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and
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Project**

Technical Report No. 15

**TECHNICAL ASSISTANCE IN
DEVELOPING A HEALTH INSURANCE REFORM
DEMONSTRATION IN ISSYK-KUL
OBLAST, KYRGYZSTAN:**

PROGRESS, PROBLEMS, AND PROSPECTS

Submitted to:

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ABSTRACT

In April 1994, the government of Kyrgyzstan requested technical assistance from USAID in evaluating the design of a health insurance demonstration to be implemented in the Issyk-Kul oblast beginning January 1995. The demonstration would determine the feasibility of the design and propose enhancements, where necessary, in its financing, payment methods, organization and quality of care, and cost-accounting and information systems.

Data collected and analyzed by HFS during the period has determined the initial part of this study, which will be continued by the USAID-funded Zdrav Reform project.

The insurance demonstration proposed to establish a mandatory health insurance fund organization at the oblast level, financed by a new payroll tax on employers and a per capita fee for non-workers. Health leaders have developed regulations for the collection and management of funds by this organization. It is recognized, however, that not all financing issues have been addressed. Outstanding concerns include the poor economy of Issyk-Kul and an inequitable capitation rate.

In the effort to generate needed funds, results of the HFS effort indicate that some simple cost-saving measures, such as decreasing lengths of stay for inpatients, would reduce unnecessary expenses for discretionary services. An adjustment to user fees, based on co-payments, is also a possibility.

Improved efficiency in other areas of health care delivery, such as payment methods and care organization, would improve the system. Capitated payment to multi-specialty groups (APTKs) is the current preferred method of payment. In addition, hospitals could phase in payment on a case or admission basis. Facilities are encouraged to adapt more autonomous status and decentralized decision-making, which would include offering staff annual contracts. A quality assurance system that concentrates on more timely and appropriate referrals and eliminates premature discharges from inpatient environments should also be established.

Implementation of information and cost-accounting systems will organize data and offer a basis for the reforms. The Kyrgyzstan Ministry of Health's medical economic standards can provide a foundation for a new cost structure.

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TABLE OF CONTENTS

ACKNOWLEDGEMENTS	i
LIST OF EXHIBITS	vi
LIST OF ACRONYMS	vii
PREFACE	viii
EXECUTIVE SUMMARY	ix
1.0 BACKGROUND ON THE HEALTH SECTOR IN KYRGYZSTAN AND THE CURRENT STATUS OF REFORM	1
1.1 INTRODUCTION	1
1.2 KYRGYZSTAN AND THE HEALTH SECTOR	2
1.3 RECENT HEALTH CARE FINANCING REFORMS IN KYRGYZSTAN	5
1.4 THE HEALTH INSURANCE DEMONSTRATION IN ISSYK-KUL	8
1.4.1 Planning for the Demonstration and the Selection of the Site	8
1.4.2 The Health Sector in the Issyk-Kul Demonstration Site	10
1.4.3 Current Issues Concerning the Health Care Delivery System in the Issyk-Kul Demonstration Site	12
2.0 ADEQUACY AND APPROPRIATENESS OF HEALTH SECTOR FINANCING	15
2.1 METHODS	15
2.1.1 Availability and Sources of Data	15
2.1.2 Methods of Analysis	18
2.2 FINDINGS	18
2.2.1 Funding Sources for the Health System	19
2.2.2 Health Care Spending	26
2.2.3 Results of the Simulations: Assessing the MHI's Financial Viability ...	30
2.2.4 Health Insurance Fund Management and Organization	36
2.3 DISCUSSION	36
2.4 RECOMMENDATIONS	40
2.4.1 The Payroll Tax	40
2.4.2 Government Contributions For Health Care	41
2.4.3 Alternative Sources of Funding and Cost-Reduction Measures	41
2.4.4 Health Insurance Fund Management and Organization	42
3.0 ALTERNATIVES SOURCES OF REVENUES	45
3.1 INTRODUCTION AND METHODS	45
3.2 FINDINGS	45
3.2.1 User Fees	45
3.2.2 User Fees for Pharmaceuticals	47
3.2.3 Selective Contracting	47
3.2.4 Benefits Package and Coverage of Services	48
3.3 RECOMMENDATIONS	48

4.0	PAYMENT SYSTEMS AND ORGANIZATIONS OF CARE	51
4.1	BACKGROUND ON PAYMENT METHODS	51
4.1.1	Fee-For-Service	52
4.1.2	Case-Based Pricing	53
4.1.3	Global Budgets	53
4.1.4	Capitation	54
4.2	DEVELOPING NEW MODELS OF PAYMENT AND ORGANIZATION OF HEALTH CARE	54
4.2.1	Payment Methods for Outpatient Services	54
4.2.2	Payment Methods for Hospital Care	57
4.2.3	Rural Health Care	58
4.3	RECOMMENDATIONS	59
4.3.1	Group Practices (APTKs)	59
4.3.2	Hospitals	60
5.0	QUALITY ASSURANCE (QA)	62
5.1	THE CURRENT QA SYSTEM	63
5.2	DEVELOPING NEW MODELS FOR QA	65
5.3	RECOMMENDATIONS	67
6.0	COST-ACCOUNTING SYSTEMS	68
6.1	SOURCES OF INFORMATION AND TECHNICAL ASSISTANCE ACTIVITIES	68
6.2	THE CURRENT COST-ACCOUNTING SYSTEM	68
6.3	DEVELOPING NEW APPROACHES	72
6.3.1	Developing a New Cost-Accounting System	72
6.3.2	Developing a Health Sector Price Index	74
6.4	RECOMMENDATIONS	74
6.4.1	Short Term	74
6.4.2	Medium Term (prior to the end 1994 or before full implementation of the demonstration)	75
6.4.3	Longer Term (after January 1, 1995)	77
7.0	MEDICAL INFORMATION SYSTEMS (MIS)	78
7.1	METHODS OF ANALYSIS	78
7.2	FINDINGS ON CURRENT DATA COLLECTION AND INFORMATION FLOWS	78
7.2.1	Information Systems at the Polyclinic and Hospital Levels	78
7.2.2	Flow of Information from the Oblast Level to the Central MOH	81
7.3	DEVELOPMENT OF NEW MODELS	81
7.4	RECOMMENDATIONS	82
7.4.1	Short Term (July to mid-September 1994)	82
7.4.2	Intermediate Term Recommendations (October 1994—December 1994)	84
7.4.3	Longer Term Recommendations (January 1—December 30, 1995)	85

8.0	SUMMARY OF RECOMMENDATIONS	91
8.1	GENERAL	91
8.2	FINANCING	91
8.3	USER FEES	95
8.4	PAYMENT TO PROVIDERS	97
8.5	QUALITY ASSURANCE (QA)	99
8.6	INFORMATION SYSTEMS	104
	BIBLIOGRAPHY	171

LIST OF EXHIBITS

EXHIBIT 1-1	DATA ON KYRGYZSTAN AND SELECTED COMPARISONS (1991 except where indicated)	4
EXHIBIT 1-2	REVENUE FLOWS: ISSYK-KUL DEMONSTRATION SITE	7
EXHIBIT 1-3	DATA ON ISSYK-KUL OBLAST DEMONSTRATION AREA (1993)	11
EXHIBIT 1-4	CHANGES IN HEALTH RESOURCES: ISSYK-KUL HEALTH INSURANCE DEMONSTRATION AREA	15
EXHIBIT 2-1	HEALTH BUDGET IN ISSYK-KUL DEMONSTRATION AREA (Som)	21
EXHIBIT 2-2	EMPLOYMENT AND SIZE OF PAYROLL ISSYK-KUL DEMONSTRATION AREA (1993 Data)	22
EXHIBIT 2-3	KYRGYZSTAN TAX STRUCTURE	23
EXHIBIT 2-4	TAXES, INCOME AND HEALTH CARE EXPENDITURES: ISSYK-KUL DEMONSTRATION ZONE (1993)	24
EXHIBIT 2-5	ECONOMIC OUTPUT, JAN—MAY 1993 & 1994: ISSYK-KUL DEMONSTRATION AREA (Constant 1994 Som in 1000's)	25
EXHIBIT 2-6	HEALTH CARE SPENDING IN THE ISSYK-KUL DEMONSTRATION AREA BY BUDGET CATEGORIES (Som, 1993 prices)	27
EXHIBIT 2-7	ESTIMATED HEALTH CARE EXPENDITURES IN THE ISSYK-KUL DEMONSTRATION AREA BY BUDGET CATEGORIES (Som, 1990 prices)	28
EXHIBIT 2-8	VOLUME OF SERVICES DATA FOR THE ISSYK-KUL DEMONSTRATION AREA (1993)	29
EXHIBIT 2-9	SAVINGS UNDER COST SAVING SCENARIOS, IN KARAKOL AND THREE RAYONS—Soms, 1993 prices (except as indicated)	33
EXHIBIT 2-10	REVENUE UNDER ALTERNATIVE FUNDING SCENARIOS	34
EXHIBIT 6-1	HEALTH FACILITY BUDGET CHAPTERS	70
EXHIBIT 7-1	RECOMMENDED DATA ELEMENTS FOR INPATIENT DISCHARGES AND OUTPATIENT EPISODES OF CARE	86

EXHIBIT 7-2	A SAMPLE OF RECOMMENDED CODES FOR SURGICAL PROCEDURES	87
EXHIBIT 7-3	SAMPLES OF RECOMMENDED CODES FOR RADIOLOGY, LABORATORY, AND HISTOLOGY PROCEDURES	88
EXHIBIT 7-4	SUMMARY OF RECOMMENDATIONS: MEDICAL INFORMATION SYSTEMS	89

LIST OF ACRONYMS

AHCPR	Agency for Health Care Policy & Research
AHFS	American Hospital Formulary Service
ALOS	Average Length of Stay
APTK	Russian language acronym equivalent of PCG
DRG	Diagnosis-Related Group
FEZ	Free Economic Zone
FIS	Financial Information System
FFS	Fee-For-Service
GDP	Gross Domestic Product
GP	General Practitioner
HFS	Health Financing and Sustainability project
HI	Health Insurance
HMO	Health Maintenance Organization
ICD-9	International Classification of Diseases, Version 9
MES	Medical Economic Standards
MIS	Medical Information System
MHI	Mandatory Health Insurance
MOF	Ministry of Finance
MOH	Ministry of Health
NIS	Newly Independent States
ODA	British Overseas Development Administration
OECD	Organization for Economic Cooperation and Development
PCG	Primary Care Group
QA	Quality Assurance
USAID	United States Agency for International Development
VAT	Value Added Taxes
IMF	International Monetary Fund

PREFACE

In April 1994, the government of Kyrgyzstan requested USAID to provide technical assistance in the area of health care financing reform. USAID called upon the Health Financing and Sustainability (HFS) project to provide this assistance through a "buy-in" contract for the Newly Independent States (NIS). The government specifically requested a rapid response for assistance in evaluating the design of a health insurance demonstration to be implemented in the Issyk-Kul oblast beginning January 1995. The purpose of this assignment was to analyze the feasibility and appropriateness of the design of the planned insurance demonstration and propose very practical solutions and changes in the design where problems were foreseen. The analysis was to cover all major aspects of the proposed program, including the adequacy and appropriateness of financing, payment systems, and organization of care, quality of care, cost accounting, and management information systems.

In response to the government's request, a technical assistance team from HFS spent three weeks in Kyrgyzstan, where they developed background papers for counterparts; collected and analyzed data for each of the technical areas earlier mentioned; trained counterparts in new information and cost-accounting approaches and in the design and use of an analytical tool for determining financing requirements; and held extensive discussions with government officials, economists, health care providers, and other counterparts to present their findings and develop collectively a series of recommendations.

This report summarizes the team's findings and the results of these extensive discussions, which are often presented as ideas and possible options for action. Given the short timeframe under which this assignment was conducted, the technical assistance aims of the assignment, and the government's urgent need for answers, the resulting report is not a comprehensive and integrated study of the proposed health insurance demonstration. Instead, it should be viewed as a working document which provides the government of Kyrgyzstan with background information, options, and recommendations to be used in refining the design and implementing the upcoming demonstration. The work presented in this report will be continued by the USAID-funded Zdrav Reform Project.

EXECUTIVE SUMMARY

In March 1994, representatives of USAID and Abt Associates met with leadership and experts in Kyrgyzstan to discuss possible areas of collaboration related to health care financing and financing reforms. The Ministry of Health (MOH) requested a rapid response and technical assistance in implementing a health insurance demonstration in one oblast area—Issyk-Kul—as well as assistance in training local personnel who would help implement it. The demonstration is scheduled to begin January 1995 and follows a 1992 law passed by the Parliament calling for a transition in the health sector from a public-based central planning scheme to a more privatized, public-private mix in the organization and financing of care. For economic and other reasons, the full implementation of the 1992 law has been delayed. The pilot demonstration provides the first opportunity to implement the new law in a systematic way for a specified geographic area, and to use lessons from it for a longer-term national implementation.

In June and July, a team of experts from USAID/Abt Associates, British ODA, and the Kyrgyzstan central MOH worked with oblast health leadership and technical counterparts across several substantive areas. These areas included 1) adequacy and appropriateness of financing, 2) cost-recovery mechanisms, 3) payment methodologies and complementary quality assurance mechanisms, 4) information and management systems, and 5) cost-accounting methods. Each of these interlinked areas are critical to allow a transition to a new, more performance-based financing and delivery system.

An extensive series of technical discussions and activity took place in the Issyk-Kul oblast region regarding the insurance demonstration design, development, and implementation. Seminars, meetings, and discussions occurred over the course of the stay. Issues and problems were identified, including lists of issues provided by the Kyrgyzstani counterparts. Options and alternatives were discussed and recommendations presented. Hospital and polyclinic staff were trained in design and use of new information and cost-accounting approaches. Assignments for beginner use of these approaches were left with appropriate staff.

An implementation strategy in each of the topic areas was outlined. Issues and solutions were framed within time periods of three to six months (i.e., prior to the January 1, 1995 start date), as well as schedules for longer periods of time—1996 and 1997.

The team provided several findings and recommendations to the oblast-level MOH and Ministry of Finance, central MOH, USAID, and other invited participants to plenary half-day meetings in both Issyk-Kul and Bishkek before departure. USAID in Almaty was briefed prior to departure. A draft of findings and recommendations is provided in this report.

The new demonstration proposes to establish a parastatal or mandatory health insurance (MHI) fund and organization at the oblast level, financed by a new 6 percent payroll tax on employers and a per capita payment for all non-workers from the existing Oblast and central government budgets. The idea of a separate and self-sustaining fund for health care services is a good one, and health leaders have developed a series of beneficial rules and regulations governing the collection and management of funds by this organization.

ADEQUACY OF FINANCING

Several issues related to financing remain, however. The most critical is how the capitated rate will be determined for the first year and updated each year. The rate will need to be fair and adjusted over time for both expected risk and changes in costs faced by health providers. An examination of nominal and real budget over the last few years indicates a trend contrary to these objectives, with a substantial deterioration of funding. The 1993 budget equaled only 57 percent of the 1990 amount in real terms.

In terms of the new payroll tax, the general economy in the Issyk-Kul region is going through a very difficult period. In the short run, the MHI is unlikely to be able to raise significant amounts of additional revenue by instituting new payroll taxes. At the same time, the effect of new payroll taxes on economic growth may be negative. Modest user fees and shifting of funds from the existing Social Insurance and Pension fund should be considered as alternatives to raising additional funds. As the economic base grows and taxes are better rationalized, additional funds can be generated for the MHI.

For the next few years, it will be much more important to focus on reallocating existing resources through changes in efficiency and modest reductions in coverage by the MHI of some more discretionary services.

COST SAVINGS

A computer-based simulation model developed by the team indicated that 21 percent of current resources could be saved through a series of simple cost-saving measures, such as modest reductions in lengths of stay for inpatient care, as well as more appropriate use of outpatient care, home care, and day-care for patients needing long-term care services.

The guaranteed benefits package should be pared back to cut unneeded expenses for discretionary services and free funds for more critical items. Some services, such as the following, should be paid for with out-of-pocket or private insurance only: i) physiotherapy, except for some types of patients such as stroke; ii) dermatology and cosmetology; iii) massage; iv) tattoo removal; v) adult dental services; and vi) some types of psychiatric care.

Additional savings are possible because some current benefits are neither clinically effective and/or cost-effective. These include: i) mandated annual x-rays for everyone; ii) mandated annual check-ups for all employees (this could be changed to every two or three years); and iii) stays in sanatoria. Such benefits should be taken out of the guaranteed package of benefits as well. Private insurance or employers could provide for such items as stays in sanatoria.

USER FEES

User fees could also generate needed revenues. For example, the one-time co-payments for the Issyk-Kul region polyclinics and hospitals—currently set at 1-4 som for a first visit to a polyclinic—should be adjusted for inflation on January 1, 1995. The current fee levels have not been updated for over a year, even though inflation has been estimated from 400-700 percent per year over the last few years. A new health price index or current consumer price index could be used to set the specific amount.

At the same time, the World Bank survey data or the upcoming ODA survey should be used to refine levels and establish a operable threshold for exempting poor and other special groups. The new ODA survey appears targeted to health services utilization and should be finished by the start of the demonstration. Hopefully, the ODA will include Issyk-Kul oblast as their designated rural site, but if they do not, USAID/Abt funds could support a special add-on component for the region as part of a longer-term commitment.

Additional funds—from both greater efficiencies and more systematic use of modest co-pays—can be used to improve quality of services, such as procuring additional supplies of pharmaceuticals, medical supplies, and other essentials.

PAYMENT METHODS AND ORGANIZATION OF CARE

Payment and organizational changes can spur these and other efficiencies in the delivery of care. There is substantial interest in Kyrgyzstan in refining both inpatient and outpatient methods of payment for services. On the inpatient side, some analyses has begun to develop a DRG-like case-based episode system. Categories (termed clinical-statistical groups) have been identified, based on medical-economic standards initiated by Moscow in the late 1980s. On the outpatient side, there is less direction about the best specific payment method. Capitation and fee-for-service approaches have been discussed with various donor organizations.

The best approach would be to move towards capitated payments to multi-specialty groups. Some support a German-style fee-for-service system, but the limited resources available for health care and the complexity of fee-for-service make this approach unrealistic. The best method for creating consumer choice and strengthening primary care would be the development of multi-specialty group practices consisting of an obstetrician/gynecologist, pediatrician, and therapist (or APTK, the Russian acronym).

Hospitals should phase in payment on a case or admission basis, adjusted for severity. The cases would be referred by any APTK operating in the demonstration area. Funds would be allocated to hospitals using a global budget based on their historic budget in the first half of the first year. Beginning in the second half, funding to hospitals would be based on the number of cases they treated in the first half of the year with an adjustment for severity. In the second year, hospitals would be paid on a per case basis. Prices for the cases would be developed by the MHI using the costing data collected by the hospitals in the first nine months of the experiment.

All facilities—inpatient and outpatient—should begin moving immediately toward more autonomous status and decentralized decision-making. All staff—physicians, nurses, and others—should sign annual contracts with facilities that choose to employ them at the start of the demonstration period.

QUALITY OF CARE

A complementary quality assurance (QA) system should be developed as these new organization and payment policies and incentives are phased in. Four areas of concern were identified for development of QA mechanisms:

- ▲ Less than timely or lack of referrals from the APTKs to hospitals;
- ▲ Inappropriate hospital admissions;

- ▲ Inappropriate referrals out of the demonstration area; and
- ▲ Premature discharge from inpatient settings.

A number of steps can be taken. The MHI, for example, should track referral rates by APTKs. The MHI would analyze all referrals by categories: hospital admissions, tests, use of drugs, etc. Practices that have very low referral rates should be investigated. Second, delayed admissions should be reported by hospitals and be investigated by the MHI.

As for hospitals, the MHI should consider several QA approaches that include stringent criteria for hospital admissions, referrals, and discharges. Internal facility-based processes, as well as areawide monitoring and surveillance systems, can help identify problems and trigger action for improved care processes.

MANAGEMENT INFORMATION AND COST ACCOUNTING

To allow the full implementation of payment, quality, and organization reforms, it is essential to develop basic infrastructure changes and support in the areas of management and information systems. Clinical and cost information need to be organized and used in ways that encourage good decisions concerning resource use and optimal mix of clinical inputs for good care.

Currently, cost accounting is not fully practical in the health care sector of Kyrgyzstan. Units are allocated funds under specific budget chapters. Accounting practice is basically a record of expenditure for each chapter. There are neither computerized systems nor decentralized budget holding within organizations, and hence resource management is generally an anathema.

The Kyrgyzstan MOH has widely implemented a methodology for determining normative prices for each ICD-9 diagnostic category or Medical Economic Standard (MES) treated by a unit, but cannot track true costs or different types of cost within organizations. For example, with depreciation, a fixed cost is only charged on machines when in use, making it a variable cost.

A step-down system of accounting was introduced to the economists and accountants of four hospitals and the new MHI. To change from the current situation, however, will require substantial ongoing managerial and organizational training. Further support should include preparation of a detailed manual on cost accounting; training on spreadsheets for finance staff and prospective budget holders; training on database systems for those to be responsible for stock and inventory control; and field work to develop, track, and manage budgets based on performance and true costs.

Likewise, the current status of health information systems does not support clinical, financial, or administrative decision-making, especially in a changing health care environment. Although considerable data is currently collected, it is incomplete and often inaccurate. Major changes in the collection of health care data at the hospital and polyclinic level should be initiated. Some were started, particularly at the hospital level, in cooperation with both hospital and MOH personnel.

Initially, minimum data sets for inpatient discharges and polyclinic visits were developed and approved. A computer-based Inpatient Discharge System was developed, and the initial programming was completed in conjunction with local programmers. The system was demonstrated several times, modifications were made, and final programming is under way. Training of staff at the local oblast hospital is to be delivered in mid-August by the programmer with actual data entry scheduled to begin on patients discharged as of September 1, 1994.

Development of the radiology, laboratory, and histology classification systems was completed; the pharmacy system will be completed by August. Programming is scheduled to be completed as soon as the classification systems are available in Russian. A format for presenting the hospital discharge data was presented, and a sample summary report was left for further review and discussion. Polyclinic data elements have been defined and a draft glossary of health care terms developed.

To maintain the current momentum, follow-up activities should be initiated in the short term and provided in the next training period. These include i) review and needed modification of the initial inpatient data collection; ii) final development of tabulation and print-out format and reports for inpatient and polyclinic data; and iii) development of surgery and pharmacy classification systems, as well as training manuals and programs for all the new classification systems.

More detailed recommendations in each area of technical assistance are provided in subsequent sections of this report and summarized in *Section 8.0*.

1.0 BACKGROUND ON THE HEALTH SECTOR IN KYRGYZSTAN AND THE CURRENT STATUS OF REFORM

1.1 INTRODUCTION

In March 1994, representatives of the U.S. Agency for International Development (USAID) and the Health Financing and Sustainability (HFS) project met with government officials and experts in Kyrgyzstan to discuss possible areas of collaboration related to health care financing and financing reforms. The Ministry of Health (MOH) requested a rapid response and technical assistance in implementing a health insurance (HI) demonstration in one oblast,¹ Issyk-Kul, as well as assistance in training local personnel who would help implement it. In June and July, a team of experts from USAID, HFS, the British Overseas Development Administration (ODA), and Kyrgyzstan federal MOH worked with oblast health officials and technical counterparts to assess the feasibility of the government's current plans, present alternative strategies and solutions, and assist in the development of an implementation strategy. The combined team examined the following areas that are critical to the successful implementation of a sustainable and more performance-based HI system:

- ▲ The adequacy and appropriateness of financing;
- ▲ Cost-recovery mechanisms;
- ▲ Payment methodologies and organization of health care;
- ▲ Quality assurance (QA) mechanisms;
- ▲ Cost-accounting methods; and
- ▲ Management information systems.

Technical assistance was carried out during two visits to Kyrgyzstan: an initial 10-day planning trip in March-April 1994 by two HFS staff members, and a three-week visit in June by a five-member team. During the second visit, the team developed a computerized simulation model which presented "what if" calculations regarding expected costs and revenues to analyze the adequacy and appropriateness of financing. The team also examined clinical and economic data; met with local political leaders, economists, health care professionals, and others during site visits to Issyk-Kul; and participated in a series of technical discussions, meetings, and seminars with a range of individuals, including officials from the central and oblast-level MOH, oblast Ministry of Finance (MOF) officials, administrators of health facilities, economists, accountants, physicians, computer system analysts, and others. During these discussions, the results of the analyses were presented and options and recommendations in each of these areas were discussed. The technical assistance team also trained hospital and polyclinic staff in the demonstration sites in the design and use of new management information and cost-accounting systems.

HFS coordinated closely with ODA, which provided the team's cost-accounting specialist/health economist.

¹ Oblasts can be considered a rough geographic and politico-economic unit equivalent to a U.S. state. There are a total of seven oblasts in Kyrgyzstan.

This report summarizes the findings and recommendations of the technical assistance team and Kyrgyzstani counterparts concerning the plans, implementation strategies, and action steps for the Issyk-Kul HI demonstration. The report is organized by the substantive areas listed earlier. Each section summarizes the issues, methods, and findings of the team, and presents recommendations and options for action, categorized by those that must be taken in the short term (prior to implementation of the experiment in January 1995) and those for the longer term. It is expected that further assistance in implementing the Issyk-Kul experiment will be provided by the new USAID-funded *ZdravReform* project.

1.2 KYRGYZSTAN AND THE HEALTH SECTOR

Kyrgyzstan is a small, mountainous country of 4.5 million people located in northeastern part of central Asia. It is a largely rural country with an ethnically diverse population made up of Kyrgyz (53 percent), Russians (21 percent), Uzbek, Ukrainians, and several small minority groups.

Exhibit 1-1 presents data on health status and outcomes, health sector infrastructure, and use of resources and health spending, and compares these figures with those of selected countries. Life expectancy at birth has been estimated at 72 for females and 64 for males, which is quite high compared to that of other countries with similar income levels, which report life expectancies of 52 to 67 years.

The leading causes of death in Kyrgyzstan are similar to those found in developed countries, with cardiovascular diseases (e.g., heart disease and strokes), chronic respiratory diseases, and cancer being the three major causes. Nonetheless, infectious and parasitic diseases are still an important cause of mortality, responsible for 12 percent of deaths in 1990.² Most of these deaths are concentrated in the rural areas of the republic, and are due largely to childhood diarrheal diseases, acute respiratory infection in children, and tuberculosis, which is prevalent in adolescents and young adults. The infant mortality rate for the republic as a whole was estimated at 30 per 1,000 live births in 1990, having fallen from 43 in 1980 due to public health programs focusing on prenatal care, immunization, and health and nutrition monitoring³. Acute respiratory infections, largely pneumonia, made up 41 percent of infant deaths in 1991.

The significant advances that Kyrgyzstan achieved in health status during the 1980s have begun to reverse in the last few years, due to recent declines in health sector spending and the quality of health care delivery, as later described. Infant mortality has reportedly increased by 6 percent between 1992 and 1993, and mortality rates of children under two climbed 22 percent during this period. (WHO, MANAS Donor Meeting Background Documents, 1994).

² Bobadilla, José-Luis and Ellis, Randall P., "Health Transition in Kyrgyzstan," World Bank Report (draft), November 1992.

³ Barnum, Howard, "Kyrgyzstan: Health Sector Assessment," draft report for first Country Economic Mission to Kyrgyzstan," World Bank Report, April 1992.

The Kyrgyzstani health system reflects the rational planning and hierarchical structure found throughout the former Soviet Union. In the urban areas, each individual is assigned to a clinic and has a primary care physician. In the rural areas, there is a basic health unit of one or more physician-extenders (e.g., feldshers or nurses) and some limited supply of medicines. Depending upon the seriousness and complexity of a patient's condition, (s)he would be referred progressively to better equipped facilities—local hospitals, a central rayon (district) hospital, or an oblast-level hospital. Each type of hospital has both inpatient and outpatient (polyclinic) facilities associated with it. There also are a limited number of "national" level centers which conduct research and provide treatment for both inpatient and outpatient care.⁴

The health care system has historically been allocated funds from the central government in a "top-down" fashion. Health budgets were based upon national budgets that were formulated and passed by the central legislative and policy-making bodies.

The share of the gross domestic product (GDP) of the newly independent states (NIS) region devoted to health has declined precipitously since the 1980s—from 6 percent of GDP to just over 3 percent. In Kyrgyzstan, spending as a percent of GDP was 4.1 percent in 1990 and fell to 3.3 percent in 1991.

The situation in Kyrgyzstan has continued to worsen in the last few years. Independence from the Soviet Union has forced self-sufficiency for the Republic, which historically enjoyed a positive net transfer of resources from Moscow through the tax system (World Bank, 1992). In addition, the economic decline that Kyrgyzstan and most other parts of the NIS have suffered over the past several years has resulted in a sharp reduction in locally generated tax revenues. According to Abel-Smith (1994), there has been a fall in output of the industrial sector of 50 percent, and a drop in export revenue by 65 percent between 1991 and the end of 1993. Between 1992 and 1993, real GDP declined by 16 percent and tax revenues fell from 14 percent of GDP to 8 percent. The economy has further suffered from hyperinflation, with retail prices rising 15 to 25 percent per month. These economic conditions have led to an emerging funding crisis in health services.

The Soviet approach to health care delivery did not encourage the efficient use of resources by providers. This was due in part to a system of allocating resources through a central planning mechanism, based on such input measures as numbers of staff and beds and occupancy, rather than on performance measures or the complexity of services provided. The resulting inefficiencies are shown in the high number of physicians per 1,000 population (3.4 vs. 2.1 in the U.S.), the number of beds per 1,000 (11.8 vs. 8.7 for upper-income countries) and average lengths of hospital stays (14.9 days vs. around nine days for upper-income countries) (see *Exhibit 1-1*). Data in *Exhibit 1-1* also suggest a bias toward expensive hospital care and the use of specialists versus more cost-effective primary and outpatient-based care. Only 12 percent of physicians in Kyrgyzstan are general practitioners, compared to more than half of all physicians in Canada, the United Kingdom, and France.

⁴ More detailed descriptions of the Soviet structure and the Kyrgyzstani health system can be found in Schieber, et al., 1992; Abel-Smith, 1993; Bobadilla and Ellis, 1992; Wellsby, 1994.

EXHIBIT 1-1
DATA ON KYRGYZSTAN AND SELECTED COMPARISONS
(1991 except where indicated)

CATEGORY	Kyrgyzstan	OECD (Avg)	Russian Federation	Turkey	West Germany	USA
DEMOGRAPHIC						
Population (mil.)	4.5		148.7	57.3	80.1	252.
% population >60 years			17.	7.	17.	20
GDP/capita (US\$)	1,550.		3,220.	1,780.	23,650.	22,240.
Health spending as % of GDP	3.3		3.	4.	8.	12.7
HEALTH OUTCOMES						
Crude birth rate/1,000	29.	14.	12.	28.	10.	16.
Crude death rate/1,000	8.	9.	11.	7.	11.	9.
Infant mortality rate/1,000	30.	9.7	20.	15.	7.	9.
Life expectancy: Males	64.3	72.6		64.1	72.6	72.
Females	72.4	78.8	68.4	79.	78.8	
INFRASTRUCTURE						
Physicians/1,000	3.4	2.4	4.69	0.74	2.73	2.38
Ratio GPs to physicians	0.12			0.93	0.68	0.15
1990-Ratio nurses to physicians	1.9			1.5	1.7	2.8
Hospital beds/1,000 population	11.8	9.2	13.8	2.1	8.7	5.3
HOSPITAL RESOURCE USE						
1990-Admissions as % of population	23.9	16.2		5.6	20.9	13.7
Occupancy rates (somatic)	79.			57.	86.4	66.8
1990-Average length of stay (days)	14.9	15.7		6.6	15.2	9.1
PATTERNS OF SPENDING						
Hospital (%)	72.4	46.1		19.1	36.6	46.2
Ambulatory (%)	18.5				28.	29.4
Pharmaceuticals (%)	9.1	13.8			21.3	8.1

Sources: OECD, 1993; World Bank, 1993; Abel-Smith, 1993; Kyrgyzstan Ministry of Health, 1994.

A further problem concerns the inadequate supply of pharmaceuticals and supplies (see Abel-Smith, 1994). Despite the efforts of hospitals to buy drugs from commercial outlets (even from China), supplies have been limited by the efforts of the state-run monopoly, "Pharmatsia," to choke off market competition. This monopoly has apparently exacerbated current problems by creating both artificially high prices and long delays. Two smaller private pharmaceutical purchasing agents have been formed, and many individuals are importing pharmaceuticals on their own. Shortages in a range of essential equipment and supplies—from autoclaves to incubators, surgical supplies to ambulances, gasoline, food for patients, fuel for heating water, and even sheets—have also been reported.

1.3 RECENT HEALTH CARE FINANCING REFORMS IN KYRGYZSTAN

The Kyrgyzstani government has acknowledged the need to reform its health care system to address the problems previously outlined. Kyrgyzstan has, in fact, been among the most progressive of central Asian republics in moving from a central planning state to more market-based reforms. Among these reforms is the Health Protection Act, which the government passed in July 1992. This new law calls for a shift in priorities toward health promotion and disease prevention, and a new emphasis on primary and family-based care. It also calls for changes in the form of ownership, including the conversion of pharmacies and pharmaceutical institutions into private and joint-stock companies;⁵ the conversion of medical institutions into joint-stock companies; the establishment of private hospitals, polyclinics, and physician practices; and private pay and leasing arrangements within public facilities.

The law provides for reform in HI as well. It mandates that the financing of health care be moved partially "off-budget," with new revenues coming from special earmarked taxes and other services. The law calls for the establishment of at least one Mandatory Health Insurance (MHI) fund in each oblast (state). The goals of the MHI are to:

- ▲ Increase the level of resources available for spending on health;
- ▲ Allocate available resources more efficiently;
- ▲ Improve the management of service delivery and quality of care, and
- ▲ Decrease reliance on the government for health care spending and allow for more sustainability of funding.

⁵ A number of pharmacies have already privatized and sell pharmaceuticals at deregulated prices. MOH officials estimate that about 40 percent of all pharmacies will be privatized over the next two years. Other public-based pharmacies have developed commercial outlets to sell drugs at unregulated prices. Government pharmacists continue to sell price-regulated pharmaceuticals—at price levels they term "procurement costs." Full price deregulation of pharmaceuticals, however, is expected shortly.

The MHI would be financed through several sources of revenue:

- ▲ Funds from the current 34.5 percent Social Insurance and Pension Fund payroll tax, which are presently used for payment of temporary and permanent disability, social security, other forms of cash assistance, and health. The relative amount of funds for health care services are either not currently known or the information is not publicly available;
- ▲ A new, minimum 6 percent payroll contribution paid by employers, and
- ▲ A capitated rate paid by the oblast government⁶ into the fund to cover non-working and exempted populations not contributing through the employer payroll. These include employees of "public budget organizations" (such as schools, hospitals, and other public sector entities), the elderly, unemployed, disabled, non-working women, and children.

Much of the government's current direct funding of health services would be redirected to flow through the MHI. The oblast government, however, would continue to allocate funds directly to hospitals and clinics for construction and capital improvements, expensive equipment, and education/training programs. The central government would continue to support medical education and research, and more traditional public health activities, such as orphan homes, AIDS treatment, infectious disease hospitals, basic sanitation and epidemiologic activities, emergency hospitals and transport vehicles, blood transfusion centers, cancer treatment, and medical supply storage. *Exhibit 1-2* shows the proposed new health financing structure for the demonstration site and how funds will flow within the system.

The proposed MHI fund organizations will develop contracts with providers and determine their method and rates of payment. These payment changes are intended to create incentives that encourage more efficient organization and management of service delivery, as well as improved quality of care.

