreciate each year.

Problems in accounting and the reporting of book values and replacement values of buildings and assets of the this hospital study have limited the practical value of the findings with regard to the capital consumption cost. In order to account for and partially offset the problems described above, and to make the depreciation methodology relatively consistent, the following adjustments were made:

1. Since the data on the total book value of all medical items (both major and minor) and the remaining values of medical items by departments are available for all surveyed hospitals, the remaining values for each department were upgraded to the book values. This was done by multiplying each remaining value by a factor that is calculated by dividing the total book value by the total remaining value of all medical items.
2. As the data on (a) the total book value of all capital assets, (b) the total book value of all buildings and (c) the total book value of medical items are all available, the missing book values of non-medical and other items by departments were calculated in the following way for hospitals with missing data. The difference between the total book value of capital assets and the sum of the book values of medical items assigned to separate hospital departments plus the total book value of the hospital buildings, was evenly distributed among the hospital administrative departments. It should be noted that with this approach, for those hospitals missing data regarding non-medical and other items assigned to paraclinical and clinical items, part of the book value of non-medical and other items were “assigned” to administrative departments. However, during the step-down process, all costs associated with administrative departments were finally allocated to intermediate cost centers (paraclinical departments) and then to patient care cost centers (clinical departments); inaccuracies produced by this approach are relatively insignificant.
3. In order for the method of calculating annual depreciation to be consistent across all hospitals and to allow for cross-comparisons, the average service life figures were introduced for each type of capital asset.
4. Many hospital buildings in Georgia were built 60-80 years ago, and most of them have undergone major renovations, with additional capital investment causing their value to appreciate and prolonging their service life. Nevertheless, their current condition is close to complete depreciation. In order to offset the effect of missing information on the adjusted service life of renovated buildings and to avoid overestimating the capital consumption cost of buildings already depreciated, the average useful life for all surveyed hospitals was assumed to be 50 years. This assumption leads to the annual depreciation of the book value of a building of 2%. Average life and annual depreciation of other items are:

For major medical equipment, 10 years (annual depreciation 10%)

For minor medical equipment, 5 years (annual depreciation 20%)

For minor non-medical items, 5 years

For furniture and other items, 5 years

Taking into account all of the possible inaccuracies in capital consumption costs created by the adjustments and unification described above, and acknowledging the possible resulting bias in the computation of the total costs for cost centers, the study team decided to calculate and analyze full costs both with and without the annual depreciation.

Step 5: Allocation of all costs to *final cost centers* using the step-down method

After the research team determined the full costs for each cost center, they allocated the full costs of overhead and intermediate cost centers to the patient care cost centers using the step-down method. The step-down method implies a hierarchy of cost centers, with top-down allocation of costs from higher-ranking cost centers to lower-ranking cost centers.

Cost centers were ranked according to an analysis of supplier-consumer relations—or more accurately, service-production relations—between them. Cost centers servicing a greater number of other cost centers were ranked higher than those servicing fewer. The team analyzed the organizational structures of different hospitals and held discussions with chief hospital doctors in order to clarify the exact role, function and interrelations among hospital departments to complete the task of hierarchization. Pareto's rule, which requires 20% of the top ranking cost centers to represent 80% of all costs, was also taken into account and a universal hierarchy of cost centers was determined. This hierarchy was used for all surveyed hospitals (see Table 2-7).

Table 2-7. Hierarchy and Allocation Statistics for Step-Down Allocation

Cost Centers	Allocation Statistics
Overhead	
General Administration	Number of Personnel
Maintenance	Floor Space in sq. meters
Financial	Direct Cost
Human Resources and Planning	Number of Personnel
Operations/Filing	Number of Personnel
Statistical	Number of Discharges
Laundry	Patient Day
Security	Annual Depreciation
Garage	Direct Cost
Kitchen	Patient Day
Intermediate	
Lab	Service Unit (Test)
Admission	Service Unit (Admissions)
Pathology/Mortuary	Service Unit (Test)
X-ray	Service Unit (Test)
Radiology	Service Unit (Test)
Blood Bank	Cost of Blood Supplied
Pharmacy	Cost of Pharmaceuticals Supplied
Sterilization	Service Unit (Procedure)
OR	Service Unit (Operation)
Endoscopy	Service Unit (Investigation)
Ultrasound	Service Unit (Investigation)
Physiotherapy	Service Unit (Procedure)
Final (Medical)	
Patient Care	
Surgical	
Medical	
Resuscitation	
Dialysis	
Virtual Ambulatory	

As a next step, the full costs of service centers (overhead and intermediate) were allocated to production centers (patient care) using the functional allocation statistic. The functional allocation statistics used for the step-down process, as in the case of indirect costs, were chosen from commonly used statistics, given that they were available for the hospitals in the current study. The allocation statistics for each cost center also are presented in Table 2-7.

During the step-down process, the full costs of the highest ranking cost center, “General Administration,” were allocated to all other overhead, intermediate and patient care cost centers based on the number of personnel employed in the departments associated with each cost center. In other words, the percentage of full costs of General Administration allocated to each cost center is equal to a percentage of employees assigned to each cost center. The percentage of employees is calculated as the total number of hospital employees minus the number of employees assigned to the cost center whose costs are stepped down. Then, the full costs of the second-highest ranking cost center, “Maintenance,” along with the portion of full costs of General Administration allocated to Maintenance during the previous step, were allocated to all other cost centers except the first one, General Administration. The allocation statistic used in this case was the floor space of cost centers, i.e. the proportion of full costs of Maintenance allocated to cost centers should be the same as the percentage distribution of floor space by cost center. Again, the estimation of the percentage of space allocated to a specific cost center excluded the floor space assigned to General Administration and Maintenance from the hospital space total. The same process was repeated for each cost center in the hierarchy, except those patient care centers which are final centers and do not allocate costs to one other.

When information regarding the allocation statistic for any cost center was missing in the surveyed hospitals, the full costs of the respective cost center (for which the allocation statistic was missing) were allocated evenly to all patient care centers (without allocating to intermediate centers and further step-down).

As a result of the step-down allocation of the full costs of overhead and intermediate cost centers to patient care centers, the total costs of patient care centers were defined.

Step 6: Computing *total* and *unit* costs for each final cost center

The total costs calculated for the final cost centers for each hospital using the methodology described in the previous five steps were divided by the patient days, number of discharged patients and number of beds, in order to estimate respective unit costs: the cost of the patient day, the cost of care, and the cost of a bed in the hospital. The full and unit costs calculated in this way for one of the hospitals is presented in Table 2-8.

Table 2-8. Total and Unit Costs for the Final Cost Centers

Final Cost Centers	Full Costs	Per Discharge /Visit	Per Patient Day	Per Bed
Surgery	821.18	0.255	0.034	3.28
Resuscitation	303.07	0.629	0.092	20.20
Medical	568.32	0.197	0.026	2.99
Dialysis	59.86	0.893	0.056	5.99
Outpatient	118.94	0.009	0.000	0.00

Regrouping Costs

During the cost-finding stage (the six steps described above), the costs were grouped into direct, indirect and capital consumption costs. For further analysis, the costs were also classified into fixed, semi-fixed and variable costs. These cost groups are presented in Table 2-9.

After calculating fixed costs for each cost enter, the fixed costs for the final cost centers were calculated with the step-down methodology described in the previous section.

Table 2.9. Classification of Costs into Fixed, Semi-fixed, and Variable

Expenditure Headings	Fixed Costs	Semi-fixed costs	Variable Costs
Payroll	+		
Physicians	+		
Middle Medical Staff	+		
Lower Medical Staff	+		
Technical Personnel	+		
Other Personnel	+		
Administration	+		
Pharmaceuticals Supplies	+		
Lab Supplies	+		+
Radioisotopes	+		+
X-ray Supplies	+		+
Blood	+		+
Pharmaceuticals	+		+
Other		+	
Communications			+
Garbage			+
Special Dressing	+		
Cleaning Staff/Supplies			+
Fire Prevention			+
Deratization			+
Electricity		+	
Heating		+	
Fuel/Oil			+
Oxygen			+
Representative costs	+		
Water Supply		+	+
Education costs	+		
Stationary		+	
Food	+		
Capital Repair cost	+		
Maintenance of Elevators	+		
Purchase of Medical Equipment	+		
Maintenance of Medical Equipment			+
Minor Repair	+		
Laundry			+
Business Trip	+		
Taxes	+		+
Payroll Tax @ 33% of payroll	+		
Production Tax @ 1% of revenues	+		
Roads Tax @ 1% of revenues	+		
Income Tax @ 20 %	+		
Property Tax	+		
Other State Taxes	+		
Tax Fines	+		

2.3.2 Patient Data Analysis

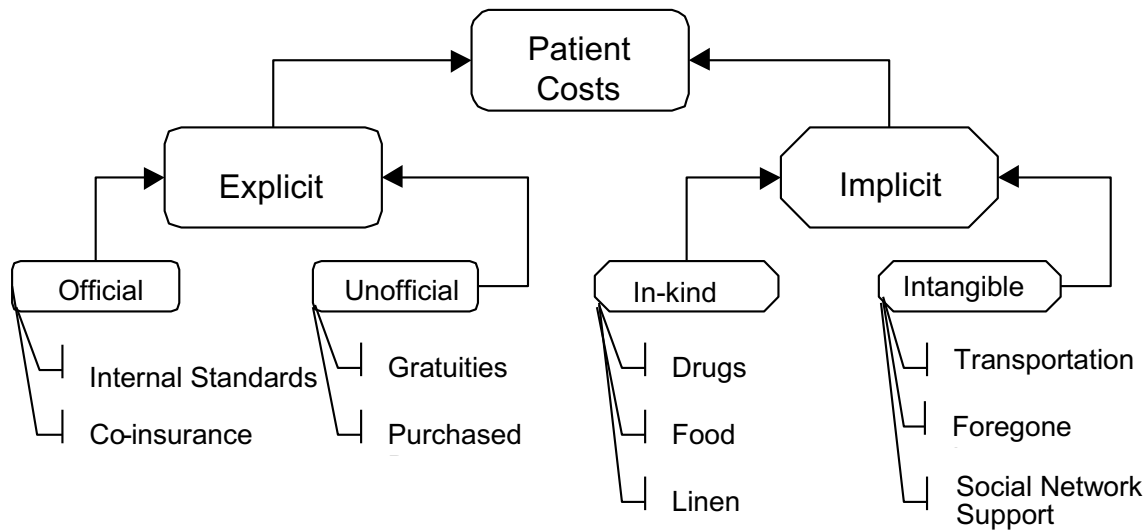
The survey was designed to measure two types of consumer costs: explicit and implicit.

Explicit costs include direct out-of-pocket payment, both legal (official) and unofficial. The systematization of those costs often causes confusion. Figure 2-1 clarifies the composition and relationship of customer costs.

Implicit costs could otherwise be called unrecognized costs incurred during the episode of hospital care, i.e., the costs that are unlikely to be listed by a respondent, but that imply the

consumption of tangible and intangible resources. These costs can be expressed in monetary values using proxy indicators.

Figure 2-1. Composition (Structure) of Patient Costs



3. Results

3.1 Hospital Survey Findings

3.1.1 Description of Hospital Sample

3.1.1.1 Size, Profile and Ownership Status

The hospitals in the study represented 14.2% (41 out of 287¹³) of all hospitals in Georgia. The total number of beds in the hospitals comprised a percentage that is twice as high—30.5% (7,460 out of 24,481)—of hospital beds throughout the country. These figures could mean that medium and large hospitals are over-represented in the hospital sample.

The sample was weighted toward facilities in Tblisi, the capital of Georgia. Sixteen of the 41 hospitals in the survey (39%) are located in Tblisi, and beds in the city comprise 57.4% of the beds in the survey (4,285 of 7,460). (The 16 hospitals contain 45% of the hospitals in Tblisi.) This reflects higher percentages for Tblisi facilities than for nationwide figures. Nationwide, Tblisi facilities comprise 23.3% (67 of 287) of hospitals in Georgia and 38.9% (9,522 of 24,481) of beds.

The remaining 25 hospitals, with 3,175 beds, are located in the six major cities and adjacent regions of Georgia.

The surveyed hospitals were categorized into four groups according to their size: (1) small (with the total number of at beds less than 150); (2) medium (150 to 250 beds); and (3) large (250-500 beds). National tertiary care hospitals with more than 500 beds were classified into a separate group. The distribution of the surveyed hospitals among these groups is presented in Table 3-1.

Table 3-1. Hospitals by Size (Bed Capacity)

Hospital Size	Small (<150 beds)	Medium (150-250 beds)	Large (250-500 beds)	National (>500 beds)	Total
Number of Hospitals	25	7	7	2	41
Average Number of Beds	90	207	349	805	363
Total Number of Beds	2,256	1,459	2,441	1,304	7,460

Official statistics on the distribution of hospitals by type and ownership status were unavailable. The survey grouped the hospitals by type, into five categories according to the existing classification in Georgia: General, General Pediatric, Maternity, Specialized (short term), and Long-term (psychiatric and TB hospitals) (Table 3-2).

¹³ The numbers of hospitals and beds nationwide cited throughout this section are from Chapter 3, in Ministry of Health of Georgia, Center for Medical Statistics 1998.

Table 3-2. Average Bed Size of Hospitals by Type

Type	General	Pediatric	Maternity	Specialized	Long-term	Average
Private	30					30
Federal	168	122	321	233	285	222
Municipal	199	357	265		35	225
Organizational	240	106				195
Mixed	106	148	130			119
Average	149	183	239	233	160	158

The majority of the hospitals in the survey are short-term general and specialized hospitals. Only three hospitals of the 41 (7.3%) are long-term facilities, namely one TB and two psychiatric hospitals, a number slightly higher than the share of long-term facilities nationwide (4.5%). The total number of beds in these three long-term facilities is 605, 25% of all long-term beds in the country. The ratio of long-term beds to total number of beds in the sample is slightly lower than the national ratio at 8.1% (605 out of 7,460) vs. 9.7% (2,370 out of 24,481).

The survey also grouped hospitals by five ownership categories: federal government, municipal governments, major state corporations and ministries (e.g., military hospitals), private and mixed ownership (Table 3-3). While military hospitals are included in the survey, hospitals owned by the Ministry of the Interior and Ministry of Defense are not. Out of the surveyed hospitals, 22 (approximately 54%) are teaching hospitals and the rest are community-based.

Table 3-3. Hospitals in Survey by Type and Ownership Status

Profile	General	Pediatric	Maternity	Specialized	Long-term	Total
Federal	5	4	5	5	2	21 (51.2%)
Municipal	6	2	2		1	11(26.8%)
Private	1					1 (2.4%)
Corporate	2	1				3 (7.3%)
Mixed	3	1	1			5 (12.2%)
Total	17 (41%)	8 (20%)	8 (20%)	5 (12%)	3 (7%)	41

3.1.2 Hospital Operational Indicators

Selected performance and operational indicators were calculated for the hospitals.

The inventory turnover ratio in this study is calculated by dividing the annual depreciation by the number of occupied beds. As shown in Table 3-4, general hospitals have the highest ratio of inventory per occupied bed, or 8,700 GEL, 1.6 times higher than the sample average of 5,000 GEL per occupied bed. This fact could be explained by the low occupancy rates of these hospitals. Maternity and long-term hospitals have the lowest ratio, which reflects the high occupancy rates of long-term hospitals in the sample and the relatively low level of sophistication of medical equipment and inventory in maternity, psychiatric, and TB hospitals. Among the hospitals grouped by size, the small hospitals have the highest ratio.

Table 3-4. Inventory Turnover Ratio for Hospitals by Size and Type

Hospital Size (# of beds)	Inventory: Per Occ. Bed	Hospital Type	Inventory: per Occ. Bed
0-150	6.0	General	8.7
151-250	4.8	Pediatric	4.1
251-500	6.5	Maternity	2.0
>500	5.9	Specialized	7.4
		Long-term	2.4
Average	5.0		5.0

The total number of patients discharged from the surveyed hospitals in 1997 is 118,090, 50.7% of the total nationwide. Considering that the hospitals represent only 30.5% of the total number of beds, the ratio of patients treated in these hospitals is higher than expected. Based on this figure, the study team assumed that hospitals in the sample have a higher workload and better operational and performance indicators than the national average.