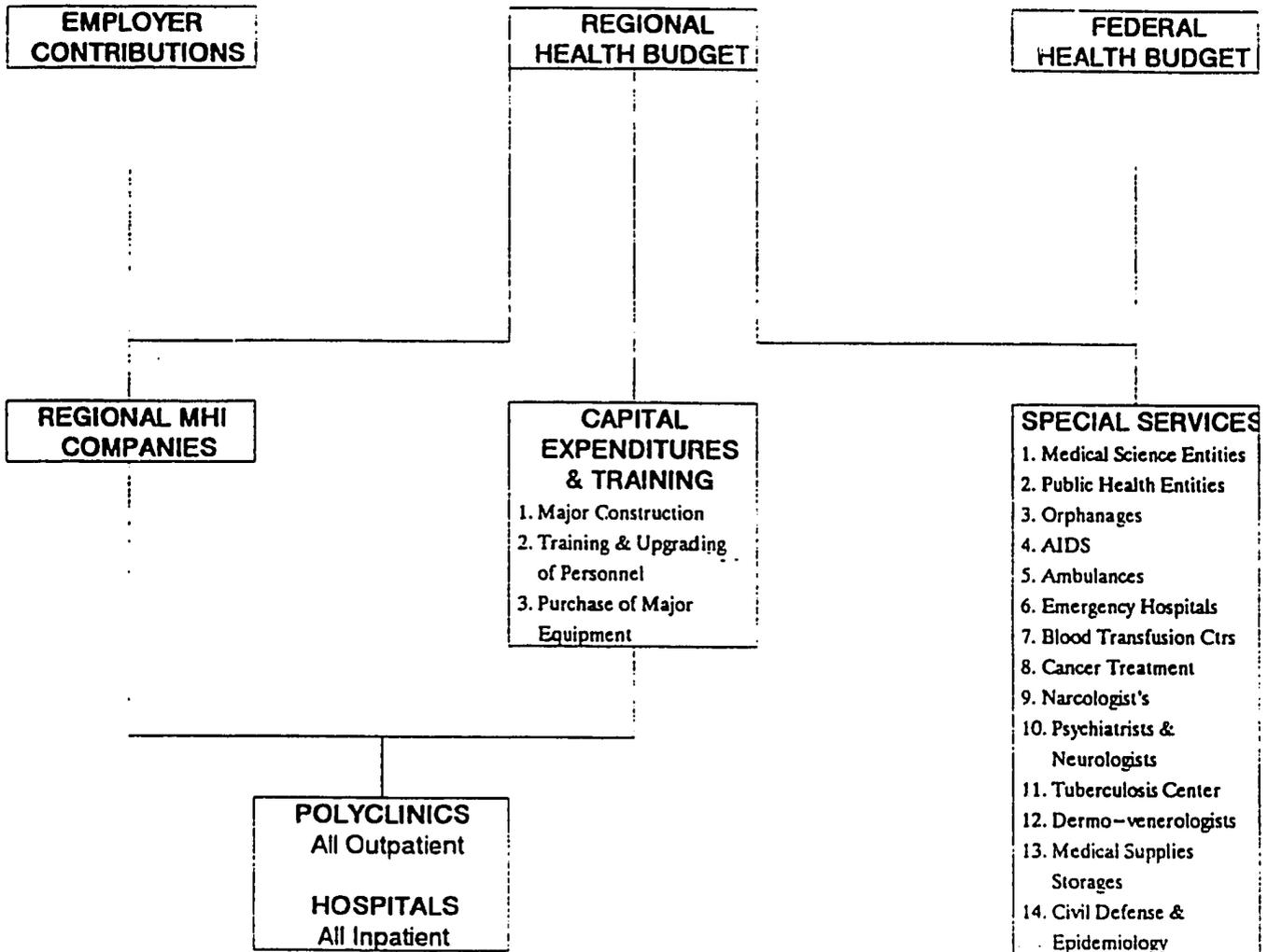
The MHI will act as a self-sustaining trust fund that will generate and " earmark " revenues for health spending. The fund will also set up a mechanism for generating employer and possibly employee contributions. The government's financial contribution to health services would be channeled through the MHI, with the level based on a predetermined capitation rate. The use of a capitation rate should create greater stability and predictability for the government's share of health spending out of general revenues.

Acting on behalf of consumers, the MHI would increase efficiency in the delivery of health care by creating appropriate financial incentives for hospitals, polyclinics, and individual providers. Unlike the current system in which the government directly provides resources in 18 restrictive budget categories based on the number of beds and staff, administrators of health facilities would receive payments based on the number of cases, their degree of severity, and the results of treatment. Hospital administrators would have the flexibility to utilize resources as they see fit to produce services efficiently. Private sector providers could also compete for the delivery of health services, although it is expected that public sector providers would initially provide the bulk of services.

⁶ While the payments would be made by the oblast government, actual source of funding would be split about 75 percent/25 percent between revenues raised by the oblast and central governments.

Exhibit 1 - 2

REVENUE FLOWS: ISSYK-KUL DEMONSTRATION SITE



The reform law calls for new "expert groups" of physicians to develop and ensure standards of care. These expert groups will be formed by private physicians' associations. The MOH will also create new offices within its structure that would be responsible for accrediting hospitals and other health care institutions. In each oblast, the local MHI will develop a program for QA for all providers under contract (see *Section 5.0*).

The insurance reform law was originally written to be implemented in 1993. Concerns about its design and its rapid implementation schedule, however, have delayed the start date several times, as have problems with reforms in other sectors (e.g., the banking system).⁷

In the last two years, several significant health sector reforms have been implemented. Most notably, direct payments by consumers have been introduced for inpatient and outpatient services and for pharmaceuticals. Employer groups have begun to negotiate contracts with hospitals for services to their employees. Public sector physicians are accepting private-pay patients through special leasing arrangements. In addition, at least four new private or "voluntary" insurance companies have emerged in the republic's capital of Bishkek and elsewhere.⁸

In preparation for implementation of the MHI system, the Kyrgyzstan MOH has developed a complex set of pricing standards and diagnostic/treatment protocols called Medical Economic Standards (MES). The purpose of these standards is both to establish normative reimbursement rates which the MHI would pay to providers for various services and to ensure a minimum level of quality of care. The MES consist of an advised minimum list of procedures and quality standards (including average number of bed-days, volume of investigations and treatment, and criteria of quality). These standards also include a recommended price based on an estimate of the costs of providing the minimum set of services for an average patient. (Additional information on the MES can be found in *Sections 5.0 and 6.0*.)

1.4 THE HEALTH INSURANCE DEMONSTRATION IN ISSYK-KUL

1.4.1 Planning for the Demonstration and the Selection of the Site

All of these activities point to a transition in the health sector in Kyrgyzstan from a government-financed, centrally planned system to one with a greater public-private sector mix in the organization and financing of health care. The Kyrgyzstani government recognizes that these changes must be incremental and may have unintended consequences on the efficiency of and access to health care. Consequently, the government has decided to pilot test its insurance-based reform model in at least one geographical area as a first step in implementing comprehensive national reform. The demonstration will focus on the following elements:

⁷ Greater detail about the HI law and reasons for the delay in its implementation can be found in Abel-Smith, 1993. More recently, Abel-Smith (1994) noted some progress has probably been made in ensuring a reasonably efficient and safe system of banking transactions. HFS team discussions with local banking leaders were consistent with Abel-Smith findings.

⁸ These initiatives are described in greater detail in the Wein and Langenbrunner Trip Report of March 22-April 2, 1994, Abt Associates Inc. under its HFS Project for USAID.

- ▲ Modification of the financing method towards lump-sum payments based on capitation and workload;
- ▲ Shift in priority from inpatient to outpatient care;
- ▲ Greater use of general practitioners versus specialists;
- ▲ Performance-based payment, and
- ▲ Shift in responsibility of health care from the state to individuals and families.

The MOH chose the Issyk-Kul oblast as the site of the pilot test. Following an agreement reached between the central MOH and the oblast, a task force consisting of individuals from the central MOH, the oblast, and local providers was formed on April 1, 1994. Planning will extend from April to December 1994. The central MOH has created a new HI reform unit, staffed by individuals who helped develop the HI reform law.

The experiment will not cover all of the Issyk-Kul oblast; rather, it will begin in the free economic zone (FEZ), which includes the town of Karakol and three surrounding rayons within the oblast. The experimental site is approximately 100 kilometers southeast of Almaty and has a population of about 253,000.

The town of Karakol has about 70,000 residents, and is best known for its production of submarine torpedoes and testing at nearby Lake Issyk-Kul. The three adjacent rayons of Dzhetiouguz, Ak-Sou, and Tyup are largely agricultural, though they have some manufacturing. There is also mining of gold, uranium, and other metals. Shepherding also continues, especially near the mountainous areas which surround the region's lake.

The FEZ designation for Karakol allows the city to have more autonomy in raising and spending revenues. Karakol has initiated several promising tax changes as of January 1994 to spur new investment, including a five-year "tax holiday" (tax exemption) for new businesses, a 10-year tax holiday for new firms employing more than 300 Kyrgyz and providing investments of at least 1.5 million som,⁹ as well as tax deductions for all employers and individuals for all spending on health, education, and communal activities.

The site of the demonstration was chosen because of its designation as a FEZ, its relatively strong industrial base and potential mining resources, and the very high per capita spending levels for health care in this oblast (\$7 per capita) as compared to the rest of the country (\$3 per capita) (Kyrgyzstan MOH, 1994).

⁹ The som was introduced in May 1993 as the official currency of the Republic of Kyrgyzstan, replacing the Russian rouble. The exchange rate was pegged at 3 som to the dollar. Currently, the exchange rate is approximately 11 som to the U.S. dollar.

1.4.2 The Health Sector in the Issyk-Kul Demonstration Site

As shown in *Exhibit 1-3*, infant mortality and other health outcomes in the areas of the demonstration site are similar to those of the republic as a whole. There is an average of 2.9 physicians per 1,000 population in the demonstration area. As would be expected, there is a heavy concentration of physicians in the main urban center, Karakol, where the rate is 7.9 per 1,000 population versus 1.4 in the rural areas.

The demonstration site contains 26 hospitals at the oblast and district levels, 45 polyclinics, and a number of basic medical units in rural areas, according to MOH statistics. There are four major health facilities in the town of Karakol: the oblast hospital (which has 460 beds), city hospital (100 beds), maternity hospital, and pediatrics hospital. In addition, there is a small psychiatric hospital, a tuberculosis dispensary, and an oncological dispensary. Each of the rayon settlements, all within a one-half hour or so drive from Karakol, also has a main hospital as well as two smaller district hospitals with 40 to 60 beds each.

Polyclinics, which provide both primary and specialty care, are attached to the hospitals. In Karakol, for example, primary care is provided by two polyclinics, one for children and one for adults. There is also a consultative polyclinic located within the oblast hospital compound, as well as polyclinics attached to the rayon center hospitals. Patients are currently assigned to a polyclinic and have no choice of physician.

One innovative experimental activity undertaken by a polyclinic in Karakol involves the placement of primary health care physicians in apartment blocks. The polyclinic purchased apartments and assigned two pediatricians and one therapist to serve in the surrounding areas. As with traditional polyclinics, the physicians had no choice of where they served, nor did patients have a choice of facilities. The operation of the apartment clinics, in fact, differs little from that of polyclinics except for their location and the fact that they have little equipment and no laboratory. As a result, they remain completely dependent on the central polyclinics.

**EXHIBIT 1-3
DATA ON ISSYK-KUL OBLAST DEMONSTRATION AREA (1993)**

CATEGORY	Karakol	Dzheti- ougouz	Ak-Sou	Tyup
DEMOGRAPHIC				
Population (mil.)	70,000	81,000	62,527	56,000
HEALTH OUTCOMES				
Crude birth rate/1,000	20	27	26	28
Crude death rate/1,000	8.0	8.0	8.0	7.0
Infant mortality rate/1,000 (1991)	32.1	30.0	29.8	20.8
INFRASTRUCTURE				
Physicians/1,000 population	7.9	1.2	1.4	1.5
Proportion of physicians that are GPs	0.16	0.24	0.20	0.27
Nurses/1,000 population	9.7	3.0	5.5	3.2
Hospital beds/ 1,000 population	19.5 (1,350)	5.2 (369)	6.4 (370)	7.9 (435)
HOSPITAL RESOURCE USE				
Average length of stay (days)	23.4	12.0	11.8	11.9
<i>Source:</i> Bureau of Health Statistics, Oblast Ministry of Health, Issyk-Kul, 1994.				

1.4.3 Current Issues Concerning the Health Care Delivery System in the Issyk-Kul Demonstration Site

The problems in the organization and delivery of health care in Issyk-Kul are similar to those for the republic as a whole, including general underfunding of the health sector, a restrictive budgeting process for health care facilities, little public confidence in the public health care delivery system, and a belief that health is the responsibility of the state and not of the individual. Specific issues concerning the inefficiencies in the system highlighted during the technical assistance visit include:

- ▲ ***An oversupply of hospitals and hospital beds.*** Visits to hospitals throughout the area revealed that existing resources were underutilized. Particularly in the rayon and district hospitals, few patients were to be seen, there were empty beds, and generally little activity. Although there has been a 16 percent reduction in the number of hospital beds in the oblast since 1991, especially in the small district hospitals in the rayons, there remains an oversupply of both beds and facilities in the demonstration area (see *Exhibit I-5*). It is important to note that the reduction in beds has not led to a parallel reduction in the number of physicians, except in the surrounding rural areas.

One apparent reason for the lack of patients in the rayon and district hospitals is that patients often bypass the traditional referral system, in which simple cases are supposed to be treated at these smaller hospitals and only complex cases are referred to the oblast hospital. Because of the perception of better quality of care, more drugs and better equipment at the oblast hospital, individuals bypass the rayon and city hospital in Karakol and go directly to the oblast hospital.

- ▲ ***An overabundance of specialists vs. primary care physicians.*** Primary care physicians in the oblast make up only 17.9 percent of all physicians, if only therapists are counted as primary care physicians. If pediatricians are also included as primary care providers, then the percentage increases to 38.2 percent. If ob-gyns are included as well, then the percentage increases to over half (50.5 percent) of all physicians. These data suggest that specialists serve as primary care doctors in their subspecialties. For example, an ophthalmologist will often provide vision testing as well as perform surgery and other more complicated tasks. Given this situation, primary care physicians could greatly increase the range of services that they currently provide.
- ▲ ***An overdependence on inpatient care.*** According to one hospital administrator, two-thirds of his current hospital admissions could probably be handled as outpatients. The polyclinics in the oblast appear to be underutilized, although they are reasonably well-equipped. The polyclinics are currently given a workload target based on the number of visits per day. If proper incentives were introduced, these facilities could probably provide a much larger volume of services.

- ▲ ***Long lengths of stay in hospitals.*** The average length of stay (ALOS) in the area's hospitals is about 13 days, ranging from 12 days in the rayon hospitals to over 23 days in the Karakol city hospital (see *Exhibit 1-4*). Since hospitals have historically been reimbursed on the basis of number of occupied beds, there is a financial incentive to keep patients in the hospital for a long time. There are also social and economic factors that encourage long lengths of stay. For example, given the small size of apartments and the difficulty in getting food, it is often easier to care for patients in the hospital than at home. Medical beliefs in the former Soviet Union also stressed long lengths of stay. Since the incentives for hospitals have not changed, there has been little reduction in the ALOS in the last several years, despite the supposed economic crisis within the health system.

- ▲ ***A lack of pharmaceuticals and other supplies.*** Due to a decrease in available funds for pharmaceuticals, there are currently serious shortages of most drugs and medical supplies, including antibiotics, insulin, anesthetic agents, bandages, and reagents for laboratory tests. Increasingly, patients pay directly for drugs or family members are asked to bring them to the hospitals. Although the national drug purchasing organization, Farmacia, apparently has reasonable stocks of drugs available, the hospitals cannot afford its high prices.

**EXHIBIT 1-4
CHANGES IN HEALTH RESOURCES:
ISSYK-KUL HEALTH INSURANCE DEMONSTRATION AREA**

NUMBER OF HOSPITAL BEDS PER 1,000 POPULATION						
AREA	1991		1992		1993	
	Rate/ 1,000	No. beds	Rate/ 1,000	No. beds	Rate/ 1,000	No. beds
Karakol	20.9	(1,450)	28.8	(1,450)	19.5	(1,350)
Dzhetiougouz	5.8	(415)	5.9	(420)	5.2	(369)
Az Sou	8.2	(475)	8.2	(475)	6.4	(370)
Tyup	10.5	(485)	10.6	(585)	7.9	(435)
Total Oblast	10.9	(4,685)	11.0	(4,685)	9.3	(3,929)
NUMBER OF PHYSICIANS PER 1,000 POPULATION						
AREA	1991		1992		1993	
Karakol	6.7		8.4		7.9	
Dzhetiougouz	1.9		1.6		1.2	
Ak Sou	2.3		1.8		1.4	
Tyup	2.1		1.8		1.5	
Total Oblast	3.2		3.2		2.9	
AVERAGE LENGTH OF HOSPITAL STAY (ALOS)						
Oblast hospital	14.		14.5		14.5	
Karakol city			18.4		23.4	
Dzhetiougouz rayon			12.4		12.0	
Ak-Sou rayon			12.3		11.8	
Tyup rayon			11.3		11.9	
Oblast overall			13.6		13.1	
<i>Source: Oblast Bureau of Medical Informatics, 1994.</i>						

2.0 ADEQUACY AND APPROPRIATENESS OF HEALTH SECTOR FINANCING

An important objective of the proposed MHI demonstration is to establish mechanisms to ensure adequate, stable, and sustainable financing for the health care delivery system. This section examines the adequacy and appropriateness of resources in the Issyk-Kul demonstration site.

Financing of health care services refers to both the sources of funds available for care, and the uses of funds for health care. Sources of funds in Western nations typically consist of a mix of government funds, employer contributions, and payments from individual consumers. Until recently in the NIS, government budgets provided the only source of revenue. The uses of funds for health care refers to both the levels of spending (e.g., per capita or as a percent of GDP) and the patterns of spending for services (e.g., salaries, equipment, pharmaceuticals).

This section examines the extent to which the new MHI approach can ensure adequate sources of funds for the health system. General economic trends will be examined as well, since the success of HI and health reform will depend to a great extent on the interplay and success in other sectors of the economy. The ability to finance the health sector will depend heavily on a healthy and growing revenue base. The analysis and recommendations in this section are also based in part on the actual performance of the HI reform demonstration currently taking place in the Dzheskasgan oblast in Kazakhstan.

Adequacy of financing will depend not only on the sources of funds, but also the uses of funds in these demonstration areas. Over time, an evaluation of adequacy and stability must include an examination of the prudent use of resources; that is, how well funds are targeted to encourage a well-organized and well-managed delivery system.

2.1 METHODS

2.1.1 Availability and Sources of Data

In general, the team found that the kinds of comprehensive and consistent data needed for the analysis of the current situation and the consideration of alternatives were difficult to obtain. Data related to economic indicators were not comprehensive, and the methodology for estimating these indicators was often unclear and differed by sources. Income and production levels are estimated in several different ways and information was not always available to evaluate the validity of various approaches. As a result, multiple sources of information were used. The team also met with statisticians and other experts to clarify discrepancies. Secondary sources such as World Bank and IMF (International Monetary Fund) reports were used as additional references.

The analysis of health sector financing utilizes data available for the 1990-1993 period obtained from the records of the oblast MOH and health offices at the rayon level. Data on economic activities, taxes, and the budget came from the oblast central statistics office, the Issyk-Kul oblast administration, and the local tax collector's office in Karakol. Payroll and employment data for Karakol and the three demonstration rayons were provided by the oblast finance office and the statistics office in Karakol. Attempts were made to collect historical data on employment and payroll size, but consistent data were not available, particularly for private firms. Data were available only for 1993, and only for those firms employing more than 100 workers.¹⁰

The HFS team examined the tax burden to companies and individuals to assess the ability of employers and individuals to pay. The total tax collected in 1993 by major tax categories also was reviewed.

The government also made available detailed information for the 1900-1993 period on types and volume of health services provided, as well as expenditures by facilities in the demonstration area. Expenditure patterns by categories of cost and by "cost centers" (e.g., hospital, polyclinics) were examined. As in other republics of the former Soviet Union, health facilities in Kyrgyzstan record expenditures according to 18 fixed spending categories ("chapters," in MOH terminology). These budget categories include: salary, social insurance tax, management costs (e.g., utilities, transportation, and other administrative costs), and pharmaceuticals, among others. Some organizations obtain a budget for each of the 18 budget chapters and organize their accounting system accordingly. But many do not receive a budget for all chapters, and thus their budget appropriation covers only a sub-set of the 18 categories. Spending cannot be shifted across categories or carried over from year to year. (The accounting system is discussed in *Section 6.0.*)

Analysis of financial alternatives required that expenditure data be separated into inpatient (hospital) and outpatient (polyclinic) categories. Since the majority of facilities in the Issyk-Kul region offer only one of these types of services, their expenditures were already provided in these categories. For facilities offering inpatient and outpatient services, data on expenditures for medical and ancillary services were generally available separately for inpatients and outpatients, but administrative services were not. The team allocated administrative expenses proportionally to medical services.

¹⁰ The total payroll and number of workers in the firms with fewer than 100 workers were estimated by deducting total payroll and employment figures in the organizations with more than 100 workers from the corresponding figures for all enterprises in the region.

To facilitate the analysis of various cost-saving and revenue-generating measures, the team further divided inpatient and outpatient expenditures into subcategories. To estimate the financial impact of reducing hospital admissions and ALOS, the team divided inpatient expenditures into expenditures for regular inpatients and day-care patients (since the costs of the former were believed to be significantly higher than the latter). The allocation of total expenditures was based on labor allocations. Staff working on night shifts were assumed to be dedicated exclusively to regular inpatient care. Daytime staff were allocated between regular inpatients and day-care patients on the basis of the number of bed-days in each category. Adding the allocations of night and daytime staff together provided a breakdown of total labor services to the regular and day-care patient subcategories. The team then used this breakdown to divide total inpatient costs into the same two (regular inpatient and day-care patient) categories. (It should be noted that this methodology implicitly assumes that the regular inpatients and the day-care inpatients use similar levels of personnel, equipment, medicines, and other inputs during the daytime.)

To facilitate the analysis of the financial impact of alternative policies about preventive and curative care, the team sought data on the per patient cost for each of these subcategories. The government provided data on the actual number of preventive and curative visits, but data on the total and average expenditure for each type of visit were not available. The team used normative estimates of cost per visit that had been developed by the Oblast Health Administration.¹¹ The estimated costs were based on the resource requirements in protocols prescribed by a panel of Kyrgyzstani physicians for prevention and treatment of services offered in the region. By using the ratio between the cost of an average preventive or curative care visit (approximately 1:1.3) and the actual number of visits of each type, the team was able to divide total outpatient expenditures into those two subcategories and estimate the unit cost of a preventive and curative visit (soms 1.46 and soms 1.94, respectively).

All monetary figures were calculated in the new local currency (som).¹² Because of the large fluctuations in the value of the som over the period under study, the team used the Industrial Wholesale Price Index produced by the State Statistical Agency to calculate constant 1990 prices.¹³

Data limitations stemming primarily from inadequate accounting systems and time constraints prevented the team from using more sophisticated costing methods for this study. This limited the analysis, particularly at the level of unit cost of services. Analysis at that level of detail would have been useful, but was not particularly necessary for this study. The methodology used provides reasonably accurate estimates on aggregate level of spending at the oblast, rayon, and facility levels, and on the inpatient and outpatient costs needed to conduct the analyses on the uses of funds presented here. Caution should be exercised in using the team's estimates for additional analyses.

¹¹ These costs estimates were developed to serve as the basis of a fee system, but were not used for that purpose.

¹² The Kyrgyzstan government introduced the som as the official currency of the republic in March 1993. When the som was introduced, it had an exchange rate of 4.1 per US\$. The exchange rate ranged from 4.1 to 8.0 per dollar during 1993, the year from which most cost and revenue information was obtained. As of July 1994, the exchange rate was 11.6 som per U.S. dollar.

¹³ This index may not be the true or precise measure of inflation in the health care sector, but is the best measure currently available.

2.1.2 Methods of Analysis

The HFS technical assistance team developed a computer-based simulation model to analyze the effect of possible changes in revenues and spending, and the impact of these changes on the ability of health care providers in the demonstration zone to provide services. The model relates the flow of funds from various sources to the use of resources by health care providers. It uses 1993 data on revenue, types of services, volume of services, and spending to predict the total funds necessary under alternative financing and spending options. It estimates the per unit costs of services and future revenue requirements under various scenarios. The model was also used to project MHI revenues under alternative assumptions about government policy, economic growth, and employer compliance.

Inflation can be an important factor in the financial stability of the health system, particularly if it affects costs and revenues differently. Lack of adequate data on the level of inflation in different sectors of the economy prevented the team from using inflation as a built-in predicting factor in the forecasting. The model assumes that inflation will affect both sides of the equation (cost and revenue) equally, and therefore will not influence outcomes. The model allows testing for sensitivity of the forecast estimates, however, both to changes in the general level of inflation and to varying levels of changes to individual items of cost and revenue.

2.2 FINDINGS

This section first discusses current government expenditures for health care and relates them to future capitated payments into the MHI for population groups that will continue to be covered by government funding. We then examine the current economic conditions and tax situation of the region and their implications for employers' ability to comply with the proposed 6 percent payroll tax. Current spending patterns for health care are next examined. Finally, we present the results of the impact analyses using the simulation model.

2.2.1 Funding Sources for the Health System

Government Contributions

Up to the present time, the oblast government and, in some cases, the federal government have paid for all health care services through regular budget contributions. Because of inflation, the government's health budget (in current som) for the demonstration area increased sharply in recent years—from 61,540 som in 1990 to almost 5.8 million som in 1993. As seen in *Exhibit 2-1*, however, the budget has actually declined in real terms every year since 1990. In fact, the 1993 budget in real terms for the area represents only about 57 percent of the 1990 budget. An examination of nominal and real budget figures over the last few years shows the importance of developing and updating capitated payments that are fair and stable and reflect the real costs faced by providers over time. Under the proposed MHI scheme, the oblast government will continue to pay for health care for its non-working population (which includes children, elderly, disabled, and those working at home without financial remuneration), as well as for workers of public-budget organizations such as schools and government agencies. Government payments into the MHI for this population will be made on a capitation basis. The government will also continue to finance major construction, purchases of major equipment, and training and retraining of personnel in hospitals and polyclinics. In addition, 6 percent of the federal budget is earmarked for certain predetermined health care activities, such as public health interventions.

Employer Payroll Tax

As previously indicated, under the proposed financing scheme, the MHI will receive a new 6 percent payroll tax from local private companies. Potential revenues for health care services are thus dependent on the region's wage bill.

As shown in *Exhibit 2-2*, approximately 100,000 workers were employed in the demonstration zone in 1993. These workers generated slightly more than 70 million som that year, with an average wage of only 703 som per worker. Twenty-three firms of over 500 workers each and 34 firms employing 100 to 500 workers contribute 75 percent of the total recorded payroll. The remaining 25 percent is generated by small firms employing less than 100 workers.

Experience with a similar insurance experiment in Kazakhstan revealed considerable opposition to new payroll taxes. A recent HFS evaluation of the demonstration in the Dzheskasgan oblast found that larger firms (more than 500 workers) participate in the employer tax scheme, but fewer firms of 100 to 500 workers contribute, while firms with under 100 workers rarely participate. In that program, less than 8 percent of firms with less than 100 workers participated.¹⁴

¹⁴ See Langenbrunner et al., "Evaluation of Health Insurance Demonstrations in Kazakhstan: Kzheskasgan and South Kazakhstan Oblasts," HFS Technical Note No. 14, July, 1994.

Employers can be classified into two other categories—government-budget organizations and private firms. The budget organizations are either state-owned or state-run organizations, and include education institutions, government offices, and parastatal companies. Private firms employ 68 percent of the workers in the demonstration zone, but constitute only 36 percent of the payroll, while public-budget organizations contribute 64 percent of the total payroll. This is important because in the current version of the document on health insurance law, the Kyrgyzstan plan calls for public-budget organizations to be exempt from the 6 percent payroll tax.

Taxes in the project area are already quite high, as shown in *Exhibit 2-3*. Companies typically pay profit taxes of 30 to 50 percent, sales tax of 15 to 20 percent, and value added taxes (VAT) of 17 to 20 percent. Excise and customs duties of 50 to 380 percent are also levied on certain domestic and imported products. In addition, there already exists an extremely high payroll tax (34.5 percent) for social insurance. Income taxes are paid by anyone earning above 58 som per month. Rates are graduated, ranging from 12 to 40 percent for those earning more than 2,030 som per month.

Probably as a result of these high rates, tax collection has generally been poor. In 1993, the tax department was able to collect only 69 percent of the modest target it set for that year. Total income tax receipts amounted to only about 3 percent of wage income. Tax receipts and other economic indicators are shown in *Exhibit 2-4*.

The poor performance of the economy also contributed to low levels of available revenues. The Issyk-Kul region, like other parts of Kyrgyzstan, is undergoing dramatic structural changes in its economy. The fall in economic output for Issyk-Kul in the last few years shows similar patterns of decline to other parts of Kyrgyzstan. *Exhibit 2-5*, which compares economic output for the city of Karakol and three surrounding rayons during the first six months of 1994 with that of the same period in 1993, shows a decline in regional income of about 39 percent. In Karakol town alone, 27 of 45 firms have shut down within the last year.

In an effort to attract new investments, new tax provisions for the Karakol FEZ were enacted in January 1994. These provisions create a more favorable environment for longer-term economic growth. They include:

- ▲ A five-year "tax holiday" (tax exemption) for newly-invested companies;
- ▲ Tax deductions for spending on health, education, and communal activities. This provision applies to all individuals and organizations. (Note that the proposed 6 percent payroll tax for health will lower a firm's taxable profits. If the firm is paying an income tax of 50 percent, half the amount of the payroll tax will be owed on income taxes. Thus, the effective tax increase for such a firm, as a result of the 6 percent tax, would be 3 percent), and
- ▲ Additional five-year tax breaks for firms employing more than 300 Kyrgyzstanis and/or that provide investments of more than 1.5 million soms.

EXHIBIT 2-1
HEALTH BUDGET IN ISSYK-KUL DEMONSTRATION AREA
 (Som)

	1990	1991	1992	1993
Nominal	61,540	120,840	723,100	5,770,700
Real	61,540	46,549	40,997	35,142
% of 1990 Budget in Real Terms	100.0%	75.6%	66.6%	57.1%

**EXHIBIT 2.2
EMPLOYMENT AND SIZE OF PAYROLL
ISSYK-KUL DEMONSTRATION AREA
(1993 DATA)**

CATEGORY	No. of Workers	Percent of Total Workers	Total Payroll (000 som)	Percent of Total Payroll
All Categories	100,058	100	70,317	100
Budget (government) organizations	31,969	32	45,270	64
Non-Budget (private) firms	68,090	68	25,047	36
Firms with over 500 workers	55,766	56	37,665	54
Firms with 100 to 500 workers	19,640	20	14,754	21
Firms with under 100 workers	24,652	25	17,897	25
<i>Source: Oblast Statistics, Issyk-Kul Oblast Administration</i>				

**EXHIBIT 2-3
KYRGYZSTAN TAX STRUCTURE**

TYPE	RATE (%)
CORPORATE TAXES	
Value Added Tax	17-20
PROFIT TAX	
State enterprises	30
Cooperatives (agriculture)	30
Public organizations (and associated enterprises)	30
Religious organizations	30
Foreign companies	30
Services (e.g., dry cleaning)	30
Self-employed	30
Intermediary trade, show, commerce ("middle-men")	50
Private firms, trade and commerce	50
Food companies	50
Collective and state farms	15
Mass media and culture	15
Joint ventures	30
REVENUES TAX (varies by activity)	6-70
EXCISE TAX (selected items)	
Domestic cigarettes	65-110
Domestic alcoholic beverages	30-125
Domestic cognac	380
Imported cigarettes	200
Imported alcoholic beverages	200-400
PROPERTY TAX	1.2
PENSION FUND (Employer Payroll Tax) (comprised of temporary and permanent disability, social security and health)	34.5
PAYROLL TAX FOR COLLECTIVE FARMERS	8.0
PERSONAL INCOME TAXES	
Graduated, based on average monthly income	
< 58 com	0%
58-348	12%
348-696	35 com + 15%
696-1160	87 com + 20%
1160-2030	180 com + 30%
> 2030	441 com + 40%

EXHIBIT 2-4
TAXES, INCOME AND HEALTH CARE EXPENDITURES
ISSYK-KUL DEMONSTRATION ZONE
(1993)

Total Population	250,400	
Total Regional Income (GDP)(som)	131,133,600	
Total Payroll (som)	70,317,265	
Ratio of Income Tax to Payroll	3.47%	
TAX REVENUES	AMOUNT (som)	TAX AS PERCENTAGE OF TOTAL REGIONAL INCOME (GDP)
Income tax and payroll tax	2,436,600	1.86%
Corporate tax	4,007,000	3.06%
Sales tax	0	0.00%
VAT	9,625,900	7.34%
Customs duty	1,901,600	1.45%
Others	417,600	0.32%
TOTAL TAXES	18,388,700	14.02%
HEALTH SPENDING		
Government Health Budget (som)	5,770,700	
Per Capita Health Spending (som)	23	
Government Health Budget as a percent of Total Tax	31.38%	
Health Budget as a Percent of Total Regional Income	4.40%	

EXHIBIT 2-5
 ECONOMIC OUTPUT, JAN—MAY 1993 & 1994
 ISSYK-KUL DEMONSTRATION AREA
 (Constant 1994 Som in 1000's)

	JAN—MAY 1993	JAN—MAY 1994	CHANGE
Karakol City	49,454.4	31,025.8	- 37%
Dzhetiougouz Rayon	228.1	365.3	+ 63%
Ak-Sou Rayon	1,871.4	1,178.2	- 37%
Tyup Rayon	3,085.1	981.7	- 68%
Total Demonstration Area	54,639.0	33,551.0	- 39%

Source: Oblast Statistics, Issyk-Kul Oblast

2.2.2 Health Care Spending

Health care expenditures in 1993 in the demonstration zone represented approximately 4.4 percent of regional income, a low figure by international standards for a country as developed as Kyrgyzstan, but substantially more than the national average, which is estimated at 3.3 percent. *Exhibit 2-6* presents detailed budget expenditures for 1993 for the demonstration zone by government budget categories.

Changes in spending patterns of health facilities between 1990 and 1993 are shown in *Exhibit 2-7*. The most dramatic changes involved the sharp increase in the "management" category, which has risen from 11 percent of total costs to 24 percent in 1993. This category includes utilities, rent, cleaning, and other upkeep expenses at the facilities. These items are all material inputs, prices of which increased dramatically. For example, prices of fuel reportedly increased 24 times in the last three years. Other areas of increased spending include social insurance tax and food. The total payroll amount declined gradually from 55 percent in 1990 to about 36 percent in 1993. During that same period, expenditures for pharmaceuticals declined from about 10 percent of total spending to less than 6 percent.

In 1993, health facilities in the demonstration area spent twice as much on care for inpatients than outpatients (69 percent and 31 percent, respectively). Outpatient care spending on personnel and management was higher as a proportion of the budget than inpatient care. Polyclinics and hospitals spend similar proportions of their budgets on pharmaceuticals. Hospitals spend almost 14 percent of their resources on food. The proportions of spending on other items are about the same for the two categories of care. Spending patterns between inpatient and outpatient settings were available for 1993 only, and thus comparing changes over time was not possible.

The hospitals and polyclinics in the demonstration zone provide a wide range of medical services. *Exhibit 2-8* presents aggregate data on the volume of medical services for 1993 in the facilities of Karakol and the three rayons. People in the region made an average of four outpatient and ambulatory visits in 1993. Fifty-three percent (or 503,000) of the approximately 950,000 outpatient care visits were for physical check-ups. In the same period, there were 49,000 inpatient visits with an ALOS of 12.9 days. About 12 percent of the inpatient admissions were for day-care services.

EXHIBIT 2-6
HEALTH CARE SPENDING IN THE ISSYK-KUL DEMONSTRATION AREA BY BUDGET CATEGORIES
(Som, 1993 prices)

	Total Expenditures	% of Total Expenditures	Outpatient Expenditures	% of Total Expenditures	Inpatient Expenditures	% of Total Expenditures
Salaries	2,076,301	35.98	832,650	45.35	1,243,650	31.61
State insurance	767,100	13.29	309,209	16.84	457,891	11.64
Management cost	1,400,401	24.27	520,097	28.33	880,303	22.37
Business trips	17,600	0.30	12,394	0.68	5,206	0.13
Food	713,000	12.36	0	0.00	713,000	18.12
Pharmaceutical	327,300	5.67	93,510	5.09	233,790	5.94
Equipment	166,300	2.88	26,777	1.46	139,523	3.55
Sheets and linen	24,100	0.42	9,290	0.51	14,810	0.38
Maintenance and construction	75,300	1.30	8,665	0.47	66,635	1.69
Other	203,300	3.52	23,381	1.27	179,919	4.57
TOTAL	5,770,702	100.0	1,835,974	100.0	3,934,726	100.0
PERCENT OF TOTAL	100.0		31.82		68.18	

EXHIBIT 2-7
ESTIMATED HEALTH CARE EXPENDITURES IN THE ISSYK-KUL DEMONSTRATION AREA
BY BUDGET CATEGORIES
(Som, 1990 prices)

Budget Category	1990		1991		1992		1993	
	Amount	% of Total Expenditures						
Salaries	33,600	54.60	23,844	51.22	17,672	43.11	12,644	35.98
State insurance	2,400	3.90	6,202	13.32	6,531	15.93	4,671	13.29
Management cost	6,800	11.05	4,622	9.93	5,522	13.47	8,528	24.27
Business trips	340	0.55	169	0.36	176	0.43	107	0.30
Food	4,900	7.96	4,160	8.94	5,176	12.63	4,342	12.36
Pharmaceutical	6,100	9.91	3,043	6.54	2,971	7.25	1,993	5.67
Equipment	2,600	4.22	1,733	3.72	924	2.25	1,013	2.88
Sheets and linen	1,200	1.95	809	1.74	232	0.57	147	0.42
Maintenance and construction	2,600	4.22	1,156	2.48	720	1.76	459	1.30
Other	1,000	1.62	809	1.74	1,072	2.61	1,238	3.52
TOTAL	61,540	100.00	46,549	100.00	40,997	100.00	35,142	100.00
Percent of real 1990 expenditures	100.00%		75.64%		66.62%		57.10%	

EXHIBIT 2-8 VOLUME OF SERVICES DATA FOR THE ISSYK-KUL DEMONSTRATION AREA (1993)			
	No. of Admissions	No. of Bed-Days	ALOS (Days)
REGULAR HOSPITAL (Inpatient) CARE			
Karakol	26,018	355,447	13.66
Three Rayons	25,442	309,461	12.16
TOTAL OR AVERAGE	51,460	664,908	12.92
DAY-CARE			
Karakol	NA	NA	
Three Rayons	2,664	31,238	11.73
Total	2,664	31,238	11.73
TOTAL INPATIENT CARE	54,124	696,146	12.86
OUTPATIENT VISITS			
Polyclinic visits	362,799		
Preventive cases	502,324		
Home visits	118,572		
TOTAL	983,695		

2.2.3 Results of the Simulations: Assessing the MHI's Financial Viability

In this section, we analyze implications of hypothetical changes in efficiency and sources of revenue on the viability of the MHI system. The analysis will allow planners to assess the consequences of the various financing and management options. The effect of changes in sources and uses of funds can be tested using the simulation model, and a detailed description of the model with assumptions, input tables, and output tables is provided in Appendix A (*Exhibits A-1 to A-7*). A number of scenarios on both expenditure and revenue for health care was postulated and tested.

Reducing Expenditures: Savings through Efficiency Improvements

On the expenditure side, four sets of hypothetical assumptions on cost-saving measures were simulated using the data for the Issyk-Kul demonstration area. Under each scenario, total expenditure and savings realized from efficiency changes are estimated.

- 1) **Scenario 1** assumes a 50 percent reduction in the number of check-up cases partially offset by a 25 percent increase in their cost.¹⁵ All other cases remain at the 1993 level.
- 2) **Scenario 2** assumes a 10 percent reduction in the ALOS for both regular inpatient and day-care admissions. The number of patients in inpatient, day-care, and outpatient categories remains at the 1993 level.
- 3) **Scenario 3** assumes a reduction of inpatient admissions by 10 percent and a corresponding increase in the number of outpatient cases. The total number of patients seeking care remains at the 1993 level.
- 4) **Scenario 4** combines the cost-saving measures of the first three scenarios.

Exhibit 2-9 summarizes the results of these four simulations on the expenditure side as follows:

Scenario 1: A large part of the outpatient activities are mandatory check-up services. In 1993, more than 50 percent of the outpatient cases were physical check-ups offered to job seekers and workers of selected professions. A 50 percent reduction of these services by, for example, reducing mandatory chest x-rays from the current yearly interval to once in two years could reduce health care spending by almost 7 percent. This estimate assumes a 25 percent increase in the unit cost due to a lower volume of services. A reduction in check-ups could result in an increase of the volume of treatment cases and/or treatment intensity, assuming check-ups result in early detection of problem cases. The model does not consider this substitution effect in deriving its estimates.

Scenario 2: Savings can also be generated from careful management of inpatients. A 10 percent reduction in ALOS for regular inpatient and day-care services would reduce spending by 6.9 percent.

¹⁵ These are mandatory and employer-requested physical check-up services offered to the population on periodic basis.

Scenario 3: Patients treated in inpatient settings use considerably more resources than those treated in outpatient or day-care services. It is possible that many of the inpatient cases can be effectively treated in outpatient or day-care units. A 10 percent reduction in the number of referrals to inpatient hospitals by primary care physicians and a shifting of those patients to day-care services will save over 8 percent of the total budget.

Scenario 4: Successful implementation of all three efficiency measures can cut costs dramatically. A combination of measures to reduce check-ups, cut back on inpatient referrals, and decrease ALOS would reduce total expenditures by more than 21 percent. The new funds resulting from these savings could be used to offset increases in the cost of inputs due to high inflation or to improve the quality of care by, for instance, ensuring adequate supplies of pharmaceuticals, medical supplies, and other essentials that had been cut back due to lack of funds.

It should be noted that the projected savings might take several years to realize. Efficiency involves the use of fewer resources in the production process. The savings indicated in the four scenarios can translate to a reduction in spending only if there is flexibility in resource management. That means health care providers do not purchase inputs that have become redundant through greater efficiency. Some redundant inputs are fixed-cost items, however, which are purchased ahead of time and used over a longer period of time (usually more than one year). Fixed-cost labor and material¹⁶ inputs cannot be reduced in the short run. The redundant variable cost items can be translated into cost savings in the short run. The simulation model used here implicitly assumes all costs as variable¹⁷ except for Scenario 2. Therefore, it overestimates short-term savings in the three other expenditure scenarios described.

Revenue From New Sources

This section reports on the use of the simulation model to assess the potential impact of several methods of generating resources for the MHI fund. The expected flow of funds and minimum compliance¹⁸ rates necessary to raise adequate funds were measured under three different scenarios:

- 1) **Scenario 1:** The proposed 6 percent payroll tax would take effect and the oblast would continue to provide the current level of resources through capitation payments. The maximum amount of resources raised under various assumptions concerning the compliance rate and employer participation are estimated.

¹⁶ Material inputs are classified as fixed costs, generally by the longer duration of the services they provide. Labor can be variable, fixed, or "step-cost," depending on divisibility of its service and terms of the employment contract.

¹⁷ In Scenario 1, a fixed cost was implicitly factored in the 25 percent increase of unit cost of check-up services.

¹⁸ The compliance rate can be described as the ratio of actual payroll contribution for health insurance to the percent of total payroll that is expected to be collected, i.e.,

$$\frac{\text{totalcontribution}}{\text{totalpayroll} * \text{taxrate}}$$

- 2) **Scenario 2:** The payroll tax would take effect as an additional source of revenue for health care. Rates of compliance necessary to raise varying amounts of money are estimated under various assumptions concerning other sources of revenue and the economy.
- 3) **Scenario 3:** The MHI fund would receive the capitated payment only, and alternative sources of new revenue (other than the 6 percent payroll tax) would be utilized.

Exhibit 2-10 shows the results of the simulation model using the three scenarios.

Under **Scenario 1**, different assumptions concerning the 6 percent payroll tax mechanism yielded the following results:

- ▲ If all (100 percent) of the private firms pay the tax, an additional 1.52 million som (26 percent of spending in 1993) will be added to the current level of funding (5.8 million som). The additional funding would raise the proportion of regional income for health care to 5.6 percent from the 1993 level of 4.4 percent.
- ▲ If the MHI receives only 20 percent of the tax from private firms, it would receive 303,771 som, or only an additional 5 percent over the government's contribution.
- ▲ If the MHI receives 20 percent of the proposed premium from both government budget and private companies, it would receive an additional 13 percent in revenues. This would increase health spending as a proportion of income to over 5 percent.
- ▲ If the MHI receives a 6 percent payroll contribution from all the public-budget organizations only, it can raise 2.7 million som, which is 32 percent of current health spending.

EXHIBIT 2-9
SAVINGS UNDER COST-SAVING SCENARIOS IN KARAKOL AND THREE RAYONS
 Soms, 1993 Prices (except as indicated)

CATEGORY	1993 DATA	Scenario 1 50% reduction in check-ups	Scenario 2 10% drop in inpatient & day-care ALOS	Scenario 3 10% drop in referrals & 10% increase in day-care	Scenario 4 Total effect of all changes
TOTAL EXPENDITURES	5,770,700	5,371,000	5,375,000	5,304,000	4,555,000
Average inpatient admissions	67.72	67.72	60.95	67.72	60.95
ALOS for inpatient (days)	12.92	12.92	11.63	12.92	11.63
Average day-care admissions	50.79	50.79	45.71	50.79	45.71
ALOS for day-care (days)	11.73	11.73	10.55	11.73	10.55
Average outpatient visit	1.94	1.94	1.94	1.94	1.94
Average check-up	1.46	1.46	1.46	1.46	1.46
Percent reduction in total spending (%)		6.93%	6.86%	8.09%	21.07%

**EXHIBIT 2-10
REVENUE UNDER ALTERNATIVE FUNDING SCENARIOS**

SCENARIO 1:

Introduce 6% payroll tax for health insurance. Revenue from other sources remains at 1993 figures (in constant som). Estimate total payroll contribution under changing participation level.

Assumptions	Total Payroll Contribution	Percent of Current Spending
a) 100% compliance from private employers	1,520,000	21%
b) 20% compliance from private employers	303,771	5%
c) 20% compliance from both private and government enterprises	843,807	13%
d) 100% compliance from state-owned enterprises	2,700,000	32%

SCENARIO 2:

Introduce 6% payroll tax for health insurance. Cost increases by 50%. Estimate compliance rate to meet residual expenditure under varying contribution from other sources.

Assumptions	Compliance rate to meet expenses (without efficiency)	Compliance rate to meet expenses (with efficiency) *
a) Budget level at 1993 nominal level	68%	26%
b) Budget contribution 60% of new expenditure level	82%	65%
c) Budget at 1993 level; Som 1 co-payment	45%	2%
d) Budget at 1993 level; 25% increase in payroll	55%	21%

SCENARIO 3:

No new payroll tax; diversify sources of finance. Estimate contributions from new sources.

Assumptions	Contribution from new source	Percent of current spending
a) Transfer 12% of social insurance fund into health care	2,712,229	47%
b) A Som 1 fee for outpatient physiotherapy	288,535	5%
c) Shift of 12% social insurance fund and Som 1 fee	3,000,764	52%

Note: * Efficiency savings of 21% of spending, as shown in Scenario 4 of Exhibit 2.9. Total expenditure after 50 percent cost increase equals Som 8,656,050. With increased efficiency, it drops to Som 6,832,220.

The experience of other countries suggests that it is highly unlikely that all private firms will be able to pay their full tax in the short run, particularly because of poor economic conditions. In a similar FEZ in Kazakhstan, the effective compliance rate was found to be only 13 percent. A 20 percent compliance, therefore, appears realistic, but would only yield a return of 5 percent of expenditures. A more favorable return is possible from state-owned enterprises, both because they have a higher proportion of payroll and tax collection is likely to be more effective. This would require an amendment to the existing insurance law.

These estimates implicitly assume equal rates of inflation in costs and revenues. If inflation rates in health care costs, government revenue, and wages vary from one another, however, the results of these analyses of alternative efficiency and revenue-generating scenarios will be affected substantially. The most difficult case for the MHI, of course, would be if health care costs rise faster than government and employer contributions. The next scenario examines this issue.

Scenario 2 assumes that health care expenditures increase by 50 percent to 8,655,000 som from the 1993 level of 5,770,000 som. An examination of compliance rates by employers necessary to raise different levels of funds under various assumptions regarding contributions from other sources yielded the following results:

- ▲ If other sources of revenue remain at the 1993 level and no new revenue sources were added, a 68 percent compliance rate for all employers (state-owned and private) is necessary to meet expenditures.
- ▲ If the government reduces its budget contribution to cover only the non-working population (60 percent of the entire population) at the higher cost per capita, an 82 percent compliance by all employers would be necessary.
- ▲ If the government's contribution remains at the 1993 nominal level and a one som user fee is charged for all outpatient visits, a 45 percent compliance by the employers would be required.
- ▲ If the government's contribution remains at the 1993 level and payroll increases by 25 percent in real terms due to an improvement in wages and/or economy, a 55 percent compliance from all employers would be necessary.

Under **Scenario 3**, an examination of revenue sources other than the payroll tax yielded the following results:

- ▲ A shift of funds from the social insurance tax¹⁹ to the MHI. A shift equivalent to four percent of payroll (11.8 percent of the Social Insurance and Pension fund), would cover 47 percent of the current level of health care spending. The other 53 percent of spending could come from the oblast's budget. Alternately, if the government's contribution remains at the current level of 47 percent, additional resources can be pumped into the health care delivery system.

¹⁹ Under the current tax configuration, employers contribute 34.5 percent of payroll to the social insurance fund.

- ▲ A user fee levied on discretionary outpatient services (e.g., physiotherapy) could raise revenues by 5 percent. If combined with the 47 percent from Social Insurance and Pension contributions, only the remaining 48 percent would need to be provided from the oblast government.

The economy in the Issyk-Kul region is undergoing a very difficult period. In this environment, the MHI is unlikely to raise significant amounts of additional revenue by instituting new payroll taxes. The required compliance rate may be too difficult to achieve, particularly with rising cost inflation and lagging wages. At the same time, the effect of new payroll taxes on economic growth may be negative. In view of these conditions, the introduction of users' fees and the shifting of funds from the Social Insurance and Pension fund to the MHI may be preferable options to raise additional funds for the health sector.

2.2.4 Health Insurance Fund Management and Organization

The technical assistance team conducted qualitative analyses and held in-depth discussions concerning the government's plans for the management and organization of the MHI. Based on this assessment, the team made a series of recommendations concerning several aspects of MHI management, including the types of activities in which the MHI should be involved, the types of insurance it should cover, financial management and monitoring of the funds, and training needs for MHI staff. These recommendations, most of which have already been incorporated into the design of the MHI by the federal and oblast MOHs, are presented in *Section 2.4.3*.

2.3 DISCUSSION

There was consensus during the discussions with MOH officials, practitioners, and others that the government's concept of a separate, earmarked HI fund is a good one, and it should be maintained and expanded. There are several advantages to this approach. First, by tapping into new sources of revenues and shifting the budgetary contributions to a capitation basis, it increases stability, predictability, and sustainability of funding available for health care. Second, it allows greater autonomy and decentralized decision-making on the part of officials and providers familiar with local needs. Finally, the new structure will create an opportunity to provide incentives to providers to increase efficiency and improve the quality of care.

During the discussions, specific aspects concerning financing for the HI demonstration were examined in detail and suggestions made on changes as a result of the team's findings. These discussions and suggestions are summarized here.

Employment-Based Contributions

It was generally believed that the new 6 percent payroll tax should not be enacted immediately on a widespread basis for a number of reasons. First, the results of the simulations show that even if all private firms pay the full tax, this would only raise 26 percent of required revenues for health care (based on 1993 expenditures). Second, it is highly unlikely that compliance rates will reach anything close to 100 percent. Experience in Kazakhstan has shown that participation and compliance with similar payroll taxes has been low—only around 13 percent of potential revenues have actually been paid. This demonstration area can expect similar problems, though perhaps to a lesser degree because of the use of the existing tax collection system. Furthermore, a new payroll tax could encourage informal "cash"-based transactions by businesses outside the formal economy, which would effectively result in fewer taxes being paid by employers for state needs and programs.

Perhaps of greatest importance, a payroll tax may be a drag on general economic development. A new payroll tax could result in either fewer funds for capital formation, or the tax could be passed from employer to employee in the form of either lower wages or a decrease in jobs. These potential adverse effects would have the greatest impact on new and small businesses. The experience from other countries has shown that entry-level jobs are most likely to be eliminated, affecting women and minorities the most. Tax benefits of the FEZ in Karakol city—including five to 10-year tax holidays and tax-deductible contributions for health, education, and other social welfare spending—would moderate to some extent some of these negative effects of the tax.

Given the potential negative impact of the new payroll tax on capital formation and jobs, it was felt that the tax, if enacted, should be phased in over time and not implemented on a widespread basis until the general economy begins to improve, probably no sooner than January 1996. A phased-in strategy might involve:

- ▲ Extending the tax benefits and provisions of the FEZ to the entire demonstration area immediately;
- ▲ Including public-budget organizations, which make up 64 percent of the payroll, in the payroll scheme, with payments starting in January 1995;
- ▲ Having large firms (e.g., those with more than 500 employees) begin paying in January 1996, but only if the economy improves (firms of this size make up over half of the workforce in the demonstration area), and
- ▲ Extending the time-limited tax holiday for small and newer firms in the FEZ area to the entire demonstration zone.

Alternative ways of generating new revenues to pay for the MHI fund should also be considered, as discussed here.

Capitated government payments into the MHI for the non-working population

The central and oblast governments are moving in the right direction through the proposed use of capitated payments to MHI fund instead of allocating funds by 18 separate line items ("chapters") as occurred in the past. The government has also added new categories for capital, equipment, and re-training. The unpredictability of the capitated rates, however, which are based on annual legislated appropriations, could create problems for the MHI's ability to predict and manage its funds prudently and maintain solvency in the future.

The development of fair capitated rates is critical to the success of the insurance program and was discussed extensively during the technical assistance team's visit. The oblast government is currently considering a single rate for all persons covered, using an average based on the most recent budget divided by the number of people covered. To ensure that rates are both sufficient to cover costs and fair, several changes in the method for determining rates have been suggested, including:

- 1) Taking an average of the oblast health services budget from several recent years and dividing it by the average population. These budget numbers should be real, not nominal; that is, adjusted for inflation to 1994 levels.
- 2) Adjusting the per capita rate by age and sex for this covered group relative to the general population as a whole. If, for example, the average health care cost of women aged 45 to 55 years is two times the cost of the average person, the per capita payments for all women in that age group would be double the average rate. Correspondingly, if their cost was .79 of the average, the amount for these individuals would be derived by multiplying the average rate by 0.79.

Since utilization statistics are not available, two alternative adjustment methods are:

- a) Using an age/sex adjuster based on resource use experience of another area or country. Ratios of relative use for various age/sex groups can be used to adjust the base per capita amount.
 - b) Developing age and sex adjusters based on a consumer survey of utilization and costs. It was suggested that a proposed ODA-financed household survey be extended to the Issyk-Kul oblast, and that it include questions on prior use as well as cost.
- 3) Updating the capitated rate periodically to adjust for changes in: i) population, ii) inflation, iii) demographic composition, iv) urban-rural composition, v) practice patterns, and vi) epidemiological patterns or other unanticipated events. The inflation update will require development of a price index, preferably before January 1995. Changes in practice patterns can be measured most easily by using the MES (treatment protocols) now used by the Kyrgyz as QA standards (see *Section 6.0*).

Alternatives Ways of Generating Additional Revenues

Given the concerns about imposing the proposed 6 percent payroll tax at this time, the technical assistance team suggested that the oblast government consider other means of generating new revenues. These alternatives include: changing the payroll tax as currently configured; using existing payroll taxes to finance the MHI; using other taxes that are not employer-based; generating savings through improved efficiency in health care delivery; and establishing a form of managed competition among insurance companies and providers.

One alternative is to change the current configuration of the payroll tax contribution. Instead of employers paying the entire amount, it could be split between employers and employees—for example, a 3 percent payroll tax for employers and a 1 percent tax for employees. This approach would involve citizens more actively in paying for their health care and also free funds for capital formation. Furthermore, the 1 percent payroll contribution from employees could be applied only to individuals in upper-income brackets (e.g., managers of state-run enterprises, banks, insurance companies). This would help to improve the equity of the system.

Another alternative would be to take the funds required to finance the MHI from the current Social Insurance and Pension Fund, which is financed by a 34.5 percent payroll tax. This high level of funding (by international standards), coupled with Kyrgyzstan's relatively small dependent population (children and the elderly), suggest that the reallocation of part of its funds to health care is feasible. If further analysis confirms this, it might well allow the proposed additional 6 percent payroll tax to be delayed or even eliminated.

Alternative taxes could also be considered to help finance the MHI, especially in the long term. For example, alcohol and tobacco taxes (although already substantial) could be doubled and earmarked for health care services. This action could reduce health costs associated with tobacco and alcohol use and provide the system with resources to pay for some of the costs that would remain. A tax modification of this type could be considered at the national level. Another possibility is to impose a VAT, with revenues earmarked for health care, although this type of tax is usually considered regressive. A third alternative is to earmark a portion of income taxes for health care.

An important source of revenues to be considered are cost savings from improved efficiency of health care delivery. As the simulation results clearly demonstrated, significant savings can be achieved through reductions in inpatient admissions (shifting them to outpatient cases), ALOSs, and such services as annual check-ups and x-rays. Other efficiency measures to be considered include basing payments to providers on admissions and services actually performed, rather than on such input measures as number of beds and staff; and eliminating the requirement that jobs for health sector staff be guaranteed. Administrators of facilities could instead put all staff on annual contracts, which would give facilities the authority to hire and fire staff as necessary to remain fiscally solvent. Funds could also be saved by selling all sanatoria in the oblast (up to 10,000 rooms) to the private sector. The services that the sanatoria currently provide would no longer be provided by the public sector or under the MHI.

Other possible revenue sources are selective contracting, the imposition of user fees for discretionary services (e.g., physiotherapy treatments), and the elimination of discretionary services and those of questionable value from the guaranteed benefits package. These options are explored in more detail in *Section 3.0*.

A further option to be considered in the long term is to establish a form of managed competition among insurers and providers. In place of the government setting an insurance premium as a flat amount or a percentage of wages, it could mandate a set of services to be provided through compulsory insurance. Groups of providers or insurance organizations could then try to offer the best prices for the mandated set of services. Insurers and/or providers would market coverage for the services to consumers through their employers. There are several benefits to this approach. First, providers/insurers would compete on the basis of price, quality, and access to services. Second, consumers would have a greater role in determining how much income and GDP is spent on health services by influencing their employers to choose the price and quality combination that best meets their needs. This system could also lead to increased innovation among private provider groups and insurers since they would have to respond to consumer demands. Since both high and low-wage workers would pay the same amount for the defined set of benefits, however, such a system would raise equity concerns and could lead to a reduction in low-wage jobs.

2.4 RECOMMENDATIONS

The following recommendations are based on the findings and analyses of the technical assistance team and extensive discussions with MOH officials, economists, health care providers, and others.

2.4.1 The Payroll Tax

- 1) The concept of a separate, earmarked HI fund for the demonstration should be maintained and further developed.
- 2) Because the proposed new 6 percent payroll tax will not likely generate sufficient funds to finance the MHI, as indicated by the simulations, alternative means of financing for the immediate future should be considered.
- 3) If a new payroll tax is approved, it should not be imposed on a widespread basis until the general economy begins to improve (e.g., no sooner than January 1, 1996). It should also be phased in over time, beginning first with public-budget (government-financed) firms, which make up 64 percent of the payroll and are currently exempt from the tax; and later with large companies (more than 500 employees) before smaller firms are requested to participate. The tax benefits of the FEZ should also be extended to the entire demonstration zone immediately.
- 4) If the payroll tax is enacted, consideration should be made to splitting it between employers and employees—for example, a 3 percent payroll tax for employers and a 1 percent tax for employees, and applying the employees' contribution only to upper-income workers (e.g., managers of state-run enterprises, banks, insurance companies).

2.4.2 Government Contributions For Health Care

- 5) The use of capitated payments (one-line budgets) to cover the non-working population (e.g., unemployed, elderly, and disabled) should begin immediately. The federal and central oblast governments should establish and commit to a capitated payment system rate that:
 - ▲ Establishes a formula leading to an initial rate that reflects current and historical expenditures (e.g., one that is not artificially low);
 - ▲ Is risk-adjusted, based on expected utilization needs (e.g., disabled, elderly vs. others) (there should be at least age and sex adjustments); and
 - ▲ Is updated over time for changes in: population, demographic composition (e.g., aging), inflation, urban/rural population patterns, practice patterns and new technology, unforeseen epidemiologic events, and other factors as appropriate
- 6) Health price input indices should be developed for the various economic zones (including urban and rural) for use in updating capitation rates and reimbursement rates to care providers. Indices will need to be updated frequently during periods of price devaluation and inflation.

2.4.3 Alternative Sources of Funding and Cost-Reduction Measures

- 7) As an alternative to the payroll tax, the government should consider using funds from the Social Insurance and Pension Fund to help finance the MHI.
- 8) The use of other types of taxes to fund health care should also be considered. The government could double the alcohol and tobacco taxes and earmark the additional revenues for health care. Other tax sources could include earmarked VATs or income taxes.
- 9) The area's health system should implement as soon as possible cost-saving measures that improve the efficiency of health care delivery. These measures could include reducing the average length of hospital stays; basing payments to providers on admissions and services actually performed, rather than on such input measures as number of beds and staff; and shifting inpatient cases to outpatient settings whenever possible.
- 10) The oblast government should consider eliminating the requirement that jobs for health sector staff be guaranteed and have administrators of facilities put all staff on annual contracts. This would give facilities the authority to hire and fire staff as necessary to remain fiscally solvent.
- 11) Other revenue sources such as selective contracting, user fees for more discretionary services, and better definition of services covered under the guaranteed benefit package should be explored (see *Section 3.0*).
- 12) All sanatoria in the oblast (up to 10,000 rooms) could be sold to the private sector and their services no longer be covered by the public health or the MHI.

- 13) For the long term, the government could consider a form of managed competition to ensure health care. In place of the government setting an insurance premium as a flat amount or as a percentages of wages, it could mandate a set of services to be provided through compulsory insurance. Groups of providers or insurance organizations could then offer the best prices for the mandated set of services. Insurers and/or providers would market coverage for the services to consumers through their employers. This approach would force providers and insurers to compete on the basis of price, quality, and access to services, thereby improving these elements, and would give consumers a greater role in choosing their HI package, but would also raise equity concerns, since both high and low-wage workers would pay the same amount for the defined set of benefits.

2.4.4 Health Insurance Fund Management and Organization

Short-Term Recommendations

- 1) The MHI fund should be an organization separate from the MOH, with separate employees and staff structure.
- 2) The fund should be set up exclusively for the purpose of health care services, and should not include life, property, and other types of insurance. Currently, the MHI organization in Kazakhstan (Dzheskasgan oblast) sells coverage for several types of insurance. This poses a risk of shifting public revenues to cover claims of non-HI subscribers.
- 3) The insurance organization should engage in the following activities:
 - ▲ Beneficiary enrollment and validation;
 - ▲ Payment to providers and facilities for services;
 - ▲ Development of information files and records;
 - ▲ Forecasting and estimation of future demand of services;
 - ▲ QA standards and review;
 - ▲ Utilization monitoring and review; and
 - ▲ Special payments or allocation of funds for capital, new construction, and equipment.
- 4) The MHI fund revenues should be allocated in the future to the following four types of separate health care accounts:
 - ▲ Payments to providers;
 - ▲ A reserve fund;
 - ▲ Promotion of preventive activities; and
 - ▲ Administrative expenses.

This approach would allow spending to be more predictable, transparent, and controllable. Specific allocations could be approved by the local administrator or later by the oblast MHI fund. Purchases of drugs and medical equipment, subsidies to medical facilities and so on would be limited and could occur only through payments to providers. A reserve fund would be necessary until reinsurance mechanisms are implemented under the July 1992 law for all regions of the country.

- 5) Special allocations for construction and equipment to facilities should be administered through the MHI Fund in the demonstration area and not through the MOH, as currently configured under the new law. This would depoliticize the process. The MHI could also allocate funds through low-cost loans rather than through direct payments. This process would encourage more rational planning and use of capital and equipment funds, and could also be a way of closing unneeded or less financially viable facilities. In the longer term, capital and equipment purchases might be financed through private capital markets as facilities become autonomous and markets develop and stabilize in the country.
- 6) The administrative budget for the insurance organization should not exceed 7.5 percent of total funds in the first five years, and 3 to 5 percent thereafter. The higher administrative costs in the first years will probably be necessary for capital, initial collection, and other start-up costs, and should moderate over time.
- 7) The use of available (temporarily free) MHI funds for any outside liquid investments should be limited to the reserve fund and the fund for promoting preventive health.
- 8) The solvency of the MHI and the prudent use of funds should be periodically and publicly reviewed. The MHI should be audited annually by a trustee council composed of the MOH, MOF, and other experts. The annual audit reports should be made available to the public.
- 9) The MHI fund organization should hire or train actuaries, who are critical in assessing needed revenues and estimating current and future demands for funds. Training opportunities and technical assistance in actuarial science should be explored immediately in preparation for the January 1, 1995 start date.
- 10) The MHI fund organization should create a beneficiary and enrollment division, which would improve management and coordination with providers and consumers.
- 11) Training of insurance funds experts from a range of disciplines should be established at the local Managers College/Institute of Karakol. An appropriate grant or award could provide needed start-up and operating expenses to establish this program.

Recommendations for the Longer Term (after 1995)

- 12) Management of the fund should be completely separate from the management of social security, cash assistance, and temporary or permanent disability. The functions and responsibilities should be either part of a separate fund or a separate category within this organization. In the short term, however, co-mingling of HI with other funds might provide an opportunity to restructure relative allocation shares for various benefits. For example, cash assistance benefits that provide disincentives for work could be curtailed, freeing funds for health care services.
- 13) The oblast government should prepare to extend the MHI organization and fund to the entire oblast. This broader geographic base would increase the fairness and viability of the system, since employers are spread unevenly across rayons of the oblast and some rayons will have difficulty raising enough funds to cover medical benefits of their residents. Offering a similar package of basic medical benefits to all oblast residents would also enhance the fairness of the system. In addition, a broader population base decreases the potential for risk selection if competing insurers emerge. This is especially true if multiple, competing insurers develop within an area or if insurance intermediary areas become relatively small.

3.0 ALTERNATIVES SOURCES OF REVENUES

3.1 INTRODUCTION AND METHODS

The discussion in *Section 2.0* pointed out the relative importance of considering alternative sources of revenues for health care services in the insurance demonstration area. The capitation payment from governmental sources should be initiated immediately. The payroll tax, on the other hand, could inhibit a fledgling private sector. A more preferable strategy, outlined in *Section 2.0*, would be to restructure the tax code, with the objectives of cutting taxes while targeting tax changes to nurture and expand the potential revenue base for health care funding in the longer term.

This approach does not preclude finding new and additional revenues through various sources such as user fees, selective contracting, and changing the benefits package to exclude services which are not cost-effective or are considered discretionary. It is especially important to consider these alternative sources in the short term (one to three years) before additional tax-based revenues are available on a relatively predictable basis.

This section discusses new revenue opportunities and issues in each of these three areas. Available data were collected in Karakol and the three rayons on current fee levels and other sources of revenues. The technical assistance team also conducted interviews with administrators and physicians. The benefits package was reviewed, and provisions for both preventive and curative care were examined.

3.2 FINDINGS

3.2.1 User Fees

Experience in the capital of Bishkek has shown that user fees for health care services have generated additional revenues for health facilities—ranging from 5 to 20 percent of facilities' overall revenues (see Wein and Langenbrunner, Trip Report, March 22-April 2, 1994). Administrators have found that general budget allocations have been as much as 60 percent short of costs, forcing them to make changes to close this gap. A number of approaches, including new fees, have been identified in both Bishkek and the Issyk-Kul region. Two levels of cost-sharing have evolved in Kyrgyzstan in the last few years. One involves the recent introduction of a small, one-time co-payment for each inpatient admission and outpatient visit. Individuals who enter the health system through the local polyclinic to which they are assigned are charged a small fee for their first visit. If the patient is referred for additional tests to better establish a diagnosis, he or she can be referred to the next level(s) of care with no further charge. If the patient is subsequently admitted to hospital, there is no charge. Accident cases are also treated at hospitals free of charge.

The fee charged for the initial visit is typically in the range of one to four soms. Each oblast and each rayon within the oblast can determine its own charge; fees are likely to be lower in poor oblasts and higher in wealthier ones. In practice, the charge may be waived for someone too poor to pay and for special categories of patients such as children under three years of age, the elderly, disabled, veterans, and Chernobyl workers. The funds are retained by the polyclinic and can be spent at the discretion of the director. Each hospital and polyclinic in the Issyk-Kul region appears to use the revenues to suit its own needs, such as to buy stationery, maintain equipment, and offer payment incentives to staff.

The second system of charges has been established for individuals who circumvent the current referral system by not entering the health system through their local polyclinic. In this case, the charges can reflect up to the full costs of the service. Full costs have been charged for cosmetic surgery for about 15 years. As part of the reforms before the break-up of the USSR, the option of going to the health services on a full-cost basis—"pay clinics"—was developed to provide more choice, generate additional revenues, and privatize services. The system has been operating in Kyrgyzstan for about two years. A patient may choose to go to another polyclinic or a hospital because of higher quality providers and/or the availability of supplies and pharmaceuticals. The demand for these services in the Issyk-Kul region appears greater than in other parts of the republic, probably due to more sophisticated equipment at some facilities and the perception of higher quality of care.

In May 1992, the Kyrgyzstan government published a price list for more than 1,200 outpatient services, but due to rapid inflation, this was soon abandoned. This list was later replaced by guidelines on how to establish fees, though these do not necessarily reflect true market costs and are not binding. The underlying principle in setting prices is to price procedures and services on some normative basis according to such factors as the equipment used, time spent on the patient, and the relative difficulty of the work. Each health facility calculates its own charges and applies these after approval at the rayon and oblast levels. Again, revenues are retained by the health facility and can be spent at its discretion.

The total revenues collected for most facilities in the Issyk-Kul region are less than in Bishkek—constituting only 1 to 10 percent of total revenues. There also is wide variation among facilities and region in the number and type of services charged and in the fees themselves. Fees for visits to a polyclinic range from .18 som in the Tyup Central Rayon Hospital to one som at the Dzhetiougouz Hospital; charges for most outpatient services average between one and six soms. Detailed fee information for services is shown in Appendix B (*Exhibits B-1, B-2, and B-3*).

The July 1992 Health Protection Act states that all medical services should be free of charge. MOH officials, however, expect an amendment to that provision in the near future that will formally legalize co-payments for services. The amendments will include exemptions for special population groups such as the poor, although there is no formal method for systematically identifying and exempting the poor. If the basic charge is to be maintained and/or increased, some mechanism for identifying the poor and documentation for them to present at health facilities will need to be developed. An extensive demographic and household survey is currently being completed by Research Triangle Institute, under contract to the World Bank (Michael Mills, personal communication, 1994). An Australian team, also under contract to the World Bank, will develop a system of benefits for the poor by the end of 1995 (Abel-Smith, 1994).