Occupancy rates, average length of stay, and patient days are presented by type of hospital in Table 3-5.

The average occupancy rate for the sampled hospitals is 31.9%, higher than the national average of 27.6%. Occupancy rates are highest for long-term hospitals at 86.9%. Among short-term hospitals, maternity and pediatric hospitals have the highest occupancy rates: 34.9% and 34.8% respectively.

The ALOS for the hospitals is 6.96 days, significantly lower than the national average of 10.49 days and comparable to the average of the U.S. Veterans Association Hospital Network. Table 3-5 shows that maternity hospitals have the lowest ALOS (5.39 days) and that specialized hospitals (excluding long-term hospitals) have the highest ALOS (8.11 days). As shown in Table 3-6, the ALOS is lower for small and national hospitals and almost twice as high for medium and large hospitals.

Table 3-5. Operational Indicators Grouped by Type

Hospital Type	Occupancy Rate	ALOS (days)	Patient Days
General	24.1%	6.98	15,108
Pediatric	34.8%	7.16	19,131
Maternity	34.9%	5.39	16,076
Specialized	25.3%	8.11	27,023
Long-term	86.9%	82.17	65,100
Average/Total	31.9%	6.96	868,910
National Ave./Total	27.6%	10.49	2,466,950

Table 3-6. Operational Indicators Grouped by Hospital Size

Hospital Size (# of beds)	Occupancy Rate	ALOS (days)	Patient Days
0-150	31.7%	8.89	9,618
151-250	43.3%	16.98	34,248
251-500	27.9%	21.45	34,450
>500	31.3%	7.35	73,784
Average/Total	31.9%	6.96	868,910
National Ave./Total	27.6%	10.49	2,466,950

The total number of days that patients spent in the hospitals, or patient days, is 868,910, which is 35.2% of the total number of hospital days countrywide. This figure is consistent with the hospital bed ratio for the hospitals studied (30.7% of hospital beds countrywide). Considering that the hospitals discharged more than 50% of all patients treated in all hospitals, the lower ratio of patient days spent in the hospitals could only be explained by the lower ALOS in the sample hospitals.

Selected Medical Output Ratios: Lab tests, X-ray tests and surgeries/deliveries per admission were measured for the hospitals studied. Table 3-7 and Table 3-8 present these ratios for the hospitals according to their type and size.

Table 3-7. Medical Outputs by Hospital Type

Hospital Type	Lab Tests Per Admission	X-ray Tests per Admission	Surgery Per Adm.
General	4.92	0.9	0.29
Pediatric	4.72	0.4	0.09
Maternity	2.52		0.18
Specialized	11.65	1.0	0.40
Long-term	6.12	1.1	
Averages for Hospital	5.03	0.5	0.20

Table 3-8. Medical Outputs by Hospital Size

Hospital Size (# of beds)	Lab Test Per Admission	X-ray Tests Per Admission	Surgery Per Admission
0-150	6.12	0.5	0.22
151-250	3.51	0.8	0.24
251-500	3.00	0.6	0.20
>500	6.22	0.4	0.16

As expected, specialized hospitals have the highest intensity of medical outputs, leading in all three parameters. General hospitals have a slightly higher intensity of services than the pediatric hospitals.

There is no clear relationship between the size of the hospital and medical outputs of hospital as measured by these three indicators. National-level hospitals with more than 500 beds and small hospitals have the highest ratio of lab tests per admission, while medium-sized hospitals perform more X-ray tests and surgeries per admission.

Hospital Personnel. The types and numbers of hospital personnel for the hospitals studied are presented in Table 3-9.

Table 3-9. Hospital Personnel

Type of Personnel	Number	% Total	% Medical
Doctors	3,284	26%	30%
Nurses and Midwives	4,993	39%	46%
Support Staff	2,298	18%	21%
Other Staff	337	3%	3%
Total Medical Personnel	10,912	86%	100%
Total Administrative Staff	1,814	14%	

Doctors employed in the surveyed hospitals represent approximately 15% of all physicians (21,706) in Georgia and 26% of all personnel in the surveyed hospitals. Middle medical personnel (nurses and midwives) in the survey comprise approximately 16% of the total number in the country, and 39% of all personnel in the survey.

Overall, medical personnel comprise 86% of all personnel employed in the surveyed hospitals; the remaining 14% is administrative and technical personnel.

Labor Per Service and Unit of Output. Table 3-10 and Table 3-11 present selected labor utilization indicators for the hospitals grouped by size and type.

Hospitals with more than 500 beds perform best in terms of labor utilization, having the best input to output ratios across all five parameters presented in the table.

Among the hospitals grouped by profile, maternity and long-term hospitals seem to utilize medical personnel more effectively, demonstrating considerably better ratios.

Table 3-10. Labor per Service and Output Units by Hospital Size

Hospital Size	Per Surgery		Per X-ray Test		Per Lab Test		Per Admission		Per Discharge	
	FTE	Labor hours	FTE	Labor Hours	FTE	Labor Hours	FTE	Labor Hours	FTE	Labor hours
0-150	0.6	1,190.9	0.2	490.3	0.0	43.0	0.1	263.6	0.0	39.6
151-250	0.5	1,103.1	0.2	345.2	0.0	76.9	0.1	269.7	0.0	24.4
251-500	0.7	1,510.2	0.2	498.3	0.0	98.5	0.1	295.4	0.0	31.9
>500	0.3	557.6	0.1	220.9	0.0	14.1	0.0	87.7	0.0	23.2
Sample Average	0.5	1,079.8	0.2	393.5	0.0	42.9	0.1	215.5	0.0	30.5

Table 3-11. Labor per Service and Output Units by Hospital Type

Hospital Profile	Per Surgery		Per X-ray Test		Per Lab Test		Per Admission		Per Discharge	
	FTE	Labor	FTE	Labor	FTE	Labor	FTE	Labor	FTE	Labor
General	0.6	1,166.2	0.2	382.8	0.0	68.2	0.2	335.7	0.0	49.3
Pediatric	0.6	1,199.9	0.1	262.3	0.0	23.7	0.1	111.9	0.0	33.6
Maternity	0.4	853.2	0.0	61.7	0.1	155.7	0.0	30.4		
Specialized	0.3	677.5	0.1	264.9	0.0	23.4	0.1	273.2	0.0	24.0
Long-term	0.3	646.9	0.1	114.0	0.3	697.2	0.0	7.7		
Sample Average	0.5	1,079.8	0.2	393.5	0.0	42.9	0.1	215.5	0.0	30.5

Supplies per unit of service and unit of output. The cost of supplies per unit of service (lab test, surgery, X-ray) and per unit of output (admission and patient-day) are presented in Table 3-12 and Table 3-13.

In general, the cost of supplies per service of output seems very low, 19.1 GEL per surgery and 3.1 GEL per admission on average.

Table 3-12. Cost of Supplies per Service and Output by Hospital Size

Hospital Size (# of beds)	Supplies (1,000 GEL)	Per Lab Test	Surgery	X-ray	Admission	Patient Day
0-150	481.5	0.6	15.8	5.4	3.3	0.5
151-250	364.6	1.2	16.6	5.1	4.2	0.4
251-500	542.4	1.7	31.4	8.9	5.8	0.6
>500	499.6	0.5	17.3	6.8	3.1	0.7
	1,888.0	0.7	19.1	6.4	3.9	0.5

Table 3-13. Cost of Supplies per Service and Output by Hospital Type

Hospital Type	Cost of Supplies (1,000 Gel)	Per Lab Test	Surgery	X-ray	Admission	Patient Day
General	739.5	1.0	18.0	5.6	5.3	0.7
Pediatric	258.2	0.3	13.6	2.8	1.4	0.4
Maternity	205.2	0.9	13.8		2.2	0.4
Specialized	539.6	0.9	22.7	8.8	9.3	0.8
Long-term	145.4	2.7		12.7	22.7	0.2
Sample Average		0.7	19.1	6.4	3.9	0.5

Long-term hospitals consume most of the supplies per unit of service (per lab test and X-ray test) and per admission. However, these hospitals have the lowest consumption of supplies per patient day, which can be explained by psychiatric care and the TB treatment requiring less instrumental investigations, as well as the high ALOS for both types of hospitals. The cost of supplies used by the specialized hospitals is highest per surgery and patient day and second highest for all other units of service and units of output.

Hospitals with between 251 and 500 beds have the highest consumption of supplies per lab test, X-ray test, surgery and admission, while hospitals with more than 500 beds have the highest consumption per patient day.

3.1.3 Quality Indicators

Mortality Rate. The total number of mortalities registered for the survey hospitals in 1997 is 3,141, or 66.2% of all mortalities in inpatient facilities in Georgia. The average mortality index (lethal cases per 10,000 discharges) is 2.66, approximately 25% higher than the national average of 1.99. This figure may indicate that the hospitals were treating a disproportionately higher number of complicated cases.

3.1.4 Financial Indicators and Financial Management

3.1.4.1 Expenditures

The total annual expenditures for 1997 for all the hospitals studied were 12,417,200 GEL, which is approximately 4.8% of the total national health expenditures of 257,550,000 GEL (Georgian Center for Transition Economy and Sustainable Development, 1998, page 28). A description of the main expenditure line items follows.

Salaries

The average annual salary for hospital personnel represents the largest share of the hospitals' official annual expenditures: an average of 53% of budget expenditures (see Table 3-14) and 60% of actual revenues.

Table 3-14. Payroll and Cost Ratios

Hospital Profile	Payroll	Budget Expendit.		Revenues		Full Costs		Fixed Costs	
		Amount	%	Amount	%	Amount	%	Amount	%
General	2,992	5,052	59%	3,857	78%	6,185	48%	5,053	59%
Pediatric	1,067	2,001	53%	2,001	53%	2,438	44%	2,106	51%
Maternity	686	1,660	41%	1,665	41%	1,827	38%	1,536	45%
Specialized	1,342	2,222	60%	2,351	57%	2,595	52%	1,993	67%
Long-term	553	1,483	37%	1,158	48%	1,625	34%	1,058	52%
Sample Average	6,640	12,417	53%	11,032	60%	14,670	45%	11,746	57%

The percentage of funds expended on salaries varies from as low as 17% (Tbilisi City Hospital #1) to as high as 86% (Telavi District Hospital). For 10 of the 41 hospitals studied, the salary funds were more than 70% of their expenditures (see Annex A, Table 1).

According to Table 3-14, specialized hospitals have the highest ratio of salaries to expenditures. General hospitals have a considerably high ratio of paid salaries to actual revenues. The reason for this disproportion is probably that general hospitals collect less revenue, or, more accurately, recover less costs than other hospitals.

Average salaries for the hospital personnel of the hospitals in the study are presented in Table 3-15, grouped by type and size.

Table 3-15. Average Annual Salaries by Hospital Profiles and Size

	Physicians	Nurses	Low Medical Personnel	Admin.	Technical	Support
Hospital Type						
General	535.7	226.8	163.2	879.1	478.3	418.1
Pediatric	505.8	252.9	219.0	707.6	397.7	479.9
Maternity	566.7	213.9	144.5	632.7	318.4	337.7
Specialized	770.2	407.8	327.2	1,101.	337.5	368.3
Long-term	695.1	543.0	464.4	1,337.	475.3	312.8
Hospital Size (# of beds)						
0-150	551.9	206.5	255.8	754.5	298.2	312.0
151-250	652.9	221.1	283.3	1,217.	874.2	783.9
251-500	396.8	162.5	218.2	619.2	336.6	293.4
>500	1,090.	281.0	514.3	1,375.	351.7	521.1
Mean of Average	573.2	206.2	267.9	846.2	413.2	404.6
St.D of Average	317.9	118.5	165.6	750.6	594.5	576.8

The average salary for each type of medical personnel from hospital to hospital ranges widely, but certain trends could be identified:

Average salaries for medical personnel (physicians, nurses, lower medical personnel) are, in general, lower than those of non-medical personnel, e.g. the salaries of administrative staff are approximately 1.5 times higher than physicians and more than three times higher than nurses.

The average annual salaries for physicians vary from as low as 56.1 GEL (Tbilisi City Hospital #1) to as high as 1,681.3 GEL (Oncology Center) (see Annex A, Table 1).

Average salaries for all personnel in most of the hospitals are below the minimal subsistence level of income in Georgia for one person (1,080 GEL per annum). Only one in four hospital physicians have an average salary exceeding this threshold. This compares to the average salary for administrative staff, which exceeds the minimal subsistence level in 11 of the 41 hospitals.

Specialized hospitals have the highest average salary for physicians and long-term hospitals have the highest average salary for administrative staff.

National hospitals with more than 500 beds have the highest average salaries for all hospital staff, mainly determined by the average salary figures for the Oncology Center, one of the two hospitals in this category.

Drugs/Supplies

The total amount of funds expended by the hospitals on pharmaceuticals, medical and lab supplies in 1997 was 1,953,000 GEL. On average, the hospitals spent 16% of annual expenditures, 20% of actual revenues, and 68% of their variable costs on pharmaceuticals and medical supplies.

For specialized hospitals, drugs and supplies account for 21% of full costs and 91% of variable costs. The variable costs ratio is high for hospitals with other profiles, except for long-term hospitals (where food is included in hospital service and accounts for most of the variable costs).

Maintenance and Others

The total amount of funds expended in 1997 by the hospitals on maintenance, utilities, and other expenses included under the expenditure heading "Other" (see section on "Other Direct Costs" in previous chapter) was 3,645,000 GEL. On average, the hospitals spent 29% of annual expenditures, 33% of their actual revenues, and 25% of their full costs on maintenance and other expenses.

Long-term hospitals and maternity hospitals devote the largest portion of their expenditures and revenues to maintenance and other expenses and these expenditures account for the largest share of their full costs (see Annex A, Table 3).

Taxes and Tax Fines

The total amount of funds spent by the hospitals on various taxes in 1997 (except the payroll tax, which is included in the payroll) was 392,000 GEL. On average, the taxes paid by the hospitals amounted to 3% of annual expenditures, 5% of their revenues, and 4% of their variable costs. Long-term hospitals pay a higher ratio of taxes than do hospitals from other groups (see Annex A, Table 4).

3.1.4.2 Hospital Revenues

The total amount billed by the hospitals in the study during the year 1997 was 14,631,000 GEL, of which 75%, 11,032,100 GEL, was collected either in cash or as “debt write-offs.” Debt write-off is a practice which has been common for the last three years in which public payers (federal and municipal governments) pay their bills to medical providers with a debt write-off when they have a cash deficit. The federal and municipal governments have medical providers write-off part of the amount the government owes to the providers for the treatment of the patients enrolled in the federal and municipal programs in amounts that medical providers owe to federal and municipal governments in various taxes, tax fines and utility payments (electricity, water). Nine percent of the bills are paid by means of debt write-offs.

Table 3-16. Revenues

Charged	Collected in Cash	Debt Write-Off	Collected + Debt Write-Off	Debts	Cash Deficit
14,631	9,666.2	1,365.9	11,032.1	3,598.9	4,964.9
%	66%	9%	75%	25%	34%

Twenty-five percent of the billed amount remains as debt. Most of this money is owed by the public payers, both federal (State Medical Insurance Company) and municipal (Regional Funds) programs.

Revenues By Source

Hospitals receive their revenues from four principal sources:

1. State Medical Insurance Company, for patients eligible for the 12 federal programs;
2. Regional Funds, for patients eligible for the municipal programs;
3. Patients and their families or sponsors paying (a) a co-payment for the hospital services covered by the municipal programs, or (b) full payment according to the internal standards for hospital services not included in the public programs;
4. Other sources, or funds received from physical and judicial facilities used for teaching, building space and other non-medical activities conducted by the hospitals.

The share of each of the charged and collected revenue sources for the hospitals grouped by profile is presented in Table 3-17.