The ODA has proposed a survey for the fall of 1994 to measure and develop a baseline of private payments for all income groups. The survey would interview 500 households in rural areas or one rural area and 500 households in Bishkek to ascertain where they went for health care; what they paid; and whether loans or sales were necessary to raise the money. Some of the questions will be designed to make comparison possible with those in the Australian poverty survey.

3.2.2 User Fees for Pharmaceuticals

Currently, pharmaceuticals are free for inpatient care by law, though most reports indicate that patients often pay for up to one-half the costs of medicines through informal payment mechanisms. For individuals seeking outpatient care, patients must now pay the full price for drugs out-of-pocket unless they fall into the special subsidy categories already mentioned, such as children under three years.

This policy of direct payments for pharmaceuticals has been introduced to both inject more funds into the system to increase supply and availability, and to encourage more appropriate use of pharmaceuticals by consumers. A number of pharmacies have been privatized and are currently selling pharmaceuticals at deregulated prices. In Bishkek, up to 40 percent of pharmacies are expected to be privatized within the next two years and a smaller number in the Issyk-Kul region. Other public-based pharmacies have developed commercial outlets to sell drugs at unregulated prices. Government pharmacists continue to sell price-regulated pharmaceuticals at price levels they term procurement costs. Full price deregulation of pharmaceuticals, however, is expected shortly.

The current pharmaceutical market monopoly created by Pharmatsia (see *Section 1.0*) and the lack of pharmaceuticals creates at least three types of situations that increase inefficiency and costs. First, individuals who cannot afford to purchase pharmaceuticals on an outpatient basis may become sicker and require hospitalization. Second, physicians may inappropriately refer patients for admissions to increase their access to medicines. Third, patients may also be kept in the hospital longer than necessary to ensure continued access to needed drugs.

3.2.3 Selective Contracting

Selective contracting by employers for health care services and small-scale attempts at privatization by hospitals and clinics are just beginning in the Issyk-Kul oblast. Some employers, for example, have contracted with hospitals to allow expedited check-ups for employees. A number of hospitals have created private or "paid" beds. The Dzhetiougouz Central Rayon hospital, for example, has 11 paid beds—four in the general therapy department, two in gynecology, and five for surgical patients. There is also one private dentist in the region.

3.2.4 Benefits Package and Coverage of Services

The benefits package is vaguely defined in the July 1992 legislation as all services for health care, temporary disability, or maternity leave under the obligatory insurance program. Defining the precise services to be covered will need to be an important focus of HI reform, especially as new voluntary insurance companies are being formed. Currently, there are at least four private insurance companies in Bishkek, though none as yet in the Issyk-Kul region.

The concept of covered benefits, as well as the duration and scope of benefits, is somewhat new to the Kyrgyzstani, given the structure of the former Soviet Union model. They noted that coverage is intended to cover all "necessary" inpatient and outpatient services except for special public health diseases such as tuberculosis and temporary occupational-based disability. "Necessary" is defined by the tests and services included in the MES or treatment protocols for each diagnostic category (see *Sections 4.0, 5.0, and 6.0* for further information on these standards).

It does appear that a number of procedures and services are overutilized relative to their clinical effectiveness and/or cost-effectiveness. These include such services as physiotherapy, except for some types of patients such as stroke victims. Other services of limited clinical or cost effectiveness include dermatology and cosmetology, massage, tattoo removal, adult dental services, and certain types of psychiatric care.

Additional savings are also possible in the area of preventive services. For example, everyone is currently mandated to have an annual x-ray and check-up. These services are probably not necessary and (in the case of x-rays) could do more harm than good.

3.3 RECOMMENDATIONS

Because planning for the demonstration is well under way, it is difficult to recommend at this time an entirely different approach to generating alternative revenues or a new set of user fees for the demonstration area. User fees were only recently introduced in Kyrgyzstan and appear to reflect (at least in part) the ability and willingness of local people to pay for services. Local decision-makers are also concerned that charges will decrease the demand for services even further and could result in patients not receiving adequate or appropriate health care. Other concerns raised are related to the fact that the area does not have a large cash economy and relies heavily on a barter system. It is also felt that the local people do not yet have a sufficiently developed sense of responsibility for personal health care. A further concern is that no formal method for determining the truly poor has yet been developed in either the insurance demonstration area or in the country as a whole.

Nevertheless, a number of action steps and recommendations can be initiated and implemented during the six months prior to the start of the HI demonstration, such as:

User Fees and Fees for Pharmaceuticals

- 1) Data from the World Bank survey or the upcoming ODA survey on health services utilization should be used to refine income and poverty levels and to establish a workable threshold for exempting the poor and other special groups from paying for services. The ODA should be encouraged to include the Issyk-Kul oblast in its survey as the designated rural site to obtain this information.
- 2) The one-time co-payment for the first visit to polyclinics and hospitals in the Issyk-Kul region (currently set at one to four som) should be increased to adjust for inflation. The current fee levels have not been updated in over a year, though inflation has been running from 400 to 700 percent per year over the last few years. The new health price index (see *Section 3.0*) or current consumer price index could be used to set the specific amount.
- 3) Polyclinics and hospitals should calculate expected revenues for 1995 and incorporate them into their business plans (see *Section 6.0*). Expected revenues should be calculated according to the formula:²⁰

Total Revenue = (total population—the population to be exempt from fees (e.g., elderly, veterans)

x (the average quantity of service per person per year)
x (the adjustment for exclusion of exempt groups)
x (the level of fees)
x (1 - reduction in quantity of services due to fees)
x (1 - proportion of fees used for administrative expenses)
x (1 - proportion of services exempt from fees)

- 4) Co-payments should be restructured to reflect the new benefits package (see nos. 8 and 9), new information from surveys on ability to pay, and new cost information available through revised cost-accounting methods to be implemented in January 1995. This restructuring can be completed in mid to late 1995, once a reasonable baseline of information (e.g., six months' worth) is available to facility staff.
- 5) Pharmacies in the demonstration area should be privatized. At the same time, an accreditation process for pharmacies should be developed which levies substantial fines for selling outdated products and engaging in other practices that are potentially harmful to individual and public health.²¹

²⁰ From Bobadilla and Ellis, November 1992, Washington, DC.

²¹ Recommendations nos. 8 and 9 are possible options for initiatives under the new USAID-funded Rational Pharmaceutical Management project managed by Abt Associates.

- 6) The scope of responsibilities of the state-owned pharmaceutical monopoly Pharmatsia should be refocused to emphasize regulation and management of product safety and effectiveness. The agency should ensure that only accredited public and private pharmacies sell pharmaceuticals. A stronger regulatory role for Pharmatsia could help end the widespread practice of selling products which are harmful, ineffective, or passed their expiration date. At the same time, its role as a buyer and distributor of drugs should be eliminated and a private procurement and distribution network should be fostered in its place. In effect, Pharmatsia would come to resemble an organization like the U.S. Food and Drug Administration which assumes a narrow but essential role in the development and distribution of pharmaceuticals.

Selective Contracting

- 7) New sources of revenues should be pursued through selective contracting initiatives, including:
- ▲ Contracts with local employers for a variety of services, such as private rooms, an increased choice of doctors, and other special services; and
 - ▲ Lease arrangements between facilities and physicians for space and staff to see private pay patients. This could be done for surgeons and surgical suites as well.

These approaches could be especially attractive to new, foreign investors wishing to provide high-quality health care to employees.

Benefits Package and Coverage of Services

- 8) A number of discretionary services should be eliminated from the guaranteed benefits package to free funds for more critical services. These services should be paid for directly by patients or through private insurance only. They include: physiotherapy, except for some conditions such as stroke; dermatology and cosmetology; massage; tattoo removal; and adult dental services. Limits should also be placed on types of psychiatric care.
- 9) Additional savings should be created by eliminating from the guaranteed benefits package services that are not clinically effective and/or not cost-effective, including:
- ▲ Mandated annual x-rays for everyone;
 - ▲ Mandated annual check-ups for all employees (which could be changed to every two or three years); and
 - ▲ Stays in sanatoria.

Private insurance or employers could provide for such items as stays in sanatoria.

4.0 PAYMENT SYSTEMS AND ORGANIZATIONS OF CARE

It is increasingly understood in countries around the world that payment methods and the behavioral incentives that underlie them are key elements in converting inefficient government-based health care delivery systems to more autonomous and efficient models of care. Payment methods and organizational changes also are crucial in fostering high-quality care.

There is substantial interest in Kyrgyzstan in reforming methods of payment for both inpatient and outpatient services. For inpatient care, the government has begun to develop a case-based episode system similar to the Diagnostic Related Groups (DRGs) used in the United States. Categories (termed clinical-statistical groups) have been identified to date, based on the MES described in *Sections 1.0, 5.0, and 6.0*.

The government has made less progress, however, in deciding which payment methods to institute for outpatient services. Capitation and fee-for-service (FFS) approaches have been discussed with various donor organizations. Decision-makers cannot agree as to whether a British-style approach (which relies on capitation payments and salaried physicians) or a German-type approach (i.e., FFS) would work better in Kyrgyzstan. The government has expressed interest in developing specific options and recommendations for outpatient payment methods.

This section first discusses different methods of payment used in industrialized countries to provide information to the Kyrgyzstani government on the range of options available. A progress report on the development of alternative payments is then presented, based on extensive discussions, seminars, and meetings between the technical assistance team and health care personnel in the demonstration area. Finally, we outline concrete recommendations and action steps concerning new payment methods and organizational changes that will address the goals set by the Kyrgyzstani leadership for the HI demonstration.

4.1 BACKGROUND ON PAYMENT METHODS

There are two principal types of health care services: ambulatory care (primary care) and hospital-based care (secondary and tertiary). The primary care setting provides the first contact with the health system, and often serves as a gatekeeper for hospital care. It is important to distinguish between the hospital and ambulatory care settings in discussing payment policies, because each setting may require different methods of payment.

The primary care setting serves as a filter—treating the less complicated cases and referring on the more complex cases. As briefly outlined in *Section 1.0*, the Soviet model of primary care in urban areas was organized around polyclinics, generally divided between pediatrics and adult medicine. Within polyclinics, most of the doctors were specialists. Although there was a primary care network, the health sector was oriented towards hospital care. The bulk of resources went to hospitals, where the best doctors worked because of higher pay and prestige. This situation still exists in the demonstration area.

The hospital setting is generally divided into two components: 1) secondary care (hospitals that deliver routine hospital services such as cholecystectomy); 2) and tertiary care (usually teaching hospitals that deliver specialized services such as oncology). It is important to distinguish between these two components because the locus of competition may differ. For secondary services, there may be general competition between rayon, oblast, and even national hospitals, whereas for tertiary services, the locus of competition is between oblast and national hospitals.

The following graph presents the range of possible payment methods for health services, based on the length of the illness episode covered by the payment. On one side of the spectrum is FFS, in which patients are charged for each service performed. On the other end is capitation, in which health care providers receive a fixed amount per person (capita) to provide all health services during a certain time period.

4.1.1 Fee-For-Service

The FFS method of payment is used for both ambulatory and inpatient services in the United States and for ambulatory services in Germany and Canada. There are two methods of paying FFS: 1) direct charges (free pricing) and 2) fee schedules.

With direct charges, there are often no restraints on how much physicians can charge for each service. Physicians usually charge third-party payers (insurance companies), however, which often put restrictions on the maximum allowable payment. Until recently in the U.S., insurance companies reimbursed providers for all charges deemed "usual, customary, and reasonable," which were determined by comparing what the physician had historically charged to the charges of other similarly qualified physicians.

In recent years, the U.S. has moved increasingly towards fee schedules, which are the most common method of paying physicians in the industrialized world. A fee schedule has a numeric weight attached to each billable service. These weights are multiplied by a standardized amount of money, called a conversion factor, to obtain a payment amount. The conversion factor can then be adjusted by a geographic index that accounts for differences in input prices across different geographic areas. In addition, different third-party payers can use different conversion factors.

The problem with FFS payment is that it creates incentives for physicians to perform more services than necessary, since they are paid for each service. An additional problem is the administrative burden placed on the health system for physicians, patients, and health insurers, since a bill is generated for each service or set of services performed. This requires a coding and billing system to keep track of all services. Intrusive QA systems may also be needed to control the unnecessary use of services. There are therefore relatively high administrative costs associated with the FFS system.

4.1.2 Case-Based Pricing

The level beyond FFS is the development of a single payment rate for all services provided during a typical episode of care for a specific procedure or diagnosis. In the case of surgery, for example, the payment covers not only the surgery itself, but the entire package of services, including the initial diagnostic work-up, surgical procedure, and postoperative follow-up (generally for a period of three months).

A related payment approach used for hospital care is a DRG. With DRGs, providers are paid a fixed sum—based on diagnosis—for each admission, regardless of the actual costs incurred by the institution. To insure against risk, there is a special fund that pays for exceptionally costly cases ("outliers"). The outlier pool is a form of reinsurance. The key advantages of DRGs is that they create an incentive for hospitals to treat patients efficiently; if the cost of treating a patient is less than the fixed sum they receive, the hospital keeps the difference. This also creates a strong incentive for hospitals to decrease the lengths of stay. This has important implications for reform in the former Soviet Union, where hospital stays are considerably longer than in other countries (see *Section 1.0*).

One drawback to using DRGs is the need to develop a coding system that reflects the actual use of resources. DRG groupings require that both diagnoses and the procedures performed be reported for each case. Procedure codes used in the U.S. are based on the WHO's International Classification of Diseases, Version 9 (ICD-9) clinical modification. As explained in *Section 7.0*, the current data collection system used in Kyrgyzstan does not track procedures and, thus, a procedure coding system would need to be developed.

4.1.3 Global Budgets

An alternative method of paying hospitals is the development of a global budget, which is used in Germany and Canada. Hospitals are given budgets based on their past expenditures. Sometimes providers and payers negotiate adjustments to the budgets based on changes in patient load, labor costs, or factors outside of the hospital's control, such as inflation. One drawback to global budgets, however, is that they do not necessarily provide adequate incentives for efficiency. In Canada, for example, the budgets are based on the number of filled beds, which leads to long-term inpatients known as "bed-blockers." These patients could be treated less expensively in other (e.g., outpatient) settings. For these reasons, Germany and Sweden have begun experimenting with DRGs as an alternative to global budgets.

Another drawback to global budgets is that they require relatively detailed administrative oversight from the government agency providing the funding.²² They also require extensive negotiations and well-developed networks of cooperating provider groups to represent all major interests.

²² In the U.S., before DRGs were introduced, hospitals were given budgets adjusted for case mix. This system provides some incentives to increase efficiency without moving to a complex case-based pricing system.

4.1.4 Capitation

The most comprehensive payment method is capitation. Under this system, a health care provider is given a fixed sum per person for all health care services in a given period of time, generally one year. This is the method used by Health Maintenance Organizations (HMOs) in the United States. HMOs are paid a fixed sum per member to provide both primary and hospital care. They therefore have a strong incentive to treat patients in the least costly setting. Numerous scientific studies have shown that HMOs generate cost savings by decreasing unnecessary hospital utilization.

President Clinton's proposed health reform plan is based on the idea of HMOs competing against each other for patients—a concept known as managed competition. In Kemerovo, Russia, recent reforms are modelled on an HMO-like system. It is important to realize, however, that managed competition between HMOs requires relatively large populations—probably at least one-half million people—to create the preconditions for competition and create stable funding.

Another type of managed competition is the general practitioner (GP) fundholding system in the United Kingdom. Under this system, GPs are given a budget for elective surgery. They can choose how to spend their budget and reinvest the surplus into their practices. There are limits on the maximum charge paid by the fund (5,000 pounds), and the budget only covers elective surgery. Fundholding systems like the U.K. method have been tried in St. Petersburg. The advantages of this system are that it gives priority to the primary care sector over the hospital sector and it can be used in much smaller areas than can managed competition.

4.2 DEVELOPING NEW MODELS OF PAYMENT AND ORGANIZATION OF HEALTH CARE

The payment system developed for the demonstration must address the problems raised in the previous section and incorporate the key elements planned for the demonstration (e.g., a shift to lump-sum payments, a greater use of primary care physicians over specialists, and a shift in priority from inpatient to outpatient care). Since the HI law of July 1992 is vague on specific payment methods, the technical assistance team held extensive discussions and meetings with practitioners, hospital administrators, and MOH officials to present in detail the pros and cons of alternative payment arrangements. *Sections 4.2.1 through 4.2.3* outline the issues raised during these discussions.

4.2.1 Payment Methods for Outpatient Services

The most favored approach among participants in the discussions was a move towards capitated payments to primary care group (PCG) practices. Another alternative is a German-style FFS system, but the limited resources available for health care and the complexity of administering a FFS system renders this approach unrealistic.

The development of PCG practices (or APTK, the Russian acronym) would also serve to strengthen the delivery of primary care services in Kyrgyzstan. These group practices would consist of an obstetrician-gynecologist, pediatrician, and therapist²³. APTKs are generally paid on a capitation basis, that is, they receive a "fundholding" budget to provide services to a defined population.

To develop competition among APTKs, individuals and families must have a free choice of APTKs, instead of being assigned to one based on their location or "catchment area." The creation of these PCG practices should also strengthen the doctor-patient relationship, which has generally been poor in the past. Doctors have traditionally been viewed by the public as instruments of the state. Patients were assigned to physicians and could not change them even if they believed their doctor was incompetent. By being able to freely choose their own doctors, patients should develop stronger, more trusting relationships with them.

Following are several critical questions concerning the establishment of APTKs and responses during the discussions:

1) What should be included in the fundholding budget?

APTKs should initially be used to provide outpatient services only. It is too early to include hospital care in the fundholding budget for several reasons. First, there is too little information at present on referral patterns to "open up" the system at this time. Second, there needs to be a phased-in transition as funds shift from the hospital sector to the primary care sector. The APTKs will also need time to develop expertise on how to treat conditions on an outpatient basis.

Concerning the type of services to be covered during the first year of the experiment, APTKs should be able to purchase laboratory, radiology, and other diagnostic services such as EKGs, as well as specialist consultations and physiotherapy. This will require the establishment of prices for individual services.

2) Should APTKs have the option of purchasing services, such as lab tests outside of the polyclinic?

As decided by the participants, the APTKs should be able to purchase services wherever they want (e.g., routine laboratory services from a hospital), but in the short run, paraclinical services would remain in the polyclinic. APTKs could purchase other services, such as cleaning, accounting, and data processing, from the polyclinic, but they would also have the option of contracting these out. The APTK's budget would include funding to pay rent to the polyclinic to cover overhead expenses.

3) Which services should be covered by the capitated payments and how should the benefits package be defined?

Two important services discussed at length were home visits and ambulance care. Because of the excessive burden imposed on physicians by home visits, it may be necessary to establish stringent criteria concerning under what circumstances home visits would be covered. Polyclinics could also develop better methods for picking up patients and bringing them to the group practice.

²³ Therapists are roughly equivalent to General Practitioners in the U.S.

Concerning ambulance services, the rationale for including them in the benefits package is that APTKs would have an incentive to decrease patients' utilization of ambulances to save costs. Physicians often have little control over their patients, however. One solution is to not include ambulance services in the benefits package, but to develop better methods of regulating ambulance calls. For example, patients could be held responsible for paying the costs of unnecessary ambulance calls.

4) How can the provision of preventive services be safeguarded?

There is a concern that preventive services will suffer under the reforms and therefore strong incentives will be needed for these services. One option is to pay providers for these services on a FFS basis and give bonuses for those achieving high levels of coverage, thus creating performance-based incentives. For example, the APTKs could directly bill the MHI for each immunization, which would cover the full cost of the immunization, plus a small profit. Those APTKs that surpass an established threshold of immunization coverage would receive a bonus.

5) What should be the role of specialists in the polyclinic?

Several options are possible:

- a) Specialists could be incorporated into the APTKs, although this would replicate the current structure of the polyclinics.
- b) Some of the specialists could serve as private practitioners receiving patients from the APTKs and compete with hospital-based specialists. The advantage of using ambulatory-based over hospital-based specialists is that they may be able to treat patients without hospitalization and provide relatively unbiased advice to APTKs on whether hospitalization was required and which specialists to use. Under this scenario, specialists could serve as independent contractors and would be free to form single or multi-specialty groups.
- c) Specialists could be linked to hospitals—both operationally and financially. They could still be located in polyclinics, or, more likely, would be moved to the hospitals where they could see both inpatients and outpatients. Given the large number of specialists in Kyrgyzstan, many of them will probably not be able to generate sufficient referrals to cover their salaries. Many specialists may therefore choose to be retrained as primary care physicians, especially if it leads to an increase in income. According to the participants in the discussion, it is imperative that a training center be established to help retrain specialists.

6) What will happen to the current polyclinic structure?

Health sector reforms and the establishment of APTKs would probably not eliminate polyclinics, but would change their functions. Polyclinics would become the administrative heads of the APTKs, and would provide them with support services, such as data processing, accounting, and cleaning. The polyclinics would also provide outpatient diagnostic services for the APTKs. They could also expand their activities to provide community support services, such as periodic home visits for the chronically ill and disabled.

Another option is to allow polyclinics to become autonomous. A board of governors could be established which would represent the major interests located within the polyclinics, including the APTKs, specialists, laboratories, and so on. In this scenario, the polyclinic administrators would see their role as furthering the interests of those economic entities located within the polyclinic.

4.2.2 Payment Methods for Hospital Care

Several key issues and possible answers developed during the discussions are as follows:

1) Should the current hierarchial referral pattern among hospitals be maintained?

To create hospital competition, it is necessary to allow the APTKs to refer to any specialist or facility. For example, if a group practice in Tyup rayon decided that it wanted to refer its ophthalmology cases to the oblast hospital, it should be free to do so. This would make it difficult for the smaller rayon hospitals to compete with the oblast hospital, however, since they have less equipment and drugs.

One way to allow the rayon hospitals to compete with the larger facilities is to institute a case-based payment system (e.g., a DRG-type system). If services are provided at a lower price at the rayon hospitals, their business would increase. Concerns have been raised that the rayon hospitals would still be unable to compete, and that penalties should be imposed for sending patients from the rayons to the oblast hospital. One possibility for increasing competition is for the MHI to offer loans to hospitals to upgrade their facilities (see recommendations in *Section 2.0*).

2) How could incentives be created to encourage hospitals to provide more services?

Hospitals should receive budgets based on the number of patients that they treat and not on occupancy rates. With a DRG-like system, hospitals would be paid a fixed sum for each diagnosis and surgical case. This idea has been accepted in Kyrgyzstan and is the conceptual basis of the MES.

The MES, as currently formulated, have several problems, however. The calculated costs do not reflect the true costs of services (see *Section 6.0*) and the MES are based solely on diagnosis, and do not account for the procedures used (see *Section 7.0*). For example, in treating cholecystitis, it is important to distinguish from a cost standpoint between surgical and medical treatment, since the costs of these procedures differ radically.

3) How should hospital services be included in the APTKs' budgets?

It was concluded that it may not be appropriate to include emergency admissions in the APTKs' budgets, since the APTKs would have no control over emergencies. One possible solution is for emergency services to be paid directly from the MHI. The MHI would be responsible for closely monitoring the APTKs' use of emergency services to see if they were using this method to circumvent the normal referral process. It may in fact be simpler to include emergency cases in the capitated payment, perhaps splitting the cost of each case between the group practices fund and the MHI.

On the issue of the APTKs being given a budget or capitated payment for hospital referrals, there is a strong disincentive on the part of APTKs to refer patients to hospitals, since this would decrease their funds. This is a major issue and was clearly a problem in the Leningrad experiment on fundholding, where referral rates decreased dramatically. Several options to decrease the disincentive to refer patients to hospitals are:

- a) Giving patients the option of leaving their group practice and enrolling in another practice if they are dissatisfied with their care. Since in the long run the relationship that develops between the doctor and patient is the key to making the system function, the threat of disenrollment should be one of the strongest incentives for groups to refer their patients. To strengthen this incentive, the frequency with which patients can change practices could be decreased from the usual one-year period to six months.
- b) Keeping the funds at the MHI and not allowing the APTKs to directly hold the funds. APTKs would have an account at the MHI, and when they referred patients, the funds would be transferred from their account to the hospital, with the amount adjusted for case severity. The MHI would set requirements on some minimum threshold of funds designated solely for inpatient care to ensure that patients receive needed hospitalization. APTKs that diverged from the norm (i.e., referred much fewer patients than the average) would receive a quality review.
- c) Setting stringent requirements on the use of unexpended (excess) funds. Only a small portion of these funds could be used for bonus payments; most of the savings could only be used to reinvest in the practice, e.g., by improving the office, getting better equipment, and providing training.
- d) Making the APTKs responsible for only a portion (e.g., 50 percent) of the hospital payment. Under this scenario, half of the payment of the referral would come from the MHI budget and half from the APTK's budget. This would be similar to a co-payment.

4.2.3 Rural Health Care

There are probably an insufficient number of providers at present to create competition in a rural area. A key to solving this problem is to find sufficient numbers of health personnel with adequate and appropriate training to practice in these areas. In particular, rural practitioners should be trained in GP, since they were already functioning as GPs. APTKs, which consist largely of specialists, would therefore not be the best model for rural areas.

As for hospitals, the small hospitals in the rayons are poorly equipped and do not provide adequate care. These hospitals should be closed or converted into primary care clinics with day beds. The money saved could be used to improve transportation to facilities that are better equipped.

4.3 RECOMMENDATIONS

4.3.1 Group Practices (APTKs)

- 1) APTKs should be established in Karakol and the rayon center settlements of Dzhetiougouz, Ak-Sou, and Tyup. Rural areas of the three rayons should not be included in the experiment.
- 2) During the next three months, physicians should be encouraged to form APTKs. Physicians who are unable to form APTKs on their own should be assigned to one.
- 3) A training center should be established to train health personnel in GP. Internists, pediatricians, and gynecologists would be trained in the outpatient management of major illnesses. A program to retrain specialists as GPs would also be offered. The new faculty for GP in Bishkek could assist in setting up this training program.
- 4) An independent accreditation committee should be established to license and accredit APTKs. A specialist should work with the new independent medical society to develop an accreditation committee independent of the MOH and MHI. The accreditation process would occur on a yearly basis.
- 5) Patients should be able to enroll in APTKs for a six-month period, beginning in December 1994. They would be free to choose their doctor with an option to change in six months. A HI expert should establish an "open season," where citizens would be given information about the different APTKs. Large employers should be encouraged to hold health fairs where the APTKs would be represented.
- 6) APTKs should be given the right to refer their patients to any accredited specialist and/or hospital.
- 7) The initial capitation payment to APTKs should be used to cover outpatient services only. In Year 2 of the demonstration, the capitation formula should include payments for hospital care. The APTKs would pay 50 percent of the hospital costs.
- 8) The initial risk adjustments for the capitation formula should be based on past utilization data, using the traditional categories (under 1 year, 1-14 years, 15-16 years, adults, and chronic patients) for the polyclinics. By June 1995, the capitation formula can be based on the following age categories: 0-1 year, 1-4, 5-9, 10-14, 15-25, 26-40, 41-65, 66-75, 76-85, and over 85. The rates should also be adjusted by gender. In 1996, capitation payments that included hospital budgets would be calculated using historical hospital utilization data. An expert should help the oblast MOH calculate the capitated payment rates to the APTKs. A survey on health expenditures should be considered to provide additional information in calculating the capitated payment rates.

- 9) A cost-accounting and medical information system (MIS) should be established to support these reforms (see *Sections 6.0 and 7.0*) and should track resource utilization and costs for individual services and patients. Paraclinical services, such as EKGs and lab tests, should be costed out and prices developed so that these services can be charged to the APTKs. Prices would also be developed for general overhead and included in the rent. Specialists in cost-accounting and health information systems should assist the polyclinics in developing an internal accounting system and MIS.
- 10) The APTKs should be allowed to use the remainder of their budget not used for referrals to reinvest in their practices and pay bonuses to staff. This would be a means of paying APTKs based on performance since their income will depend on the number of patients they enroll. A specialist should develop detailed rules for how APTKs could use unspent funds.
- 11) In the first two years of the experiment, APTKs could be primarily economic entities (i.e., they would manage their own budgets), but would still function legally under the auspices of the polyclinic. In the third year, they should have the option of becoming independent, legal entities. A specialist should develop a framework for the formation of legally independent APTKs.
- 12) The MHI fund should develop a capital fund that would provide APTKs with low-interest loans to move out of the polyclinics. A specialist should assist the MHI in setting up such a loan program.

4.3.2 Hospitals

Payment Methods

The following recommendations are based on the goal of developing a case-based payment system for hospitals, making adjustments for case severity:

- 1) Hospitals should be free to accept referrals from any APTK or other facility in the demonstration site.
- 2) The MES should not be used to develop the case-based pricing system (see *Section 6.0*).
- 3) In the first six months of the demonstration, hospitals should be allocated funds using a global budget, which would be based on their past budgets. Hospitals would receive approximately 70 percent of the entire health budget as their initial funding during this transition period. The global budget would be a lump-sum payment and not based on the 18 budget categories used in the past.
- 4) Beginning in the second half of the first year, funding to hospitals should be allocated based on the number of cases they treated during the first half of the year, with an adjustment made for severity of cases. Each clinical department in the hospitals would develop five severity-based cost categories. A specialist should develop a simplified severity adjustment system that could be used to adjust global budgets to hospitals.

- 5) In the second year of the demonstration, hospitals would begin to be paid purely on a per case basis. Prices for the cases would be developed by the MHI using the costing data collected by the hospitals during the first nine months of the demonstration. For each admission, hospitals would receive half of their payment from the APTK and half from the MHI.
- 6) A capital fund should be developed under the auspices of the MHI fund to give low-interest loans to hospitals to develop new services and encourage competition among hospital providers (see *Section 2.0*).

Organizational Changes

- 7) Health care institutions should move towards becoming autonomous organizations. Each institution should establish a board of governors with representation from the community, the largest employers, doctors, and the city and oblast governments. The hospital administrator would be responsible to the board of governors. A specialist should help health care institutions develop an independent management and financial structure, which could be modeled on the Institute of Management in Karakol.
- 8) All health personnel should be placed on short-term contracts (e.g., one year) to give institutions and health personnel the opportunity to adjust to a changing environment. A personnel specialist should help design contracts for health personnel.
- 9) A training center for hospital managers should be established at the Institute of Management in Karakol city. This training center would provide courses in economics, management, cost accounting, and information systems. A training specialist should help the Institute set up this center.

5.0 QUALITY ASSURANCE (QA)

Financing and payment reforms make sense only in the context of improved quality of health care delivered. QA should be linked to the experiment's final design and use of payment methods, information systems, and relationship between financing and delivery of services.

Methods of QA are generally based on three general constructs (Donabedian, 1978): structure, process, and outcomes of care delivered. Structure refers to the adequacy of equipment, necessary personnel, and so on. Process includes methods of treatment, whether necessary tests were performed, the combination of appropriate skills and technology, and similar measures. Outcomes can be measured through changes in morbidity, mortality, and intermediate events such as hospital readmissions.

Each of these components has a role to play in a general QA strategy. Increasingly, however, emphasis across countries is being placed on outcomes, rather than traditional approaches which rely on structure and process. This is both because medicine is dynamic and because innovation must continue to be fostered.

Strategies to encourage improved quality rely on incentives as much as possible to minimize intrusiveness on professional autonomy and the very personal patient-doctor relationship. There also are costs to QA systems, and some methods may be too costly for the number and relative severity of problems identified.

Recommendations for QA must complement and indeed depend on what methods are used for payment. One of the functions of the system is to counteract any perverse incentives inherent in the payment system. For example:

- ▲ If payment is made to APTKs on a capitated basis, then the APTKs have an incentive not to refer; and
- ▲ If hospitals are paid on a per case basis, then hospitals have an incentive to admit patients unnecessarily, to refer out of the demonstration site if too costly, and to discharge patients too early.

Therefore, the goal of the QA system is to counteract incentives under the new payment system that potentially have a negative effect on quality.

In this section, proposed methods of QA for the demonstration are reviewed first. Next, new models are developed for QA that complement payment recommendations made in the previous section.

5.1 THE CURRENT QA SYSTEM

The key part of the QA system for the insurance demonstration is the MES. The MES are based on the QA system developed in Kemerova, adapted to local circumstances. Each ICD-9 code has a set of standards or protocols for treatment, which means that there are approximately 10,000 standards. Each institution in the demonstration site is expected to develop its own standards, which will then be synthesized by the national MOH using expert opinion. It is expected that standards will vary by institution based on their technological capabilities.

Each MES standard contains the following fields:

- ▲ The ICD-9 Code;
- ▲ Name of the diagnosis;
- ▲ Average number of bed-days;
- ▲ Volume of investigations;
- ▲ Volume of treatments;
- ▲ Criteria of quality;
- ▲ Level of severity of curative care;
- ▲ Level of complexity of surgery; and
- ▲ Fee.

To illustrate the workings of the MES, take a specific standard for ICD-9 code 410—a myocardial infarction. The ALOS is 25.1 days, which is quite long by standard treatment in Organization for Economic Cooperation & Development (OECD) countries. The volume of investigations includes the following: general blood and urine tests, transamines, cholesterol three times, EKG every hour up to 10 times, blood coagulation, glucose, and chloride.

In terms of treatment, the following 13 drugs are used: anesthetic, fentanyl, droperidol, morphine, promador, atropine, heparin, fibrinolysis, lidocaine, prednisolone, nitrates, demidrol, and texapam-tranquilizer. The number of bed-days, the tests that should be ordered, and the drugs determine the resources that are used to calculate the tariff price.

This list of services is preliminary. The actual number of investigations will be quantified (e.g., when the tests should be ordered and how many). In terms of drugs, the dose and frequency of administration will be specified. After the protocols are finalized, they will be approved by the oblast MOH and then by the central MOH.

The standards will be used for QA in a three-stage process:

- ▲ Every record will be reviewed by the head of the department and a mathematical quality score will be assigned;
- ▲ An expert board will be established in the hospital, composed of a hospital administrator and an economist, that will review a sample of records; and

- ▲ The MHI will establish an expert panel to review a selected sample of records. The panel would have the right to review medical records. If any difference is found in the sample between the MHI experts' review and the hospital review, then all records would be reviewed.

A complex system of penalties will be imposed if the MES are not followed. The penalties can range from 5 percent to several times the cost of the case. In addition, a special expert panel will be set up to examine malpractice cases. Malpractice would be based on two categories: 1) lack of satisfactory organization of treatment, and 2) violation of technology standards.

An accreditation committee under the MHI organization will also be established. This accreditation process would give facilities the right to contract with and bill for services to the insurance fund. Other details of the accreditation process have not been worked out.

Several seminars and discussions were held with members of the federal MOH, the oblast MOH, the head pediatrician, surgeon, internist, and other staff at the oblast hospital. The key point of discussion was whether MES were an appropriate method for QA. Several issues were identified:

- 1) The complexity of the standards. It seems a formidable task to develop standards for every ICD-9 diagnosis—over 10,000 in all. And within each diagnosis there are numerous grades of severity. For example, in ICD-9 clinical modification there are numerous types of myocardial infarctions enumerated, ranging from an anterior myocardial infarction to subendocardial infarction. This captures variations in the severity of a myocardial infarction.

Severity grades to the diagnosis are being planned. This adds another element of complexity to the standards.

- 2) ICD-9 codes do not adequately capture surgery. For example, if a patient has cholecystitis, the patient could be treated either with antibiotics or surgery. The question is when one should use medical treatment versus surgical treatment. This is not covered in the MES. It was agreed that it is necessary to develop a set of indications for surgery.
- 3) The inclusion of bed-day norms in the MES. It was suggested that the norms would serve as an effective cap on hospital stays; hospitals would be likely to keep patients until the norm was reached. The response was that the bed-days were only used to calculate the tariff, and hospitals would be paid a fixed price regardless of the length of stay. It was agreed that bed-days should not be included in the MES to prevent their use as caps.
- 4) Flexibility of the standards. Most of the discussants claimed that the standards would be minimum standards to which they did not have to rigidly adhere. In fact, many claimed the standards were lists of what could be used, but not all were necessary. It is unclear how the departments would adhere to standards and how external reviewers would assess them.