Table 3-17. Charged and Collected Revenues by Source

Hospital	Charged	Federal	Municipal	Co-payment	Internal	Other
General	295	27.7%	39.8%	6.7%	23.0%	2.7%
Pediatric	327	55.8%	26.1%	6.4%	10.3%	1.4%
Maternity	247	61.2%	2.2%	7.7%	12.5%	16.5%
Specialized	698	67.8%	7.2%	2.9%	11.5%	10.6%
Long-term	510	98.7%		0.0%		1.3%
Average for All	357	54.2%	20.3%	5.2%	14.2%	6.1%

On average, 54.2% of the total charged and 52.2% of total revenue collected in 1997 came from federal sources (mostly from the SMIC). Municipal programs accounted for an average of 20.3% of the charged amount and 18% of actual revenues collected, and internal standards (user fees) accounted for 14.2% of the amount charged and 18.1% of total collected revenues, reflecting better collection rates for user fees than for revenues from public sources. Co-payments accounted for 5.2% of the amount charged and 5.1% of collected income, and other sources accounted for 6.1% and 6.7% of charged and collected revenues respectively.

Revenues for long-term hospitals come almost exclusively from federal sources. Maternity and specialized hospitals are also primarily financed by the federal programs.

Table 3-18. Revenues by Type of Hospital and Source of Payment

Hospital	Collected	Federal	Municipal	Co-payment	Internal	Other
General	227	26.9%	33.8%	7.1%	29.4%	2.9%
Pediatric	250	57.0%	24.5%	5.1%	12.1%	1.3%
Maternity	208	58.8%	1.7%	5.4%	14.6%	19.6%
Specialized	470	62.2%	6.7%	4.4%	16.0%	10.7%
Long-term	386	98.2%		0.1%		1.7%
Average for All	269	52.2%	18.0%	5.1%	18.1%	6.7%

Municipal programs provide the highest share of general hospital revenues. However, general hospitals also collect the highest share of revenues from user fees of all the types of hospitals.

Revenues by Activity

The hospitals of the study received revenues for the following activities:

1. Inpatient services, the main hospital activity, provided by all the hospitals;
2. Outpatient services, provided by part of the hospitals;
3. Other services, e.g. teaching, leasing building space, IDP hosting, earmarked funds for capital investments for construction, etc., provided by some of the hospitals.

Table 3-19. Revenues by Type of Hospital and Activity/Operation

Hospital	Revenues	Inpatient	Outpatient	Teaching	Rent	Capital Inv.	IDPs	Other
General	295	91.2%	5.0%	0.1%	1.3%	0.6%	1.0%	0.8%
Pediatric	327	94.0%	4.9%	0.0%	1.1%	0.0%		
Maternity	247	76.5%	6.8%	0.1%	0.2%	15.2%	0.2%	1.0%
Specialized	698	84.9%	15.0%	0.1%				
Long-term	510	94.0%	4.4%	0.3%	0.5%	0.8%		
Average for All	357	88.5%	7.5%	0.0%	0.7%	2.3%	0.4%	0.5%

Reimbursement for inpatient services accounts for an average of 88.5% of revenues received by the hospitals. At the same time, the debt accrued for the provision of inpatient services comprises 75% of the total debt owed to the hospitals. In other words, the collection of inpatient charges yields a lower rate than the collection of revenues charged for other activities.

Outpatient services account for 7.5% of total hospital revenues in the sample. Specialized hospitals charge the highest share (15%) for outpatient services.

Capital investments for major construction account for 2.3% of total revenues. Maternity hospitals have the highest ratio of capital investments.

Other services comprise the remaining 3% of total revenues. It is notable that the portion of total revenues received for teaching activities performed by the teaching hospitals, which comprise the majority of the sample, is very insignificant (below 0.1%) compared to other activities.

3.1.4.3 Costs

Direct vs. Indirect

As described in Chapter 2, “Methodology,” costs incurred by the hospitals are classified into direct, indirect and capital consumption cost categories. Direct costs comprise a major part of the total hospital costs (on average 60.5% of total costs), as presented in Annex A, Table 7. Indirect costs accounted for an average of 24.7% of full costs (direct+indirect+capital consumption costs).

According to the table, there is a difference between the sum of direct and indirect costs and budget expenditures for 1997 as reported by the hospitals. This difference does not exceed 2%-3% for each of the hospitals, and totals 210,080 GEL for all hospitals, or approximately 1.6% of full costs. This difference is induced by two occurrences:

1. A number of hospitals used more pharmaceuticals and other medical supplies during the reporting period than the amount that they procured in 1997, according to their financial statements. In other words, they have used the stock of pharmaceuticals and other supplies purchased during the previous year. However, since the supplies were used during the reporting period, it was determined that the costs were incurred during the reporting period and subsequently these costs were included in the direct costs for 1997.
2. During the cost-finding, payroll taxes were calculated at 33% of payroll as stated in the tax code of Georgia. However, more than half of the hospitals reported other figures, some more than 33% (hence, the negative difference indicated for five hospitals in Annex Table 7), others less than 33%. Focus group discussions with hospital accountants revealed no legitimate reason for the discrepancies. Perhaps these differences are induced by widespread deficiencies in accounting and tax reporting processes. Those reporting having paid payroll taxes of less than 33% of payroll have probably not paid one or more composites of the payroll tax (unemployment tax of 1%, obligatory medical insurance premium of 4%; the employee’s contribution to the pension fund is 1%), which is a common phenomenon in Georgia. On the other hand, those reporting having paid more than 33% have probably included some of the tax fines imposed by the tax authorities on hospitals for violations in tax payment. Despite these variances, the study considers that the present method used for calculating costs in relation to the payment of payroll taxes is in compliance with the existing tax code, more accurately reflects the reality, and may account for deficiencies caused by improper reporting and accounting.

Fixed vs. Variable

According to the scope of work, hospital costs of the study were classified into fixed, semi-fixed, and variable (see Table 2-9 “Classification of Costs into Fixed, Semi-fixed, and Variable” in Chapter 2). Fixed and variable costs were calculated for the hospitals and are presented in Annex A, Table 8).

On average, fixed costs comprise 83.5% of the full costs, or 80.1% of total costs incurred by all the hospitals. For eight hospitals the fixed portion of full costs exceeds 90%, for three, 95%.

According to Table 3-20, general hospitals have the highest share and long-term hospitals have the lowest share of fixed costs. Small hospitals also show a slightly higher than average share of fixed costs.

Only an average of 16.5% (19.9% of full costs) are variable costs. For eight of the 41 hospitals, the variable costs comprised less than 10% of full costs.

Table 3-20. Fixed and Variable Costs by Hospital Type and Size

	Fixed Costs	Variable Costs
Hospital Profile		
General	86.5%	13.5%
Pediatric	85.3%	14.7%
Maternity	81.7%	18.3%
Specialized	80.5%	19.5%
Long-term	73.4%	16.6%
Hospital Size		
0-150	85.0%	15.0%
151-250	80.0%	20.0%
251-500	82.6%	17.4%
>500	81.3%	18.7%
Sample Average	83.5%	16.5%
St.D of Average	8.5%	1.3%

The methodology for calculating *capital consumption costs* was described in Chapter 2. The results for the hospitals grouped by profile and size are presented in Table 3-21. The total annual capital consumption costs for the 41 hospitals studied is 2,042,700 GEL, or 13.9% of the hospitals' full costs.

Table 3-21. Capital Consumption Costs

	Depreciation	% of Full Costs
Hospital Profiles		
General	973.8	18.6%
Long-term	137.5	13.2%
Maternity	131.7	8.3%
Pediatric	341.6	13.1%
Specialized	458.1	15.2%
Hospital Size		
0-150	702.8	15.3%
151-250	250.7	13.5%
251-500	727.8	13.8%
>500	361.4	15.7%
Total/Average	2,042.70	14.6%
Percentage of Full Costs	13.9%	

On average, the capital consumption cost comprises 14.6% of the full costs for the hospitals. Maternity hospitals have the lowest consumption of capital among hospitals grouped by type, general and specialized hospitals have slightly higher than average capital consumption rate.

Small hospitals and hospitals with more than 500 beds have a higher capital consumption rate than the other two groups.

Final Costs

The final costs of patient care centers are estimated by using the methodology described in Chapter 2. The final costs of patient care centers for the entire sample are presented in Table 3-22.

Table 3-22. Final Costs of Patient Care Centers

Patient Care Center	Initial Costs	Allocated Overhead Cost	Allocated Intermediate Costs	Final Costs	Percent of Total FC
Medical	4222.4	1717.5	1206	7174.6	49.3%
Surgery	2598.6	817.5	1211	4684.8	32.2%
Intensive care	946.6	280.8	310	1543.8	10.6%
Outpatient	376.7	110.2	40.8	531.2	3.6%
Virtual ambulatory	34.7	1.8	455.5	515.8	3.5%
Dialysis	71.7	16.6	25.6	114.7	0.8%
Grand Total	8,250.5	2,944.9	3,248.4	14,565.4	

The final costs of medical patient care centers (PCC) comprised an average of 55% of total final costs for medical PCCs and 49% of total final costs for all types of PCCs, thus ranking highest among PCCs.

The “virtual ambulatory” PCC introduced for the current study (see Chapter 2, Step 2: Definition of *cost centers*) on average accounted for a considerable 3.5% of total final costs for the hospitals and dialysis for 0.8% of total final hospital costs.

Outpatient PCCs accounted for only 3.6% of the total final cost for all the hospitals, while revenues produced by their activity comprised twice as large a share of total hospital revenues for all the hospitals (see “Revenues by Activity,” above).

Unit Costs of Patient Care (Final) Cost Centers

Unit costs (patient discharge, patient day, and hospital bed) for the patient care centers are presented in Table 3-23, Table 3-24, and Table 3-25, grouped by hospital type.

Table 3-23. Cost of Discharge by Hospital Type

	Surgery	Medical	Dialysis	Intensive Care
General	167	120	1,045	544
Pediatric	210	113	181	249
Maternity	107	57		298
Specialized	381	200		640
Long-term		719		

Table 3-24. Cost per Patient Bed Day by Hospital Type

	Surgery	Medical	Dialysis	Intensive Care
General	23	16	65	80
Pediatric	24	11	62	27
Maternity	41	10	18	
Specialized	21	15	19	640
Long-term		8		

Table 3-25. Costs per Hospital Bed by Hospital Type

	Surgery	Medical	Dialysis	Intensive Care
General	7,778	3,038	1,255	536
Pediatric	2,800	16,767	726	1,680
Maternity	1,115	13,029		2,793
Specialized	23,719	11,025		2,559
Long-term		91,285		

Total Financial Requirements (Cost Recovery)

According to the conceptual framework, one of the goals of the study was to define the total financial requirements of the hospitals and determine the ability of the hospitals to meet these requirements. Problems in recording and collecting information about the revenues and costs of teaching (i.e., salaries for the faculty members employed in teaching hospitals) precluded the current study from treating teaching as a hospital cost or revenue center. In addition, hospitals in Georgia conduct almost no public health activities; rather, special outpatient facilities, polyclinics and sanitary-epidemiological stations are responsible for carrying out these activities. As a result, hospital activities are limited to the provision of inpatient, and in certain instances, outpatient services. For this reason, the AHA definition of TFR is not fully applicable for the hospitals in Georgia and this study simply uses the terms “cost recovery” and “cost recovery rate.”

It should be noted that the full costs as calculated in this study include not only the basic production costs of the hospitals, such as labor, supplies, depreciation, and administrative overhead, but also components of (a) financial costs (maintenance of the working capital, taxes) and (b) economic costs (financial losses and reserves).

The cost recovery rate is defined as the part of the costs that the organization (in this case, the hospital) is able to recover by means of revenue collection for services rendered. The cost recovery rates (CRR) for the hospitals of this study were calculated by dividing the sum of billed amounts and revenues received by amount of costs incurred. The CRR is calculated for both full costs and full costs excluding capital consumption costs (or depreciation) for the reasons explained in the Chapter 2.

The resulting CRRs (for billed amounts and revenues actually received in cash and debt write-off) for each of the hospitals are presented in Annex A, Table 2.

The average CRRs for the hospitals grouped by size and profile are presented in Table 3-26 and Table 3-27.

Table 3-26. Cost Recovery Rates Based on Charged Amounts

	Charged Amount	Full Cost	Average CRR	Full Cost w/o Deprec.	Average CRR
Hospital Profile					
General	5,159.7	6,020.2	92.86%	5,028.7	115.58%
Long-term	1,530.4	1,625.1	116.93%	1,487.3	140.97%
Maternity	1,972.5	1,826.8	106.23%	1,693.4	115.71%
Pediatric	1,887.1	1,860.9	114.11%	1,516.6	131.27%
Specialized	4,081.4	3,336.8	115.45%	2,866.4	137.38%
Hospital Size (# of beds)					
0-150	4,506.5	4,338.9	109.96%	3,629.0	131.14%
151-250	2,698.1	3,010.7	92.21%	2,695.8	107.29%
251-500	4,251.9	4,674.1	92.84%	3,992.2	108.70%
>500	3,174.6	2,646.1	113.15%	2,275.4	133.15%
Total/Average	14,631.0	14,669.9	99.73%	12,592.4	116.19%

Table 3-27. Cost Recovery Rates Based on Actual Revenues

	Actual Revenues	Full Cost	Average CRR	Full Cost without Deprec.	Average CRR
Hospital Type					
General	3,881.0	6,020.0	64.84%	296.0	80.34%
Long Term	1,158.4	1,625.1	73.70%	1,487.3	86.00%
Maternity	1,665.2	1,826.8	90.06%	1,693.4	98.29%
Pediatric	1,456.9	1,860.9	90.17%	1,516.6	103.31%
Specialized	2,870.8	3,336.8	91.02%	2,866.4	107.87%
Hospital Size (# of beds)					
0-150	3,544.0	4,338.9	83.52%	3,629.0	98.43%
151-250	1,788.5	3,010.7	63.54%	2,695.8	73.90%
251-500	3,575.8	4,674.1	76.20%	3,992.2	88.36%
>500	2,123.8	2,646.1	77.50%	2,275.4	91.95%
Total/Average	11,032.10	14,669.90	75.20%	12,592.40	87.61%

According to Table 3-26, the CRR of full costs for all hospitals would have been 99.7% (116.9% if capital consumption costs are excluded) if the entire amount of billed charges had been collected. The mean CRR for the sample is 104.06% (St.D=29.2%, Mode 88%). Except for general hospitals, all types of hospitals charged more than the amount of incurred costs, and had they fully recovered billed amounts, they would have received excess revenue. Among the hospitals grouped by size, small and national level hospitals with more than 500 beds also charged more than 100% of incurred costs.

When hospitals are considered individually, according to Table 2 in Annex A, more than half of the hospitals (22 out of 41) charged less than the amount of incurred costs for providing the hospital services. Five hospitals charged less than 80% of their full costs. Excluding the capital consumption cost, nine hospitals charged less than the full amount of costs.

According to Table 3-27, the actual revenues collected by all the hospitals comprised 75.2% of their full costs and 87.6% of their full costs not considering the capital consumption cost. The mean CRR for the sample is 78.6% (StD=25.2%, Mode=56.5%). General and long-term hospitals recovered the smallest portion of their costs (on average 64.84% and 73.7%, respectively) among hospitals grouped by type. Only pediatric and specialized hospitals were able to collect enough revenues to cover their full costs, excluding the capital consumption costs. Medium hospitals performed worst among hospitals grouped by size, recovering only 63.5% of full costs. Average CRR for all four hospital size groups were below 100%.

Among individual hospitals (Annex A, Table 5), 33 out of 41 hospitals (80.5%) were not able to recover full costs and 29 hospitals (70.5%) were not able to recover full costs excluding the capital consumption cost. The CRR of full costs for 14 hospitals (34.4%) is less than 70% and the CRR of full costs minus capital consumption costs is less than 70% for eight hospitals (19%).

Selected financial indicators (ratios) were calculated for the hospitals.

Asset Turnover Ratio (ATO): This ratio is a key indicator of how efficiently assets have been used to meet the financial requirements of a hospital.

$$ATO = \text{net operating revenues} / \text{total assets}$$

Accounts Receivable Turnover (ART) and Average Collection Period (ACP): These ratios show the length of the time it takes to collect from third-party payers.

$$ART = \text{net patient revenues} / \text{net accounts receivable}^{14}$$

$$ACP = 365 / \text{accounts receivable turnover}$$

Net Operating Margin (NOM): This ratio expresses the difference between the revenues received from services provided and the expenses required to support those revenues as a percentage of net operating revenues.

$$NOM = \text{net income from operations} / \text{net operating revenues}$$

Return on Assets (ROA): This shows the net operating margin as a percentage of the assets employed to provide patient care.

$$ROA = \text{net income from operations} / \text{total assets.}$$

Results for each of the hospitals are presented in Annex A, Table 6. For most of the selected indicators, the sample mean is within the U.S. industry norms (Georgian norms are unavailable). The mean NOM and ROA exceed the norms by more than two times (0.15 vs. 0.07).

Average ratios for the hospitals grouped by profile and size are presented in Table 3-28. For most of the selected indicators the group averages of the hospitals in all categories fall in the range of industry norms, except for the general hospitals, which have a negative NOM and a 0 value for ROA.

¹⁴ "Net Accounts Receivable" is the entire amount of revenues charged but not collected, assuming that there are no bad debts.

Table 3-28. Financial Ratios: Turnover and Performance Indicators

	Asset Turnover Ratio ATO	Accounts Receivable Turnover ART	Average Collection Period ACP	Net Operating Margin NOM	Return on Assets ROA
Hospital Profile					
General	0.27	4.20	86.92	-0.01	0.00
Pediatric	0.39	4.25	85.94	0.24	0.10
Maternity	0.75	6.42	56.86	0.16	0.13
Specialized	0.56	3.06	119.19	0.36	0.25
Long-term	0.63	4.11	88.77	0.03	0.02
Hospital Size					
0-150	0.34	4.53	80.54	0.21	0.08
151-250	0.51	3.29	111.08	0.03	0.02
251-500	0.38	5.65	64.64	0.06	0.02
>500	0.46	3.02	120.82	0.30	0.16
Average	0.40	4.03	90.58	0.15	0.07
Industry Norms	0.07-1.10	4.44-6.34	7.54-82.22	0.003-0.062	0.02-0.07

3.2 Patient Survey Findings

3.2.1 Description of Patient Sample

3.2.1.1 Characteristics of Customers/Patients

The average age of the 404 patients in the sample was 28.2 (Standard Error [SE]=1.16), which can be explained by the high representation of maternity hospitals (31.4% of the sample). The distribution of patients by age groups is shown in Table 3-29.

Table 3-29. Distribution of Patients by Age Groups

	Age Groups	Frequency	Percent	Cumulative Percent
1.	0-14	130	32.2	32.2
2.	15-30	116	28.7	60.9
3.	31-45	66	16.3	77.2
4.	46-60	44	10.9	88.1
5.	61-75	42	10.4	98.5
6.	>75	6	1.5	100.0
Total		404	100.0	

The table indicates that respondents under the age of 14 constituted 32.2% of the sample, while older respondents, age 46 and above, represented only 21.3% of the sample.

Females prevailed in the sample: they constituted 60.9% of the sample, males only 39.1%. Females mostly dominated in two age groups, 15-30 and 31-45, and thus are the majority in the first three groups, which comprise 77% of the total.

The average household size in the sample was 4.58 members (St.D.=1.59). The maximum was 10 members. There was a statistically significant difference in the size of a household by residency

area (capital versus periphery) with the average size in the capital at 4.54 and 4.62 in the periphery ($p=0.03$).

The employment rate among patients was 23.1%. There was no statistically significant difference in employment between patients living in the capital or in the periphery. Almost half of the working patients held positions in the public sector: 33.9% in public enterprises and 12.9% in governmental agencies. Only 16.1% held positions in the private sector, more specifically, in the service sector. More than half of the patients (206) reported being unemployed. More than half of the unemployed patients were pensioners (retired) or housewives. The actual unemployed constituted only 21.9% of the 206 non-working patients. However, over half of them (57.5%) were unemployed, despite high educational and/or occupational qualifications.

The great majority of households, 90.2%, reported that their average monthly income was 150 GEL or less. The average monthly income reported by 348 households (86.1% of the sample) was estimated at 93.2 GEL ($SE=6.25$ GEL).

Not surprisingly, the average monthly income per household where the patient was working was 124 GEL, much higher than the average monthly income of households where patients had no work (considering only patients of working age), which was 84 GEL ($p=0.009$).

There was no statistically significant difference in a household's monthly income by residency; in the capital, the monthly income was 103 GEL and in the countryside it was 84 GEL ($p>0.05$).

The households' income findings should be interpreted very cautiously, considering the implicit constraints of the survey tool. Respondents were only asked about the range of their cash income. No cross-checking was incorporated into the questionnaire.

3.2.1.2 Representation of Different Types of Hospitals

As described in Chapter 2, the primary sampling units for the patient survey were 16 of the sampled hospitals. The distribution of patients by hospital type and service area (capital versus countryside) is shown in Table 3-30. The distribution of patients is generally the same as the distribution of hospitals by type and service area. The hospital sample covers all types of hospitals except long-term hospitals such as mental care and TB hospitals. General hospitals comprise one-third of the sample, and maternity hospitals another third. Maternity hospitals are more over-represented in the periphery. All hospitals in the sample are public (central or municipal) and are contracted through the State Medical Insurance Company or the Municipal Health Fund.

Table 3-30. Description of Hospitals by Type and Service Area

Hospital Type	Capital	Periphery	Total
General Hospital	2	3	5
Tertiary/Specialized	2	0	2
Pediatric	2	2	4
Maternity	2	3	5
Total	8	8	16

3.2.2 Choice of Hospitals

Respondents were asked about their reason for going to a particular hospital (assuming that their health problem truly required hospital care).

As shown in Table 3-31, only 54 of 404 patients, or 13.4%, had no other choice and another 128 patients (31.7%) were referred to the particular hospital due to an emergency.

Table 3-31. Selection Criteria

	Frequency	Percent
Sent by the doctor	60	14.9
Need of emergency aid	128	31.7
Experienced personnel	48	11.9
Free treatment	5	1.2
Close to residence	19	4.7
Medicines available	1	.2
Good conditions	15	3.7
Experienced personnel*	14	3.5
Free treatment*	2	.5
Close to residence*	7	1.7
Good conditions*	7	1.7
Acquaintance	30	7.4
Had no other choice	54	13.4
Other reason	14	3.5
Total	404	100.0

Note: The same question was asked considering the patient's personal experience or the experience/recommendations of their family members. Those questions are marked with an asterisk.

The rest of the patients (45.1%) made an informed choice. Experienced personnel attracted 62 patients (15.4% of the total and 27.9% of the 222 patients with a “free” choice). Referral by a doctor was ranked as the second most frequent reason for choosing a particular hospital (14.9% and 27% of the total correspondingly). The third factor mentioned by was acquaintance (7.4% and 13.5%), meaning that the perceived benefits of personal relations with medical personnel, or the expectation of special treatment and the evasion of possible harassment. Free treatment (either received by the patients themselves, as was the case for 1.2%, or by their family members, 0.5%) contributed to the choice of the hospital in only 1.7% of the cases.

While referral by a doctor played a critical role in the selection of specialized/tertiary hospitals, the need for emergency attention was the number one reason for choosing pediatric and general hospitals. Experienced personnel was far behind other reasons for the selection of maternity hospitals.

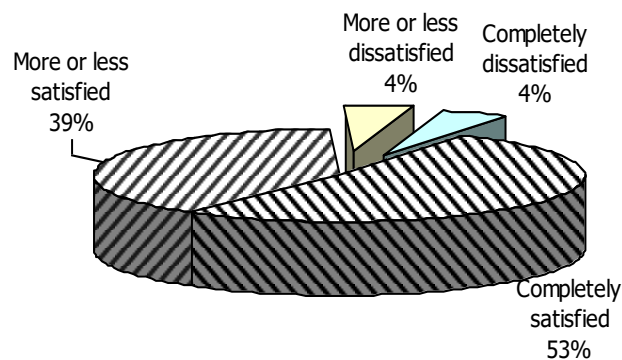
Good conditions were more frequently mentioned by patients selecting maternity hospitals (14 out of the 22 total cases). It is likely that in a non-urgent situation, particularly when the choice of maternity hospital is made several weeks in advance, comfort and amenities become very important criteria for making the decision.

3.2.3 Satisfaction with Hospital Care

General patient satisfaction with hospital services was considerably high (see Figure 3-1). Only about 9% of the 404 respondents reported any degree of dissatisfaction. More than half, or 210, of the respondents expressed complete satisfaction. Maternity hospitals had the most satisfied patients: 118 out of 127 patients treated in maternity hospitals (92.9%) reported high satisfaction ratings.

The respondents were asked to rank six criteria: facility, services, food, hygiene, supply of pharmaceuticals, and the professional qualifications of medical staff. All these criteria received almost equal ranking, except food: only 33.8% of 240 responses (or 22.1% of the sample) to this question were positive.

Figure 3-1. Overall Opinion about the Hospital



Finally, the customers were asked if they would recommend the hospital they used to other patients with similar medical problems. Overall, positive answers were received in 89.1% of the cases. Compared to other types of hospitals, general hospitals got less support, but still received positive answers from 83.1%.

At the end of the interview, respondents were again asked whether they experienced and could identify at least one problem related to hospital care. The results shown in Table 3-32 confirm initial findings (e.g., 53% are “completely satisfied” patients). More than half of the patients (242 or 60% of the sample) did not mention any problem at all. The rest of the respondents indicated physician’s fees and drug expenditures (9.7% and 15.6% respectively) as problems experienced in the hospital.

Table 3-32. Hospital Care Related Problems Reported by Respondents

	Frequency	Percent
Nothing	242	59.9
Transportation expenditures	8	2.0
Medicines expenditure	63	15.6
Money for doctors	39	9.7
Could not cover official cost	10	2.5
Difficulty in getting needed medicines	4	1.0
Difficulty in finding needed specialists	4	1.0
Other	34	8.4
Total	404	100.0

It is noteworthy that only 10 respondents (or 2.5% of the sample) identified the inability to cover *official costs* as a major problem. This response means that were it not for unofficial payments (for details see Table 3-32), affordability/access problems might have been relatively insignificant.

3.2.4 Patient Awareness of Hospital Care Costs

Finally, the survey aimed to explore:

The degree of public awareness of the financing aspects of health care/health care reforms, particularly regarding the state health programs covering hospital care;

The actual behavior of the hospital and patient during the payment process.

It was logical to propose that patients, once exposed to hospital care, should be more informed than the general population about (1) their rights and responsibilities within the hospital setting, (2) the rules for reimbursement for hospital services, and (3) the portion of hospital care costs covered by various public programs and the part of those costs officially paid by the patient. However, other similar surveys (e.g., “Family Planning/Reproductive Health Assessment in Georgia, 1997”) indicated an extremely low level of awareness of these issues among the population exposed to hospital care. This tendency raises serious concerns about the fact that the general population is not informed about state benefits. No baseline data is available, however.

3.2.4.1 Knowledge of Official Service Rates

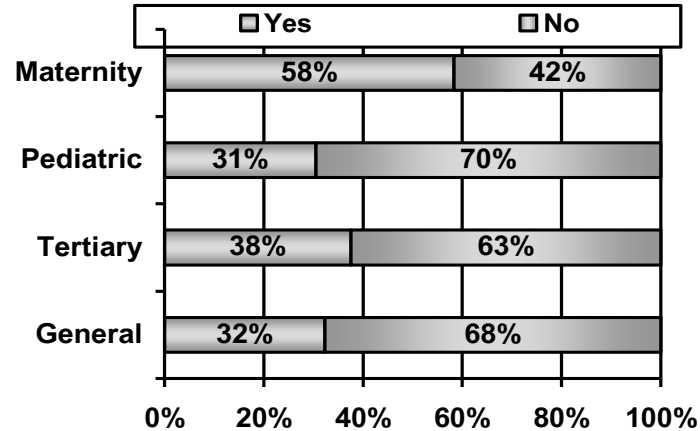
Patients were first asked whether they knew what the official hospital care rates were, and 239 patients (or 59.2% of the sample) did not know.

The breakdown of public awareness of prices by hospital type is presented in Figure 3-2. The best results were found in maternity hospitals, with a level of awareness of 58%; the lowest level of awareness (31%) was found in pediatric hospitals. One explanation could be the same assumption made for hospital selection preferences: the customer of a maternity hospital has more time to learn about hospital service rates in advance, compared to customers of other types of hospitals. Tertiary hospitals follow maternity hospitals with respect to the awareness level, at 38%; as in maternity hospitals, hospitalization in tertiary hospitals is also usually non-urgent. It looks like the factor of *urgency* becomes significant with respect to the selection criteria and the awareness of service rates. In other words, it is better and/or easier to learn about hospital rates when a patient can carefully plan an admission than when a patient is an emergency referral.

Further exploration of the knowledge of official service rates revealed some interesting figures. As shown in Figure 3-3, 196 patients (48.5% of the sample) were simply not interested(!) in learning about official service rates. Only four patients who tried to find out the official service rates, were unable to find them.

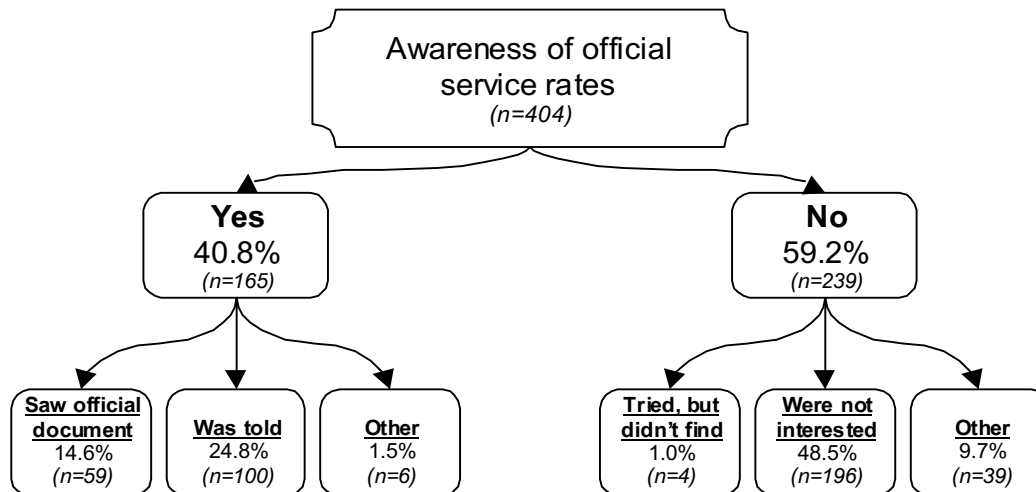
Although these figures explain the low level of awareness, they also raise an interesting and important question: “Why are almost half of the patients not interested in official service rates?” Is it because 56.4% of payment is unofficial? Is it because neither patients nor hospital personnel are concerned enough about the official cash flow? This report tried to find partial answers, but this question really deserves a deeper study with the involvement of psychologists and sociologists.

Figure 3-2. Customer Knowledge of Official Service Rates by Hospital Type



A final noteworthy finding in Figure 3-3 is the source of information for official service rates. Only 14.6% of respondents (one-third of those who knew rates) mentioned official documents as a reference for rates. The remaining two-thirds who claimed awareness had been told verbally about service rates. The study team did not request the source of verbal information but assumes that those 106 patients had incorrect information about the official service rates. In other words, they could have been objects (“victims”) of misinformation or fraud.