- 5) The scientific validity of the practice protocols. The questions concerned the criteria and bases on which treatment choice was made. For example, how did one know the experts were right? In western countries, there is a growing consensus that valid standards must be based firmly on rigorous scientific evidence that comes from well-controlled experiments (e.g., randomized controlled trials). Because of the plethora of trials, it is necessary to synthesize them using techniques such as meta-analysis.

The use of expert judgement often leads to experience that experts are wrong. There are numerous examples of the failure of expert judgement to choose the correct treatment—the overuse of tonsillectomy, putting tubes in ears to treat serous otitis media, the use of coronary artery bypass in single coronary artery disease. Thus, because of a history of problems inherent in expert judgement, there has been a movement to base practice protocols on scientific evidence.

The problem in using expert judgement is particularly important given the isolation of Soviet medicine from medical science in the rest of the world. Many medical practices in this region will change in response to growing contact with Western medical science. Standards adding rigidity to medical practice, however, would prevent physicians from changing their practice patterns. Therefore, the medical standards would have the opposite effect from what is necessary: giving physicians greater autonomy and allowing them to do things differently.

- 6) The administrative burden required in implementing the MES as a QA system. First, standards need to be developed for every diagnosis. Then the standards need to be reviewed by the oblast and national MOHs. Once the standards are developed, every case has to be reviewed by the heads of departments. Then a sample of records must be reviewed by a hospital committee. Finally, a sample of records needs review by the MHI. It is questionable whether such a complex process is needed to assure quality and whether the method is cost-effective.
- 7) Use of incentives/rewards versus punishment. There is a strong tradition in the region of using punishments instead of incentives to improve quality. The goal is to have physicians take an active role in continuous quality improvement. They should be provided with incentives, rather than relying on a overly bureaucratic and intrusive method of quality control.

In general, there was a strong attachment to the MES. Most of the participants were hesitant to abandon this approach, particularly after so much work had been put into developing them.

5.2 DEVELOPING NEW MODELS FOR QA

The HFS team believes that the MES should not be used as QA standards, as they are too complex an undertaking in the short run. It would be better to rely on less intrusive methods. In considering this issue, it is important that Kyrgyz decision-makers understand how practice protocols have developed in other countries. Examples of protocols developed in the United States by the Agency for Health Care Policy and Research (AHCPR) and in United Kingdom by the Effective Health Bulletin should be translated into Russian and widely disseminated. The goal is to move towards evidence-based guidelines and to use the guidelines as educational tools.

The QA system should counteract the potentially negative incentives vis-à-vis quality established by the payment system. If the payment system is based on capitated payments to APTKs and case-based payments to hospitals, the following negative incentives will be created:

- ▲ APTKs could select patients—to enroll only healthy patients and disenroll sicker patients;
- ▲ APTKs will benefit financially by not referring patients to specialists and hospitals as appropriate;
- ▲ Hospitals will admit patients unnecessarily; and
- ▲ Hospitals will discharge patients too early.

There are many refinements in the payment system that can counteract the APTKs' incentives not to refer, such as allowing patients to change practices every six months, not having the APTKs actually hold budgets, placing restrictions on how unspent funds could be used, and having APTKs only pay a fraction of the hospital admissions. The incentive not to refer, although attenuated, still will exist, however. Therefore, the MHI should keep close track of referral rates by APTKs. The MHI would analyze all referrals by categories: hospital admissions, tests, use of drugs, etc. Practices that have very low referral rates should be investigated.

Second, delayed admissions should be reported by hospitals, and these should be investigated by the MHI. As for hospitals, the MHI should consider several QA approaches:

- ▲ Stringent criteria for hospital admissions. These should create diagnostic categories that should be treated in a less intensive setting. The hospitals would have to get permission to treat these cases on an inpatient basis;
- ▲ Stringent criteria for hospital discharges. These criteria could be based on item seven in the MES. It was explained that the standard for bronchitis is that patients can only be discharged if they have no noise in their lungs, their breathing is adequate, and their blood tests improved. This type of information could be used to establish simplified discharge criteria;
- ▲ Seriously investigate quality complaints from APTKs concerning hospitals. Similarly, hospitals should be able to lodge complaints about APTKs;
- ▲ Maintain quality reviewers for each health care institution. The reviewers would be responsible for reviewing admissions, discharges, and helping the hospital manage outliers. Once the expenditures for a case become excessively expensive, the facility would no longer be reimbursed by the case-based pricing system. Management of outlier cases need to be reviewed actively by the MHI; and
- ▲ Maintain comprehensive hospital statistics on hospital infection rates, complications, and readmission rates. If these rates are high, this should trigger a review by the accreditation committee.

Hospitals will need to create internal QA systems as well. Each department needs a quality improvement plan. The plans would consist of four phases: i) identification and selection of improvement opportunities, ii) determination of the barriers to improving quality, iii) development and implementation of improvements, and iv) establishment of ongoing control. The goal should be to have departments and hospitals themselves become the locus of quality improvement rather than external reviewers.

5.3 RECOMMENDATIONS

- 1) An information specialist should develop methods for collecting information on referral rates, disenrollment, and resource utilization of APTKs. It is essential to adjust the capitation formula for high-utilization individuals. In addition, at the hospital level, statistics need to be developed on nosocomial infection rates, readmission rates, and other statistics that would be used by the MHI.
- 2) A quality expert should be sent in the next three months to help departments step up an internal quality improvement plan. The goal is for physicians, departments, and hospitals to see continuous quality improvement as part of their mission rather than externally derived rules.
- 3) The quality standards of the MES should be adapted by one or more quality experts into a method for analyzing the appropriateness of hospital discharges.
- 4) Standards for hospital admissions should be established with the help of quality experts.
- 5) An accreditation committee that is independent of the MHI should be created to increase both independence of review and flexibility in updating standards. The committee should be composed of independent experts and funded jointly by the MHI and the health care facilities. It should charge fees for accreditation. The accreditation process should review established basic standards for facilities. Particular emphasis should be placed on hygiene, and inspectors should be sent on a monthly basis. Each hospital department should be accredited yearly. If the MHI identifies problems in specific departments (e.g., high readmission rates), the accreditation committee should be notified and it should review that department.
- 6) The specific standards to be used by the accreditation committee should be established with the help of one or more experts in the next three to six months. Emphasis should be placed on developing both facilitywide and department-specific standards. Accreditation procedures also need to be established for the APTKs.
- 7) A general statistics office should be created to keep track of all important public health statistics: mortality, infant mortality, patterns of infection, analysis of autopsy data, etc. These statistics should be sent to all health facilities on a monthly basis.

6.0 COST-ACCOUNTING SYSTEMS

Cost-accounting methods and systems are critical components in tracking use of resources. They also are critical in moving the locus of decision-making from central planning to local autonomy. Regardless of specific policies and decisions regarding financing and payment, there must be an adequate understanding of how resources are used and how this changes across settings and over time.

6.1 SOURCES OF INFORMATION AND TECHNICAL ASSISTANCE ACTIVITIES

There currently exist methods of cost accounting in the insurance demonstration area, but it is not clear what approach was used or how these methods compared to other countries such those in the OECD. A number of interviews were held²⁴ and documents reviewed.

Health care providers in the demonstration area had already started estimating the prices that they should use to bill the MHI fund under the new financing system. The pricing methodology was contained in a 1992 document entitled "Organisation and Economical Basis of Paid Medical Services for Kyrgyzstan." The document was translated into English, but remained difficult for the HFS team to interpret. The staff from the oblast and city hospitals, however, worked through actual examples of the methodology. The methodology centers upon the use of MES, and the prices estimate the costs of providing a minimum set of services for an average patient (see *Section 5.0* for a discussion of the MES).

Staff and technicians were subsequently trained intensively in a series of classes and seminars to review principles of costing in general and to introduce the system of cost accounting used in western economies.²⁵

6.2 THE CURRENT COST-ACCOUNTING SYSTEM

Providers of health care are allocated funds from a central point, the oblast MOH. These funds are split between the 10 budget chapters for the purpose of budgeting and spending (*Exhibit 6-1* shows a subset of these chapters). Line-item shifting between chapters is difficult and never permissible for expenditure on salaries, drugs, and managerial overheads.

²⁴ These interviews included Akmatova Gulmira, current economist for the oblast administration and future economist for the HI company; Dr Mediet, Deputy Administrator for Methodology, Oblast Hospital; Tatiana, economist, Oblast Hospital; Damira Kurmanalieva and Maripa Burganakovna, economist and accountant, Dzhetiougouz rayon hospital; and Evilina Menshikova, economist of the Karakol city hospital and polyclinic.

²⁵ These included Dudina Valentina, current accountant at the oblast administration and future accountant for the HI company; Karymshakova Gulmira, economist of the Oblast Childrens' hospital; and Doronina Elina, economist of the Oblast Maternity hospital.

Each unit has an economist who estimates a budget, using centralized planning norms expenditures for the coming year. An appropriate annual allocation, called the planned allocation, is then negotiated from the oblast. Money is received monthly; due to cash shortfalls, the amount is often below the planned level, although additional back payments become available at times. Realistically, the process of negotiation can continue all year, and planned allocations rarely match actuals. There also is no carry forward between accounting years (Jan.—Dec.), precluding long-term saving for investment purposes.

Each facility has an accountant, responsible for manually recording all expenditures made under each chapter heading. From the files kept it is possible to locate expenditures by department, but information is never summarized in this way, making it difficult to do so. The accountant and economist jointly manage the dissemination of funds within the unit and give financial reports to the administrator and deputy administrators. There are no systems for decentralized budget holding or resource management.

Quarterly reports on expenditures within each chapter are checked against the annual plan by the oblast MOH. This serves as the auditing process.

Computers are not used to track expenditure, stock, or inventory. Only the oblast hospital has computers, and it would be preferable if these were upgraded to have 3.5" disk drives. The computers are used only as terminals for entering patient data. Upon inspection, it was discovered that both FoxPro, a database package, and SuperCalc4, a basic spreadsheet package, had been loaded. Help is being received from a computer specialist at the University of Karakol, who plans to train some staff on these packages.

**EXHIBIT 6-1
HEALTH FACILITY BUDGET CHAPTERS**

1	Salaries
2	Taxes and Other Employee Expenditures
3	General Overhead
4	Business Travelling Expenses
9	Food
10	Drugs
12	Technical Equipment
14	Clothing and Ancillary Soft Materials
16	Buildings Maintenance
18	Other

Medical Economic Standards (MES)

The tables and text in Appendix C contain the methodology for calculating prices based on the MES. *Exhibit C-8* shows the layout of the information kept in each MES and gives a specific example for urology. The prices are listed under the "Fee Tariff" heading in column F. The fee is comprised of two charges: one to cover the hospital costs of the stay, and one to cover the operative and diagnostic procedures listed in column H. The methodology is quite complex, so a summary of the main conclusions follows.

- 1) The economists had faithfully followed the methodology, but unfortunately it would not lead to full cost recovery or enable decentralized budget holding.
- 2) The major problem with the methodology is that it starts from the premise that expenditures will continue to be summarized under the existing budget headings. It disaggregates the total expenditure under each heading over the clinical departments. A major infrastructural change in the demonstration site will be lump-sum financial allocations to providers from the MHI (see *Section 3.0*). Hence, the chapter delineation will disappear and the methodology will flounder.
- 3) The MES do not make a distinction between cost and price. It is never stated that a zero profit rule is in place, and concepts of pricing to maintain viability in times of inflation and activity changes were not considered.
- 4) The methodology does not explain or enable the structure of cost relationships between departments to be clearly identified. The changing relationships of costs and volumes were not accounted for.
- 5) Depreciation was calculated on the basis of lifespan of an item and either its historical or replacement value. It is unlikely that all items in a department will have the same lifespan, so using a standard formula per department, as in *Exhibit C-4*, is unlikely to reflect true cost.
- 6) The proportion of total occupied bed-days per clinical department was used as the apportionment criteria for food, depreciation, drugs, soft materials and furnishings, and overhead. Two related problems emerge here:
 - a) Using occupied bed-days neglects the fact that the fixed costs of the unoccupied beds remain. A fairer proportion would be that based on available bed-days.
 - b) Even if available bed-days were used, if the number of beds changes in any year, the basis of all the prices would no longer reflect actuality.

Historical levels of occupancy are so high that they are not plausible. Still, the difference between using occupied and available bed-days in the MES would make little difference.

- 7) Food, depreciation, soft furnishings, and overhead (maintenance and energy) are all apportioned on planning norms. Actual expenditure is not accounted for. It is impossible to track flows of resources (i.e., linen stocks between departments by the MES method) to know which departments may be receiving a disproportionate share of total expenditure.

- 8) Many support departments are not separately accounted for, e.g., laundry, kitchens, and garages. This would be necessary for department-level budgeting.
- 9) Operationally, it would be very difficult to pay only some workers (e.g., laboratory workers) for the minutes they worked. There were no plans for social benefits if it was found there was insufficient analysis for which a worker could earn a minimum wage.
- 10) There were examples of double counting. Some staff were costed in the procedure prices, but their salaries had already been fully accounted for in *Exhibits C-2 and C-3* of the hospital costs.

There is a logic to the derivation of the MES normative prices. Reimbursement rates, however, should be based on measures of actual costs incurred for typical cases. Perhaps more importantly, the methodology would not be compatible with establishing resource management initiatives at a level lower than central administration.

6.3 DEVELOPING NEW APPROACHES

6.3.1 Developing a New Cost-Accounting System

Work was initiated with the accountants and economists by discovering which costing terms they understood. This led to explanations of the different types of cost found in units. This included direct, indirect, fixed, variable, and step, and many examples were used to show how the same expenditure could be perceived as a different type of cost by different parts of an organization. This baseline work continued by looking at methods of depreciation, differences between costs and prices, and use of price indices.

Next, the training group looked at organizational structure. An afternoon was spent at the oblast hospital compiling a list of all the functions in the unit and determining their management structure. Although currently a hierarchy with economic management responsibility of all departments resting with the chief administrator, economist, and accountant, the departments could be reorganized into three groups—overhead, paraclinical, and clinical—though many departments currently had two functions. For example, surgery also ran its own theater.

This schema demonstrated to the group how the departments of all their organizations could be split into the same three groups, on the principle that any clinical department provided a direct service to the patient and could not survive without the use of paraclinical and overhead departments. Paraclinical departments provided a service only to clinical departments, but in turn could not survive without the overhead departments. Overhead departments could function alone, but existed to provide service to all departments. The departments in each category were not the same as those under similar headings in the MES. Each member of the training group developed a similar listing for his or her hospital.

Subsequently, the question of direct costs was addressed. Using an exemplar budget, ways of reconciling annual expenditure on variable (e.g., staff) and fixed assets were covered. The group felt that it would be difficult to base depreciation on replacement values, although they recognized the advantages of so doing in a time of inflation. Much of their equipment had been produced in other former member states of the USSR and was often no longer available. Historic costs were generally known, but were in roubles, not soms, and bore no relation to current market values. The group agreed to draw up an inventory for each department (even staff are not currently recorded this way) and attempt to cost it as explained.

Coding for financial purposes was simultaneously introduced. The "what, where, for which" (e.g., a nurse, on Ward 1, in surgery) categorization, as it became known, was covered. The importance of having a standard set of codes for all units was stressed. Coding was discussed with the HFS information specialist and the Department of Informatics in Bishkek. It was agreed to disseminate the specialty and procedure codes they were developing to the finance function. The training group decided to work together to devise a set of codes for staffing.

Principles of allocation and apportionment were then explained. The difference between activity-based apportionment criteria for paraclinical departments and non-activity-based criteria for overhead departments was covered and a suitable set of criteria suggested. Training concentrated on the reasons why methods were used, and examples were not presented as absolutes. This was to empower the training group to make their own decisions over the specifics at their own units once the team had left.

Using a simple spreadsheet print-out and schematic diagram, step-down costing was explained. This analysis stopped at the level of departmental cost and the derivation of average department cost per patient. It summarized all of the previous work, and the group appreciated how the jigsaw puzzle pieces of an entire unit's costs could be understood once put together, something difficult with the MES.

The total costs of each clinical department were seen to have three components: their direct costs, apportionment from paraclinical departments, and apportionment from overhead. The level of budgetary control at departmental level was then clarified. For example, direct costs, other than those for long-life machinery, were variable or step. Directly controlled machinery was a fixed cost. All apportioned overhead and paraclinical costs also were fixed. This explanation made the concept of full cost recovery easier to understand; i.e., fixed costs must be recovered no matter the patient volume or number of beds in a department.

A morning was spent with some of the group studying a step-down model (unfortunately, in English) on the computer. Having never used spreadsheets, examples of how calculations could be automated made the cost-accounting process appear more manageable, although still very labor intensive.

The setting and monitoring of budgets was briefly covered with some of the group, but these ideas were a bit abstract, as the whole principle of decentralized budget holding is new. This subject, and the interplay of business planning and performance management, should be easier to grasp once the first steps of the methodology have been completed.

6.3.2 Developing a Health Sector Price Index

Conflicting information was received by the team with respect to the availability of a health sector price index. It appears that there is one line in the price index for paid services in the monthly national statistics publication. The calculation of this is unclear, however, and the provider units report receiving the index too late for it to be of use.

The economist at one unit had used a "methodology from Moscow" to estimate a price index for inflation between March 1992 and March 1993. Upon discussion, the methodology was a 1992 base-weighted Laspyeres index, the commodity weights belonging to each budget chapter. The economist noted that prices for salaries and utilities rose most sharply.

A price index will be needed in the demonstration area and in Kyrgyzstan. The current figures are insufficient. The problem in developing a national one is that the demonstration area will again rely on the standard budget chapters nationally, making data incompatible with the demonstration. The project will need a monthly index based on a basket of health commodities, which can then be annually chained over time. The statistics department of the MHI could take responsibility for computing this from data collected in the provider units.

6.4 RECOMMENDATIONS

6.4.1 Short Term

To Providers:

The fees calculated using the 1992 pricing methodology "Organisation and Economical Basis of Paid Medical Services for Kyrgyzstan" should not be used as the basis for billing the health insurer. In their place, a new cost-accounting system should be completed. The team recommends that the following tasks be carried out to develop the new system:

- 1) The internal structure of the hospital or polyclinic organization should be established, and the resulting departments should form the basis of the cost-accounting system. New departments may be created, such as a billing department to deal specifically with the health insurer on the recovery of funds. Existing departments may also be rationalized, such as x-ray and ultrasound, which may be managed jointly and called "radiology."
- 2) The resultant departments should be split by function into overhead, paraclinical, and clinical departments. For example, hospital overhead departments would include personnel, central administration, finance, and building maintenance. Paraclinical departments would include laboratories, physiotherapy, and x-ray. Clinical departments would include surgery, therapy, and cardiology.
- 3) An inventory of staff and equipment for each department should be made.

- 4) All items in the inventory should be coded according to what they are, the physical location in which they are used, and the department that has direct control over them. For example, a nurse working on ward 1 for the surgery department may be coded N1, W1, 100 where N1= a salary category of nurse, W1= ward 1, and 100 is the code for surgery. So that all the organizations use a universal set of codes, it should be ensured that the coding system developed by the HFS information specialist (Sheryl Rymer) and the Bureau of Informatics in Bishkek for specialties, diagnoses, procedures, and tests is disseminated widely for this purpose.
- 5) The inventories should be costed to derive the direct costs of each department. Staff should be costed on the basis of salary, plus additional payments for tax and social insurance. All equipment not bought in the last year should be given a depreciation value based on replacement cost, if possible. All other expenditures should be priced at what was actually paid for the item.
- 6) Training should be initiated in the use of spreadsheets for those responsible for developing the cost-accounting system. They should then begin to construct a spreadsheet cost-accounting model.

To Sponsoring Agencies

- 1) A cost-accounting manual should be written for use in the Kyrgyzstan health care system and translated into Russian. This should include an outline spreadsheet on floppy disk showing how the methodology works.
- 2) Computer training for the finance function, general administration, and prospective budget managers should be supported. The training should include the use of databases for stock and inventory systems and spreadsheets for cost-accounting, financial, and patient activity planning.
- 3) Continue further assistance on the development of a demonstration area health price index. The MHI statistics department should be responsible for calculating a monthly index using data from the health care providers. This could start as a 1995 base-weighted Laspyres index and be developed into a chained index with annual links.

6.4.2 Medium Term (prior to the end 1994 or before full implementation of the demonstration)

To Providers—Completion of the Cost-Accounting Model

- 1) A set of apportionment criteria and weights for each of the overhead and paraclinical departments should be developed. The criteria for the overhead departments are unlikely to be activity based. For example, personnel may be apportioned by the share of total direct cost that each department represents. Put numerically, if the total direct costs of an entire hospital were 1,000 soms and the direct costs of the laboratories were 10 soms, the apportionment weight for the laboratories would be 0.01. For the paraclinical departments, the criteria are likely to be unit based. For example, laboratories may be apportioned on the number of tests given to each clinical department. It should be checked that activity data are collected in a way that makes the calculation of the weights possible. It would also be preferable if providers used the same apportionment methods where they have the same departments.

- 2) Use these criteria to develop the step-down methodology as explained in the manual and to the economists at the oblast, city, children, and maternity hospitals in Karakol. The total costs borne by a clinical department will comprise three elements:
 - ▲ The direct costs that relate to the expenditure that they actually make;
 - ▲ A cost that reflects the apportionment of the overhead departments; and
 - ▲ A cost that reflects the apportionment of the paraclinical departments.

The costs per department thus gained should be used as the baseline position for setting departmental budgets for the financial year 1995.

- 3) From the total costs at each clinical department, average departmental prices per patient can be derived by dividing total cost by the historical number of patients treated per year.
- 4) Develop inventory and tracking systems. A materials management position could be created to inspect and maintain all equipment and furnishings. Systems for the reporting of breakages to this post should be established.
- 5) Consider the business planning cycle. So that costs, prices, and budgets can be ready for the live stage of the demonstration it will be important that a timetable of tasks is written:
 - ▲ Determine a timetable for coordinating budget allocations with departments; and
 - ▲ Consider the internal reporting and review mechanisms necessary for monitoring the budgets, so that it can be determined whether departmental expenditure is as expected. If it is not, then methods for either changing expenditure patterns or adding or subtracting funds to the budget need to be developed.
- 6) Construct a business plan. A plan will be needed for the first year of operation so that all within the organization can understand what it is aiming to do. It may also include strategies for future years.

This document should comprise at least the following:

- ▲ The objectives of the organization, services it intends to offer, and patients it wants to treat;
- ▲ A review of services that it does offer to inform the GPs, other providers, and patients; and
- ▲ Realistic targets for the provider, that are monitorable during the year, covering:
 - i) Forecast activity;
 - ii) Forecast budgets for departments; and
 - iii) Forecast of end of first year position.

To Sponsor Agencies

- 1) Sponsor help with business planning, objective setting, and performance management.

6.4.3 Longer Term (after January 1, 1995)

To the Kyrgyzstan Health Sector

- 1) Annual auditing and reporting mechanisms:
 - a) Mechanisms for the auditing of the providers' financial accounts should be agreed between the MOH, providers, and MHI. These mechanisms could include the presentation of annual reports and accounts in the style of a private company.
- 2) The development of costs per case:
 - b) Using the utilization data from the first three to six months of the demonstration, the costs of individual cases can begin to be estimated. At first, this might lead to all cases being coded as one of five severity bands and average departmental costs weighted appropriately.

To Sponsoring Agencies

- 1) Training should be given in the reporting and auditing of financial reports.
- 2) Training and advice should be given in the determination of costs per case.

7.0 MEDICAL INFORMATION SYSTEMS (MIS)

Good information and well-designed information systems can be used to improve both the quality of care and decisions regarding prudent resource use. Data and data systems also can provide a basis for comparison, evaluation, planning, and future decision-making.

7.1 METHODS OF ANALYSIS

A baseline-level analysis of the current system was developed first. Information on the current status of health information was obtained by interview, document review, data analysis, and observation. Information was gathered primarily at the oblast hospital and the city polyclinic in Karakol, both model facilities at the upper end of the referral structure in the demonstration area.

Site visits were made to the Division of Medical Insurance in Bishkek, oblast hospital in Karakol, city polyclinic in Karakol, central rayon hospitals, maternity hospital and polyclinic in Karakol, Bureau of Medical Informatics for Issyk-Kul oblast, Division of Health Statistics at MOH in Bishkek, and MOHs in both Bishkek and Issyk-Kul oblast.

Information also was gathered on the MISs and structure between the facility and local level with the national level through the Issyk-Kul Oblast Bureau of Medical Informatics, the Medical Informatics Division at the central MOH in Bishkek, and the Informatics Calculation Center of the Division of Medical Insurance in Bishkek.

A review of data elements (items) collected at the hospital and polyclinic levels was conducted and reporting mechanisms examined. The review focused on demographic and clinical utilization data. Once this baseline analysis was completed, new models for information collection, reporting, and use were developed. Models were discussed and agreement was reached on further steps over the next few months and years.

7.2 FINDINGS ON CURRENT DATA COLLECTION AND INFORMATION FLOWS

7.2.1 Information Systems at the Polyclinic and Hospital Levels

Facilities in Kyrgyzstan traditionally have gathered health information data using forms supplied from Moscow. These forms include the basic medical records for collecting patient information during each episode of care, whether polyclinic visit or inpatient hospitalization. Forms also were developed for reporting aggregated data from facilities, rayons, and oblasts. Over the last few years, Kyrgyzstan has developed new forms by simply removing the Moscow imprint as the source of the form and replacing it with the Kyrgyzstan MOH imprint, without changing the actual content or structure of any form.

There are in excess of 30 separate inpatient hospital forms in Kyrgyzstan, and considerable duplication of information from one form to another. At the conclusion of each hospital episode, a final discharge form is generated by the physician responsible for discharging the patient (see Appendix D). The physician completing this form is most often the physician responsible for the patient's care during the episode, unless there has been a transfer of service. The discharge form is forwarded to the hospital's statistics department on the day the patient is discharged.

The statistics department is typically under the direction of a physician with some training in health care statistics. Staff perform clerical tasks, such as assigning ICD-9 diagnosis codes to the discharge diagnosis, calculating the length of stay, and copying certain data items from the discharge forms onto tally sheets. At the oblast hospital, unlike other facilities in the Issyk-Kul oblast, this information is entered into a computer. The computer-based system essentially mimics the paper system with the same forms, with no changes in content or presentation. Data is aggregated on a monthly basis and sent to the oblast MOH.

The data collected at the hospitals and polyclinics was evaluated using an established minimum clinical data set as the standard. This data set collects 9-10 data elements that comprise demographic, clinical, and care management information. It has been adopted in the U.S. and other countries for a variety of clinical, epidemiologic, and resource use purposes (see Appendix E for more details). Large amounts of data are collected by each facility—both hospital and polyclinic—but some basic data items are not collected:

- 1) Hospital demographic data: the collection is relatively complete. Some specific insurance data elements (employer identification and policy numbers) should be added as that program develops.
 - a) one problem is the current reporting format. Patients are reported as either adults or less than 14 years of age. Occasionally, separate categories for 0-1 year or 0-5 years are reported, but this is not routine. Narrower age categories would be useful.
 - b) The current collection also does not allow a review of a patient's visit history without going to the patient's medical record. If and when the system is automated, a master patient index with a visit history can be created and maintained for each patient.

- 2) Hospital clinical utilization and management data:
 - a) Hospitals record only one diagnosis per discharge.
 - b) Data on associated "co-morbid" conditions are not available.
 - c) Data on complications are collected, but the definition for what constitutes a complication is very narrow, resulting in considerable underreporting. Additionally, the forms used to report diagnostic data are preprinted so that only limited diagnostic codes are reported individually. For example, one might know that there are 300 patients discharged with diagnoses related to endocrine and metabolic disorders, but only three specific disorders are reported individually, with the rest aggregated into a lump-sum total.

- d) There is no classification system in use for identifying the specific surgical procedures performed. Surgical procedures are reported as they relate to diagnoses by body system. For example, a hospital will report that of the 500 patients with diagnoses related to gastrointestinal diseases, 200 had surgical procedures. Data on the actual procedures performed, however, are not available.²⁶
 - e) There are similar problems with data collection on ancillary services, such as radiology, laboratory, histology (pathology), and pharmacy. There is no classification system for systematically collecting data on these services. Therefore, no data is collected and no utilization statistics are available.
 - f) Discharge status of patients is reported as either alive or dead only. When the discharge status is "death," additional information should be collected regarding length of time between admission and death, surgery and death, autopsy status, etc.
 - g) Data on referrals is marginally existent. The data should reflect the referrals into the hospitals and the transfers to other facilities. Referrals are collected as an aggregate, but individual referral facilities are not identified.
- 3) Hospital-based physicians:
- a) Individual physicians involved in the care and treatment of patients cannot be identified.
 - b) Each clinical department maintains its own statistics on patients treated by physicians within that department, but it is not reported as part of the hospital's data set. The Department of Surgery, for example, maintains data on surgeons and their individual cases. This is not included in the overall hospital reporting system, however; relative physician case loads, case mix, practice patterns, quality, and outcomes cannot be monitored or evaluated.
- 4) Polyclinic data:
- a) Polyclinics also report only one diagnosis per patient, thereby rendering an incomplete clinical profile. Polyclinic data collection does not include any procedure information, although some data is available on treatments, such as physiotherapy.
 - b) The wide variety and high volume of procedures and treatments provided in the polyclinics means this data is critical to support reviews of utilization of ambulatory services.
 - c) Data on individual physicians is also collected at the department level in the polyclinics, but represented in the polyclinic reports as aggregates only.

²⁶ Hospitals capture diagnostic data using the ICD-9 disease classification system published by the WHO. ICD-9, however, does not have a companion volume for capturing data on surgical procedures. Therefore, the hospitals have no mechanism for collecting and reporting surgical data.

Finally, it should be noted that data and statistical reviews revealed inconsistencies in both the reporting of data and tabulation of hospital and polyclinic data. For example, a tabulation of the line items for patients and bed-days resulted in totals that varied from those on the forms reviewed. Data on the number of physicians by specialty, hospital beds, and polyclinic visits, for example, was compared across reports. Totals did not agree with those reported on the report forms, nor did the data from the individual forms always agree with the oblast-level report.

At present, there is no computer support for any of these functions, and calculation errors abound even with the use of an abacus for tabulation.

7.2.2 Flow of Information from the Oblast Level to the Central MOH

Facilities forward completed forms to the oblast Bureau of Medical Informatics, where they are reviewed for completion and errors. Some data items are reported more frequently. For example, maternal deaths are submitted every three days, infant deaths every 10 days. Mortality, maternity patient volume, birth and delivery data, as well as data on farmers and agricultural workers, is submitted once a month. Data on maternal and infant deaths is reported in turn to the Institution of Mother and Child Protection of the central MOH.

The Oblast Bureau of Medical Informatics prepares an annual report for each rayon and a summary report of all rayons. Less populated oblasts of Naryn, Chouï, and Talas have no central bureau, but report data only through the central hospitals within their oblast, then to the MOH in Bishkek.

Data received by MOH is reviewed for discrepancies and discussed with oblast information specialists. Data are used for developing a future health plan, though most recommendations do not have target dates for implementation or completion.

7.3 DEVELOPMENT OF NEW MODELS

The current status of MISs does not support clinical, financial, or administrative decision-making in a changing health care environment.

Several steps were taken to develop new approaches and models. First, an Inpatient Discharge System was developed. The appropriate data elements were identified and defined. Working with a programmer from the Medical Informatics Center of the Division of Medical Insurance at the MOH in Bishkek, the initial programming was completed. The program was designed with pull-down screens and is user friendly.

The Inpatient Discharge System was demonstrated at the Oblast Hospital in Karakol at several junctures. Modifications to the system were made after each presentation, based on input from physicians, administrators, and statistics clerks. Final programming modifications are currently being made.

Training of the statistics department staff at the oblast hospital will be completed by mid-August under auspices of a local programmer. Statistics department staff will begin entering data on discharged patients commencing September 1. Data on procedures, radiology, laboratory, histology, and pharmaceutical products will not be entered in this initial testing period.

Development of radiology, laboratory, and histology classification systems was initiated and will be completed prior to September in the United States. The Director of the Medical Informatics Center and the programmer assigned to the project will complete the programming once the classification systems are translated into Russian.

A recommended format for presenting the basic hospital discharge data was presented to the oblast and central MOH. A sample summary report was left for further review and discussion. The format can be finalized during the next team visit.

Finally, a draft list of health care data elements was developed and can be translated into Russian (see Appendix F).

7.4 RECOMMENDATIONS

7.4.1 Short Term (July to mid-September 1994)

- 1) Minimum uniform data sets for inpatient and outpatient episodes of care should be adopted. Data on discharged patients should be collected by all hospitals and data for each episode of outpatient care should be collected by all polyclinics. The respective data sets should reflect the most significant minimal information on patient episodes relevant to multiple users both within and external to the hospital and polyclinics (see *Exhibit 7-1* for a list of recommended data elements). Criteria for selection and inclusion of an item into the data set include: i) utility to most if not all potential users; ii) can be collected with reasonable accuracy and reliability; iii) should not duplicate data available from other sources; iv) confidentiality of medical information should be preserved.
- 2) A detailed hierarchical numerical classification system for coding surgical operations and procedures should be developed and implemented. The ICD-9-CM Procedure Classification codes should be used as a basis for the system to minimize development time, and the codes should be translated into Russian. Samples of the recommended procedure coding is shown in *Exhibit 7-2*.
- 3) A detailed hierarchical numerical classification system for coding radiology procedures and tests, laboratory tests, and histology (pathology) tests should be developed and implemented. The system should be based on the CPT-94 codes to save time and should be translated into Russian. A sample of the recommended codes for radiology and histology is shown in *Exhibit 7-3*.

- 4) A detailed, hierarchical numerical classification system for coding pharmaceutical products should be developed and implemented. The American Hospital Formulary Service (AHFS) list might serve as a basis for this system, although it contains only broad categories, and identification of drugs at the level of generic and brand names is desirable. An investigation into the systems available for classification of pharmaceuticals should be conducted. After identification of an appropriate system, it should be adapted for use in Kyrgyzstan and translated into Russian.
- 5) A program to train medical and clerical staff in the use of these classification systems should be initiated. The training should be implemented in Karakol for staff from the oblast hospital and city polyclinic during the next team visit.
- 6) An automated MIS that provides a comprehensive system of recording and reporting medical data should be developed. Data collected in a MIS is usually categorized as:
 - ▲ Demographic;
 - ▲ Clinical; and
 - ▲ Financial.

Specific data elements must be defined and collected for each category. A standard definition should be developed for each data element so that all persons collecting data adhere to the same definitions. Standardization of terminology will result in more reliable and useful statistics.

Upon completing the review of the basic minimum data set for inpatient discharges, development of an automated Inpatient Discharge System for entering this data was begun. A programmer from the Medical Informatics Center of the Division of Medical Insurance at the MOH developed a model program using FoxPro. This program was demonstrated several times at the Oblast Hospital, and modifications were made based on recommendations received during the demonstrations.

Between now and a possible September team visit, programming for a Polyclinic Visit System should be initiated and completed, excluding the portions on procedure and test classification systems.

- 7) Formulas for tabulating and calculating the data collected for inpatient discharges should be provided to the programmers within the next month and basic print-outs of the data supplied to the programmers. Programming for tabulations and print-out format should be completed by mid-September.
- 8) Hospital staff should be trained in the use of the Inpatient Discharge System:
 - a) The training of hospital staff should be conducted by the programmer from the Medical Informatics Center in Bishkek. There are approximately seven staff members in the statistics department at the oblast hospital who require training.
 - b) Once the classification systems are added to the program, users will have to be trained to use them so that they can fully use the Inpatient Discharge System. During the September team visit, a training program in the use of the new classification systems will be conducted with the oblast hospital and city polyclinic staff.