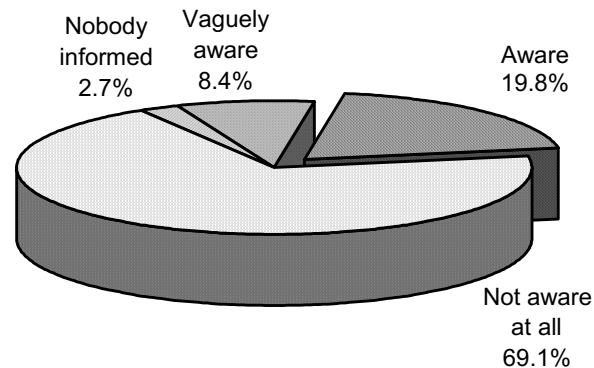
Figure 3-3. “Knowledge Tree” of Official Service Rates



3.2.4.2 Knowledge of State Health Programs/Reimbursement

One of the most interesting findings of the survey was patient knowledge of state health programs and the reimbursement of hospital services by public sources, illustrated in Figure 3-4. The figure reveals some unfortunate figures: only 80 patients—less than 20 % of the sample—responded that they were aware of state funding. Almost 70% were not.

Figure 3-4. Patient Awareness of State Funding of Hospitals



In regard to maternity hospitals, curiously, 72.5% of maternity hospital patients had absolutely no idea that delivery costs are fully funded by the state. At the same time, this group of patients represented the stratum of respondents who claimed to have the highest awareness of official rates of the hospital services. These two results seem to be contradictory. The only explanation to this paradox is that patients from maternity hospitals understand as “official rates” the fixed, unofficial payment rates, because information about these unofficial rates is widely and openly disseminated by the hospital personnel among patients. This example again demonstrates the inability of the State Medical Insurance Company to inform the population about the publicly guaranteed free delivery services in maternity hospitals. The ignorance of the population with regard to their rights for free maternity services creates an environment conducive for medical personnel to easily cheat the patients and extract considerable unofficial payments from them, payments that patients are not supposed to pay.

Without any additional exploration, it becomes clear that the state provides no publicity or social marketing for either the financing or administration of the SMIC.

Why should it be expected that citizens be satisfied with the current state of health care and health care reforms if almost three-fourths of the primary beneficiaries, namely maternity hospital patients, have no idea and no perception of tangible achievements or benefits of health care reforms?!

3.2.4.3 The Forms of Requesting Payment

The patients were asked in *what form* payments, both official and unofficial, were requested.

Results are given in Table 3-33. The cases above the dashed line in the table reflect all instances of payment request. As shown, official payments were requested twice as frequently as unofficial payments (34.2% and 15.3% respectively). The difference is more prominent when payment was requested recurrently during the treatment process (third row in the table), 11.6% in the case of official payment versus 3.7% for unofficial.

It is of certain interest to compare the aforementioned findings with reported payments. One hundred and six respondents did not answer the question, “How much did you pay officially?,” and another 129 reported that they paid nothing. Thus, a total 235 (106+129) patients (or 58.1%) did not report any official payment. If this is the case, 129 patients out of 162 (fourth row, second column in the table) did not pay because the official payment was not requested.

Table 3-33. Frequency of Payment Request Forms by Official and Unofficial Payments

Forms of Requesting Payment	Official			Unofficial		
	Frequency	Percent	Cumulat. Percent	Frequency	Percent	Cumulat. Percent
Would do nothing without money	85	21.0%	21.0%	40	9.9%	9.9%
Categorically pre-payment	6	1.5%	22.5%	7	1.7%	11.6%
Gradually	47	11.6%	34.2%	15	3.7%	15.3%
Fully, by our own wish	104	25.7%	59.9%	88	21.8%	37.1%
Did not request	162	40.1%	100.0%	254	62.9%	100.0%
Total	404	100.0%		404	100.0%	

From the findings above, we can also assume that 21.8% of patients pay unofficial fees (or gratuities) voluntarily. Unofficial payments were requested in a total of 15.3% of all cases. That is, the patients experienced illegal “pressure” only in a few cases, which challenges the common notion that you can not get anything in the hospital without under-the-table payments. However, *30.7% of maternity hospital patients* (twice more than the sample average!) reported that they were requested to pay unofficially, which is outrageous, considering the amount of public spending (through SMIC) for delivery services.

3.2.5 Patient Costs

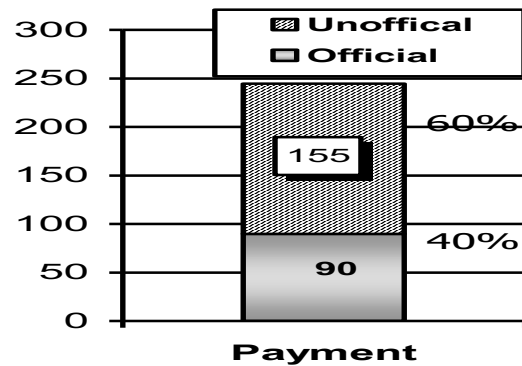
3.2.5.1 Explicit Costs/Fees

The consumers were asked how much they paid in total and what amount they paid officially out of this total.

A total of 321 patients (79.5% of the sample) responded to the question about total payment. The average amount per case was 240.67 GEL (SE 5236.92=GEL. St.D.=661.45; (the large St.D. is caused by two cases where 10,000 GEL and 5,000 GEL were paid [no official payment was reported], and, in both cases, the hospital stay was 120 days). Fifty-two respondents (12.9% of the total sample and 16.2% of the 321 respondents) did not pay anything for hospital care.

Only 298 respondents (73.8% of the total sample) reported making an official payment. The average amount was 89.93 GEL. One hundred twenty-nine respondents reported having paid nothing officially (31.9% of the total sample and 43.3% of the 298 respondents). Thus, the official payment per case (or per admission) constituted only 37.4% of the total amount (for details see Figure 3-5 Payment Composition). Unofficial payment on average was 154.74 GEL (SE=35.77 GEL).

Figure 3-5. Payment Composition



In order to compare user fees for different types of hospitals, cost per unit of output (per diem) should be used.

The average length of stay in the sample was 9.1 days (Mode=5 days, Median=7 days, SE=0.6¹⁵ days). There was a statistically significant difference in the length of hospital stay between hospital types (see Table 3-34). The longest hospital stay was, as expected, in tertiary clinics: 13.0 days compared to the sample average of 9.1 (p=0.026).

Table 3-34. Length of Stay by Types of Hospital

Type of Hospital	Length of Stay	
1 General	Mean	9.46
	SE	.75
2 Tertiary/Specialized	Mean	13.00
	SE	2.33
3 Pediatric	Mean	7.15
	SE	.78
4 Maternity	Mean	8.43
	SE	1.23
Total	Mean	9.10
	SE	.60

The comparison of user fees per unit of output (per diem) by different types of hospitals is shown in Table 3-35.

The high rate of per diem payment in tertiary hospitals seems natural. However, the high ratio of unofficial fees (the last column in the table) in two types of hospitals, pediatric and maternity (63% in both cases), should be noted. Pediatric and maternity hospitals are funded from public sources (SMIC). However, from a cost-shifting perspective, the survey findings indicate the opposite: the share of direct out-of-pocket payments is higher in maternity hospitals than in tertiary hospitals (63%>48.8%).

¹⁵ Std. Error of Mean

Table 3-35. Comparison of Total User Fees and Unofficial User Fees by Hospital Types

Type of Hospital		Total Fee per diem	Unofficial Fee per diem	Unofficial Fee as a % of Total
1 General	Mean	31.74	16.26	51.2%
	SE	3.40	2.54	
2 Tertiary/Specialized	Mean	41.75	20.38	48.8%
	SE	7.38	4.59	
3 Pediatric	Mean	15.11	9.51	63.0%
	SE	2.42	1.57	
4 Maternity	Mean	33.02	20.80	63.0%
	SE	2.45	2.03	
Total	Mean	30.19	17.03	56.4%
	SE	1.84	1.29	

What accounts for the direct, out-of-pocket payments? According to the survey findings, pharmaceuticals constitute the largest share of out-of-pocket expenditures—on average, 68.37 GEL. Almost half of the 404-person sample (~48.6%) reported that they bought medicines for hospital care.

Two-hundred and seventy-four patients reported having paid nothing for surgery (67.8% of the sample and 90.1% out of 304 respondents who replied on the question). This figure should be interpreted cautiously, because during the survey, patient medical charts were not examined and thus it was impossible to confirm how many of the 304 respondents needed or underwent surgery. For details see Annex A.

3.2.5.2 Implicit (Hidden) Costs

In-kind Drugs

Only 10 patients reported having brought their own medicines (without paying cash). According to their estimation, the value of this in-kind contribution was 42.10 GEL on average (Std.D=36.55, n=10). Although this cost should be included in the computation of customer costs in general, due to the small size of the sample (n=10) and the high St.D, the study did not incorporate it in its calculations. However, even this figure could be used successfully with a more sophisticated algorithm, a task outside the scope of this report.

Food

Seventy respondents (or 17.3% of the sample) mentioned that food was available at the hospital. However, only 40 respondents consumed the hospital food; this constituted 10.4% of the sample and 60% of the 70 respondents. These findings are consistent with the satisfaction results regarding the hospital food discussed above.

Assuming a minimum average household expenditure on food of 3.48¹⁶ GEL per day, average food costs per case were calculated and appear in Table 3-36.

Table 3-36. Average Food Costs per Case by Type of Hospital

¹⁶ This figure is calculated based on a minimum food basket of 2,500 calories for a working man, from the State Statistical Department report for the first quarter of 1998.

Type of Hospital		Food Costs per Case
General	Mean	31.23
	SE	2.62
Tertiary/Specialized	Mean	45.60
	SE	8.24
Pediatric	Mean	24.80
	SE	2.75
Maternity	Mean	33.16
	SE	5.60
Total	Mean	32.33
	SE	2.27

These calculations show that the additional financial burden of hospital care for households with regard to food is 32.33 GEL per hospital admission on average. The averages by hospital type are statistically significant ($p=0.039$), with the maximum value for tertiary hospitals (45.60 GEL) and the minimum value for pediatric hospitals (24.80 GEL).

Hygiene and Linen

Personal hygiene items and linen were brought to the hospital by 231 patients, 57.2% of the sample. Only 98 patients (23.8%) had no need to bring those items.

The average household costs for hygiene items and linen were calculated using the empirical equation $5X+(0.5)Y$, where X is a variable with fixed values 0, 0.5 and 1, corresponding to the responses to the following question “Did you bring linen and hygienic items?”: No ($=0$), Partial ($=0.5$) and Complete ($=1$). The coefficient 5 is fixed, reflecting the initial costs of bringing linen and hygienic items; Y is equal to the length of hospital stay. Thus, the cost of linens for three days of inpatient care would be $5(1)+(0.5)(3)=6.5$ GEL.

The calculated means for linen and hygiene costs by hospital type are reflected in Table 3-37. As the table shows, the average cost for the sample is 9.61 GEL (with $SE=0.37$).

Table 3-37. Average Customer Costs of Linen by Type of Hospital

Types of Hospital		Linen/Hygiene Costs per Case
General	Mean	9.81
	SE	.44
Tertiary/Specialized	Mean	11.16
	SE	1.27
Pediatric	Mean	8.27
	SE	.46
Maternity	Mean	9.44
	SE	.81
Total	Mean	9.61
	SE	.37

Transportation

Transportation costs consist of both referral transportation costs (the cost of taking the patient to the hospital for admission) and visiting transportation costs (the cost of caretaker visits to the hospital).

Only in 5.3% of cases did the patient get to the hospital on foot. In most cases, a car (either the patient's own car or a household member's) was the primary means of transportation, reported by 60.1% of the sample. An ambulance delivered patients to the hospital in only 12.4% of the cases.

Table 3-38 looks at transportation costs (patient referral and caretaker visit) per case. However, analyzing the figures in the table, the average cost (12.25 GEL) seems inconsistent with the average distance of 5.6 Km. It is more likely that the real average cost of a single trip is not more than 2.5-3 GEL. Adjusting for the number of patients reporting caregiver visits (211), average transportation costs (3 GEL), and distance to the hospitals, average transportation costs per case were approximately 20.6 GEL.

Table 3-38. Major Parameters for the Calculation of Transportation Costs

	N	Min.	Max.	Mean	St.D.
Time needed to get to the H. (minutes)	402	5.0	120	21.49	16.18
Distance to the H. (Km)	282	.5	32	5.64	4.95
Transportation cost	354	.0	99	12.25	30.27

Foregone Income

In Georgia, it is very common for patients' family members to be involved in the process of inpatient care. This involvement can range from caretaking and supplying medicines and materials upon the request of hospitals, to calling specialists, bringing food, getting money, etc. When a household member involved in caretaking is a major source of income for the household, the inpatient care automatically means the loss of revenues for the household, which can be attributed to hospital care costs.

A total of 288 patients (71.3%) had a caretaker at the hospital. Only 211 patients responded to the question about how frequently caretakers attended the patient. Eighty patients (19.8% of the sample and 37.9% of 211 patients) responded that the caretaker was with the patient all the time at the hospital; in only 11 cases (2.7% of the sample) did the caretaker visit the patient irregularly. Thus, in the rest of cases, the caretaker attended the patient on a daily basis with varying frequency (one, two or three times a day).

The detailed calculations of RVU, or the number of days that a household member who is a major source of household income (to be identified) spent at the hospital, require a special application (module), which is outside the scope of this report. However, a rough estimate can be made based on the mean length of hospital stay for the patients with a caretaker (or caretakers), 10.05 days (SE=0.80, n=288) compared to the average of 6.76 days (SE=0.58, n=116) for patients without a caretaker (p=0.012). Assuming that on average at least one person was taking care of the patient regularly and on a daily basis, and assuming that the opportunity cost for a person per day is the average daily income of the household (or the average monthly income, 94 GEL, divided by 30 days, which is equal to about 3 GEL), it is possible to estimate the opportunity cost to be 10 patient days x 3 GEL, which equals approximately 30 GEL for patients with a caretaker, and 6.10 patient days x 1.5 GEL,

which is approximately 9 GEL for patients without a caretaker. Consequently, the sample average would reflect weighted group averages: $30 \times 71.3\% + 9 \times 28.7\% \approx 24$ GEL per case (or admission).

3.2.5.3 Total Patient Costs

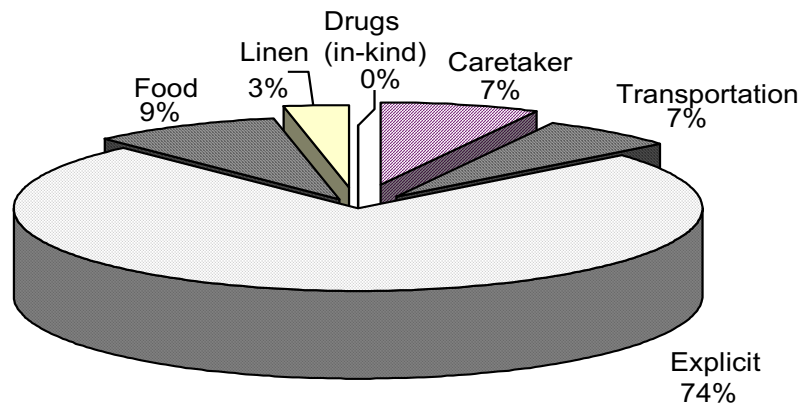
The various components of patient costs were calculated in Chapter 2. This chapter has presented summarized results of patient cost finding and the calculated aggregate patient cost per case of hospital care.

Table 3-39. Total (aggregated) Patient Costs

I Explicit	II Food	III Linen	IV Drugs (in-kind)	V Caretaker	VI Transportation	I+II+III+IV+V+VI TOTAL
240	32	10	0	24	21	323
74%	9%	3%	0%	7%	7%	

The total costs equal an average of 323 GEL per case (or per discharge), or 323 GEL/9.1 days = 36 GEL per day of hospital stay. Three-fourths of hospital care costs are explicit customer costs, one-half of which, depending on the type of hospital, are unofficial, out-of-pocket payments, or in other words, about 35%-37% of the total cost. The figures in Table 3-39 represent the average breakdown pattern for patient costs in the sample. The structure of customer costs is presented graphically in Figure 3-6. If hospital and type-specific calculations were conducted, the differences in distribution of cost components could be assessed.