- c) Classification systems must be translated into Russian and added to the computer programs by early September.
 - d) Respective training manuals must be completed, translated into Russian, and reproduced for distribution prior to the September team visit.
- 9) Commencing with the October 1 discharges, code the complete data set for each inpatient discharge. During the team's return visit—preferably September—one month of data from the oblast hospital (September discharge data) should be available for testing the formulas and print-out format. Necessary modifications can be made at this time.

7.4.2 Intermediate Term Recommendations (October 1994—December 1994)

- 1) Train staff at the city polyclinic in Karakol in the use of the Polyclinic Visit System. Having previously been trained in the use of the classification systems for ancillary services (radiology, laboratory, etc.), data collection should begin for visits as of November 1994.
 - a) Computer availability will be needed at the polyclinic for collecting the Polyclinic Visit System data.
- 2) Draft a national glossary of health care terms:
 - a) Using the data elements from the Inpatient Discharge and Polyclinic Visit Systems as a starting point, a draft glossary of health care terms should be developed. The glossary should also include basic cost-accounting and financial terminology. (See Appendix F for definitions of the data elements in the Inpatient Discharge and Polyclinic Visit systems.)
 - b) A committee with representatives from various MOH divisions in Bishkek and Issyk-Kul oblasts could be established to participate in review and adoption of the definitions.
- 3) Provide programmers with formulas for tabulating and calculating the data collected for polyclinic visits by the end of November. A basic print-out of the data should be supplied to the programmers. Programming for tabulations and print-out format should be completed by December.
- 4) Define reports to be generated from the MIS:
 - a) A set of standard management reports should be designed to provide managers with quantitative information about volume of services, quality, and outcome data.
 - b) The purpose and description of the report should be defined and a distribution schedule for each report established that includes the name and title of each person receiving the report, as well as the frequency with which the report is distributed (see Appendix G for sample report descriptions.) Reports are usually generated monthly, quarterly, semi-annually, and annually.

- 5) Assist with development of automated data bases for MHI fund:
 - a) Automated data bases should be developed to better manage the MHI fund. For example, the data bases should provide the enrollment and registry of persons eligible to receive coverage in the new insurance scheme.
 - b) Data bases and their data elements must be defined.
 - c) Programming should commence in November.

7.4.3 Longer Term Recommendations (January 1–December 30, 1995)

- 1) Develop formulas for tabulating and calculating the data collected by the MHI fund:
 - a) Basic print-outs of the data should be supplied to the programmers.
 - b) Programming for the tabulations and print-out format should be completed by mid-January 1995.
- 2) Develop a physician data base for public use:
 - a) Reports on physician practice are to be made available to health care consumers and managers. The content, format, and distribution schedule for these reports must be established. Reports are to be distributed to physicians, public officials, MHI fund, and health care consumers.
- 3) Establish a department of Medical Practice Patterns within the MHI fund:
 - a) Actual hospital practice data across settings and facilities should be compiled and compared with differences or variations in outcomes.
 - b) Focused review of high volume diagnoses and procedures should be conducted.
 - c) Recommendations from the Department of Medical Practice Patterns should be disseminated to the appropriate medical and administrative personnel at hospitals, polyclinics, MOH, etc.
- 4) Develop regional and national level reports of hospital and polyclinic data:
 - a) Data from each region should be aggregated to produce a national report on inpatient discharges and polyclinic visits. The format, content, and distribution schedule for these reports should be developed.
- 5) Develop a human resource management system for hospitals and polyclinics:
 - a) Essentially, an automated system for collecting and tabulating data on personnel, staffing, and related costs.

A summary of recommendations and target dates for the development of a MIS is presented in *Exhibit 7-4*.

**EXHIBIT 7-1
RECOMMENDED DATA ELEMENTS FOR INPATIENT DISCHARGES AND
OUTPATIENT EPISODES OF CARE**

INPATIENT DISCHARGES

Patient name Sex Date of birth Medical record number Insurance identification number Hospital identification number Admission date Discharge date Referral source Attending physician	Principal diagnosis Secondary diagnosis Complication Surgeon Date of surgery Principal procedure Secondary procedure Disposition of patient Sick days authorized Referral to
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OUTPATIENT EPISODES OF CARE (POLYCLINICS)

Patient name Sex Date of birth Medical record number Insurance identification number Polyclinic identification number Clinic encounter/visit date Referral source	Attending physician Reason for visit Principal diagnosis Secondary diagnosis Clinic procedure Disposition of patient Sick days authorized Referral to
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EXHIBIT 7-2
A SAMPLE OF RECOMMENDED CODES FOR SURGICAL PROCEDURES

CHOLECYSTECTOMY

51.22 open

51.23 laparoscopic

DILATION AND CURETTAGE

69.01 for termination of pregnancy
 69.02 following delivery

69.02 following abortion
 69.09 other

HERNIA REPAIR

53.0 inguinal, unilateral
 53.1 inguinal, bilateral
 53.2 femoral, unilateral
 53.4 umbilical
 53.5 incisional without prosthesis

53.6 incisional with prosthesis
 53.7 diaphragmatic, abdominal approach
 53.8 diaphragmatic, thoracic approach
 53.9 other

**EXHIBIT 7-3
SAMPLES OF RECOMMENDED CODES FOR RADIOLOGY,
LABORATORY, AND HISTOLOGY PROCEDURES**

RADIOLOGY CODES: CHEST

71010 Radiologic exam, chest, frontal	71090 Insertion of pacemaker
71020 Radiologic exam, chest, frontal & lateral	71100 Radiologic exam, ribs, unilateral
71030 Radiologic exam, chest, complete	71110 Radiologic exam, ribs, bilateral
71035 Radiologic exam, chest, special views	71120 Radiologic exam, sternum
71036 Needle biopsy of intrathoracic lesion	71250 Computerized axial tomography, thorax
71040 Bronchography, unilateral	71550 Magnetic resonance imaging, chest
71060 Bronchography, bilateral	71555 Magnetic resonance angiography, chest

LABORATORY CODES: URINALYSIS

81000 Urinalysis, by dip stick	81025 Urinalysis for pregnancy test
81005 Urinalysis, qualitative or quantitative	81099 Urinalysis test not listed above
81007 Urinalysis for bacteria screen	

HISTOLOGY CODES

88300 Level I—Surgical pathology, gross examination only

88302 Level II—Surgical pathology, gross and microscopic examination:

Appendix, incidental	Nerve
Fallopian tube, sterilization	Skin, plastic repair
Finger/toes, traumatic amputation	Sympathetic ganglion
Foreskin, newborn	Testis, castration
Hernia sac	Vaginal mucosa, incidental
Hydrocele sac	Vas deferens, sterilization

**EXHIBIT 7-4
SUMMARY OF RECOMMENDATIONS: MEDICAL INFORMATION SYSTEMS**

TASK	TARGET DATES
MINIMUM UNIFORM DATA SET	
Adopt data set for inpatient discharges	July 1994
Adopt data set for polyclinic visits	September 1994
MEDICAL INFORMATION SYSTEM	
Inpatient Discharge System: begin programming demonstrate system modify system begin trial data collection add surgical classifications add test classifications begin 2nd trial data collection	July 1994 July 1994 July 1994 August 1994 September 1994 September 1994 October 1994
Polyclinic Visit System: begin programming demonstrate system modify system begin trial data collection	August 1994 September 1994 September 1994 November 1994
Data Tabulation and Display: Inpatient Discharge System provide formulas to programmers provide sample print-out format develop print-out format complete programming for tabulation	August 1994 July 1994 August 1994 September 1994
Polyclinic Visit System: provide formulas to programmers provide sample print-out format develop print-out format complete programming for tabulation	November 1994 November 1994 December 1994 December 1994
Define MIS reports: hospitals polyclinics regional and national reports	1995 1995 1995
Develop public physician data base	1995
<i>(continued on next page)</i>	

**EXHIBIT 7-4
SUMMARY OF RECOMMENDATIONS: MEDICAL INFORMATION SYSTEMS**

TASK	TARGET DATES
CLASSIFICATION SYSTEMS	
Surgical classification develop a model develop system	July 1994 August 1994
Radiology procedures and tests Laboratory tests Histology tests Pharmaceutical products	July 1994 July 1994 July 1994 August 1994
TRAINING PROGRAMS	
Inpatient Discharge System Classification Systems Polyclinic Visit System	August 1994 September 1994 October 1994
NATIONAL GLOSSARY OF HEALTH CARE TERMS	
Draft of terms and definitions Establish MOH Review Committee	July 1994 October 1994
MHI FUND	
Define data elements, including unique patient ID Data base programming Develop formulas Develop reports Develop Department of Medical Practice Standards	October 1994 begins Nov 1994 1995 1995 1995

8.0 SUMMARY OF RECOMMENDATIONS

This section provides a summary of the detailed recommendations for each area of technical assistance required. These recommendations were developed collaboratively as working recommendations that the MOH and oblast-level leaders can use for implementation and refinement as the HI demonstration develops.

8.1 GENERAL

- 1) A comprehensive evaluation plan should be developed as soon as possible for the HI demonstration to measure progress of the experiment.
- 2) The government should set priorities for all recommendations in this report that it approves and deems feasible. The government should also develop a detailed and realistic timetable for implementation of the approved recommendations.

8.2 FINANCING

The following recommendations are based on the findings and analyses of the technical assistance team and extensive discussions with MOH officials, economists, health care providers, and others.

The Payroll Tax

- 1) The concept of a separate, earmarked HI fund for the demonstration should be maintained and further developed.
- 2) Because the proposed new 6 percent payroll tax will not likely generate sufficient funds to finance the MHI, as indicated by the simulations, alternative means of financing for the immediate future should be considered.
- 3) If a new payroll tax is approved, it should not be imposed on a widespread basis until the general economy begins to improve (e.g., no sooner than January 1, 1996). It should also be phased in over time, beginning first with public-budget (government-financed) firms, which make up 64 percent of the payroll and are currently exempt from the tax, and later with large companies (more than 500 employees), before smaller firms are requested to participate. The tax benefits of the FEZ should also be extended to the entire demonstration zone immediately.
- 4) If the payroll tax is enacted, consideration should be made to splitting it between employers and employees (e.g., a 3 percent payroll tax for employers and a 1 percent tax for employees) and applying the employees' contribution only to upper-income workers (e.g., managers of state-run enterprises, banks, insurance companies).

Government Contributions For Health Care

- 5) The use of capitated payments (one-line budgets) to cover the non-working population (e.g., unemployed, elderly, and disabled) should begin immediately. The federal and central oblast governments should establish and commit to a capitated payment system rate that:
 - a) Establishes a formula leading to an initial rate that reflects current and historical expenditures (e.g., one that is not artificially low).
 - b) Is risk-adjusted, based on expected utilization needs (e.g., disabled, elderly vs. others) (there should be at least age and sex adjustments).
 - c) Is updated over time for changes in population, demographic composition (e.g., aging), inflation, urban/rural population patterns, practice patterns and new technology, unforeseen epidemiologic events, and other factors as appropriate.
- 6) Health price input indices should be developed for the various economic zones (including urban and rural) for use in updating capitation rates and reimbursement rates to care providers. Indices will need to be updated frequently during periods of price devaluation and inflation.

Alternative Sources of Funding and Cost-Reduction Measures

- 7) As an alternative to the payroll tax, the government should consider using funds from the Social Insurance and Pension Fund to help finance the MHI.
- 8) The use of other types of taxes to fund health care should also be considered. The government could double the alcohol and tobacco taxes and earmark the additional revenues for health care. Other tax sources could include earmarked VATs or income taxes.
- 9) The area's health system should implement as soon as possible cost-saving measures that improve the efficiency of health care delivery. These measures could include reducing the average length of hospital stays; basing payments to providers on admissions and services actually performed rather than on such input measures as number of beds and staff; and shifting inpatient cases to outpatient settings whenever possible.
- 10) The oblast government should consider eliminating the requirement that jobs for health sector staff be guaranteed, and having administrators of facilities put all staff on annual contracts. This would give facilities the authority to hire and fire staff as necessary to remain fiscally solvent.
- 11) Other revenue sources such as selective contracting, user fees for more discretionary services, and better definition of services covered under the guaranteed benefit package should be explored (see *Section 3.0*).
- 12) All sanatoria in the oblast (up to 10,000 rooms) could be sold to the private sector and their services no longer be covered by the public health or MHI.

- 13) For the long term, the government could consider a form of managed competition to insure health care. In place of the government setting an insurance premium as a flat amount or a percentage of wages, it could mandate a set of services to be provided through compulsory insurance. Groups of providers or insurance organizations could then offer the best prices for the mandated set of services. Insurers and/or providers would market coverage for the services to consumers through their employers. This approach would force providers and insurers to compete on the basis of price, quality, and access to services, thereby improving these elements, and would give consumers a greater role in choosing their HI package, but would also raise equity concerns, since both high and low-wage workers would pay the same amount for a defined set of benefits.

Health Insurance Fund Management and Organization

Short-Term Recommendations

- 1) The MHI fund should be an organization separate from the MOH, with separate employees and a separate staff structure.
- 2) The fund should be set up exclusively for the purpose of health care services, and should not include life, property, and other types of insurance. Currently, the MHI organization in Kazakhstan (Dzheskagan oblast) sells coverage for several types of insurance. This poses a risk of shifting public revenues to cover claims of non-HI subscribers.
- 3) The insurance organization should engage in the following activities:
 - ▲ Beneficiary enrollment and validation;
 - ▲ Payment to providers and facilities for services;
 - ▲ Development of information files and records;
 - ▲ Forecasting and estimation of future demand of services;
 - ▲ QA standards and review;
 - ▲ Utilization monitoring and review; and
 - ▲ Special payments or allocation of funds for capital, new construction, and equipment.
- 4) The MHI fund revenues should be allocated in the future along the following four types of separate accounts for health care:
 - ▲ Payments to providers;
 - ▲ Reserve fund;
 - ▲ Promotion of preventive activities; and
 - ▲ Administrative expenses.

This approach would allow spending to be more predictable, transparent, and controllable. Specific allocations could be approved by the local administrator or later by the oblast MHI fund. Purchases of drugs and medical equipment, subsidies to medical facilities, and so on would be limited and could occur only through payments to providers. A reserve fund would be necessary until reinsurance mechanisms are implemented under the July 1992 law for all regions of the country.

- 5) Special allocations for construction and equipment to facilities should be administered through the MHI fund in the demonstration area, and not through the MOH, as currently configured under the new law. This would de-politicize the process. The MHI could also allocate funds through low-cost loans rather than through direct payments. This process would encourage more rational planning and use of capital and equipment funds, and may also be a way of closing unneeded or less financially viable facilities. In the longer term, capital and equipment purchases might be financed through private capital markets as facilities become autonomous and markets develop and stabilize in the country.
- 6) The administrative budget for the insurance organization should not exceed 7.5 percent of total funds in the first five years, and 3 to 5 percent thereafter. The higher administrative costs in the first years will probably be necessary for capital, initial collection, and other start-up costs; expenses should moderate over time.
- 7) The use of available (temporarily free) MHI funds for any outside liquid investments should be limited to the reserve fund and the fund for promoting preventive health.
- 8) The solvency of the MHI and the prudent use of funds should be periodically and publicly reviewed. The MHI should be audited annually by a Trustee Council composed of the MOH, MOF, and other experts. The annual audit reports should be made available to the public.
- 9) The MHI fund organization should hire or train actuaries, who are critical in assessing needed revenues and estimating current and future demands for funds. Training opportunities and technical assistance in actuarial science should be explored immediately in preparation for the January 1, 1995 start date.
- 10) The MHI fund organization should create a beneficiary and enrollment division, which would improve management and coordination with providers and consumers.
- 11) Training of insurance funds experts from a range of disciplines should be established at the local Managers College/Institute of Karakol. An appropriate grant or award could provide needed start-up and operating expenses to establish this kind of program.

Recommendations for the Longer Term (after 1995)

- 12) Management of the fund should be completely separate from the management of social security, cash assistance, and temporary or permanent disability. The functions and responsibilities should be part of either a separate fund or a separate category within this organization. In the short term, however, co-mingling of HI with other funds might provide an opportunity to restructure relative allocation shares for various benefits. For example, cash assistance benefits that provide disincentives for work could be curtailed, freeing funds for health care services.

- 13) The oblast government should prepare to extend the MHI organization and fund to the entire oblast. This broader geographic base would increase the fairness and viability of the system, since employers are spread unevenly across rayons, and some rayons will have difficulty raising enough funds to cover medical benefits of their residents. Offering a somewhat similar package of basic medical benefits to all residents of the oblast would also enhance the fairness of the system. In addition, a broader population base decreases the potential for risk selection if competing insurers emerge. This is especially true if multiple, competing insurers develop within an area or if insurance intermediary areas become relatively small.

8.3 USER FEES

Because planning for the demonstration is well under way, it is difficult to recommend at this time an entirely different approach to generating alternative revenues or a new set of user fees for the demonstration area. User fees were only recently introduced in Kyrgyzstan and appear to reflect (at least in part) the ability and willingness of local people to pay for services. Local decision-makers are also concerned that charges will decrease the demand for services even further and could result in patients not receiving adequate or appropriate health care. Other concerns raised are related to the fact that the area does not have a large cash economy, and instead relies heavily on a barter system. It is also felt that the local people do not yet have a sufficiently developed sense of responsibility for personal health care. A further concern is that no formal method for determining the truly poor has yet been developed in either the insurance demonstration area or in the country as a whole.

Nevertheless, the following action steps and recommendations can be initiated and implemented during the six months prior to the start of the HI demonstration:

User Fees and Fees for Pharmaceuticals

- 1) Data from the World Bank survey or the upcoming ODA survey on health services utilization should be used to refine income and poverty levels and establish a workable threshold for exempting the poor and other special groups from paying for services. The ODA should be encouraged to include the Issyk-Kul oblast in its survey as the designated rural site to obtain this information.
- 2) The one-time co-payment for the first visit to polyclinics and hospitals in the Issyk-Kul region (currently set at one to four som) should be increased to adjust for inflation. The current fee levels have not been updated for over a year, even though inflation has been running from 400 to 700 percent per year over the last few years. The new health price index (see *Section 3.0*) or current consumer price index could be used to set the specific amount.
- 3) Polyclinics and hospitals should calculate expected revenues for 1995 and incorporate these revenues into their business plans (see *Section 6.0*). Expected revenues should be calculated according to the formula:²⁷

²⁷ From Bobadilla and Ellis, November 1992, Washington, DC.

Total Revenue = (total population - the population to be exempt from fees (e.g., elderly, veterans)

- x (the average quantity of service per person per year)
- x (the adjustment for exclusion of exempt groups)
- x (the level of fees)
- x (1 - reduction in quantity of services due to fees)
- x (1 - proportion of fees used for administrative expenses)
- x (1 - proportion of services exempt from fees)

- 4) Co-payments should be restructured to reflect the new benefits package (see nos. 8 and 9), new information from surveys on ability to pay, and new cost information available through revised cost-accounting methods to be implemented in January 1995. This restructuring can be completed in mid to late 1995, once a reasonable baseline of information (e.g., six months' worth) is available to facility staff.
- 5) Pharmacies in the demonstration area should be privatized. At the same time, an accreditation process for pharmacies should be developed which levies substantial fines for selling outdated products and engaging in other practices that are potentially harmful to individual and public health.²⁸
- 6) The scope of responsibilities of the state-owned pharmaceutical monopoly Pharmatsia should be refocused to emphasize regulation and management of product safety and effectiveness. The agency should ensure that only accredited public and private pharmacies sell pharmaceuticals. A stronger regulatory role for Pharmatsia could help end widespread practices of selling products which are harmful, ineffective, or passed their expiration date. At the same time, its role as a buyer and distributor of drugs should be eliminated and a private procurement and distribution network should be fostered in its place. In effect, Pharmatsia would come to resemble an organization like the U.S. Food and Drug Administration, which assumes a narrow but essential role in the development and distribution of pharmaceuticals.

Selective Contracting

- 7) New sources of revenues should be pursued through selective contracting initiatives, including:
 - ▲ Contracts with local employers for a variety of services, such as private rooms and an increased choice of doctors; and
 - ▲ Lease arrangements between facilities and physicians for space and staff to see private-pay patients. This could be done for surgeons and surgical suites as well.

These approaches could be especially attractive to new, foreign investors wishing to provide high-quality health care to employees.

²⁸ Recommendations no. 8 and 9 are possible options for initiatives under the new USAID-funded Rational Pharmaceutical Management project managed by Abt Associates.

Benefits Package and Coverage of Services

- 8) A number of discretionary services should be eliminated from the guaranteed benefits package to free funds for more critical services. These services should be paid directly by patients or through private insurance only. They include: physiotherapy, except for some conditions such as stroke; dermatology and cosmetology; massage; tattoo removal; and adult dental services. Limits should also be placed on the types of psychiatric care.
- 9) Additional savings should be created by eliminating from the guaranteed benefits package services that are not clinically effective and/or cost-effective. These include:
 - ▲ Mandated annual x-rays for everyone;
 - ▲ Mandated annual check-ups for all employees (which could be changed to every two or three years); and
 - ▲ Stays in sanatoria.

Private insurance or employers could provide for such items as stays in sanatoria.

8.4 PAYMENT TO PROVIDERS

Group Practices (APTKs)

- 1) APTKs should be established in Karakol and the rayon center settlements of Dzhetiougouz, Ak-Sou, and Tyup. Rural areas of the three rayons should not be included in the experiment.
- 2) During the next three months, physicians should be encouraged to form APTKs. Physicians who are unable to form APTKs on their own should be assigned to one.
- 3) A training center should be established to train health personnel in GP. Internists, pediatricians, and gynecologists would be trained in the outpatient management of major illnesses. A program to retrain specialists as GPs would also be offered. The new faculty for general practice in Bishkek could assist in setting up this training program.
- 4) An independent accreditation committee should be established to license and accredit APTKs. A specialist should work with the new independent medical society to develop an accreditation committee independent of the MOH and MHI. The accreditation process would occur on a yearly basis.
- 5) Patients should be able to enroll in APTKs for a six-month period beginning in December 1994. They would be free to choose their doctor with an option to change in six months. A HI expert should establish an "open season," where citizens would be given information about the different APTKs. Large employers should be encouraged to hold health fairs where the APTKs would be represented.
- 6) APTKs should be given the right to refer their patients to any accredited specialist and/or hospital.

- 7) The initial capitation payment to APTKs should be used to cover outpatient services only. In Year 2 of the demonstration, the capitation formula should include payments for hospital care. APTKs would pay 50 percent of the hospital costs.
- 8) The initial risk adjustments for the capitation formula should be based on past utilization data, using the traditional categories (under one year, 1-14 years, 15-16 years, adults, and chronic patients) for the polyclinics. By June 1995, the capitation formula can be based on the following age categories: 0-1 year, 1-4, 5-9, 10-14, 15-25, 26-40, 41-65, 66-75, 76-85, and over 85. The rates should also be adjusted by gender. In 1996, capitation payments that included hospital budgets would be calculated using historical hospital utilization data. An expert should help the Oblast MOH calculate the capitated payment rates to the APTKs. A survey on health expenditures should be considered to provide additional information in calculating the payment rates.
- 9) A cost-accounting and MIS should be established to support these reforms (see *Sections 6.0 and 7.0*). These systems should track resource utilization and costs for individual services and patients. Paraclinical services, such as EKGs and lab tests, should be costed out and prices developed so that these services can be charged to the APTKs. Prices would also be developed for general overhead and included in the rent. Specialists in cost-accounting and health information systems should assist the polyclinics in developing an internal accounting system and MIS.
- 10) APTKs should be allowed to use the remainder of their budget not used for referrals to reinvest in their practices and pay bonuses to staff. This would be a means of paying APTKs based on performance since their income will depend on the number of patients they enroll. A specialist should develop detailed rules for how APTKs could use unspent funds.
- 11) In the first two years of the experiment, APTKs could be primarily economic entities (i.e., they would manage their own budgets), but would still function legally under the auspices of the polyclinic. In the third year, they should have the option of becoming independent, legal entities. A specialist should develop a framework for the formation of legally independent APTKs.
- 12) The MHI fund should develop a capital fund that would provide APTKs with low-interest loans to move out of the polyclinics. A specialist should assist the MHI in setting up such a loan program.

Hospitals

Payment Methods

The following recommendations are based on the goal of developing a case-based payment system for hospitals, making adjustments for case severity:

- 1) Hospitals should be free to accept referrals from any APTK or other facility in the demonstration site.
- 2) The MES should not be used to develop the case-based pricing system (see *Section 6.0*).

- 3) In the first six months of the demonstration, hospitals should be allocated funds using a global budget, which would be based on their past budgets. Hospitals would receive approximately 70 percent of the entire health budget as their initial fund during this transition period. The global budget would be a lump-sum payment and not based on the 18 budget categories used in the past.
- 4) Beginning in the second half of the first year, funding to hospitals should be allocated based on the number of cases they treated during the first half of the year, with an adjustment made for severity of cases. Each clinical department in the hospitals would develop five severity-based cost categories. A specialist should develop a simplified severity adjustment system that could be used to adjust global budgets to hospitals.
- 5) In the second year of the demonstration, hospitals would begin to be paid purely on a per-case basis. Prices for the cases would be developed by the MHI using the costing data collected by the hospitals during the first nine months of the demonstration. For each admission, hospitals would receive half of their payment from the APTK and half from the MHI.
- 6) A capital fund should be developed under the auspices of the MHI fund to give low-interest loans to hospitals to develop new services and encourage competition among hospital providers (see *Section 2.0*).

Organizational Changes

- 7) Health care institutions should move towards becoming autonomous organizations. Each institution should establish a board of governors with representation from the community, the largest employers, doctors, and city and oblast government. The hospital administrator would be responsible to the board of governors. A specialist should help health care institutions develop an independent management and financial structure, which could be modeled on the Institute of Management in Karakol.
- 8) All health personnel should be placed on short-term contracts (e.g., one year) to give institutions and health personnel the opportunity to adjust to a changing environment. A personnel specialist should help design contracts for health personnel.
- 9) A training center for hospital managers should be established at the Institute of Management in Karakol city. This training center would provide courses in economics, management, cost-accounting, and information systems. A training specialist should help the Institute of Management set up this center.

8.5 QUALITY ASSURANCE (QA)

- 1) An information specialist should develop methods for collecting information on referral rates, disenrollment, and resource utilization of APTKs. It is essential to adjust the capitation formula for high-utilization individuals. In addition, at the hospital level, statistics need to be developed on nosocomial infection rates, readmission rates, and other statistics that would be used by the MHI.

- 2) A quality expert should be sent in the next three months to help departments step up an internal quality improvement plan. The goal is for physicians, departments, and hospitals to see continuous quality improvement as part of their mission rather than externally derived rules.
- 3) The quality standards of the MES should be adapted by one or more quality experts into a method for analyzing the appropriateness of hospital discharges.
- 4) Standards for hospital admissions should be established with the help of one or more quality experts.
- 5) An accreditation committee independent of the MHI should be created to increase both independence of review and flexibility in updating standards. The committee should be composed of independent experts and funded jointly by the MHI and health care facilities. It should charge fees for accreditation. The accreditation process should review established basic standards for facilities, placing particular emphasis on hygiene and sending inspectors on a monthly basis. Each hospital department should be accredited yearly. If the MHI identifies problems in specific departments (e.g., high readmission rates), the accreditation committee should be notified and it should review that department.
- 6) The specific standards to be used by the accreditation committee should be established with the help of one or more experts in the next three to six months. Emphasis should be placed on developing both facilitywide standards and department-specific standards. Accreditation procedures also need to be established for the APTKs.
- 7) A general statistics office should be created to keep track of all important public health statistics: mortality, infant mortality, patterns of infection, analysis of autopsy data, etc. These statistics should be sent to all health facilities on a monthly basis.

COST ACCOUNTING

Short Term

To Providers:

The fees calculated using the 1992 pricing methodology, "Organisation and Economical Basis of Paid Medical Services for Kyrgyzstan," should not be used as the basis for billing the health insurer. In their place, a new cost-accounting system should be completed. The team recommends that the following tasks be carried out to develop the new system:

- 1) The internal structure of the hospital or polyclinic organization should be defined and the resulting departments should form the basis of the cost-accounting system. New departments may be created, such as a billing department to deal specifically with the health insurer on the recovery of funds, and existing departments may also be rationalized; an x-ray and ultrasound may be managed jointly and called "radiology."

- 2) Resultant departments should be split by function into overhead, paraclinical, and clinical departments. For example, hospital overhead departments would include personnel, central administration, finance, and building maintenance. Paraclinical departments would include laboratories, physiotherapy, and X-ray. Clinical departments would include surgery, therapy, and cardiology.
- 3) An inventory of staff and equipment for each department should be made.
- 4) All items in the inventory should be coded according to what they are, the physical location in which they are used, and the department that has direct control over them. For example, a nurse working on ward 1 for the surgery department may be coded N1, W1, 100 where N1 = a salary category of nurse, W1 = ward 1, and 100 is the code for surgery. So that all the organizations use a universal set of codes, it should be ensured that the coding system developed by the HFS information specialist (Sheryl Rymer) and the Bureau of Informatics in Bishkek for specialties, diagnoses, procedures, and tests is disseminated widely.
- 5) Inventories should be costed to derive the direct costs of each department. Staff should be costed on the basis of salary, plus additional payments for tax and social insurance. All equipment not bought in the last year should be given a depreciation value based on replacement cost, if possible. All other expenditures should be priced at what was actually paid for the item.
- 6) Training should be initiated in the use of spreadsheets for those responsible for developing the cost-accounting system. They should then begin to construct a spreadsheet cost-accounting model.

To Sponsoring Agencies

- 1) A cost-accounting manual should be written for use in the Kyrgyzstan health care system and translated into Russian. This should include an outline spreadsheet on floppy disk showing how the methodology works.
- 2) Computer training for the finance function, general administration, and prospective budget managers should be supported. The training should include the use of databases for stock and inventory systems and spreadsheets for cost-accounting, financial, and patient activity planning.
- 3) Continue further assistance on the development of a demonstration area health price index. The MHI statistics department should be responsible calculating a monthly index using data from the health care providers. This could start as a 1995 base-weighted Laspayres index and be developed into a chained index with annual links.

Medium Term (prior to the end of 1994 or before full implementation of the demonstration)

To Providers—Completion of the Cost-Accounting Model

- 1) A set of apportionment criteria and weights for each of the overhead and paraclinical departments should be developed. The criteria for the overhead departments are unlikely to be activity-based. For example, personnel may be apportioned by the share of total direct cost that each department represents. Put numerically, if the total direct costs of an entire hospital were 1,000 soms and direct costs of the laboratories were 10 soms, the apportionment weight for the laboratories would be 0.01. For paraclinical departments, the criteria are likely to be unit-based. For example, laboratories may be apportioned on the number of tests given to each clinical department. Activity data should be collected in a way that makes the calculation of the weights possible. It would also be preferable if providers used the same apportionment methods where they have the same departments.
- 2) Use these criteria to develop the step-down methodology, as explained in the manual and to the economists at the oblast, city, children, and maternity hospitals in Karakol.

The total costs borne by a clinical department will comprise three elements:

- ▲ Direct costs that relate to the expenditure that they actually make;
- ▲ A cost that reflects the apportionment of the overhead departments; and
- ▲ A cost that reflects the apportionment of the paraclinical departments.

The costs per department thus gained should be used as the baseline position for setting departmental budgets for the financial year 1995.

- 3) From the total costs at each clinical department, average departmental prices per patient can be derived by dividing total cost by the historical number of patients treated per year.
- 4) Develop inventory and tracking systems. A materials management position could be created to inspect and maintain all equipment and furnishings. Systems for the reporting of breakages to this post should be established.
- 5) Consider the business planning cycle. So that costs, prices, and budgets can be set ready for the live demonstration, it will be important that a timetable of tasks is drawn up:
 - ▲ Produce a timetable for coordinating budget allocations with departments; and
 - ▲ Consider the internal reporting and review mechanisms necessary for monitoring budgets, so that it can be determined whether departmental expenditure is as expected. If it is not, methods for either changing expenditure patterns or adding or subtracting funds to the budget would need to be developed.

- 6) Construct a business plan for the first year of operation so that all staff within the organization can understand what it is aiming to do. The plan may include strategies for future years. This document should comprise at least the following:
- ▲ The objectives of the organization, type of services that they intend offer, and patients they want to treat;
 - ▲ A review of services that they do offer to inform GPs, other providers, and patients; and
 - ▲ Realistic targets for the provider that are monitorable during the year and cover:
 - i) Forecast activity;
 - ii) Forecast budgets for departments; and
 - iii) Forecast of end of first year position

To Sponsor Agencies

- 1) Sponsor help with business planning, objective setting, and performance management.

Longer Term (after January 1, 1995)

To the Kyrgyzstan Health Sector

- 1) Annual auditing and reporting mechanisms:
- a) Mechanisms for the auditing providers' financial accounts should be agreed between the MOH, providers, and MHI. These mechanisms could include the presentation of annual reports and accounts in the style of a private company.
- 2) The development of costs per case:
- a) Using the utilization data from the first three to six months of the demonstration, the costs of individual cases can begin to be estimated. At first, this might lead to all cases being coded as one of five severity bands and average departmental costs weighted appropriately.

To Sponsoring Agencies

- 1) Training should be given in the reporting and auditing of financial reports.
- 2) Training and advice should be given in the determination of costs per case.

8.6 INFORMATION SYSTEMS

Short Term (July to mid-September 1994)

- 1) Minimum uniform data sets for inpatient and outpatient episodes of care should be adopted. Data on discharged patients should be collected by all hospitals and data for each episode of outpatient care should be collected by all polyclinics. The respective data sets should reflect the most significant minimal information on patient episodes relevant to multiple users both within and external to the hospital and polyclinics (see *Exhibit 7-1* for a list of recommended data elements). Criteria for selection and inclusion of an item into the data set includes: i) utility to most if not all potential users; ii) can be collected with reasonable accuracy and reliability; iii) should not duplicate data available from other sources; and iv) confidentiality of medical information should be preserved.
- 2) A detailed hierarchical numerical classification system for coding surgical operations and procedures should be developed and implemented. The ICD-9-CM procedure classification codes should be used as a basis for the system to minimize development time and should be translated into Russian. Samples of the recommended procedure coding is shown in *Exhibit 7-2*.
- 3) A detailed hierarchical numerical classification system for coding radiology procedures and tests, laboratory tests, and histology (pathology) tests should be developed and implemented. The system should be based on the CPT-94 codes to save time and translated into Russian. A sample of the recommended codes for radiology and histology is shown in *Exhibit 7-3*.
- 4) A detailed, hierarchical numerical classification system for coding pharmaceutical products should be developed and implemented. The AHFS list might serve as a basis for this system, although it contains only broad categories, and identification of drugs at the level of generic and brand names is desirable. An investigation into the systems available for classification of pharmaceuticals should be conducted. After identification of an appropriate system, it should be adapted for use in Kyrgyzstan and translated into Russian.
- 5) A program to train medical and clerical staff in the use of these classification systems should be initiated. The training should be implemented in Karakol for staff from the oblast hospital and city polyclinic during the next team visit.
- 6) An automated MIS should be developed that provides a comprehensive system of recording and reporting medical data. Data collected in a MIS is usually categorized as:
 - ▲ Demographic;
 - ▲ Clinical; and
 - ▲ Financial.

Specific data elements must be defined and collected for each category. A standard definition should be developed for each data element so that all persons collecting data adhere to the same definitions. Standardization of terminology will result in more reliable and useful statistics.

Upon completing the review of the Basic Minimum Data Set for Inpatient Discharges, development of an automated Inpatient Discharge System for entering this data was begun. A programmer from the Medical Informatics Center of the Division of Medical Insurance at the MOH developed a model program using FoxPro. This program was demonstrated several times at the Oblast Hospital and modifications to the program were made based on recommendations received during the demonstrations.

Between now and a possible September team visit, programming for a Polyclinic Visit System should be initiated and completed, excluding the portions on procedure and test classification systems.

- 7) Formulas for tabulating and calculating the data collected for inpatient discharges and basic print-outs of the data should be provided to the programmers within the next month. The programming for tabulations and print-out format should be completed by mid-September.
- 8) Hospital staff should be trained in the use of the Inpatient Discharge System:
 - a) Training of hospital staff should be conducted by the programmer from the Medical Informatics Center in Bishkek. There are approximately seven staff members of the oblast hospital statistics department who require training.
 - b) Once the classification systems are added to the program, users will have to be trained to use them to fully use the Inpatient Discharge System. During the September team visit, a training program in the use of the new classification systems will be conducted with the hospital and city polyclinic staff.
 - c) Classification systems must be translated into Russian and added to the computer programs by early September.
 - d) Respective training manuals must be completed, translated into Russian, and reproduced for distribution prior to the September team visit.
- 9) Commencing with the October 1 discharges, code the complete data set for each inpatient discharge. During the team's return visit—preferably September—one month of data from the oblast hospital (September discharge data) should be available for testing the formulas and print-out format. Necessary modifications can be made at this time.

Intermediate Term (October 1994—January 1995)

- 1) Train staff at the city polyclinic in Karakol in the use of the Polyclinic Visit System. Having previously been trained in the use of the classification systems for ancillary services (radiology, laboratory, etc.), data collection should begin for visits as of November 1, 1994.
 - a) Computer availability will be needed at the polyclinic for collecting the Polyclinic Visit System data.

- 2) Draft a national glossary of health care terms:
 - a) Using the data elements from the Inpatient Discharge and Polyclinic Visit Systems as a starting point, a draft glossary of health care terms should be developed. The glossary should also include basic cost-accounting and financial terminology. (See Appendix F for definitions of the data elements in the Inpatient Discharge and Polyclinic Visit systems.)
 - b) A committee with representatives from various MOH divisions in Bishkek and Issyk-Kul oblast could be established to participate in review and adoption of the definitions.
- 3) Provide programmers with formulas for tabulating and calculating the data collected for polyclinic visits by the end of November. A basic print-out of the data should be supplied to the programmers. The programming for tabulations and print-out format should be completed by December.
- 4) Define reports to be generated from the MIS:
 - a) A set of standard management reports should be designed to provide managers with quantitative information about volume of services, quality, and outcome data.
 - b) The purpose and description of the report should be defined. A distribution schedule for each report should be established that includes the name and title of each person receiving the report, as well as the frequency with which the report is distributed (see Appendix G for sample report descriptions.) Reports are usually generated monthly, quarterly, semi-annually, and annually.
- 5) Assist with development of automated data bases for MHI fund:
 - a) Automated data bases should be developed to better manage the MHI fund. For example, an enrollment and registry of persons eligible to receive coverage in the new insurance scheme could be provided.
 - b) Data bases and their data elements must be defined.
 - c) Programming should commence in November.

Longer Term (January 1—December 30, 1995)

- 1) Develop formulas for tabulating and calculating the data collected by the MHI fund:
 - a) Basic print-outs of the data should be supplied to the programmers.
 - b) Programming for tabulations and print-out format should be completed by mid-January 1995.
- 2) Develop a physician data base for public use:
 - a) Reports on physician practice are to be made available to health care consumers and managers. Content, format, and distribution schedule for these reports must be established. Reports are to be distributed to physicians, public officials, MHI fund, and health care consumers.

- 3) Establish a department of Medical Practice Patterns within the MHI fund:
 - a) Actual hospital practice data across settings and facilities should be compiled and compared with differences or variations in outcomes;
 - b) Focused review of high volume diagnoses and procedures should be conducted, and
 - c) Recommendations from the Department of Medical Practice Patterns should be disseminated to appropriate medical and administrative personnel at hospitals, polyclinics, MOH, etc.

- 4) Develop regional and national level reports of hospital and polyclinic data:
 - a) Data from each region should be aggregated to produce a national report on inpatient discharges and polyclinic visits. Format, content, and distribution schedule for these reports should be developed.

- 5) Develop a human resource management system for hospitals and polyclinics:
 - a) Essentially, it will be an automated system for collecting and tabulating data on personnel, staffing, related costs.

A summary of recommendations and target dates for the development of a MIS is presented in *Exhibit 7-4*.

APPENDICES

APPENDIX A

APPENDIX A

HEALTH FINANCING SIMULATION MODEL FOR KYRGYZSTAN

In the absence of accurate and comprehensive historical information on both financial and economic indicators and rapid changes in organizational structure and operations of the health care delivery system, it is difficult to predict future outcome with reasonable accuracy. Changes in the organizational and operational structure that are being contemplated will have major impact on the cost of health care, whereas rapid and profound changes in political and macroeconomic condition will have major impact on the economy to finance health care. The computer-generated simulation model estimates broad financial aggregates resulting from hypothetical changes in efficiency and sources of revenue to analyze the ability of the economy to raise sufficient finance. The analysis will allow the planners to assess the consequences of the various financing and management options and also set reasonable targets for raising revenue and improving efficiency.

Description of the model

The model uses a spreadsheet software (Lotus 1-2-3) and data from numerous sources to replicate flows and uses of fund in the current health care delivery and finance system in Karakol and the three rayons of the Issyk-Kul oblast that together will form the HI demonstration zone. On the sources side, it records revenue currently flowing in for health care and reconstructs the employment and payroll base in the economy of the demonstration zone, classifying business according to size of employment, rural/urban, and budget and non-budget organizations. On the users' side, it incorporates information on expenditure by cost items and facilities type and volume of services provided in different settings of care.

The simulation model uses four worksheets within its framework to input data and produce output tables. The cell address of the four worksheets is shown in cells A48 to G52 of the model. The input data are used in formulas physically located in the cells within the worksheets to produce a series of estimations and which are, in turn, used to compute the final results produced in the output tables located in other cells of the model. For example, expenditure and utilization data are used to compute unit cost of inpatient, daycare, and outpatient services, proportion of expenditures attributed to various settings of care or types of inputs, proportion of revenue coming from various sources, etc. These estimates are processed with indicators of expected changes like inflation, tax rate, etc., and postulated in the scenario table to determine expected level of costs, revenue, and other financial indicators. The following sections provide descriptions of the variables in the input spreadsheets, scenario table, and output tables and their relative positions in the framework of the electronic spreadsheet.

A. INPUT VARIABLES

Cost/Expenditure Data

Expenditure data is organized within the cell coordinates of A1 to J37. Key data inputs in this category and their location in the spreadsheet are described below. The actual data on expenditure incorporated in the model are shown in *Table A.1*.

- ▲ Total expenditure by "Chapters" (line item categories) for all hospitals and polyclinics in the demonstration zone for the period 1990 to 1993 are entered in cells A1 to J16.
- ▲ Total expenditure by cost centers for the demonstration zone for the period 1990 to 1993 are organized in cells A19 to J28.
- ▲ Average cost of services by inpatient, daycare, outpatient categories for the demonstration zone 1993 are computed in cells A31 to J36.

Revenue Data

The model analyzes two aspects of sources of revenue, sources that contributed to health care in the past, some of which will continue to do so under the Mandatory Health Insurance scheme (MHI), and the payroll base of the region that will be taxed to support the MHI fund. Data on sources of revenue is arranged in the cell address AD247 to AI378 in the Lotus spreadsheet. Key data inputs in this category and their location in the spreadsheet are described below. The actual data on expenditure incorporated in the model are shown in *Table A.2*.

- ▲ Data on payroll, number of workers employed in the agricultural sector in Karakol and the three rayons for 1993 are entered in cells AD248 to AI275.
- ▲ Data on payroll, number of workers employed in the industrial sector in Karakol and the three rayons for 1993 are entered in cells AD285 to AD340.
- ▲ Data on payroll and employment of major enterprises by budget and non-budget organizations and by size of employment are entered in cells AD335 to AL340.

Utilization Data

Data on volume of health care services provided by the system is shown in *Table A.3*. These are arranged in inpatient, day-care, and outpatient categories. Utilization data are entered in the cell address O34 to AC244 of the spreadsheet. Key variables in this category and their location in the spreadsheet are described below:

- ▲ Data on admissions, bed-days, and ALOS by nosological groups for regular inpatient for hospitals in Dxtigou are entered in cells O34 to W58.
- ▲ Data on admissions, bed-days, and ALOS by nosological groups for day-care patients for hospitals in Aksou are entered in cells O60 to W81.
- ▲ Data on admissions, bed-days, and ALOS by nosological groups for regular inpatient for hospitals in Toupski are entered in cells O83 to W104.
- ▲ Data on admissions, bed-days, and ALOS by nosological groups for inpatients for hospitals in Karakol are entered in cells O106 to W127.
- ▲ Data on admissions, bed-days, and ALOS by nosological groups for inpatients for all hospitals in Karakol and the three rayons are computed in cells O175 to AC27.
- ▲ Data on outpatient visits to polyclinics in all of Karakol and the three rayons by specialty areas are entered in cells O217 to U244.

KYRGYZSTAN TABLE A.1

Cost by Item - Hosp & Poly (Karakol & Three Rayons)									
	1990		1991		1992		1993		
	Cost	P.C. of Total	Cost	P.C. of Total	Cost	P.C. of Total	Cost	P.C. of Total	
Salary	33,600	54.60%	61,900	51.22%	311,700	43.11%	2,076,300	35.98%	
State Insurance	2,400	3.90%	16,100	13.32%	115,200	15.93%	767,100	13.29%	
Management Cost	6,800	11.05%	12,000	9.93%	97,400	13.47%	1,400,400	24.27%	
Business Trips	340	0.55%	440	0.36%	3,100	0.43%	17,600	0.30%	
Food	4,900	7.96%	10,800	8.94%	91,300	12.63%	713,000	12.36%	
Pharmaceutical	6,100	9.91%	7,900	6.54%	52,400	7.25%	327,300	5.67%	
Equipment	2,600	4.22%	4,500	3.72%	16,300	2.25%	166,300	2.88%	
Sheets & Linen	1,200	1.95%	2,100	1.74%	4,100	0.57%	24,100	0.42%	
Maintenance & Construction	2,600	4.22%	3,000	2.48%	12,700	1.76%	75,300	1.30%	
Other	1,000	1.62%	2,100	1.74%	18,900	2.61%	203,300	3.52%	
Total	61,540	100%	120,840	100%	723,100	100%	5,770,700	100%	

Cost by Centers (Karakol and Three Rayons)									
	1990		1991		1992		1993		
	Cost	P.C. of Total	Cost	P.C. of Total	Cost	P.C. of Total	Cost	P.C. of Total	
Polyclinics and Ambulance	17,767	28.87%	34,887	28.87%	208,762	28.87%	1,666,028	28.87%	
Hospital	38,608	62.74%	75,810	62.74%	453,645	62.74%	3,620,315	62.74%	
Administration	5,165	8.39%	10,143	8.39%	60,693	8.39%	484,357	8.39%	
Capital		0.00%		0.00%		0.00%		0.00%	
Others		0.00%		0.00%		0.00%		0.00%	
Total	61,540	100%	120,840	100%	723,100	100%	5,770,700	100%	

KYRGYZSTAN TABLE A.2

MAJOR EMPLOYERS AND AMOUNT OF PAYROLL					
INDUSTRIAL					
	Firm Name	Total Payroll	Number Employees	Average Payroll	Insurance Obligation (@5%)
KARAKUL CITY					
	BREAD PLANT	288,700	262	1,102	17,322
	2	209,400	246	851	12,564
	3	1,336,900	522	2,561	80,214
	4	849,400	693	1,226	50,964
	5	109,900	124	886	6,594
	6	787,620	655	1,202	47,257
	7	98,100	175	561	5,886
	8	2,476,620	1,007	2,459	148,597
	9	472,000	309	1,528	28,320
	10	158,800	250	635	9,528
	11	127,200	170	748	7,632
	12	232,680	421	553	13,961
	13	76,490	102	750	4,589
	14	398,100	127	3,135	23,886
	15	290,700	248	1,172	17,442
	16	287,700	474	607	17,262
	17	524,800	339	1,548	31,488
	18	310,010	185	1,676	18,601
	19	159,240	137	1,162	9,554
	20	26,820	148	181	1,609
	21	580,600	489	1,187	34,836
	22	157,760	483	327	9,466
	23	55,620	122	456	3,337
	24	16,000	193	83	960
	25	132,600	163	813	7,956
	26	354,800	275	1,290	21,288
	OTHERS	12,757,940	17,184	742	765,476
	TOTAL	23,276,500	25,503	913	1,396,590
TOUPSKI					
		189,900	306	621	11,394
	2	78,500	126	623	4,710
	3	9,765	117	83	586
	4	100,100	150	667	6,006
	OTHERS	5,749,065	10,518	547	344,944
	TOTAL	6,127,330	11,217	546	367,640
AK-SOU					
	1	75,400	112	673	4,524
	2	126,500	126	1,004	7,590
	3	447,920	179	2,502	26,875
	4	104,800	131	800	6,288
	OTHERS	6,476,520	12,034	538	388,591
	TOTAL	7,231,140	12,582	575	433,868
DZETIOGOUZ					
	1	104,500	138	757	6,270
	2	99,400	131	759	5,964
	3	118,400	151	784	7,104
	4	279,160	218	1,281	16,750
	TOTAL	601,460	638	943	36,088
TOTAL INDUSTRIAL (OVER 100)		37,236,430	49,940	746	2,234,186
TOTAL (UNDER 100)		17,897,425	24,652	726	1,073,846
TOTAL KARAKOL & 3 RAYONS		70,317,265	100,058	703	4,219,036
Private organizations		38,674,496	55,032	703	2,320,470
Public organizations		31,642,769	45,026	703	1,898,566

KYRGYZSTAN TABLE A.2

MAJOR EMPLOYERS AND AMOUNT OF PAYROLL						
AGRICULTURAL						
	Firm Name	Total Payroll	Number Employees	Average Payroll	Insurance Obligation (@5%)	
KARAKUL CITY						
	1	334,800	194	1,726	20,088	
	2	62,500	143	437	3,750	
	3	254,330	185	1,375	15,260	
	TOTAL	651,630	522	1,248	39,098	
TOUPSKI						
	1	282,330	521	542	16,940	
	2	1,340,260	2,646	507	80,416	
	3	2,107,850	3,661	576	126,471	
	4	147,000	347	424	8,820	
	5	38,240	150	255	2,294	
	6	665,660	1,290	516	39,940	
	TOTAL	4,581,340	8,615	532	274,880	
AK-SOU						
	1	3,201,000	6,203	516	192,060	
	2	1,621,000	1,846	878	97,260	
	3	83,000	110	755	4,980	
	4	140,000	520	269	8,400	
	TOTAL	5,045,000	8,679	581	302,700	
DZET						
	1	1,831,040	3,963	462	109,862	
	2	2,628,400	2,932	896	157,704	
	3	446,000	755	591	26,760	
	TOTAL	4,905,440	7,650	641	294,326	
TOTAL AGRICULTURE		15,183,410	25,466	596	911,005	

KYRGYZSTAN TABLE A.3

Toupski Hospitals

	1993		
	Admissions	Beddays	ALOS
ICU	275	1,270	4.62
INFECTIOUS DISEASE	569	10,156	17.85
ENT	426	5,651	13.27
PEDIATRIC	1,865	22,673	12.16
NEUROLOGY			
SURGERY	560	5,507	9.83
THERAPY	2,823	42,042	14.89
TRAUMA	440	5,604	12.74
MATERNAL	1,522	14,432	9.48
GYNACOLOGY	1,175	16,341	13.91
OTHERS			
Total	9,655	123,676	12.81

Karakol City Hospitals

	1993		
	Admissions	Beddays	ALOS
ICU			
INFECTIOUS DISEASE	3,270	33,400	10.21
ENT			
PEDIATRIC	1,299	23,600	18.17
NEUROLOGY	874	18,100	20.71
SURGERY	2,223	16,969	7.63
THERAPY	1,979	33,900	17.13
TRAUMA	1,260	16,900	13.41
MATERNAL	2,166	16,900	7.80
GYNACOLOGY	2,459	16,700	6.79
DENTAL	118	1,000	8.47
DERMATOLOGY	1,325	24,300	18.34
OTHERS	9,045	153,678	16.99
Total	26,018	355,447	13.66

KYRGYZSTAN TABLE A.3

Combined Karakol & 3 rayons (Aggregate Statistics):

	1993		
Regular Inpatient	Admissions/Visits	Beddays	ALOS
Karakol	26,018	355,447	13.66
Three Rayons	25,442	309,461	12.16
Total	51,460	664,908	12.92
Day Care			
Karakol	0	0	11.53
Three Rayons	2,664	31,238	11.73
Total	2,664	31,238	11.73
Total	54,124	696,146	12.86
Polyclinic visits	362,799		
Preventive cases	502,324		
Home Visits	118,572		

KYRGYZSTAN TABLE A.3

Combined Karakol & 3 Rayon (Outpatient Cases)

	1993 Visits
001-139	10,114
140-239	1,150
240-279	2,093
280-289	2,449
290-319	7,889
320-389	12,599
390-459	7,259
460-519	28,685
520-579	9,186
580-629	7,536
651-676	1,665
680-709	3,211
710-739	3,489
740-759	610
780-799	591
800-999	3,496
Others	260,777
TOTAL VISITS	362,799

Preventive Services

1993

Vaccination	
Preventive Maintenance	502,324
Contraception Services	
Total	502,324

B. SCENARIO VARIABLES

Data from input spreadsheets are tied in with assumptions on changes in macroeconomic and firm level indicators and in management and organization of health care system. These data are postulated in the scenario or assumption template to estimate cost, revenue, and other indicators in several output tables and charts. *Table A.4* lists the variables in the assumption template and specifies their positions in the electronic spreadsheet. The second column of the table illustrates computed value from the data already entered in the model. The third column accepts values for expected changes in the variables indicated in column one and whose impact the analyst would like to measure. An analyst can enter any one or a combination of values in column three. A copy of the scenario template with examples of some assumption values used to estimate cost and revenue in the health sector is provided in *Table A.5*.

TABLE A.4 LIST OF VARIABLES IN THE SCENARIO TEMPLATE		
Types of Variables	1993 Data (Cell Address)	Assumed Changes (Cell Address)
Revenue: (Column AL385..AL392) Capital contribution Budget contribution Payroll tax rate Other contribution Co-payment/User fee Payroll volume Compliance rate	Col AP385 AP386 AP388 AP389 AP390 AP391 AP392	Col AQ385 AQ386 AQ388 AQ389 AQ390 AQ391 AQ392
Cost: (Column AL395..AL399) General price level Salary in health care Administrative cost Pharmaceutical cost Cost of capital	Col AP395 AP396 AP397 AP398 AP399	Col AQ395 AQ396 AQ397 AQ398 AQ399
Efficiency: (Col AL403..AL408) Reduction in preventive/check-up services Change in inpatient/outpatient ratio Reduction in ALOS Inpatient Daycare	Col AP403 AP404 AP405 AP407 AP408	Col AQ403 AQ404 AQ405 AQ407 AQ408

C. OUTPUT VARIABLES

A series of output tables on revenue, aggregate cost by types of care, average cost by services, and unit cost by specialty groups are produced by the model. *Table A.6* is a sample of cost and revenue forecast tables produced under a hypothetical scenario. The output tables are available in cells AL418 to AS647 of the model spreadsheet. The values shown in columns two and three of *Table A.6* are estimated from data collected from various sources and entered in the model. They indicate the current status (1993) of sources and uses of funds in the health care system in the region. Column four and five shows the new estimates of the same variables when the first two sets of assumptions (on revenue and cost) indicated on the scenario template *Table A.4* are true. The final column results from changes in the third set of assumptions (efficiency) in the scenario template. The difference in values between the columns represent the effect of changes in the various economic indicators, financing policy and management, and organizational changes in health care postulated in the scenario template.

The model estimates unit cost for various category of care. Output table for unit costs could be located in cells AL583 to AS697 in the electronic spreadsheet. Average cost of services by type of care is computed simply by dividing total cost of services for a particular type of service into number of services provided by that category. Unit cost of services by inpatient specialty area is also calculated by the model. Examples of unit costs computed by the model are shown in *Table A.7*. Average cost by specialty in our example varies only by ALOS because data on case severity were not available. If this data were available, however, normalized values of severity could be entered in the column titled "complicacy factor" (shown in *Table A.7*) to estimate case-adjusted unit cost of services by specialty group. Complicacy factor at this time was applied equally for all cases in our estimation.

KYRGYZSTAN (ISSYUK-KUL)

Scenario Worksheet

Scenario: 50 % compliance by non-budget enterprises; -10 % IP cases; -10% ALOS; 1 som user fee; -50% check-ups;

First Level of Changes:	Current Rate/Amt	Expected Changes (%)	Amount (Tenge)
Revenue Assumptions:			
Change in capital contribution	0	0.00%	0
Change in Budget Contribution	5,770,700	-22.00%	4,501,146
Change in Insurance Rate for Health (percent of payroll)	0.00%	6.00%	
Change in other contributions (amnt/prcnt)	0	0.00%	0
Introduction of co-payment (Som per visit)	0	0	0
Change in Payroll Volume (percent)	0	-45.00%	0
Change in Collection Effectiveness	0.00%	50.00%	
Cost Assumptions:			
General changes in cost, other than those below		0.00%	
Percent change in Salary		0.00%	
Percent change in administrative cost		0.00%	
Percent change in pharmaceutical cost		0.00%	
Percent change in capital cost		0.00%	
Second Levels of Changes:			
Relative change in cost (structural Efficiency)			(New ratio)
Reduction in preventive/check-up services	502,324	-50.00%	
Change in inpatient/daycare ratio	95.08%	-10.00%	85.57%
Change in inpatient/outpatient ratio	10.11%	-10.00%	9.10%
Reduction in ALOS			
Regular inpatient	12.92	10.00%	
Day-care	11.73	10.00%	

KYRGYZSTAN TABLE A.6

Funding Sources and Amount Scenario: 50 % compliance by non-budget enterprises; -10 % IP cases; -10% ALOS; 1 s

Sources	1993 Contribution		Expected Contribution	
	Amount	P.C. of Total	Amount	P.C. of Total
Capital Budget	0	0.00%	0	0.00%
Government Health Budget	5,770,700	100.00%	4,501,146	79.51%
Insurance Premium	0	0.00%	1,160,235	20.49%
Sponsor	0	0.00%	0	0.00%
Voluntary Contribution	0	0.00%	0	0.00%
Patient Contribution	0	0.00%	0	0.00%
Others	0	0.00%	0	0.00%
Total	5,770,700	100.00%	5,661,381	100.00%

Cost by Items Scenario: 50 % compliance by non-budget enterprises; -10 % IP cases; -10% ALOS; 1 s

Items	1993		Expected Cost After First Iteration		Expected Cost After Efficiency
	Cost	P.C. of Total	Cost	P.C. of Total	
Salary	2,076,300	35.98%	2,076,300	35.98%	1,635,396
State Insurance	767,100	13.29%	767,100	13.29%	604,206
Management Cost	1,400,400	24.27%	1,400,400	24.27%	1,103,024
Business Trips	17,600	0.30%	17,600	0.30%	13,863
Food	713,000	12.36%	713,000	12.36%	561,594
Pharmaceutical	327,300	5.67%	327,300	5.67%	257,798
Capital/Equipment	166,300	2.88%	166,300	2.88%	130,986
Sheets & Linen	24,100	0.42%	24,100	0.42%	18,982
Maintenance & Repair	75,300	1.30%	75,300	1.30%	59,310
Other	203,300	3.52%	203,300	3.52%	160,129
Total	5,770,700	100%	5,770,700	100%	4,545,287

Cost by Centers Scenario: 50 % compliance by non-budget enterprises; -10 % IP cases; -10% ALOS; 1 s

Centers	1993		Expected Cost After 1st Iteration	Expected Cost After Efficiency	
	Cost	P.C. of Total	Cost	Cost	P.C. of Total
Hospitals					
Regular Inpatient	3,485,005	60.39%	3,485,005	2,540,569	55.89%
Daycare	135,310	2.34%	135,310	321,315	7.07%
Polyclinics	1,666,028	28.87%	1,666,028	1,301,900	28.64%
Administrative Cost	484,357	8.39%	484,357	381,503	8.39%
Total	5,770,700		5,770,700	4,545,287	100%

Average Cost of Services Scenario: 50 % compliance by non-budget enterprises; -10 % IP cases; -10% ALOS; 1 s

	1993	Expected Cost After 1st Iteration		Expected Cost After Efficiency	
	Cost	ALOS	Cost	Cost	ALOS
Cost per Inpatient Admission	67.72	12.92	67.72	60.95	11.63
Cost per Day-Care Admission	50.79	11.73	50.79	45.71	10.55
Cost per Outpatient Visit	1.91		1.91	1.91	
Cost of preventive service/check-up	1.49		1.49	1.49	

KYRGYZSTAN TABLE A.7

Combined Karakol & 3 Rayons (regular inpatient) 1993 Figures

	Admissions	Bed-days	ALOS	Complicacy Factor	Cost per Admission	Total Cost
ICU	617	3,075	4.98	1	26	16,117
INFECTIOUS DISEASE	5,021	61,825	12.31	1	65	324,046
ENT	501	6,362	12.70	1	67	33,345
PEDIATRIC	6,387	82,437	12.91	1	68	432,080
NEUROLOGY	1,246	23,982	19.25	1	101	125,698
SURGERY	4,192	37,310	8.90	1	47	195,554
THERAPY	8,497	129,705	15.26	1	80	679,827
TRAUMA	2,698	39,745	14.73	1	77	208,317
MATERNAL	6,789	54,500	8.03	1	42	285,653
GYNACOLOGY	4,970	46,397	9.34	1	49	243,182
DENTAL	172	1,592	9.26	1	49	8,344
DERMATOLOGY	1,325	24,300	18.34	1	96	127,364
	0	0		1	0	0
	0	0		1	0	0
	0	0		1	0	0
	0	0		1	0	0
OTHERs	5,045	153,678	16.99	1	89	805,478
Total	51,460	664,908	12.92	1	68	3,485,005

Combined Karakol & 3 Rayons (regular inpatient) after efficiency

	Admissions	Bed-days	ALOS	Complicacy Factor	Cost per Admission	Total Cost
ICU	500	2,242	4.49	1	24	11,749
INFECTIOUS DISEASE	4,067	45,070	11.08	1	58	236,229
ENT	406	4,638	11.43	1	60	24,309
PEDIATRIC	5,173	60,097	11.62	1	61	314,986
NEUROLOGY	1,009	17,483	17.32	1	91	91,634
SURGERY	3,396	27,199	8.01	1	42	142,559
THERAPY	6,883	94,555	13.74	1	72	495,594
TRAUMA	2,185	28,974	13.26	1	69	151,863
MATERNAL	5,499	39,731	7.22	1	38	208,241
GYNACOLOGY	4,026	33,823	8.40	1	44	177,280
DENTAL	139	1,161	8.33	1	44	6,083
DERMATOLOGY	1,073	17,715	16.51	1	87	92,849
	0	0	0.00	1	0	0
	0	0	0.00	1	0	0
	0	0	0.00	1	0	0
	0	0	0.00	1	0	0
OTHERs	7,326	112,031	15.29	1	80	587,193
Total	41,683	484,718	11.63	1	61	2,540,569

KYRGYZSTAN TABLE A.7

Combined Karakol & 3 Rayons (day care) 1993 Experience

	Admissions	Bed-days	ALOS	Complicacy Factor	Cost per Admission	Total Cost
Infection & Parasitic	60	808	13.54	1	20	1,193
Cancer & Neoplastic	221	11,857	53.75	1	79	17,509
Endocrinopathy	25	711	28.28	1	42	1,050
Blood & Homogenic	575	17,362	30.21	1	45	25,639
Psychiatry	125	5,882	47.16	1	70	8,686
Nervous & Sensority	219	6,870	31.38	1	46	10,145
Blood Circulation	621	24,725	39.84	1	59	36,512
Respiratory	182	9,016	49.62	1	73	13,314
Digestion	429	8,702	20.26	1	30	12,850
Urological	209	5,696	27.31	1	40	8,411
Pregnancy	0	0		1	0	0
Cuts & Hypodermic/Tissue	0	0		1	0	0
Muscular	0	0		1	0	0
Inherency Anomolies	0	0		1	0	0
Peri-natal	0	0		1	0	0
Symptoms & non-indicative	0	0		1	0	0
Traumatic	0	0		1	0	0
Total	2,664	91,629	34.40	1	51	135,310

Combined Karakol & 3 Rayons (day care) after efficiency changes

	Admissions	Bed-days	ALOS	Complicacy Factor	Cost per Admission	Total Cost
Infection & Parasitic	157	1,919	12.19	1	18	2,833
Cancer & Neoplastic	582	28,156	48.37	1	71	41,579
Endocrinopathy	66	1,688	25.45	1	38	2,493
Blood & Homogenic	1,516	41,229	27.19	1	40	60,883
Psychiatry	329	13,968	42.45	1	63	20,626
Nervous & Sensority	578	16,314	28.24	1	42	24,091
Blood Circulation	1,637	58,714	35.86	1	53	86,703
Respiratory	479	21,410	44.66	1	66	31,616
Digestion	1,133	20,664	18.24	1	27	30,515
Urological	550	13,526	24.58	1	36	19,974
Pregnancy	0	0	0.00	1	0	0
Cuts & Hypodermic/Tissue	0	0	0.00	1	0	0
Muscular	0	0	0.00	1	0	0
Inherency Anomolies	0	0	0.00	1	0	0
Peri-natal	0	0	0.00	1	0	0
Symptoms & non-indicative	0	0	0.00	1	0	0
Traumatic	0	0	0.00	1	0	0
Total	7,029	217,588	30.96	1	46	321,315

KYRGYZSTAN TABLE A.7

Combined Karakol & 3 Rayons (Polyclinic Visits)

	1993 Experience		After Efficiency	
	Nos Visits	Total Cost	Nos Visits	Total Cost
GP	10,114	19,270	10,228	19,487
Surgeon	1,150	2,191	1,163	2,216
Obstetrics	2,093	3,988	2,117	4,033
Pediatrician	2,449	4,666	2,477	4,719
Citus & Venereal Disease Specialist	7,889	15,031	7,978	15,200
Teeneger Specialist	12,599	24,005	12,741	24,275
Tumor Specialist	7,259	13,830	7,341	13,986
Harcology Specialist	28,685	54,653	29,008	55,268
Psychiatrist	9,186	17,502	9,289	17,699
Physiologist	7,536	14,358	7,621	14,520
Endocrinologist	1,665	3,172	1,684	3,208
Cardiologist	3,211	6,118	3,247	6,187
Neuropathologist	3,489	6,648	3,528	6,722
Urologist	610	1,162	617	1,175
Contagienist	591	1,126	598	1,139
Dentist	3,496	6,661	3,535	6,736
Other curative cases not included above	379,349	722,767	383,614	730,894
Total preventive cases	502,324	748,880	251,162	374,440
Total	983,695	1,666,028	737,945	1,301,900

Operation of the Model

The model allows forecasting of health care revenue and cost with presumed changes in the following determinants, independently or in any combination.

Revenue Aspects

1. Effect of: Changes in the level of revenue contribution from current sources on total revenue and its ability to meet health care obligation
2. Effect of: Changes in the rate of payroll tax for health insurance on total revenue and its ability to meet health care obligation
3. Effect of: Co-payment or user fee on total revenue and its ability to meet health care obligation
4. Effect of: Changes in the volume of payroll in the economy on the size of contribution to health insurance and total revenue and its ability to meet health care obligation
5. Effect of: Changes in compliance rate on the size of contribution to health insurance and total revenue and its ability to meet health care obligation

Cost Aspect

1. Effect of: Changes in general price level on cost/expenditure of health care.
2. Effect of: Changes in salary level of health care workers on cost of health care
3. Effect of: Changes in health care administrative cost on health care finance
4. Effect of: Changes in cost of pharmaceutical and medical supplies on health care cost
5. Effect of: Changes in capital and other fixed cost on health care finance

Efficiency Aspect

1. Effect of: Rationalizing outpatient services, such as by reducing less effective services
2. Effect of: Changes in day-care referral rate on cost of health care
3. Effect of: Changes in inpatient referral rate on cost of health care
4. Effect of: Changes in inpatient average length of stay (ALOS) on cost of health care
5. Effect of: Changes in day-care ALOS on cost of health care

To reconstruct a scenario, the entries in the scenario template need to be adjusted. The cursor will move to the cell AQ385 when the Lotus spreadsheet of the model is retrieved in the computer, showing the scenario worksheet. The analyst can move the cursor up or down the column and make any changes in the values of the variables shown in rows 385 and 408 in that column (column AQ). The analyst should not make any entries in any of the other cells, because that may alter important formulas in those cells, making the model inoperable. Once the assumptions are entered, the model will automatically compute the new estimates and show up in the output tables. Move the cursor down to the appropriate output tables by pressing the direction keys or the page down key. Entries in the scenario template can be changed any number of times. To change input data, move to the cells of the appropriate variables and enter the new values. Only cells that have hard numbers (data that has been entered physically) should be changed. It is crucial that the cells containing formulas are not altered.

The analyst can move around the spreadsheet. To locate a particular area of the spreadsheet, refer to the cell address given in this text, or move to cell A48. This can be done by pressing F5, typing A48, and then pressing Enter. To move to another address, simply press F5, type in the cell address, and then press Enter.