Figure 3-6. Customer's Cost Structure



3.3 Total Cost of Unit of Hospital Services

For this study, the total cost of unit of hospital services (TCUHS) was calculated as the sum of components "A" and "B." Component "A" expresses the final unit costs of inpatient cost centers and was calculated by dividing the total final costs of inpatient cost centers of all hospitals by the total number of patient discharges from the hospitals (in section 3.1.4.3, "Costs"). Component "B" represents aggregated patient costs in the hospitals (section 3.2.5.3, "Total Patient Costs").

Total final costs of inpatient cost centers equals $14,669,900 * 0.929$ (portion of inpatient cost centers) = 13,628,337.

Component A per discharge = $13,628,336 / \text{total number of patient discharges}$, where the total number of patient discharges is equal to 118,090. Therefore, component A = $13,628,336 / 118,090 = 115.4$ (GEL). Component B per discharge = 323 GEL.

Subsequently, TCUHS per discharge is approximately:

$$\sim 115.4 + 323.4 = 438.8 \text{ GEL}$$

Component A per patient day = $13,628,336 / 868,910$ (total number of patient days) = 15.7 GEL. Component B per patient day is 36 GEL.

As a result, TCUHS per patient day is approximately:

$$\sim 15.7 \text{ GEL} + 36 \text{ GEL} = 51.7 \text{ GEL}$$

In other words, if all costs associated with the provision of hospital services (hospital direct, indirect, and capital consumption costs, and patient direct, indirect and hidden costs) are accounted for, the total unit costs of hospital inpatient services calculated with the method described above would be approximately 439 GEL per patient discharge and 52 GEL per patient day.

These results should be interpreted with caution and should be used only for comparative purposes. Direct addition of components A and B as a method for calculating total unit costs of hospital services is highly arguable. These components, i.e. hospital and patient costs, are estimated by using different methodologies, and data is obtained from two distinct surveys (though from the same hospitals). Further investigation and more sophisticated statistical analyses are required to obtain more scientific results.

Nevertheless, a simple comparison of the figures obtained for hospital and patient unit costs may lead to some meaningful conclusions, as the total costs incurred by patients per case and patient day of hospital service exceeds by several times the recognized costs incurred by the hospitals themselves. This fact certainly deserves close attention and further exploration.

4. Summary of Findings and Policy Recommendations

4.1 Summary of Findings

The hospitals studied encompass almost all types of hospitals currently operating in Georgia, varying by size, type, ownership status, teaching status and geographical location. Because of the small number of observations in certain hospital categories, e.g., long-term hospitals and national hospitals (>500 beds), the statistical significance of the sample results for those categories is limited and does not allow for a generalization of findings for all such hospitals in Georgia. However, findings for the hospitals in other categories and the number of findings for the entire sample could be used to characterize the hospital sector in general. It is quite likely that many achievements and problems identified in the studied hospitals are generic to all other hospitals in the country, particularly those problems that reflect failures in common accounting practices and reimbursement mechanisms.

Several findings on hospital performance and operational indicators are worth mentioning:

The average length of stay for hospitals in Georgia has decreased dramatically during the years of health reform, from 15.3 in 1991 to 9.8 in 1997 (for acute care beds), while for the hospitals of this study the ALOS was even lower, 6.96. This decrease in the ALOS is likely to be closely associated with:

the introduction of new reimbursement mechanisms for inpatient care that create financial disincentives for hospital management to extend hospital stay, by reimbursing only for the defined number of inpatient days per case.

the high cost of each additional day in the hospital (not depending upon whether it is officially publicly financed and supposed to be free of charge) as demonstrated by this study also discourages a patient from spending more time in a hospital.

The same factors could be contributing to the alarmingly low average occupancy rates throughout the nation's hospitals (the national average is 27.6% and the study average is 31.9%). In addition to the financial disincentives for extended hospital stay, the introduction of internal standards, or user fees, and co-payments for hospital services are likely to erect considerable financial barriers to access to hospital care for a significant portion of the population. These barriers have changed hospital admissions patterns. According to expert evaluations, only urgent cases and patients objectively requiring inpatient care are referred to hospitals, unlike the Soviet times of "free" care when patients were admitted to hospitals for medical or sometimes even social rehabilitation, for example, lonely pensioners needing some human attention and care. As annual admissions and the ALOS decreased dramatically over a short period of time, the capacity of the hospital network created in the country during the Soviet times became highly excessive. The oversupply of hospital beds and medical personnel is obvious, requiring immediate measures to solve this problem.

The above applies to long-term psychiatric and TB hospitals (among others), where occupancy rates are very high, at up to 87%. This percentage could be explained by the specificity of long-term care and by the almost 100% public financing of treatment in these hospitals, a factor that removes the financial barriers mentioned previously.

The oversupply of medical personnel in hospitals is demonstrated by findings of labor per service and output unit indicators. These indicators are beyond what would be rational for hospitals grouped by any category, and are average for our sample, e.g. sample average of 1,079 labor hours per surgery, 393.5 per lab test, etc. Moreover, the sample average ratio of 0.44 physicians per hospital bed and 1.5 physicians per occupied bed does not require any additional comment.

Over-staffing and salary equalization policies implemented by hospital management, despite MOH recommendations, determine the high share of fixed costs (80%) in the cost structure of the hospitals, which makes hospitals less able to adjust to a changing and competitive environment and will eventually lead to a complete cessation of functions. The reasons for which these hospitals still function and a considerable number of them even have surprisingly high cost recovery rates and financial indicators (NOM, ATO, ROA), according to the study findings, are the following:

Salaries officially paid to hospital personnel are unreasonably low; for most of the staff, the salary levels fall below minimal subsistence level for the general population. Labor costs are therefore artificially lowered.

Hospital expenditures on drugs and other supplies are also inadequate; even for the given operation level, some of the hospitals reported treating several thousand patients per year with drugs and supplies valued at 2 thousand to 3 thousand GEL. The cost figures for supplies procured and expended per unit of output for the hospitals strongly support this statement—3.9 GEL per admission and 0.5 GEL per patient day, far below any reasonable level.

“Missing” labor costs (the difference between the official salary and the real income of the hospital medical personnel that at least exceeds the subsistence level) and medical supply costs are shifted to the patient, who is obliged to pay unofficial “gratuities” and buy drugs and other supplies, spending *several* times more than the official cost of care or hospital service prices. One other finding which indirectly supports this assumption is the fact that average official salary figures for medical personnel (including physicians) are lower than the average salaries of administrative and technical personnel across the sample. This finding may indicate a greater opportunity for medical personnel, who deal more directly with the patient than do administrative and technical personnel, to supplement their income by extracting unofficial payments from patients.

The amount expended for the maintenance of buildings and medical equipment, and for major repairs and rehabilitation of assets, are inadequately low. Many assets are unaccounted for, and even if they are, their recorded book values are far from the replacement value at market price. Most hospitals operate with depreciated assets and buildings, which artificially lowers the depreciation allowance.

In 95% of the hospitals, no funds have been accumulated for capital investment or asset replacement which, in the near future, will lead to the gradual, complete consumption of capital assets and result in the breakdown of the hospital network. This situation is aggravated by the fact that during Soviet times, when these hospitals were constructed and better utilized, economic formation and accounting practices were completely different, lacking the notion of capital accrual for the replacement of depreciated buildings and equipment. It is unclear where in the system the capital replacement costs were formerly

“accumulated.”¹⁷ Even if capital funds were accumulated, or more precisely, *planned* for these purposes, with the dissolution of the Soviet Union and the change in economic formation, these “saved” funds no longer exist.

All the factors mentioned above allow for the conclusion that, in reality, only a small portion of real hospital production, accounting, financial and economic costs are accounted for in Georgia, and that official prices for hospital services, which were set according to the reimbursable accounted costs, are not adequate. According to the study findings, in 1997, payments received through official sources (federal, municipal and official user charges) reimbursed only 30%-35% of the total cost of hospital services. This tendency leads to widespread corruption as hospital personnel request (and receive) a considerable amount of illegal payments, exceeding the official standard price of hospital services by several times. Though these illegal/unofficial payments reimburse part of the costs not accounted for (i.e., labor, medical supply and food), a significant portion of the costs of capital consumption not accounted for remain almost totally unrecovered, which makes the hospital sector operate with significant financial imbalance.

The current system of hospital reimbursement has achieved a certain positive impact on hospitals and patients by motivating the adoption of a more rational consumption of scarce resources. However, the standards utilized for reimbursement obviously do not fully reflect even the basic production costs of the hospitals, resulting in under-pricing services for certain types of hospitals participating in specific public programs (e.g. general hospitals) and over-pricing (given the existing cost accounting system) services for others (e.g. long-term hospitals). This trend is demonstrated by the wide range of variation in cost recovery rates for these hospitals. For example, TB hospitals are charging 140%-170% of recorded costs, while most general and pediatric hospitals are allowed to charge at only 80-90% of their recorded costs. Again, it should be noted that using the term “over-pricing” here is highly normal, as costs officially incurred and reported are only the lesser portion of the real total costs of hospital services.

Finally, several comments regarding the patient survey findings follow.

The total costs (both official and unofficial) of hospital services borne by the patients (323 GEL) exceed the reported household’s monthly cash income for the sample (93.5 GEL) by more than three times, and are almost twice as much as the average total household monthly income (both cash and in-kind) of 174.4 GEL for the year 1997 (Georgian Economic Policy and Law Affairs Center, 1998, p. 65). Even if the surveyed patients are under-reporting their income, these proportions allow us to qualify patient expenses in hospital care as *catastrophic* for the majority of Georgian households.

It is very hard to find an explanation for the high degree of patient satisfaction found throughout the patient survey. Based on the objective assessment of hospitals of Georgia, it is clear that most of the hospitals did not meet even basic standard requirements for the provision of medical care, quite a few being simply unsafe for the patients. A study conducted by the U.S. consulting firm Kaiser Permanente International under a contract with the Ministry of Health revealed that up to 90% of hospital buildings are unsafe, their equipment depreciated or obsolete, that 80% of the hospitals do not meet basic safety criteria, that infection control mechanisms are inadequate and that hygienic conditions are highly unsatisfactory (Kaiser Permanente International, 1998). Considering these figures, the customers’ perceptions established in our survey seem inadequate. Without going too far into the cultural background regarding the lack of experience or tradition of being a customer, several comments need to be made.

¹⁷ It is dubious whether the notion of capital saving for replacement is at all applicable to the command economy.

- € First, the survey instrument was not specifically designed to measure patients' satisfaction (using direct and indirect measurements). Thus, it was impossible to distinguish the major determinant of satisfaction, whether it be medical/health outcomes, the process of health care in the hospital, or both. Although the survey did not assess medical outcomes, it can be assumed that in most cases, particularly concerning pediatric and maternity hospitals, health care outcomes were positive. This fact probably outweighed many minor negative components or episodes of inpatient care.
- € Second, when expressing their satisfaction with services rendered in the hospitals, many patients could be judging in comparative terms, considering the conditions in the nation's hospitals during the last 3-4 years. Three years are enough to assume that most of the households had either direct or indirect experience of hospital encounters in unheated, dark, and empty facilities with no pharmaceuticals and indeed no conditions at all, not even to provide emergency, life-saving medical assistance, from the years 1992-1995. Compared to that period, there is no doubt that the situation has improved, and that current patients have sufficient grounds to be satisfied with the hospital services provided now.
- € Third, respondents/patients were selected from hospital lists, so the interviewees were *not* anonymous. It is likely that respondents refrained from negative answers, preferring terms like "more or less satisfied or dissatisfied." But even if this assumption is true, still the 52% of the cases answering "completely satisfied" needs further study and explanation. What is clear is that if the reliability of the aforementioned figures is proved, proponents of health care reforms will receive strong arguments in favor of reforms.

4.2 Policy Recommendations

The findings of the study demonstrate that there is an obvious need to introduce contemporary cost accounting methods to improve the resource and cost accounting systems in hospitals nationwide and to allow hospitals to perform management accounting in order to identify the full costs of producing hospital output, more reliably project their funding needs, and more effectively manage costs.

The methodology and software application developed for the purposes of this study may be used by (1) policymakers, to conduct sector wide monitoring of hospital performance with an emphasis on financial management and (2) hospital managers, to start implementing resource, cost accounting techniques, and product line management in order to improve the efficiency of their institutions.

Thus, it will be reasonable for the Ministry of Health to consider adopting the methodology and adjusted software application for (1) continuous monitoring of the performance of the hospital sector and (2) competitive selection of the most efficient hospitals for contracting under public programs. The methodology and custom-designed software application might be recommended to the hospital managers nationwide for unified resource and cost accounting purposes.

The cost accounting methodology employed in this study and the findings of the study regarding final costs for patient care cost centers per product of output (per case, per patient day and per hospital bed) may serve as an essential demonstration step for the implementation of the case-mix reimbursement system in Georgia. It may also serve as useful baseline data for considering more aggregate methods of reimbursement, such as performance-based global budgets and region-wide

capitation (in addition, the data from years 1996 and 1998 can be collected in a similar fashion, and averages can be calculated for three years). All three options are currently being discussed by policymakers in Georgia as alternatives for, or supplements to the current reimbursement system.

The high level of unofficial payments and the striking unawareness of patients regarding the official price of hospital services and service benefits to which they are entitled should motivate policymakers to (1) conduct an intense public awareness campaign about public programs either fully or partially covering the cost of hospital services for patients, (2) disseminate patient information leaflets in hospitals and as an attachment to SMIC insurance cards; and (3) reintroduce the obligation for medical providers to obtain the signature of the patient under the financial claim that the providers submit to the SMIC, municipal funds, and tax inspection. Although initially in effect, this requirement was abolished in 1996 under the pressure of medical providers.

One way to protect the population from the significant financial burden associated with hospital care (for both official and unofficial costs), is to promote private health insurance and informal insurance schemes via the creation of a relevant regulatory and economical environment. With the appropriate regulation and economic motivation, private insurance may be allowed to effectively supplement the currently limited public insurance system, and to redistribute the financial risks associated with ill health across the population, from the sick to the healthy, from the rich to the poor, and to extend risks over the time.

Immediate preventive actions should be taken to stop the hospital sector from further deterioration. The funds required to upgrade hospitals to minimal standards only in Tbilisi amount to around US\$ 102.5 million, and if (according to the preliminary recommendations of the consulting company that performed the assessment of hospital network in Georgia) these capital requirements are to be recovered in the next five years only for Tbilisi hospitals (67 out of 287 nationwide), this will result in an average of US\$ 20.4 million of capital consumption costs per year.¹⁸ If these costs are reflected in the full costs of hospital services that are the subject of reimbursement, the prices for services will become unaffordable for users of both public and private services. Thus, it will be more realistic and reasonable to finance these capital requirements in some other way, e.g. allocate earmarked funds for capital construction and rehabilitation of health facilities from the government's budget each year, rather than fully including the real capital consumption costs in the reimbursable costs of hospital service.

The study findings once again demonstrate that there is an obvious need for the optimization of the hospital network in Georgia. Low utilization rates, significant excess of medical personnel, and scarcity of public and private financial resources to support this inflated infrastructure calls for immediate and radical actions for the restructuring of the hospital sector. In order to optimize the hospital sector nationwide and achieve the acceptable occupancy rates of 75% to 80%, the excess bed capacity should be reduced by a significant 45% to 50%. Respective adjustments should be made to the staffing levels in the nation's hospitals, which means not only reducing the number of medical personnel, but also changing the ratios of different levels of medical personnel, shifting some of the functions and responsibilities currently held by physicians, whose labor costs are higher, to nurses and middle medical personnel with lower labor costs. A proposed strategy for the achievement of the aforementioned objectives could be the liquidation of excess beds and services which exceed the need assessed in the hospitals' respective areas and the consolidation of under-utilized, under-equipped,

¹⁸ This figure will be even higher if the annual inflation and real interest rate on capital is taken into account.

¹⁹ As a comparison, in 1997 the total amount of funds officially paid to hospitals, including the actual reimbursement for services by public and private sources, did not exceed US\$ 25 million.

old and unsafe facilities requiring major renovations with newer, more acceptable medical institutions. The buildings vacated after this liquidation and consolidation could be sold or leased out, with the condition that the proceeds from sale and lease be reinvested into the health sector to: (1) rehabilitate and re-equip strategic and perspective inpatient facilities; (2) re-train the medical personnel for new positions and responsibilities; (3) provide compensations and pensions to medical staff that will be laid off in the optimization of the hospital network.

Implementation of this strategy will achieve the following:

Renovated and well-equipped hospitals closely matching the population's need for inpatient care, operating at much higher levels of efficiency and managed as business centers;

Optimized capital resources and investments in the hospital sector;

Higher, more realistic salaries for physicians and reasonable salaries for other hospital personnel;

Decreased *total* costs and more affordable prices for hospital services achieved through the optimization of capital assets and restructuring of staffing;

Long-term sustainability of the hospital sector in Georgia; and

Improved access to, and affordability of, quality hospital care.


Wide-scale optimization of the hospital network in Georgia is a critical precondition for the improvement of hospital financing in the country. It is unrealistic to hold that the major problems eroding the hospital sector, namely the inappropriately low official prices for hospital services and the high level of illegal payments and unrecovered costs, can be addressed without a substantial restructuring of excess bed capacity and staffing levels. In order to satisfy the real financial needs of the currently excessive hospital infrastructure and medical personnel and to prevent the entire hospital sector from complete deterioration, official spending (both public and private) on hospital care should be increased by four to five times,²⁰ from US\$ 100-125 million per year. Considering that total public expenditures on health did not exceed US\$ 50 million and spending on hospital care has been about US\$ 25 million per year for the last three years, it is unlikely that third-party payers and patients could afford paying *real* prices. However, if the optimization of the hospital sector is implemented, 50% of existing beds will be removed, 40%-45% of medical personnel will be laid off, and the total costs for providing hospital care will decrease at least by 35%-40%. Moreover, if the proceeds from privatization and lease of vacated hospital buildings is invested in the rehabilitation of remaining hospitals and the replacement of their equipment, a significant part of the capital consumption costs could be removed from the reimbursable costs of hospital services, resulting in further savings. Under these conditions, the adjustment of official reimbursement rates of hospital services becomes more realistic, an increase of two to two-and on half times.

The possible changes in prices for hospital services resulting from the adjustment of price levels according to the real total costs of hospital services and the optimization of the hospital sector are presented in Figure 4-1.

Figure 4-1. Expected Changes of Price for Hospital Services for Different Policy Options

²⁰ As it was mentioned above, funds coming from official sources of payment covered only 30%-35% of total hospital costs, plus unaccounted for capital consumption costs assumed at a minimum of 25% of the total costs and 10% of additional taxes, as the unregistered unofficial payments will become legal and hence taxed.

	Current Hospital Sector	Optimized Hospital Sector
Current Official Price for Hospital Services	assumed at 1	x 0.6

		
Price Adjusted According to the Real Total Costs	x 4-5	x 2 - 2.5

(Optimization assumes decreasing the number of beds by 45%-50% and staffing levels by 40-45%)

Annex A. Tables

Table 1. Payroll and Cost Ratios

Hospital	Payroll	Budget	%	Revenue	%	Full Cost	%	Fixed Cost	%
	6,640	12,417	53%	11,032	60%	14,670	45%	14,670	45%
Oncology Center	983	1,497	66%	1,475	67%	1,683	58%	1,683	58%
Central Clinical Hospital	796	1,555	51%	1,370	58%	1,836	43%	1,836	43%
Batumi City Central Clinical Hospital	388	583	66%	135	288%	620	63%	620	63%
Research Clinic of Neurology Institute	388	583	66%	520	75%	742	52%	742	52%
Children Republican Hospital	358	733	49%	648	55%	963	37%	963	37%
Research Institute of Mental Diseases	306	799	38%	490	62%	867	35%	867	35%
Batumi City Children Hospital	277	492	56%	544	51%	577	48%	577	48%
Kutaisi Regional Clinical Hospital	257	343	75%	336	77%	397	65%	397	65%
Aviation Factory Hospital #5	207	354	59%	159	131%	460	45%	460	45%
Kvitiri Mental Hospital	200	610	33%	594	34%	658	30%	658	30%
Zugdidi Republican Hospital	172	215	80%	132	130%	289	59%	289	59%
Tbilisi City Clinical Hospital #4	148	340	44%	136	108%	433	34%	433	34%
Tbilisi City Maternity Hospital #5	138	309	45%	307	45%	359	39%	359	39%
Batumi Maternity Hospital	136	491	28%	576	24%	512	27%	512	27%
Tbilisi City Children Hospital #3	129	214	60%	248	52%	243	53%	243	53%
Infectious Pathology Center	128	327	39%	433	30%	416	31%	416	31%
Rustavi City Maternity Hospital	123	249	49%	178	69%	263	47%	263	47%
Tbilisi Medical University Clinic #1	113	193	58%	184	61%	220	51%	220	51%
Rustavi City Central Hospital	112	196	57%	212	53%	214	53%	214	53%
Kutaisi Regional Children Hospital	111	208	53%	195	57%	256	43%	256	43%
Kutaisi City Maternity Hospital #1	102	170	60%	230	44%	192	53%	192	53%
Gori District Hospital	97	124	78%	119	82%	169	58%	169	58%
Sepsis Center	95	186	51%	187	51%	259	37%	259	37%
Tbilisi Cardiology Center	81	110	73%	158	51%	130	62%	130	62%
Telavi District Hospital	79	92	86%	80	98%	120	65%	120	65%
Kaspi Regional Hospital	64	86	75%	86	75%	141	46%	141	46%
Tbilisi City Pediatric Hospital #1	61	133	46%	104	59%	156	39%	156	39%
Tbilisi City Maternity Hospital #1	61	256	24%	156	39%	276	22%	276	22%
Chiatura Maternity Hospital	56	98	58%	107	53%	110	51%	110	51%
Institute of Dermatology and Venerology	55	101	54%	97	57%	108	51%	108	51%
Gori City Children Hospital	52	80	64%	114	45%	93	56%	93	56%
Telavi Maternity Hospital	48	58	83%	86	56%	67	73%	67	73%
Zugdidi Tuberculosis Hospital-Dispensary	47	75	62%	74	63%	100	47%	100	47%
Lanchkhuti Regional Hospital	46	84	55%	68	68%	96	48%	96	48%
Ozurgeti Children Hospital	41	68	61%	73	56%	73	57%	73	57%
Rustavi City Children Hospital	39	72	54%	74	53%	78	50%	78	50%
Khashuri City Hospital	38	52	73%	49	76%	86	44%	86	44%
Chokhatauri Regional hospital	38	66	57%	69	54%	85	44%	85	44%
Tbilisi City Hospital #1	27	159	17%	183	15%	243	11%	243	11%
JSC "Enguri" Medical Center	22	28	78%	18	124%	36	61%	36	61%
Chokhatauri Maternity hospital	21	28	75%	25	84%	49	44%	49	44%
Average/Total	6,640	12,417	53%	11,032	60%	14,670	45%	14,670	45%

Table 2. Cost Recovery Ratios by Hospital by Charged Revenues

Hospital	Profile	Size	Revenue	Full Cost	CRR	Full Cost-Depr	CRR
Zugdidi Tuberculosis Hospital-Dispensary	Long-term	35	170.2	100.0	170.20%	74.7	227.80%
Gori City Children Hospital	Pediatric	120	148.3	92.7	160.00%	83.5	177.50%
Infectious Pathology Center	Specialized	284	659.1	416.1	158.40%	323.9	203.50%
Chokhatauri Regional hospital	General	80	128.0	84.9	150.80%	66.8	191.70%
Telavi Maternity Hospital	Maternity	70	95.6	66.7	143.30%	62.4	153.20%
Tbilisi Cardiology Center	Specialized	40	179.7	129.6	138.70%	117.3	153.20%
Oncology Center	Specialized	630	2,327.2	1,683.1	138.30%	1,538.6	151.30%
Tbilisi Medical University Clinic #1	General	146	299.5	220.1	136.10%	198.7	150.70%
Kutaisi City Maternity Hospital #1	Maternity	130	246.4	192.4	128.10%	171.5	143.70%
Batumi Maternity Hospital	Maternity	273	652.2	511.5	127.50%	494.8	131.80%
Batumi City Children Hospital	General	166	729.6	576.6	126.50%	490.7	148.70%
Rustavi City Children Hospital	Pediatric	40	95.3	78.3	121.70%	70.4	135.40%
Tbilisi City Children Hospital #3	Pediatric	100	294.0	243.0	121.00%	216.0	136.10%
Rustavi City Central Hospital	General	200	231.1	213.5	108.20%	196.3	117.70%
Kutaisi Regional Children Hospital	Pediatric	148	270.4	255.6	105.80%	207.1	130.60%
Kaspi Regional Hospital	General	115	148.5	140.5	105.70%	87.9	169.00%
Chiatura Maternity Hospital	Maternity	100	115.5	110.0	105.00%	98.6	117.20%
Tbilisi City Pediatric Hospital # 1	Pediatric	106	159.0	155.8	102.10%	134.1	118.60%
Rustavi City Maternity Hospital	Maternity	50	267.0	262.7	101.60%	251.4	106.20%
Ozurgeti Children Hospital	Pediatric	100	72.7	72.5	100.20%	68.7	105.70%
Kvitiri Mental Hospital	Long-term	320	648.0	658.0	98.50%	608.7	106.50%
Gori District Hospital	General	170	164.2	168.6	97.40%	125.4	131.00%
Tbilisi City Hospital #1	General	60	234.0	243.1	96.30%	164.1	142.60%
Telavi District Hospital	General	90	112.4	120.3	93.50%	96.8	116.20%
Tbilisi City Maternity Hospital #5	Maternity	500	326.9	359.0	91.10%	313.6	104.20%
Lanchkhuti Regional Hospital	General	105	86.9	96.2	90.40%	83.8	103.80%
Institute of Dermatology and Venerology	Specialized	60	96.7	107.9	89.60%	101.2	95.50%
Khashuri City Hospital	General	101	75.7	85.5	88.50%	70.4	107.40%
Children Republican Hospital	Pediatric	674	847.4	963.0	88.00%	736.8	115.00%
Sepsis Center	Specialized	150	227.5	258.6	88.00%	186.4	122.10%
Tbilisi City Maternity Hospital #1	Maternity	220	236.0	275.9	85.50%	259.2	91.00%
Central Clinical Hospital	General	465	1,565.4	1,836.1	85.30%	1,552.8	100.80%
Zugdidi Republican Hospital	General	227	244.3	289.4	84.40%	221.3	110.40%
Kutaisi Regional Clinical Hospital	General	123	329.7	396.6	83.10%	347.6	94.90%
Research Institute of Mental Diseases	Long-term	250	712.2	867.1	82.10%	803.9	88.60%
JSC "Enguri" Medical Center	General	30	29.4	35.8	82.00%	28.7	102.30%
Research Clinic of Neurology Instit.	Specialized	127	591.2	741.5	79.70%	599.0	98.70%
Chokhatauri Maternity hospital	Maternity	30	32.9	48.6	67.70%	41.9	78.40%
Batumi City Central Clinical Hospital	General	226	380.7	619.6	61.40%	599.0	63.60%
Aviation Factory Hospital #5	General	334	251.0	460.0	54.60%	356.5	70.40%
Tbilisi City Clinical Hospital #4	General	265	149.3	433.4	34.50%	341.9	43.70%
Grand			14,631.0	14,669.9	99.73%	12,592.4	116.19%

Table 3. Maintenance and Other Expenses Ratios

Hospital	Drug/Supp	Budget Expenditure		Actual Revenues		Full Costs	
General	1,211	5,052	24%	3,857	31%	6,185	20%
Pediatric	620	2,001	31%	2,001	31%	2,438	25%
Maternity	738	1,660	44%	1,665	44%	1,827	40%
Specialized	363	2,222	16%	2,351	15%	2,595	14%
Long-term	714	1,483	48%	1,158	62%	1,625	44%
Average for All	3,645	12,417	29%	11,032	33%	14,670	25%

Table 4. Tax Ratios

Hospital	Taxes	Budget Expenditures		Actual Revenues		Full Costs	
General	187	5,052	4%	3,857	5%	6,185	3%
Pediatric	58	2,001	3%	2,001	3%	2,438	2%
Maternity	42	1,660	3%	1,665	3%	1,827	2%
Specialized	30	2,222	1%	2,351	1%	2,595	1%
Long-term	75	1,483	5%	1,158	6%	1,625	5%
Average for All	392	12,417	3%	11,032	4%	14,670	3%

Table 5. Cost Recovery Ratios by Hospital by Collected Revenues

Hospital	Profile	Size	Revenues	Full Cost	CRR	Full-Depr Cost	
Telavi Maternity Hospital	Maternity	70	86.1	66.7	129.00%	62.4	137.90%
Gori City Children Hospital	Pediatric	120	114.3	92.7	123.30%	83.5	136.90%
Tbilisi Cardiology Center	Specialized	40	158.3	129.6	122.20%	117.3	134.90%
Kutaisi City Maternity Hospital #1	Maternity	130	230.2	192.4	119.70%	171.5	134.20%
Batumi Maternity Hospital	Maternity	273	575.8	511.5	112.60%	494.8	116.40%
Infectious Pathology Center	Specialized	284	433.3	416.1	104.20%	323.9	133.80%
Tbilisi City Children Hospital #3	Pediatric	100	248	243	102.10%	216	114.80%
Ozurgeti Children Hospital	Pediatric	100	73.4	72.5	101.20%	68.7	106.90%
Rustavi City Central Hospital	General	200	212.1	213.5	99.30%	196.3	108.10%
Chiatura Maternity Hospital	Maternity	100	106.8	110	97.10%	98.6	108.40%
Batumi City Children Hospital	General	166	544.4	576.6	94.40%	490.7	110.90%
Rustavi City Children Hospital	Pediatric	40	73.8	78.3	94.30%	70.4	104.90%
Kvitiri Mental Hospital	Long-term	320	594	658	90.30%	608.7	97.60%
Institute of Dermatology and Venerology	Specialized	60	96.7	107.9	89.60%	101.2	95.50%
Oncology Center	Specialized	630	1,475.40	1,683.10	87.70%	1,538.60	95.90%
Tbilisi City Maternity Hospital #5	Maternity	500	307.5	359	85.70%	313.6	98.10%
Kutaisi Regional Clinical Hospital	General	123	336.3	396.6	84.80%	347.6	96.80%
Tbilisi Medical University Clinic #1	General	146	184.2	220.1	83.70%	198.7	92.70%
Chokhatauri Regional hospital	General	80	69.1	84.9	81.40%	66.8	103.50%
Kutaisi Regional Children Hospital	Pediatric	148	195.3	255.6	76.40%	207.1	94.30%
Tbilisi City Hospital #1	General	60	183	243.1	75.30%	164.1	111.50%
Central Clinical Hospital	General	465	1,370.10	1,836.10	74.60%	1,552.80	88.20%
Zugdidi Tuberculosis Hospital-Dispensary	Long-term	35	74.3	100	74.30%	74.7	99.40%
Sepsis Center	Specialized	150	186.9	258.6	72.30%	186.4	100.30%
Gori District Hospital	General	170	119.1	168.6	70.60%	125.4	95.00%
Lanchkhuti Regional Hospital	General	105	67.6	96.2	70.30%	83.8	80.70%
Research Clinic of Neurology Institute	Specialized	127	520.2	741.5	70.10%	599	86.80%
Rustavi City Maternity Hospital	Maternity	50	177.6	262.7	67.60%	251.4	70.60%
Children Republican Hospital	Pediatric	674	648.4	963	67.30%	736.8	88.00%
Tbilisi City Pediatric Hospital # I	Pediatric	106	103.7	155.8	66.60%	134.1	77.40%
Telavi District Hospital	General	90	79.9	120.3	66.50%	96.8	82.60%
Kaspi Regional Hospital	General	115	85.9	140.5	61.10%	87.9	97.70%
Khashuri City Hospital	General	101	49.4	85.5	57.80%	70.4	70.20%
Tbilisi City Maternity Hospital #1	Maternity	220	155.8	275.9	56.50%	259.2	60.10%
Research Institute of Mental Diseases	Long-term	250	490.1	867.1	56.50%	803.9	61.00%
Chokhatauri Maternity hospital	Maternity	30	25.4	48.6	52.30%	41.9	60.60%
JSC "Enguri" Medical Center	General	30	17.6	35.8	49.00%	28.7	61.20%
Zugdidi Republican Hospital	General	227	132.2	289.4	45.70%	221.3	59.70%
Aviation Factory Hospital #5	General	334	158.8	460	34.50%	356.5	44.50%
Tbilisi City Clinical Hospital #4	General	265	136.3	433.4	31.50%	341.9	39.90%
Batumi City Central Clinical Hospital	General	226	134.8	619.6	21.80%	599	22.50%
Grand Total			11,032.1	14,669.90	75.20%	12,592.4	87.61%