APPENDIX B

EXHIBIT B-1 (3 pages)
 PATIENT CO-PAYMENTS FOR SERVICES
 DZHETIOUGOUZ CENTRAL RAYON HOSPITAL
 (1994)

SERVICE	FEE (in Som)
I. POLYCLINIC visit home visit patient transfer check-ups, employees, and students check-ups, through employer contracts copies of certificates of medical charts	1.00 4.00 2.00 3.00 4.00 2.00
II. OCULIST iridium diagnostic/investigation correctional lenses	2.00 1.45
III. EAR, NOSE, THROAT correction of nose bones ear drops pouring of drugs, criminal cases cleaning mucous of tongue by drugs removal of sulfid from ears	1.50 1.50 1.00 3.00 0.70
IV. WOMEN'S CONSULTATION CENTER introduction/removal IUD introduction of vaginal pads/gyn baths gynecologic massage mini-abortions electro-ogulation removing polyps from uterus searing of vaginal condyloma caocoscopia	2.40 1.00 3.25 6.00 1.60 2.30 2.25 1.30
V. SURGERY circumcision ear piercing massage of muscles bougelring of urine channels applying gypsum at home binding at home cleaning of bladder	1.50 1.50 2.40 2.40 2.00 3.00 6.00
VI. ENDOSCOPY (depending upon specific procedure)	1.20-3.00
VII. PROCEDURES intervein/intermuscle injections enema testing gastric juice bandage, residents of other cities	0.90 1.30 1.00 1.60

(continued on next page)

EXHIBIT B-1 (3 pages)
 PATIENT CO-PAYMENTS FOR SERVICES
 DZHETIOUGOUZ CENTRAL RAYON HOSPITAL
 (1994)

SERVICE	FEE (in Som)
VIII. MASSAGE	
top limbs	3.60
lower limbs	3.60
neck	3.60
head	3.30
elbow	3.00
wrist	3.00
stomach	3.00
chest	6.00
lumbo-dorsal	3.00
back	3.60
curative message	3.00
cosmetic	3.00
IX. PHYSIOTHERAPY	
ultraviolet rays	1.10
light therapy	1.10
paraffin application	1.10
mud treatment	1.10
cosmetic inhalation	1.10
screening	1.10
X. X-RAYS	
temple and jaw	10.00
stomach	12.00
lower jaws	10.00
chest	4.80
esophagus	7.00
nose	3.80
heart and muscle motor	11.70
colon	10.60
small colon	7.50
hips, legs, shoulder	7.50
teeth	3.00
wrist, spine, scapula	7.50
kidney, urethra, bladder	3.80
fingers	1.20
ribs	6.00
coxofemoral limbs	7.00
chest organs	6.20
cholecystography	13.00

(continued on next page)

EXHIBIT B-1 (3 pages)
 PATIENT CO-PAYMENTS FOR SERVICES
 DZHETIOUGOUZ CENTRAL RAYON HOSPITAL
 (1994)

SERVICE	FEE (in Som)
XI. DRUGS	
novocaine	5.20
mixture for coughing	1.70
sodium chloride (0.9%)	5.33
sodium chloride (10%)	4.80
ringer solution	5.33
furacillin solution	5.33
pavlov mixture	2.34
novocaine solution	4.88
potassium solution	1.54
calcium chloride	1.63
calcium chloride	1.65
sodium bromide	2.34
anti-influenza	3.78
hauthoin infusion	2.70
plantain infusion	2.70
dogrose infusion	2.70
knotweed infusion	2.70
origanum infusion	2.70
savory infusion	2.70
tansy infusion	2.70
shepherd's purse	2.70
novocaine solution into muscles	2.24
XII. OTHER	
abortions (> 12 weeks)	24.00
XIII. HOSPITALIZATION	
admission in two departments	5.00

EXHIBIT B-2 PATIENT CO-PAYMENTS FOR SERVICES AK-SOU CENTRAL RAYON HOSPITAL (1994)	
SERVICE	FEE (in Som)
Visit to polyclinic (first visit)	0.50
EKG	1.50
X-ray	5.00
Chest x-rays	3.00
Massage	5.00
Physiotherapy (2 treatments)	5.00
Vein injections	5.00
Muscle injections	3.00
Forms (except sick leave)	1.00

EXHIBIT B-3 PATIENT CO-PAYMENTS FOR SERVICE TYUP CENTRAL RAYON HOSPITAL (1994)	
SERVICE	FEE (in Som)
Visit to polyclinic (first visit)	0.18
Dermatology	N/A
Venereal disease	N/A
Public food/caterer check-ups	N/A

APPENDIX C

APPENDIX C

THE DERIVATION OF MES TARIFFS

CHAPTERS 1, 2: SALARIES, STAFF TAXES

Staff are grouped into clinical and paraclinical departments. The personnel are divided into four grades—doctors, nurses, attendants, and administration. The average annual salary of each grade is multiplied by the number of posts to gain the salary costs per grade per department.

Critique

Salary costs are one of the direct costs of each department. For ease of understanding, they should be referred to as such.

The salary costs would be better understood if all staff grades rather than just averages were used.

The paraclinical grouping includes administration and overhead departments (methodology department, central administration, polyclinic staff, finance).

The paraclinic group does not have staff for all of the paraclinical departments that exist in the hospital. For example, there is no cost for staff in the laboratory.

Basic Salaries & Allocation Criteria for the Work of the Paraclinical Departments

Each department is assigned an activity-based allocation criteria. For example, laboratories, pathology, and x-ray departments are apportioned on the number of tests (unweighted for complexity), physical therapy and physiotherapy are apportioned on the number of procedures, and anesthetics on the number of patients. The total number of procedures given to each clinical department are counted, and the proportion of this total given becomes the allocation weight.

Critique

Included in the paraclinical department are various overhead departments; such as the reception, traumatology post, and maintenance. Dentistry, which could be considered a clinical department, is also included. When the hospital structure was discussed with the economist, sterilization, laundry, and garage services existed but did not seem to be accounted for. Although there are some questionable criteria and the overheads are mixed up in the service departments, the basic idea here is compatible with step-down apportionment.

EXHIBIT C-1: SALARY APPORTIONMENT

This apportions the salary costs of the paraclinical departments (as listed in *Exhibit C-2*) onto the clinical departments. The salary costs are gained from *Exhibit C-1*.

This has stepped down the direct staff costs of the paraclinical departments. It has not stepped down overheads, materials, and equipment.

EXHIBIT C-2: TOTAL SALARY COSTS PER CLINICAL DEPARTMENT

This table adds the direct staff costs of the clinical departments, the apportioned paraclinical department staff costs, and additional salary payments to gain a total direct and indirect salary bill by clinical department.

2.89 percent of the total is the amount required for social insurance.

Critique

This presentation makes it appear as if additional payments are made only to clinical departments, although in practice this unlikely to be the case.

EXHIBIT C-3: FOOD COSTS PER CLINICAL DEPARTMENT

The average costs of buying the food to feed one patient per day was worked out using current market prices in March 1993. This was multiplied by the number of occupied bed-days in 1993 for each department to get the total cost of food by department.

Critique

This cost did not include the staff that cooked the food or equipment costs. This would make it impossible to derive the direct costs of the catering department if budgets were to be set up using the MES methodology. For similar reasons, it would be impossible to derive budgets for many other departments.

CHAPTER 12: TECHNICAL EQUIPMENT

EXHIBIT C-4: DEPRECIATION COSTS PER CLINICAL DEPARTMENT, PER YEAR

A norm depreciation rate per day for each department was given, and so is the number of occupied bed-days. A specific internal formula was used to calculate total annual depreciation allocation, but this did not appear to be straight-line depreciation.

Critique

The hospital did not appear to have an inventory of equipment by department.

CHAPTER 10: DRUGS

EXHIBIT C-5: DRUG COSTS PER CLINICAL DEPARTMENT

A norm of expenditure on drugs per bed is given. This is multiplied by the number of occupied bed-days per department per year to give an annual total for drug expenditure in roubles.

Critique

The drug norm is calculated as the total budget divided by the expected number of patients. This norm does not include the costs of purchasing or dispensing the drugs.

CHAPTER 14: ANCILLARY MATERIALS AND SOFT FURNISHINGS

EXHIBIT C-6: ANNUAL COST OF SOFT MATERIALS AND FURNISHINGS

A norm of expenditures per bed on soft furnishings (to include clothes, sheets, etc.) is given. This is multiplied by the total number of bed-days to gain the total annual expenditure by department.

Critique

Akin to that for drugs, this norm is a derivative of annual total allocation, and does not include labor costs of purchasing.

CHAPTER 3: OVERHEAD

EXHIBIT C-7: COSTS OF OVERHEAD PER CLINICAL DEPARTMENT

The overhead department is not overhead in the sense that Cost Accounting views it. It is the cost of maintaining the buildings, the carpenter, and the energy (e.g., cost of buying coal).

These are apportioned per department on the basis of a detailed weighting given by the methodology booklet.

Average cost of one Bed-Day per Medical Department

The sum of total expenditures on salaries, food, taxes, drugs, soft furnishings, overhead, and equipment depreciation is calculated from the preceding exhibits for each department. This is then divided by the total number of occupied bed-days per department to give the average cost per bed-day.

A sample printout of the information kept in each MES is shown in *Exhibit C-8*.

PROCEDURE COSTS

Laboratory Tests

A Russian norm book lists the average number of minutes that each analysis takes. Salary costs are calculated by working out the total number of minutes each technician would work in a day. The total number of minutes is multiplied by a price per minute to give the salary. This cost per minute was calculated on the salaries in 1993.

The costs of the machinery needed for the test are given as depreciation at a normative rate of 12 percent (Russian). The depreciation cost of a machine is divided by the number of minutes it is used by each test to get a depreciation cost per test. The number of tests and hence minutes of usage were calculated from 1993 activity data.

Critique

If actual future usage is not exactly equal to historic usage, the full depreciation charge of the machinery will not be accounted for. Depreciation is treated as a variable cost. It will be difficult to determine the amount that was contributed from each component of the price, as nothing is coded.

Operative Procedures

In a similar way to laboratory tests, the time each operation takes is multiplied by a physician cost per minute. The prices charged are weighted to reflect the complexity of the procedure, as described in column K in the MES. So, for example, a grade 1 procedure costs one-fifth that of a grade 5.

Critique

There appeared to be double counting here, as the full costs of the physicians' salaries had already been accounted for in other exhibits.

The total tariff is a summary of:

- ▲ The hotel costs per bed-day multiplied by the ALOS
- ▲ The costs of all diagnostic procedures listed
- ▲ The costs of all operative procedures listed

EXHIBIT C-1 PARACLINICAL STAFF APPORTIONED ONTO CLINICAL STAFF				
CLINICAL DEPARTMENTS				
Paraclinical Depts	Total salary	Surgery % weight	AppORTIONED salary	ICU % weight
1	37,192	0.17	6,322.64	
2	20,724			
--	--	--	--	
17	121,766			
Total	504,035			

EXHIBIT C-2 TOTAL SALARY COSTS PER CLINICAL DEPARTMENT					
CLINICAL DEPTS	A	B	C	D	E
	Basic salary	Paraclinical	Total	Extra payments	Total
1		table C-2		external	c + d
2					
10					

EXHIBIT C-3 FOOD COSTS PER CLINICAL DEPARTMENT				
CLINICAL DEPTS	A	B	C	D
	Beds	Occupied bed-days	Cost per patient per day	Total
1	60	21,753	3.5 given	76,135 B*C
2				
10				

EXHIBIT C-4 DEPRECIATION OF TECHNICAL EQUIPMENT PER YEAR				
CLINICAL DEPTS	A	B	C	D
	Beds	Occupied bed-days	Depreciation rate per bed-day	Depreciation allocation
1	60	21,753	0.02 given	51
2				
10				

EXHIBIT C-5 DRUG COSTS PER CLINICAL DEPARTMENT				
CLINICAL DEPTS	A	B	C	D
	Beds	Occupied bed-days	Drugs norm per day	Annual Total
1	60	21,753	1.7 given	36,980 B*C
2				
10				

EXHIBIT C-6 SOFT MATERIALS AND FURNISHINGS				
CLINICAL DEPTS	A	B	C	D
	Beds	Occupied bed-days	Norm per bed-day	Annual Total Roubles
1	60	21,753	17.6 given	13,051
2				
10				

EXHIBIT C-7
OVERHEAD

CLINICAL DEPTS	A	B	C
	Salary	Formula = 1.5	Total Annual
1	103,442	1.5 A*B	155,163
2			
10			

EXHIBIT C-8
MEDICAL ECONOMIC STANDARDS: A sample printout
(i.e., UROLOGY): Time and cost information
(The average price for 1 bed-day is 3 Som and 64 Tyines)

A	B	C	D	E	F	G	H	I	J	K
Name of disease	ICD 9 code	No. of cases	ALOS	Total ALOS	Tariff	QUALITY STANDARDS			CRITERIA	
				(C*D)	Som inc. H	Diagnostic investigations no. of days	Operations performed and price	Quality	Difficulty of treatment	Complexity of operation
Chronic infection of the prostate gland	601.1	39	18.9	737.1	640.8	Clinical analysis Analysis of prostate gland Ultrasound Urological.... 1-5 days	Antiphlogistic resorption Immunological means of improving microcalculation Physiotherapy Massage of prostate Installation of bladder Hormonal treatment 5-21 days 13 Som	Normalization of laboratory indicators State of health	II	II

APPENDIX D

INPATIENT DISCHARGE FORM

Министерство здравоохранения СССР

Код формы по ОКУД	_____
Код учреж. по ОКПО	_____

наименование учреждения _____

Медицинская документация форма № 066/У
Утверждена Минздравом СССР 04.10.80. № 1030

СТАТИСТИЧЕСКАЯ КАРТА ВЫБЫВШЕГО ИЗ СТАЦИОНАРА

1. Фамилия, имя, отчество _____

Пол

Муж.
Жен.

Дата рождения _____
год. месяц. число

2. Проживает постоянно (адрес) _____

Житель (подчеркнуть): города-1, села-2

3. Кем направлен больной _____

7. Исход заболевания (подчеркнуть)

- 1) выписан -1
- 2) умер -2
- 3) переведен -3

Отделение _____

7а. Дата выписки, смерти

19 ____ г. _____ месяц

Профиль коек _____

_____ число _____ час.

4. Доставлен в стационар по экстренным показаниям

да	1
(подчеркнуть) нет	2

5. Через сколько часов после заболевания (получения травмы) (подчеркнуть):

- 1. в первые 6 час. -1
- 2. 7—24 час. -2
- 3. позднее 24-х час. -3

7б. Проведено дней _____

6. Дата поступления в стационар

8. Диагноз направившего учреждения _____

19 ____ г. _____ месяц

9. Госпитализирован в данном году по поводу данного заболевания:

- впервые -1
- повторно -2

_____ число _____ час.

Подпись *С.С.* Общественное «Поллиграфнет».

10. Диагноз стационара *chronic IDx*

Основной <i>main</i>	Осложнения <i>Complications</i>	Сопутствующие заболевания	
клинический заключительный <i>clinical conclusive</i>	<i>none code</i>	<i>side- secondary</i>	10 а
патолого- анатомический <i>patho- anatomical</i>			10 б

В случае смерти (указать причину): *Death*

I. Непосредственная причина смерти (заболевание или осложнение основного заболевания)

заболевание, вызвавшее или обусловившее непосредственную причину смерти:

а) _____

б) _____

в) _____

основное заболевание указывается последним

II. Другие важные заболевания, способствовавшие смертельному исходу, но не связанные с заболеванием или его осложнением, послужившим непосредственной причиной смерти.

secondary due to diff

Хирургические операции *Operations*

Дата, мес	Название операции а	Осложнения б	
	<i>type</i>	<i>Complications</i>	11а]
			11б]

Обследован на Rw < _____ > 19 _____ г. Результат _____

Инвалид Отечественной войны (подчеркнуть): да -1, нет -2

SCREEN 4

DIAGNOSES:

ADMITTING DIAGNOSIS:

PRIMARY DIAGNOSIS:

SECONDARY DIAGNOSES:

CONCOMITANT ILLNESSES:

PROCEDURES:

SCREEN 5

DATE OF PROCEDURE:

TYPE OF PROCEDURE: urgent: yes or no

IF URGENT, HOW MANY HOURS BETWEEN ADMISSION AND SURGERY?:

NAME OF PROCEDURE:

NAME OF SURGEON:

NAME OF ANESTHESIOLOGIST:

APPENDIX E

MEDICAL INFORMATION SYSTEMS

MEDICAL INFORMATION SYSTEMS

DEFINITION: A Medical Information System (MIS) is an organized method of collecting, aggregating and reporting data on patient activities, utilization and management of resources in a population.

PURPOSE OF A MEDICAL INFORMATION SYSTEM (MIS)

A Medical Information System provides a comprehensive, integrated system of collecting and reporting enrollment, clinical and financial data.

An MIS provides information which is used

- to economically manage resources while providing optimum quality of care to the population,
- to analyze health care costs, utilization of resources, and quality of services, and
- to provide standardized, quantitative management reports at the hospital, clinic, regional and system-wide levels.

STRUCTURE OF A MEDICAL INFORMATION SYSTEM

An MIS is designed to support the collection and reporting of health care data.

The data collected is generally categorized as:

1. Clinical - patient-related data
2. Financial - facility-related data
3. Enrollment - population-related data

Specific data elements (items) are defined and collected for each category.

DATA ELEMENTS IN MEDICAL INFORMATION SYSTEMS

Each item of data to be collected is identified and defined as an individual data element. A standard definition is developed for each data element so that all persons collecting data adhere to the same definitions. Use of standard definitions assures that data collected in different sites and facilities can be compared. Standard definitions assist in assuring that the data is valid, consistent, accurate and comparable.

A typical Medical Information System is composed of subsystems, such as the Clinical Information System, Financial Information System, and Enrollment Information System.

ENROLLMENT INFORMATION SYSTEM

Data in an Enrollment Information System is demographic and population-related data. It is the vital statistics on the population served by the health care system.

ENROLLMENT DATA ELEMENTS:

Patient-specific data:

- identification number (unique identifier assigned to each enrollee)
- name of enrollee
- address (street and town)
- postal code
- zone of residence (industrial, residential, rural, other)
- date of birth
- sex
- race/ethnicity
- relation code (enrollee's relationship to insured, i.e. husband, wife, son, daughter)
- employment status (employed, unemployed, student, pensioner, veteran, disabled, etc.)

Employee-specific data:

- employer's name
- location or address of employment
- occupation

Provider-specific data:

- facility I.D. number - a unique numerical identifier assigned to each hospital
- pharmacy benefits code

CLINICAL INFORMATION SYSTEM

Clinical data is diagnostic and treatment data for a specific patient for a defined episode of care. An episode of care may be an inpatient hospitalization, a clinic visit, or emergency room treatment. The data collected for inpatient hospitalizations varies somewhat from that collected for polyclinic visits. A Clinical Information System is an organized system for collecting and reporting this data.

INPATIENT HOSPITALIZATION DATA ELEMENTS:

Patient name - the first, middle and family name (surname)

Sex - male or female

Date of birth - day, month, and year of birth

Medical record number - a unique numerical identifier assigned within a hospital that distinguishes a patient and his hospital record from all others in that hospital.

Admitting clinic - the clinic service area which refers a patient for admission as a hospital inpatient. The Admitting Clinic may be a specific clinic (e.g. Orthopedic Clinic or Cardiology Clinic) or the Emergency Room.

Admission date - day, month, and year of admission

Discharge date - day, month, and year of discharge

Principal diagnosis - determined at discharge, it is the condition established after study to be chiefly responsible for causing the admission of the patient to the hospital. A patient has only one principal diagnosis for each hospital discharge.

Secondary diagnosis - the most important condition, after the principal diagnosis, in terms of resource consumption. A patient may have several secondary diagnoses for each hospital discharge. Usually a maximum of five (5) secondary diagnoses are recorded. Secondary diagnoses are categorized as comorbid or complicating conditions:

Comorbidity - a condition that coexisted at admission with a specific principal diagnosis and is thought to increase the length of stay by at least one day for approximately 75 per cent of the patients. A comorbidity is a secondary diagnosis.

Complication - an additional diagnosis that describes a condition arising after the beginning of hospital observation and treatment and modifying the course of the patient's illness or the medical care required. A complication is a secondary diagnosis.

Principal procedure - the procedure performed for definitive treatment rather than diagnostic or exploratory purposes or to treat complications. If more than one procedure is performed, the principal procedure is the one most clearly related to the principal diagnosis. If only one procedure is performed, it is the principal procedure.

Secondary procedure - any surgical procedure other than the principal procedure. The secondary procedure may be performed for diagnostic or exploratory purposes. Usually a maximum of ten (10) secondary procedures are recorded.

Disposition of patient - the circumstances under which the patient left the hospital. Disposition of the patient includes data about further care, and is usually categorized as follows:

- discharged to home (routine discharge)
- left against medical advice
- discharged or transferred to another institution
- died

Attending physician - the physician who was primarily responsible for the care of the patient from the beginning of his inpatient admission until discharge.

Sick days authorized - the total number of work days the patient is expected to be absent from the work place after discharge from hospital, as authorized by the treating physician.

Referral Source - the facility and the provider who refer the patient to the inpatient facility. Each facility and provider is assigned a discreet identification number.

POLYCLINIC DATA ELEMENTS:

A polyclinic is an organized unit of a hospital, or a free-standing unit with facilities and medical services exclusively or primarily for patients who are generally ambulatory and who do not currently require or are not currently receiving services as an inpatient of a hospital. Emergency Room treatment is care for patients with severe, life-threatening, or potentially disabling conditions that require immediate intervention and treatment.

Patient name - the first, middle and family name (surname)

Date of birth - day, month, and year of birth

Medical record number - a unique numerical identifier assigned within a hospital that distinguishes a patient and his hospital record from all others in that hospital.

Polyclinic Identification (I.D.) Number - a unique numerical identifier assigned to clinics. For example, the clinic i.d. number for Orthopedic Clinic is the same for every Orthopedic Clinic regardless of the location of the clinic (hospital-based or free-standing).

Clinic encounter date - day, month and year a hospital outpatient receives clinic and/or emergency services

Reason for visit - the circumstances which caused the patient to come to the clinic or emergency room. Reason for visit data is usually categorized as follows:

- routine (appointment/walk-in)
- non-routine/emergency
- follow-up
- procedure

Principal diagnosis - determined at treatment, it is the condition chiefly responsible for causing the patient to come for treatment. The patient has only one principal diagnosis for each polyclinic episode.

Secondary diagnosis - the most important condition, after the principal diagnosis, in terms of resource consumption. Usually a maximum of five (5) secondary procedures are recorded.

Clinic procedure - a specified identifiable act of service involved in the medical care of a clinic patient. If more than one procedure is performed, the principal procedure is the one most clearly related to the principal diagnosis. If only one procedure is performed, it is the principal procedure. Polyclinic procedures may be defined to include services such as x-ray examinations, blood tests, injections, physical examinations, prescriptions, incisions, etc.

Disposition of patient - Disposition of the patient includes data about further care, and is usually categorized as follows:

- discharged to home (routine discharge)
- left against medical advice
- admitted to hospital
- died

Attending physician - the physician who was primarily responsible for the care of the patient during the polyclinic encounter.

Sick days authorized - the total number of work days the patient is expected to be absent from the work place after discharge from polyclinic or emergency room, as authorized by the treating physician.

Referral Source - the facility and the provider who refer the patient for treatment. Each facility and provider is assigned a discreet identification number. If the polyclinic visit is the initial treatment, that is the referral source.

MODEL FOR DESCRIPTIONS OF DATA FIELDS

DATA ELEMENTS	FIELD DESCRIPTION	LENGTH OF FIELD
<u>DATES:*</u>		
DATE OF BIRTH	numeric	6-8 characters
ADMISSION DATE	numeric	6-8 characters
DISCHARGE DATE	numeric	6-8 characters
POLYCLINIC VISIT DATE	numeric	6-8 characters
<u>HOSPITAL/POLYCLINIC DATA ELEMENTS:</u>		
ADMITTING CLINIC	numeric	4 characters
ATTENDING PHYSICIAN	alpha/numeric	15 characters
CLINIC I.D. NUMBER	numeric	4 characters
HOSPITAL I.D. NUMBER	numeric	5 characters
MEDICAL RECORD #	numeric	12 characters
REFERRAL FACILITY	alpha/numeric	6 characters
REFERRAL PROVIDER	alpha/numeric	6 characters
<u>PATIENT DATA ELEMENTS:</u>		
PATIENT NAME	alpha	to be defined
SEX	alpha	1 character

*Field format for dates usually requires the day, month and year be entered as six numeric characters. Spaces are filled with zeros; slashes are often used as punctuation (e.g., 8 May 1982 is entered as 080582 or 08/05/82).

MODEL FOR DESCRIPTIONS OF DATA FIELDS - page 2

DATA ELEMENTS	FIELD DESCRIPTION	LENGTH OF FIELD
<u>MEDICAL CARE DATA ELEMENTS:</u>		
DISPOSITION OF PATIENT:	alpha or numeric	3-5 characters
discharged to home (HOM)		
left against medical advice (AMA)		
discharged/transferred to another institution (TRN)		
died (DTH)		
REASON FOR CLINIC VISIT	alpha or numeric	4 characters
ICD-9 DIAGNOSIS CODES:		
Principal Diagnosis	alpha & numeric	8 characters
Secondary Diagnoses	alpha & numeric	8 characters
ICD-9 PROCEDURE CODES:		
Principal Procedure	alpha & numeric	8 characters
Secondary Procedures	alpha & numeric	8 characters
SICK DAYS AUTHORIZED	numeric	3 characters

FINANCIAL INFORMATION SYSTEMS

Financial and management decisions can be supported by information obtained in different ways. Information for frequently made management decisions can be derived from operational systems such as the Financial Information System (FIS) which collect and process data routinely. Special studies can be conducted to collect and analyze data for infrequently made decisions or for long range planning.

The general purpose of a Financial Information System is to provide accurate procedural level cost information for planning and decision making on a routine basis. Information from a Financial Information System may be used to support the review of efficiency, case-mix analysis, contracting, and financial forecast on a routine basis. A key component of an effective FIS is good cost accounting that generates accurate information on the use of resources in the delivery of services at every point of intervention or cost control at the facility. Used in combination with patient-level data, financial data provides information for costing services, analysis of labor productivity, control of materials and supplies, and examination of the productivity of investment.

Three important factors should be addressed to develop effective financial reporting systems:

1. categories of cost by their characteristics
2. the level of organization at which cost should be aggregated (cost centers)
3. identifying appropriate units of services.

Appropriate cost centers will depend to a great extent on the health care system, the revenue sources and the payment method in the system. It is important to remember that health care facilities generally have three types of functional departments:

- the overhead or administrative departments
- the ancillary or intermediate departments (e.g. X-ray, laboratory, operating theatre, etc., and
- the final service or medical departments.

Data on basic cost elements that should be recorded at the cost centers are the following:

Fixed cost - the cost of buildings and plants and their productive life, such as major equipment, i.e. elevators, automobiles, generators, etc. and their productive life

Step cost - personnel cost, such as

- salary by type and number of employed
- cost of fringe benefits offered to staff
- taxes and other deductions
- cost of major durable products, e.g. diagnostic equipments, computers, refrigerators, beds and furniture, etc. and their productive life

Incremental cost - such as

- utilities, such as rent, electricity, gas, heat, water
- medical supplies and other supplies, such as stationery, detergents, etc.
- pharmaceutical (drugs and medicines) and other products
- linens and sheets
- food and drinks
- maintenance costs
- other related items

In order to relate cost to services provided, information on volume by type of services is needed. This information is obtained from the patient medical record via the Clinical Information System. Also, information on inflation and price index is necessary to project cost prospectively. These can be obtained from external sources, or can be developed internally.

APPENDIX F

APPENDIX F

GLOSSARY OF HEALTH CARE DATA ELEMENTS

ADMISSION DATE

day, month, and year of admission (Gregorian).

ADMITTING CLINIC

the clinic service area which refers a patient for admission as a hospital inpatient. The Admitting Clinic may be a specific clinic (e.g., Orthopedic Clinic or Cardiology Clinic) or the Emergency Room.

AGE

the age of the patient represented in days if less than one year old or years if greater than one year old, i.e., 29 days or 43 years.

ATTENDING PHYSICIAN

the physician who was primarily responsible for the care of the patient from the beginning of his inpatient admission until discharge.

AVERAGE LENGTH OF STAY

the average length of hospitalization of inpatients discharged during the period under consideration.

BED DAY

a unit of measure denoting the services received by one patient in one 24-hour period.

CLINIC

an organized unit with facilities and medical services exclusively or primarily for patients who are generally ambulatory and who do not currently require or are not currently receiving services as an inpatient of the hospital. (GHT)

CLINIC SERVICE NUMBER

a unique numerical identifier assigned to hospital clinics. For example, the clinic service number for Orthopedic Clinic is the same for every Orthopedic Clinic regardless of the rayon or hospital in which it is located.

CLINIC VISIT DATE

day, month, and year an outpatient receives clinic services.

COMORBIDITY

a condition that coexisted at admission with a specific principal diagnosis and is thought to increase the length of stay by at least one day for approximately 75 percent of the patients.

COMPLICATION

an additional diagnosis that describes a condition arising after the beginning of hospital observation and treatment and modifying the course of the patient's illness or the medical care required. (1)

DATE OF BIRTH

day, month, and year of birth.

DEATH

an inpatient hospitalization that ends in death (includes newborns, paediatric and adult patients). (Also known as Hospital Inpatient Death.)

DIAGNOSIS

a word or phrase used by a physician to identify a disease from which an individual patient suffers or a condition for which the patient needs, seeks, or receives medical care. (1)

DISCHARGE DATE

day, month, and year of discharge.

DISPOSITION OF PATIENT

the circumstances under which the patient left the hospital. Disposition of the patient includes data about further care, and is usually categorized as follows:

- discharged to home (routine discharge)
- left against medical advice
- discharged or transferred to another institution
- died

HOSPITAL IDENTIFICATION NUMBER

a unique numerical identifier assigned to each hospital.

INPATIENT ADMISSION

the formal acceptance by a hospital of a patient who is to be provided with room, board, and continuous medical and nursing service in an area of the hospital where patients generally stay at least overnight. (1)

INPATIENT CENSUS

the number of patients present in the hospital at any given time. The official census taking time in hospitals is usually midnight, but it need not be so long as it is the same time each day.

INPATIENT DISCHARGE

the termination of a period of inpatient hospitalization through the formal release of the inpatient by the hospital. Inpatient discharge includes the end of a hospitalization by order of the physician, by transfer, against advice, or death. Unless otherwise specified, discharges always include deaths.

LENGTH OF STAY

the number of calendar days from admission to discharge. When calculating the length of stay, count either the day of admission or the day of discharge, but not both. Usually the day of admission is not counted, and the day of discharge is counted.

MEDICAL RECORD NUMBER

a unique numerical identifier assigned within a hospital that distinguishes a patient and his hospital record from all others in that hospital.

PATIENT NAME

the first, middle, and family name (surname) of each patient.

PRINCIPAL DIAGNOSIS

determined at discharge, it is the condition chiefly responsible for causing the admission of the patient to the hospital. A patient has only one principal diagnosis for each hospital discharge.

PROCEDURES**CLINIC PROCEDURE**

a specified identifiable act of service involved in the medical care of a clinic patient. Clinic procedures include services such as x-ray, blood tests, examinations, physiotherapy, prescriptions, etc.

PRINCIPAL PROCEDURE

the procedure performed for definitive treatment rather than diagnostic or exploratory purposes or to treat complications. If more than one procedure is performed, the principal procedure is the one most clearly related to the principal diagnosis. If only one procedure is performed, it is the principal procedure.

SECONDARY PROCEDURE

any surgical procedure other than the principal procedure.

SURGICAL PROCEDURE

any single separate systematic manipulation upon or within the body which can be complete in itself, normally performed by a physician, dentist or other licensed practitioner, either with or without instruments, to restore disunited or deficient parts, to remove diseased or injured tissues, to extract foreign matter, to assist in obstetrical delivery, or to aid in diagnosis. (1)

READMISSION

the admission of a patient to the hospital within seven days of a prior hospital discharge.

SECONDARY DIAGNOSIS

the most important condition, after the principal diagnosis, in terms of resource consumption. A patient may have several secondary diagnoses for each hospital discharge.

SEX

male or female.

SICK DAYS AUTHORIZED

the total number of work days the patient is expected to be absent from the workplace after discharge from hospital, clinic, or emergency room, as authorized by the treating physician.

TOTAL INPATIENT BED DAYS

the sum of all bed days in the period under consideration, such as one month or one year.

TOTAL LENGTH OF STAY

the sum of the length of stay for any group of inpatients discharged during a specific period of time. For example, the length of stay for a one-month period may be calculated.

APPENDIX G

SAMPLE REPORTS GENERATED FROM MEDICAL INFORMATION SYSTEMS

A BRIEF DISCUSSION OF REPORTS GENERATED FROM AN MIS

Effective management of a medical services program requires the systematic generation of activity reports that routinely provide managers with valuable facility, regional and system-wide information.

Management reports are designed to provide managers with quantitative information about health care costs, volume of services, quality, and access. Information contained in these reports is useful for :

- measuring health service utilization by beneficiaries
- Identifying and monitoring trends
- discovering and resolving problems/issues
- aggregating and analyzing comparative data
- planning for future health care needs

Reports are usually generated monthly, quarterly, semi-annually, and annually.

When deciding upon reports to be produced, the purpose and description of the report must be determine. A description of each report should be developed which includes:

Purpose - why the report is important

Interpretation - discussion about result implications

Definitions - description of frequently used terms

Formulas - how the data/results were calculated

Data Sources - the form names and/or locations indicating where the original input data can be found

Distribution - the position and title of personnel who receive the report

Report descriptions should be updated as operations evolve, information needs expand, and management requirements change.

On the following pages are examples of several report descriptions:

Enrollment Information System = Beneficiary Distribution Report

Clinical Information System = Clinic Visi. Report

Financial Information System = Medical Services Group Expenditure

BENEFICIARY DISTRIBUTION REPORT

Purpose

Beneficiary Distribution Reports (reports # ___ and # ___) provide managers with a regional overview of the number of beneficiaries enrolled at each facility and the frequency with which they change facilities. This provides management with a comprehensive view of the facilities' case load.

Interpretation

Distribution information is important for two reasons: the number of beneficiaries enrolled at a facility determines the facilities per capita payment; and, the number of beneficiaries per hospital serves as the denominator in subsequent hospital and regional report calculations.

Beneficiaries are permitted to change hospitals every twelve months. Frequency of facility changes should be tracked to identify trends in facility and/or patient behavior as well as to analyze the motivation behind frequent changes. Comparatively high frequency may indicate a suboptimal level of patient satisfaction and/or compromised quality of patient care.

Definitions

Beneficiaries are defined as:

- employees and their dependents, including employees, wife, all children under the age of 18 living within the parental residence
- retirees and wife
- widows of employees and their dependent children under the age of 18 living within the parental residence

Formula

Case Load Percentage by Facility:

$$\frac{\text{The sum of all categories of beneficiaries enrolled at each facility}}{\text{Total number of beneficiaries in the cachement area}}$$

Data Sources

The data source for this report is the forms completed by the beneficiaries when they initially select a facility and when they change hospitals.

Report Relationship

Beneficiary Distribution reports will be generated monthly and consolidated annually. The total number of beneficiaries, and the number per facility will be referenced repeatedly in all reports that calculate rates.

Distribution

Regional monthly reports (# __) will be sent to:

- Director
- Manager, Registration
- Manager, Beneficiary and Facility Relations

Detailed monthly reports (# __) will be sent to:

- Supervisor, Registration and Control
- Supervisor, Beneficiary and Facility Relations

POLYCLINIC VISIT REPORTS

Purpose

This series of reports (# ___ - # ___) are designed to provide managers with comparative outpatient data regarding the number of polyclinic visits conducted at each facility and their respective clinic visit rates.

Interpretation

This data will give managers information about patient volume, the facilities' work loads, and physician practice patterns. The volume data is also useful in contract negotiations.

Definition

Polyclinic visit - an ambulatory/outpatient encounter with a physician in a designated areas for diagnosis and treatment of a medical condition.

Formula

Monthly Polyclinic Visit Rate:

$$\frac{\text{Number of polyclinic visits for each facility in the reporting period}}{\text{Total number of beneficiaries enrolled at the facility}/100}$$

Data Source

The source document for this data is the Outpatient Daily Activity Report.

Report Relationship

Report # ___ provides polyclinic visit rates by month. This number should be divided by the number of days in the month so it can provide input data for the Utilization Ratios (# ___ and # ___).

Distribution

Report # ___ will be generated monthly.

Reports # ___ - # ___ will be generated quarterly.

Reports will be sent to the following individuals:

- Director, Medical Services
- Manager, Quality Services
- Manager, Registration and Utilization

MEDICAL SERVICE GROUP EXPENDITURE REPORTS

Purpose

The Medical Service Expenditure reports (# ___ - # ___) are designed to accurately track the financial resources allocated to health benefits for beneficiaries.

Monthly and quarterly reports capture costs for each facility, as well as the entire region. The data elements in these reports are:

- total expenditures
- total per capita and non-capitated expenditures
- total per capita expenditures
- total expenditures for non-capitated services

Interpretation

The reports provide valuable information for comparing costs per beneficiary among the facilities. They also provide information for trending expenditures over time which will prove helpful in negotiating contracts for services.

Definitions

Per capita expenditures are monthly payments made to facilities based on the number of beneficiaries enrolled at each facility.

Non-capitated services are medical services that are not covered under routine inpatient or outpatient services and are not included in the per capita price. These services are paid for separately.

Report Relationship

These reports provide management with three levels of specificity:

- facility
- region
- total program

They are designed so that the reports build on one another. For example, data in reports # ___ and # ___ provide input for report # ___. Report # ___ is a consolidation of totals from reports # ___ - # ___.

Distribution

Reports # __, # __, # __, and # __ will be generated monthly.

Reports # __ and # __ will be prepared quarterly.

Reports will be sent to the following individuals:

- Director, Medical Services
- Manager, Quality Services
- Manager, Medical Services
- Manager, Payments

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