Table 6. Financial Ratios

	Hospital	ATO	ART	ACP	NOM	ROA
1	Tbilisi Medical University Clinic #1	0.83	2.60	140.54	0.36	0.44
2	Telavi District Hospital	0.21	3.46	105.46	0.19	0.04
3	Rustavi City Central Hospital	0.85	12.20	29.93	0.15	0.14
4	Research Clinic of Neurology Institute	0.28	8.32	43.87	0.01	0.00
5	Tbilisi City Clinical Hospital #4	0.09	11.46	31.86	-1.27	-0.11
6	Gori District Hospital	0.35	3.64	100.21	0.24	0.09
7	Tbilisi City Hospital #1	0.12	3.97	92.03	0.32	0.04
8	Batumi City Central Clinical Hospital	0.52	1.55	235.77	-0.53	-0.42
9	Aviation Factory Hospital #5	0.15	2.72	134.09	-0.41	-0.07
10	Lanchkhuti Regional Hospital	0.37	4.50	81.13	0.03	0.01
11	Zugdidi Republican Hospital	0.28	2.18	167.48	0.12	0.04
12	Kutaisi Regional Clinical Hospital	0.37	20.06	18.19	-0.04	-0.02
13	Chokhatauri Regional hospital	0.26	2.17	167.96	0.48	0.14
14	Central Clinical Hospital	0.36	8.02	45.54	0.01	0.00
15	Kaspi Regional Hospital	0.08	2.37	153.92	0.42	0.04
16	Khashuri City Hospital	0.34	2.88	126.52	0.32	0.12
17	JSC "Enguri" Medical Center	0.22	2.49	146.75	0.04	0.01
18	Children Republican Hospital	0.23	4.26	85.73	0.14	0.03
19	Tbilisi City Pediatric Hospital # 1	0.59	2.88	126.93	0.16	0.12
20	Tbilisi City Children Hospital #3	1.08	6.39	57.11	0.27	0.35
21	Batumi City Children Hospital	0.56	3.94	92.65	0.33	0.21
22	Ozurgeti Children Hospital	2.51	0.06	0.15		
23	Kutaisi Regional Children Hospital	0.31	3.60	101.33	0.23	0.08
24	Rustavi City Children Hospital	0.53	4.43	82.35	0.24	0.15
25	Gori City Children Hospital	0.95	4.37	83.61	0.46	0.56
26	Rustavi City Maternity Hospital	1.49	2.99	122.21	0.07	0.20
27	Tbilisi City Maternity Hospital #5	0.33	16.85	21.66	0.05	0.02
28	Tbilisi City Maternity Hospital #1	0.68	2.94	124.06	-0.08	-0.07
29	Batumi Maternity Hospital	2.73	8.54	42.76	0.25	0.99
30	Telavi Maternity Hospital	1.62	10.04	36.35	0.39	0.76
31	Chiatura Maternity Hospital	0.96	13.37	27.30	0.15	0.16
32	Kutaisi City Maternity Hospital #1	0.45	15.17	24.07	0.31	0.14
33	Chokhatauri Maternity hospital	0.24	4.40	82.91	0.14	0.04
34	Tbilisi Cardiology Center	1.14	8.39	43.53	0.39	0.51
35	Oncology Center	0.71	2.73	133.60	0.36	0.34
36	Institute of Dermatology and Venerology	1.59	-0.05	-0.08		
37	Infectious Pathology Center	0.45	2.92	125.03	0.50	0.27
38	Sepsis Center	0.17	5.60	65.21	0.18	0.03
39	Zugdidi Tuberculosis Hospital-Dispensary	0.51	1.77	206.09	0.56	0.41
40	Kvitiri Mental Hospital	0.54	12.00	30.42	0.06	0.03
41	Research Institute of Mental Diseases	0.81	3.21	113.82	-0.12	-0.13
	Mean	0.66	5.74	89.02	0.14	0.15
	Industry	0.07-1.10	4.44-6.34	7.54-82.22	0.003-0.062	0.02-0.07

Table 7. Cost Summary

Hospitals	Budget Expenditures for 1997 (1,000 GELs)	Direct Costs (1,000 GELs)	%	Indirect Costs (1,000 GELs)	%	Difference between total costs and exp.
Aviation Factory Hospital #5	353.7	240.6	52.3%	116.2	25.3%	3.12
Batumi City Central Clinical Hospital	583.2	501.9	81.0%	97.1	15.7%	15.76
Batumi City Children Hospital	491.8	355.7	61.7%	135.1	23.4%	0.96
Batumi Maternity Hospital	490.7	173.5	33.9%	321.6	62.9%	4.5
Central Clinical Hospital	1,554.60	1,135.30	61.8%	431	23.5%	11.7
Chiatura Maternity Hospital	97.8	68.7	62.4%	30	27.2%	0.86
Children Republican Hospital	733	452.2	47.0%	286	29.7%	5.31
Chokhatauri Maternity hospital	28.4	36.1	74.3%	5.9	12.1%	13.65
Chokhatauri Regional hospital	66.3	46.5	54.8%	20.4	24.1%	0.61
Gori City Children Hospital	80.4	66.5	71.8%	17	18.4%	3.23
Gori District Hospital	124	103.8	61.5%	21.7	12.9%	1.46
Infectious Pathology Center	327.1	179.4	43.1%	147.1	35.4%	-0.63
Institute of Dermatology and Venerology	101.4	65	60.2%	37.2	34.5%	0.82
JSC "Enguri" Medical Center	28.1	22.7	63.4%	6	16.8%	0.6
Kaspi Regional Hospital	85.7	69.4	49.4%	19	13.5%	2.65
Khashuri City Hospital	51.8	61.1	71.4%	9.4	11.0%	18.65
Kutaisi City Maternity Hospital #1	170	124.5	64.7%	47	24.4%	1.5
Kutaisi Regional Children Hospital	208	131.2	51.3%	75.9	29.7%	-0.85
Kutaisi Regional Clinical Hospital	343.3	298	75.1%	52.2	13.2%	6.89
Kvitiri Mental Hospital	609.5	439.1	66.7%	169.6	25.8%	-0.83
Lanchkhuti Regional Hospital	84	47.5	49.4%	36.3	37.7%	-0.23
Oncology Center	1,496.70	1,390.80	82.6%	155.7	9.3%	49.75
Ozurgeti Children Hospital	68.2	48.9	67.4%	20	27.6%	0.66
Research Clinic of Neurology Institute	583.3	498.4	67.2%	100.7	13.6%	15.73
Research Institute of Mental Diseases	799.5	626.6	72.3%	177.3	20.4%	4.41
Rustavi City Central Hospital	195.8	140.5	65.8%	56.3	26.4%	0.94
Rustavi City Children Hospital	72.2	51	65.1%	19.8	25.3%	-1.43
Rustavi City Maternity Hospital	249.5	172.6	65.7%	78.8	30.0%	1.89
Sepsis Center	186.1	144.8	56.0%	41.9	16.2%	0.65
Tbilisi Cardiology Center	110.4	109.9	84.8%	8	6.2%	7.45
Tbilisi City Children Hospital #3	214	154	63.4%	62	25.5%	2.01
Tbilisi City Clinical Hospital #4	339.7	187.6	43.3%	154.3	35.6%	2.22
Tbilisi City Hospital #1	159.1	60	24.7%	104.1	42.8%	5.02
Tbilisi City Maternity Hospital #1	255.7	109.6	39.7%	150.1	54.4%	4.01
Tbilisi City Maternity Hospital #5	309.4	174.7	48.7%	139.4	38.8%	4.74
Tbilisi City Maternity Hospital #5	309.4	174.7	48.7%	139.4	38.8%	4.74
Tbilisi City Pediatric Hospital # I	133.3	76.1	48.8%	58.5	37.5%	1.31
Tbilisi Medical University Clinic #1	192.9	126	57.2%	72.8	33.1%	5.79
Telavi District Hospital	91.5	84.1	69.9%	12.7	10.6%	5.25
Telavi Maternity Hospital	58.2	56.3	84.4%	6.4	9.6%	4.55
Zugdidi Republican Hospital	214.6	195	67.4%	26.3	9.1%	6.7
Zugdidi Tuberculosis Hospital-Dispensary	74.5	50.5	50.4%	24.7	24.7%	0.62
Total /Average	12,417.40	9,076.10	60.5%	3,551.50	24.7%	210.08
Percentage of Full Costs		61.9%		24.2%		

Table 8. Fixed and Variable Cost Shares

Hospitals	Profile	Beds	Budgeted	Fixed		Variable	
Aviation Factory Hospital #5	General	334	353.7	396.1	86.1%	63.9	13.9%
Batumi City Central Clinical Hospital	General	226	583.2	499.5	80.6%	120.1	19.4%
Batumi City Children Hospital	General	166	491.8	479.9	83.2%	96.7	16.8%
Batumi Maternity Hospital	Maternity	273	490.7	468.9	91.7%	42.6	8.3%
Central Clinical Hospital	General	465	1,554.60	1,327.80	72.3%	508.4	27.7%
Chiatura Maternity Hospital	Maternity	100	97.8	94.3	85.6%	15.8	14.4%
Children Republican Hospital	Pediatric	674	733	853.6	88.6%	109.4	11.4%
Chokhatauri Maternity hospital	Maternity	30	28.4	33.1	68.1%	15.5	31.9%
Chokhatauri Regional hospital	General	80	66.3	72.2	85.0%	12.7	15.0%
Gori City Children Hospital	Pediatric	120	80.4	73.1	78.9%	19.6	21.1%
Gori District Hospital	General	170	124	159.4	94.5%	9.3	5.5%
Infectious Pathology Center	Specialized	284	327.1	358.6	86.2%	57.4	13.8%
Institute of Dermatology and Venerology	Specialized	60	101.4	95	88.0%	12.9	12.0%
JSC "Enguri" Medical Center	General	30	28.1	34.1	95.3%	1.7	4.7%
Kaspi Regional Hospital	General	115	85.7	133.9	95.3%	6.6	4.7%
Khashuri City Hospital	General	101	51.8	60.8	71.1%	24.7	28.9%
Kutaisi City Maternity Hospital #1	Maternity	130	170	166.3	86.5%	26	13.5%
Kutaisi Regional Children Hospital	Pediatric	148	208	232.2	90.8%	23.4	9.2%
Kutaisi Regional Clinical Hospital	General	123	343.3	342.4	86.3%	54.2	13.7%
Kvitiri Mental Hospital	Long-term	320	609.5	421.7	64.1%	236.3	35.9%
Lanchkhuti Regional Hospital	General	105	84	91.8	95.5%	4.3	4.5%
Oncology Center	Specialized	630	1,496.70	1,243.30	73.9%	439.8	26.1%
Ozurgeti Children Hospital	Pediatric	100	68.2	64.3	88.6%	8.3	11.4%
Research Clinic of Neurology Institute	Specialized	127	583.3	605.5	81.7%	136	18.3%
Research Institute of Mental Diseases	Long-term	250	799.5	542.5	62.6%	324.6	37.4%
Rustavi City Central Hospital	General	200	195.8	175.6	82.2%	38	17.8%
Rustavi City Children Hospital	Pediatric	40	72.2	62.8	80.3%	15.4	19.7%
Rustavi City Maternity Hospital	Maternity	50	249.5	211.2	80.4%	51.5	19.6%
Sepsis Center	Specialized	150	186.1	196.4	75.9%	62.2	24.1%
Tbilisi Cardiology Center	Specialized	40	110.4	99.7	77.0%	29.8	23.0%
Tbilisi City Children Hospital #3	Pediatric	100	214	208.3	85.8%	34.6	14.2%
Tbilisi City Clinical Hospital #4	General	265	339.7	389.7	89.9%	43.7	10.1%
Tbilisi City Hospital #1	General	60	159.1	205.7	84.7%	37.3	15.3%
Tbilisi City Maternity Hospital #1	Maternity	220	255.7	191.8	69.5%	84.1	30.5%
Tbilisi City Maternity Hospital #5	Maternity	500	309.4	314.4	87.6%	44.5	12.4%
Tbilisi City Maternity Hospital #5	Maternity	500	309.4	314.4	87.6%	44.5	12.4%
Tbilisi City Pediatric Hospital # I	Pediatric	106	133.3	131.6	84.5%	24.2	15.5%
Tbilisi Medical University Clinic #1	General	146	192.9	192.4	87.5%	27.6	12.5%
Telavi District Hospital	General	90	91.5	113.2	94.1%	7.1	5.9%
Telavi Maternity Hospital	Maternity	70	58.2	56.2	84.3%	10.5	15.7%
Zugdidi Republican Hospital	General	227	214.6	252.5	87.2%	36.9	12.8%
Zugdidi Tuberculosis Hospital-Dispensary	Long-term	35	74.5	93.6	93.6%	6.4	6.4%
Total / Average		182	12,417.40	11,745.40	83.5%	2,924.00	16.5%
Percentage of Full Costs					80.1%		19.9%

Table 9. Destination of Out-of-Pocket Payments

	N	Minimum	Maximum	Mean	Std. Deviation
Cash for consultations with specialists	225	0	50	1.78	6.60
Cash paid for ward doctor	218	0	100	7.61	17.95
Cash paid for medicines	243	0	5000	68.37	355.95
Cash paid for lab. Investigations	232	0	900	7.41	59.84
Cash paid for operation	304	0	780	14.83	66.80
Cash paid for medical manipulations	281	0	180	3.16	14.84
Cash for meal at the hospital	353	0	40	.21	2.56
Cash for hospital attendant (sanitar)	295	0	70	2.26	6.92
Cash paid for heating	388	0	20	5.15E-02	1.02
Cash for other expenses	277	0	1000	8.78	66.83
Valid N (listwise)	99				

Annex B. Bibliography

- Georgian Economical Policy and Law Affairs Center. 1998. "Georgian Economic Trends, Quarterly Report, IV Quarter 1997." Tbilisi.
- Georgian Center for Transition Economy and Sustainable Development. 1998 "Report on the Survey of Demand for Health Care Services and Expenditures in Georgia." Tbilisi.
- Joint Experts Group. 1996. "Aide Memoir on Health Sector in Georgia." UNICEF/UNDHA/WHO.
- Kaiser Permanente International. October 1998. "Hospital Master Plan for Georgia." Summary Findings. Technical Report. Tbilisi.
- Kaiser Permanente International. August, 1998. "Preliminary Report and Recommendations on Hospital Master Plan for Tbilisi." Tbilisi,
- Ministry of Health of Georgia, Center for Medical Statistics. 1998. "Health Care. Georgia 1997." Tbilisi.
- Ministry of Health. 1994. "Statement of Development Objectives." Tbilisi.
- Surer, Neumann, B.R., J.D. Surer, and W.N. Zelman. 1988. "Financial Management. Concepts and Applications for Health Care Providers." AUPHA Press (NHP).
- Shepard, D.S., D. Hodgkin, Y. Anthony. 1995. "Analysis of Hospital Costs: A Manual for Managers." Prepared for Health Systems Development Program. Geneva: World Health Organization.
- United Nations Development Fund. 1996. "Human Development Report: Georgia 1996." Tbilisi.